

Archived NUS Bulletin 2016-17
Section 22: Bulletin Updates

(A) [Updates included in NUS Bulletin 2016-17 before archival \(i.e., up to 30 June 2017\)](#)

(B) [Updates for NUS Bulletin 2016-17 after archival \(i.e., from 1 July 2017 onwards\)](#)

S/N	Date	Faculty/ School/	(A) Updates included in NUS Bulletin 2016-17 before archival (i.e., up to 30 June 2017)
1.	22 Jun 2016	SCALE	<p>1. Amendments at http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-chemical-engineering/ are as follows:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><i>Degree Requirements</i></p> <p>Candidates must satisfy the following requirements to be conferred the degree of BTech (Chemical Engineering):</p> <p>Complete a minimum of 121 MCs with a minimum CAP of 2.00 by taking modules as listed below; Comply with the requirement that the limit on the number of Level-1000 modules to be counted towards fulfillment of graduation requirements being 60 MCs (including exemption of 20 MCs for polytechnic diploma holders); and Satisfy any other additional requirements that may be prescribed by SCALE, the Faculty of Engineering, or the University.</p> </div> <p>2. Updates in this page page (http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/key-contact-information/) are as follows:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>SCALE's administrative office is located at: University Town Education Resource Centre (ERC), #02-16 8 College Avenue West Singapore 138608</p> <p>For the time being, queries may be directed, via email, as follows:</p> <p>For BTech admissions: btech_admissions@nus.edu.sg scale-admissions@nus.edu.sg</p> <p>For current BTech students:</p> <ul style="list-style-type: none"> Chemical Engineering: btech_che@nus.edu.sg btech.che@nus.edu.sg </div>

			<ul style="list-style-type: none"> Electronics Engineering: btech-ee@nus.edu.sg btech.ee@nus.edu.sg Industrial & Management Engineering: btech-ime@nus.edu.sg btech.ime@nus.edu.sg Mechanical Engineering: btech-me@nus.edu.sg btech.me@nus.edu.sg <p>For up to date information on the School, please visit: http://scale.nus.edu.sg</p>	
2.	23 Jun 2016	SoC	<p>Business School has been asked to change their branded short domain (OCR informed Webmasters/Web Managers on 18 May 2016 that 'We noticed that there are some faculties and departments who are using nus.edu for your offline and online marketing tools or for your redirecting URLs. The implementation of the nus.edu shortened brand URL could affect your sites. As such, it is vital that you update the URL of your sites from nus.edu to nus.edu.sg as soon as possible. We would be providing you a two-week grace period to make the adjustments from your end and will be implementing our nus.edu shortened brand URL thereafter.' As a result, SoC requested for the following amendment to be made in the NUS Bulletin.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Double Degree in Computer Science / Information Systems and Business Administration / Business Administration (Accountancy) :</p> <p>http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/double-degree-programmes/double-degree-in-computer-science-information-systems-and-business-administration-business-administration-accountancy/relevant-website/</p> <p>5.4.4 Relevant website</p> <p>To change 'Please refer to: http://nus.edu/prog/bizsoc/.' to 'Please refer to: http://nus.edu.sg/prog/bizsoc/'.</p> </div>	
3.	24 Jun 2016	FoS	<p>1. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/overview/</p> <p>(3) Special Faculty-Based Programmes</p> <ul style="list-style-type: none"> <u>Multidisciplinary Undergraduate Programmes</u> <p>The Faculty has jointly set up two^{three} multidisciplinary programmes—Physics and Life Sciences, Chemical Sciences (with undergraduate and graduate research scholarships from A*STAR) and Computational Biology—with the Faculty of Engineering, the Yong Loo Lin School of Medicine and the School of Computing. These programmes are designed with the objective of paving the way to specific graduate programmes and research in hot multidisciplinary areas like Biophysics, Medicinal Chemistry and Bioinformatics. As such, these programmes are well suited for students who seek careers in the research-intensive track.</p>	

			<p><u>In 2016, the Faculty will be offering a Data Science and Analytics major, also a multidisciplinary programme jointly offered by the Department of Mathematics and the Department of Statistics and Applied Probability in the Faculty of Science, with the collaboration of the School of Computing. Data science is an emerging field of study that involves statistical and computational principles, methods and systems for extracting and structuring knowledge from data. On a daily basis, large data sets are routinely generated by activities in the sciences, administration, leisure and commerce. Data scientists are constantly seeking patterns and predicting outcomes from these vast collections of data. The four-year direct Honours programme in Data Science and Analytics (DSA) is designed to prepare graduates who are ready to acquire, manage and explore data that will inspire changes around the world.</u></p> <p>The growing list of challenging multidisciplinary study options also includes specially designed double degree programmes in Law and Life Sciences, Computer Science and Mathematics / Applied Mathematics, Materials Science & Engineering and Physics, as well as a Concurrent M.Sc. (Mgt.) and B.Sc. (Hons.) programme. Additionally, academically outstanding students who want to acquire competence in two disciplines may apply to do self-designed (free structure) double degrees. Some viable combinations of double degrees include a Science degree with Operations and Supply Chain Management (offered by the School of Business), Computing (offered by the School of Computing), Psychology [offered by the Faculty of Arts and Social Sciences (FASS)], or Economics (offered by FASS).</p> <ul style="list-style-type: none"> • <u>Undergraduate Professional Internship Programme (UPIP)</u> <p>The Undergraduate Professional Internship Programme (UPIP) aims to provide Science undergraduates (with the exception of Food Science and Technology majors) the opportunity to perform structured internship in an organisation during their undergraduate study. This elective programme allows students to engage actively in career preparation and job seeking exercises, hone their interpersonal, communications and other soft skills, and experience day-to-day working professional life. Students will be presented the challenges of competing and securing a job position in the organisation, applying their discipline-related knowledge and professionalism in a working environment, and thus acquiring experiential learning that complements their course activity.</p> <p><u>The Undergraduate Professional Internship Programme (UPIP) aims to provide Science undergraduates* the opportunity to perform structured internship in an organisation during their undergraduate study. Internship helps students craft a fulfilling university journey through meaningful work experience. This programme allows students to engage in career preparation and job seeking exercises, hone their interpersonal, communications and other soft skills, and actively experience day-to-day operations in an organisation's ecosystem. Students will be presented with opportunities to apply their discipline-related knowledge and professionalism in an actual work setting thus allowing students to gain experiential learning that complements their course activity. Upon successful completion of this elective internship module, students will also be awarded with Modular Credit (MC) that would count towards the Unrestricted Elective component of their graduation requirements.</u></p> <p>For more information, visit URL: http://science.nus.edu.sg/students/upip</p>
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*with the exception of Food Science and Technology majors

(4) Special University-Level Programmes

In support of the overarching objectives of many of the University-initiated programmes, the Faculty currently hand-picks outstanding scholars for intensive programmes like ~~the Massachusetts Institute of Technology's (MIT) Research Opportunities Programme~~, University of North Carolina at Chapel Hill Summer Lab, the Double Degree Programme with French Grandes Écoles and the NUS Overseas College Programme. Other programmes like the NUS Student Exchange Programme are also actively promoted to students as we believe that the exposure students receive outside the Singapore-NUS educational environment adds value to their undergraduate education and contributes to their personal growth.

2. <http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degrees-offered/>

3.2 Degrees Offered

The Faculty offers two full-time degree programmes:

1. Bachelor of Science/Bachelor of Science (Hons.)

Majors available under the Bachelor of Science Programme include:

- Applied Mathematics
- Applied Mathematics (with specialisation in Mathematical Modelling and Data Analytics)
- Applied Mathematics (with specialisation in Operation Research and Financial Mathematics)
- Chemistry
- Chemistry (with specialisation in Materials Chemistry)
- Chemistry (with specialisation in Medicinal Chemistry)
- Chemistry (with specialisation in Environment and Energy)
- Computational Biology*
- [Data Science and Analytics](#)
- Food Science and Technology
- Life Sciences
- Life Sciences (with specialisation in Biomedical Science)
- Life Sciences (with specialisation in Environmental Biology)
- Life Sciences (with specialisation in Molecular and Cell Biology)
- Mathematics
- Physics
- Physics (with specialisation in Astrophysics)
- Physics (with specialisation in Nanophysics)

- Quantitative Finance
 - Statistics
 - Statistics (with specialisation in Biostatistics)
 - Statistics (with specialisation in Finance and Business Statistics)
2. Bachelor of Science (Pharmacy)/Bachelor of Science (Pharmacy) (Hons.)*

* Pharmacy, ~~and~~ Computational Biology [and Data Science and Analytics](#) are strict four year programmes, while all other programmes allow for graduation after three years with a general Bachelor of Science degree. The Chemistry, Life Sciences, Applied Mathematics, Physics and Statistics majors offer general B.Sc.(Hons.) programmes as well as B.Sc.(Hons.) programmes with specialisation. Specialisation is only awarded for B.Sc.(Hons.) programmes. The Faculty also offers a spread of minors, multidisciplinary programmes and special programmes for the educational broadening and enhancement of our students.

3. <http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/curriculum-structure-and-graduation-requirements/bachelor-of-science/>

3.3.1.1 Bachelor of Science

Summary of Requirements for B.Sc.		MCs
University Level Requirements		20
General Education		20
Programme Requirements**		
<ul style="list-style-type: none"> • B.Sc. (excluding FST major) • For FST major 		6472 – 86
		848
Faculty requirements		
<ul style="list-style-type: none"> • B.Sc. (excluding FST major) • B.Sc.(for FST major) 		12
		16
Major requirements [B.Sc.]		
<ul style="list-style-type: none"> • B.Sc. (excluding FST major) • B.Sc.(for FST major) 		5260 – 74
		6872

			Unrestricted Elective Modules (NOT including additional MCs due to reduced programme requirements as a result of MAJOR REQUIREMENTS DOUBLE COUNTING AS FACULTY REQUIREMENTS) **	14 – 3628
			<ul style="list-style-type: none">• B.Sc. (excluding FST major)• B.Sc.(for FST major)	162
			Total	120

4. <http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/curriculum-structure-and-graduation-requirements/bachelor-of-science-hons/>

3.3.1.2 Bachelor of Science (Hons.)

Summary of Requirements for B.Sc. (Hons.)/B.Appl.Sc (Hons.)		MCs
University Level Requirements		20
General Education		20
PROGRAMME REQUIREMENTS**		
<ul style="list-style-type: none">• B.Sc. (Hons.)(excluding FST major)• B.Sc. (Hons.)(for FST major)		10 08 – 122
		12 04
Faculty requirements		
B.Sc. (Hons.)(excluding FST major)		16
B.Sc. (Hons.)(for FST major)		20
Major requirements [B.Sc. (Hons.)]		
B.Sc. (Hons.)(excluding FST major)		8492 – 106
B.Sc. (Hons.)(for FST major)		10 04

UNRESTRICTED ELECTIVE MODULES (NOT INCLUDING ADDITIONAL MCS DUE TO REDUCED PROGRAMME REQUIREMENTS AS A RESULT OF MAJOR REQUIREMENTS DOUBLE COUNTING AS FACULTY REQUIREMENTS) **		
B.Sc. (Hons.)(excluding FST major)		18 – 40 32
B.Sc. (Hons.)(for FST major)		25 5.16
Total		160

5. <http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/curriculum-structure-and-graduation-requirements/bachelor-of-science-pharmacybachelor-of-science-pharmacy-hons-requirements/>

3.3.1.3 Bachelor of Science (Pharmacy)/Bachelor of Science (Pharmacy) (Hons.) Requirements

To be awarded a Bachelor of Science (Pharm.)/ Bachelor of Science (Pharm.) (Hons.) Degree, students must have:

- Satisfied the University Level Requirements comprising:
 - 20 MCs from General Education modules (GEMs)
- Satisfied the Programme Requirements comprising:
 - 16 MCs of faculty requirements; and
 - One set of major requirements.
- Accumulated a minimum of 160 Modular Credits (MCs)* (of which no more than 60 MCs may come from level-1000 modules);
- Obtained a cumulative average point (CAP) of at least 3.00 for the award of the B.Sc. (Pharm.) (Hons.) degree. Students who obtain a CAP of between 2.0 to 2.99 will be awarded a B.Sc. (Pharm.) degree.
- Completed the modules PR4197 Pharmacy Internship I, PR4198 Pharmacy Internship II, and PR4196 9 Pharmacy Research Project and Scientific CommunicationHonours Project in Pharmacy; and
- Passed the requisite English Skills module(s) by the fourth semester (only applicable to students who fail to meet exemption criteria based on the Qualifying English Test (QET) results).

6. <http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/curriculum-structure-and-graduation-requirements/major-prerequisites/>

3.3.1.5 Major Prerequisites

Major	Prerequisites
1. Chemistry	A good H2 pass (or equivalent) in Chemistry, and at least a good GCE 'O' Level pass in Mathematics.
2. Chemistry (with specialisation in Materials Chemistry)	
3. Chemistry (with specialisation in Medicinal Chemistry)	
4. Chemistry (with specialisation in Environment and Energy)	
5. Computational Biology*†	<p><u>Good H2 passes or the equivalent in Mathematics and either Biology or Chemistry.</u></p> <p><u>Students without H2 passes or the equivalent in either Biology or Chemistry should have at least an O-level or equivalent pass in it.</u></p> <p>Good H2 passes (or equivalent) in Mathematics and either Biology, Chemistry or Physics. Students without H2 passes (or equivalent) in any two of the three Science subjects (Biology/Chemistry/Physics) should have at least GCE 'O' Level or equivalent passes in them.</p> <p>Subject to departmental approval.</p>
6. <u>Data Science and Analytics</u>	<u>A very good H2 pass or the equivalent in Mathematics and a good H2 pass or the equivalent in Biology or Chemistry or Physics or Computing</u>

			<p>67. Food Science & Technology*</p>	<p>(1) Good H2 passes (or equivalent) in Chemistry and at least one other science subject, and good GCE'O' level or above pass in Biology</p> <p>Subject to departmental approval.</p>	
			<p>87. Life Sciences</p> <p>98. Life Sciences (with specialisation in Biomedical Science)</p> <p>109. Life Sciences (with specialisation in Environmental Biology)</p> <p>110. Life Sciences (with specialisation in Molecular and Cell Biology)</p>	<p>Good H2 passes (or equivalent) in Biology, Chemistry and either Mathematics or Physics.</p> <p>Students without H2 Biology or Chemistry may read the relevant bridging modules to meet the eligibility requirements.</p>	
			<p>124. Mathematics</p> <p>132. Applied Mathematics</p> <p>143. Applied Mathematics (with specialisation in Mathematical Modelling and Data Analytics)</p> <p>154. Applied Mathematics (with specialisation in Operation Research and Financial Mathematics)</p> <p>165. Statistics</p> <p>176. Statistics (with specialisation in Biostatistics)</p>	<p>A good H2 pass (or equivalent) in Mathematics.</p> <p>Subject to departmental approval (applicable to Quantitative Finance only)</p>	

		<div><div>187. Statistics (with specialisation in Finance and Business Statistics)</div><div>198. Quantitative Finance*</div></div>		<div>* These majors are</div>																			
<div>capped with quotas; eligibility to read these majors will be determined by additional selection criteria set by the department/programme.</div> <div>@ B.Sc. (Pharm.)/ B.Sc. (Pharm.) (Hons.) degree. Admission into the programme is by direct application.</div> <div>+ Admission into the Data Science and Analytics programme is by direct application.</div> <div>^ Pharmacy, and Computational Biology and Data Science and Analytics are strict four-year programmes, while all other programmes allow for graduation after three years with a general Bachelor of Science degree. The Chemistry, Life Sciences, Applied Mathematics, Physics and Statistics majors offer general B.Sc.(Hons.) programmes as well as B.Sc.(Hons.) with specialisation programmes. Specialisation is only awarded for B.Sc.(Hons.) programmes.</div>																							
<div>7. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/curriculum-structure-and-graduation-requirements/faculty-requirements/</div>																							
<table><tr><th>Subject Group</th><th>Majors</th><th>Module Code Prefix</th></tr><tr><td rowspan="2">Computing Sciences</td><td>Computational Biology (ZB)</td><td rowspan="2">CS*, CSD, CZ, IT1001*, IT1002*, IT1006*, QF, ZB</td></tr><tr><td>Quantitative Finance (QF)</td></tr><tr><td rowspan="6">Chemical Sciences</td><td>Chemistry (CM)</td><td rowspan="6">CM, FST, PR</td></tr><tr><td>Chemistry (Specialisation in Materials Chemistry) (CM)</td></tr><tr><td>Chemistry (Specialisation in Medicinal Chemistry) (CM)</td></tr><tr><td>Chemistry (Specialisation in Environment and Energy) (CM)</td></tr><tr><td>Food Science & Technology (FST)</td></tr><tr><td>Pharmacy (PR)</td></tr><tr><td rowspan="2">Life Sciences</td><td>Food Science & Technology (FST)</td><td rowspan="2">FST, LSM, PR</td></tr><tr><td>Life Sciences (LSM)</td></tr></table>					Subject Group	Majors	Module Code Prefix	Computing Sciences	Computational Biology (ZB)	CS*, CSD , CZ , IT1001*, IT1002*, IT1006*, QF, ZB	Quantitative Finance (QF)	Chemical Sciences	Chemistry (CM)	CM, FST, PR	Chemistry (Specialisation in Materials Chemistry) (CM)	Chemistry (Specialisation in Medicinal Chemistry) (CM)	Chemistry (Specialisation in Environment and Energy) (CM)	Food Science & Technology (FST)	Pharmacy (PR)	Life Sciences	Food Science & Technology (FST)	FST, LSM, PR	Life Sciences (LSM)
Subject Group	Majors	Module Code Prefix																					
Computing Sciences	Computational Biology (ZB)	CS*, CSD , CZ , IT1001*, IT1002*, IT1006*, QF, ZB																					
	Quantitative Finance (QF)																						
Chemical Sciences	Chemistry (CM)	CM, FST, PR																					
	Chemistry (Specialisation in Materials Chemistry) (CM)																						
	Chemistry (Specialisation in Medicinal Chemistry) (CM)																						
	Chemistry (Specialisation in Environment and Energy) (CM)																						
	Food Science & Technology (FST)																						
	Pharmacy (PR)																						
Life Sciences	Food Science & Technology (FST)	FST, LSM, PR																					
	Life Sciences (LSM)																						

				Life Sciences (Specialisation in Biomedical Science) (LSM)		
				Life Sciences (Specialisation in Molecular & Cell Biology) (LSM)		
				Life Sciences (Specialisation in Environmental Biology) (LSM)		
				Pharmacy (PR)		
			Mathematical & Statistical Sciences	Applied Mathematics (MA)	CZ, DSA , MA, QF, ST	
				Applied Mathematics (Specialisation in Mathematical Modelling and Data Analytics) (MA)		
				Applied Mathematics (Specialisation in Operations Research and Financial Mathematics) (MA)		
				Data Science and Analytics (DSA)		
				Mathematics (MA)		
				Quantitative Finance (QF)		
				Statistics (ST)		
				Statistics (with specialisation in Biostatistics) (ST)		
				Statistics (with specialisation in Finance and Business Statistics) (ST)		
			Physical Sciences	Physics (PC)	PC	
				Physics (with specialisation in Astrophysics) (PC)		
				Physics (with specialisation in Nanophysics) (PC)		
			Multidisciplinary & Interdisciplinary Sciences	—	FMS12XXB, FMS12XXC, FMS12XXD , FMS12XXM, FMS12XXP, FMS12XXR, FMS12XXS, SP1202,	

					SP1203, SP1541, SP2251, SP3201, SP3202, SP3203, SP3277
					<p>For more details on fulfilling Faculty requirements, students are advised to visit the following website: http://science.nus.edu.sg/undergraduate-studies/ugreq/curriculum-structure?id=212 http://www.science.nus.edu.sg/undergraduate-studies/ugreq/curriculum-structure/186-undergraduate/ugreq/curriculum-structure/212-facreq</p> <p>8. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/curriculum-structure-and-graduation-requirements/sp1541es1541-exploring-science-communication-through-popular-science/</p> <p>3.3.1.7 SP1541/ES1541 Exploring Science Communication through Popular Science</p> <p>Please refer to http://www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/summer-programme/186-undergraduate/ugreq/curriculum-structure/708-es1541-sp1541 http://www.science.nus.edu.sg/undergraduate-studies/ugreq/curriculum-structure/186-undergraduate/ugreq/curriculum-structure/708-es1541 for more information.</p> <p>9. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/curriculum-structure-and-graduation-requirements/english-skills-es-requirements/</p> <p>Based on the Qualifying English Test results, students who do not meet exemption criteria have to take and pass ES1103² English for Academic Purposes. In addition, <u>very</u> weak students have to take and pass ES1000^{FC} Basic English Course before proceeding to ES1102.</p> <p>ES1000^{FC} and ES1102 are <u>is</u> not counted towards Modular Credits and CAP. However, <u>it they are is</u> counted as part of the workload for every semester. (Please refer to section 3.3.2)</p> <p>ES1103 is worth 4MC and letter-graded (with the option to convert to S/U grade).</p>

		<p>Students who need to clear ES requirements for graduation are strongly encouraged to do so by their <u>second semester</u> at the latest.</p> <p>10. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/curriculum-structure-and-graduation-requirements/honours-eligibility-and-honours-projects/</p> <p>For B.Sc. (Pharm.) (Hons.)</p> <p>Pharmacy is a four-year programme leading to a Bachelor of Science (Pharmacy) (Hons.) degree, subject to a minimum CAP attainment.</p> <p>Students admitted to the programme from AY2014/2015 onwards have to complete PR41969 Pharmacy Research Project and Scientific Communication in Pharmacy in their final year.</p> <p>11. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/curriculum-structure-and-graduation-requirements/degree-classification/</p> <p>All students are on a track that leads to either the B.Sc./B.Sc. (Pharm.) or B.Sc. (Hons.)/B.Sc. (Pharm.) (Hons.) degree. CAP computation is based on all modules completed at all levels, <u>excluding</u>:</p> <ol style="list-style-type: none"> 1. Modules for which grades obtained have no assigned grade points (for e.g. EXE, OCT, OVS, S/U, CS/CU, IC, IP); and 2. ES1000 FC Basic English Course and ES11032 English for Academic Purposes. <p>12. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/policies-and-procedures/advanced-placementexemptions/</p> <p>Modules for which advanced placement may be awarded are: Chemistry: CM1121, CM1131 Life Sciences: LSM1101, LSM1102, LSM1401</p>
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			<div>15. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/policies-and-procedures/filing-for-graduationproject-options/</div> <div>3.3.2.8 Filing for Graduation/Project Options</div> <div>File for Honours Project</div> <div>Students who intend to take honours projects in their respective majors have to file for Honours Project <u>one semester before</u> registering for their honours project. For example, if you intend to take the honours project in Semester 1, AY201<u>65</u>/201<u>76</u>, you will have to file for honours project at the beginning of Semester 2, AY201<u>54</u>/201<u>65</u> during module registration. This filing may be done during the online registration period via CORS.</div>						
4	24 Jun 2017	FoS	<div>http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/data-science-and-analytics/</div> <div>3.3.3.4 Data Science and Analytics</div> <div>Graduation Requirements</div> <div>To be awarded a B.Sc. or B.Sc. (Hons.) with a primary major in Data Science and Analytics, candidates must satisfy the following:</div> <table><tr><th>Module Level</th><th>Major Requirements</th><th>Cumulative Major MCs</th></tr><tr><td>Level 1000 (20 MCs)</td><td>Pass – CS1010/CS1010S/CS1010X Programming Methodology – CS1020 Data Structures and Algorithms I – DSA1101 Introduction to Data Science</td><td>20</td></tr></table>	Module Level	Major Requirements	Cumulative Major MCs	Level 1000 (20 MCs)	Pass – CS1010/ CS1010S / CS1010X Programming Methodology – CS1020 Data Structures and Algorithms I – DSA1101 Introduction to Data Science	20
Module Level	Major Requirements	Cumulative Major MCs							
Level 1000 (20 MCs)	Pass – CS1010/ CS1010S / CS1010X Programming Methodology – CS1020 Data Structures and Algorithms I – DSA1101 Introduction to Data Science	20							

			<table><tr><td></td><td>– MA1101R Linear Algebra I</td><td></td></tr><tr><td></td><td>– MA1102R Calculus</td><td></td></tr></table> <table><tr><th>Summary of Requirements</th><th>B.Sc. (Hons.)</th></tr><tr><td>University Requirements</td><td>20 MCs</td></tr><tr><td>Faculty Requirements</td><td><u>846 MCs*</u></td></tr><tr><td>Major Requirements</td><td>100 MCs</td></tr><tr><td>Unrestricted Elective Modules</td><td><u>3224 MCs</u></td></tr><tr><td>Total</td><td>160 MCs</td></tr></table> <p><u>* 8 MCs of Faculty requirements are fulfilled through the reading of a CS-coded module and a ST/MA-coded module within the DSA curriculum.</u></p> <p><u>Students are required to fulfill the remaining 8 MCs of Faculty requirements from any two of the following subject groups: Chemical Sciences, Life Sciences, Physical Sciences or Multidisciplinary & Interdisciplinary Sciences; but not from the following subject groups: Computing Sciences and Mathematical & Statistical Sciences.</u></p>		– MA1101R Linear Algebra I			– MA1102R Calculus		Summary of Requirements	B.Sc. (Hons.)	University Requirements	20 MCs	Faculty Requirements	<u>846 MCs*</u>	Major Requirements	100 MCs	Unrestricted Elective Modules	<u>3224 MCs</u>	Total	160 MCs
	– MA1101R Linear Algebra I																				
	– MA1102R Calculus																				
Summary of Requirements	B.Sc. (Hons.)																				
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Major Requirements	100 MCs																				
Unrestricted Elective Modules	<u>3224 MCs</u>																				
Total	160 MCs																				
5.	24 Jun 2016	FoS	<p>1. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/minor-programmes/minor-in-geosciences/</p> <p>2.3.4.3.7 Minor in Geosciences</p> <p>Given the increasing significance of environment on national and international agendas it is timely to consider how to improve awareness of geosciences. A Minor in Geosciences would appeal to students who are interested in the functioning of environmental processes and concerned about the key issues of climate and environmental change, natural hazards and risk management and sustainable landuse.</p> <p>Please refer to the FASS Faculty of Arts and Social Sciences AY2015/16 bulletin on this minor for the requirements and more information.</p>																		

6.	24 Jun 2016	FoS	<p>http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/physics-and-life-sciences-programme/</p> <p>(The entire section is deleted as the programme has been discontinued wef AY2015/16 Sem 1).</p> <p>3.4.5 Physics and Life Sciences Programme</p> <p>Programme Structure and Curriculum Rationale</p> <p>Physics, the most fundamental of all sciences, is the basis of our scientific knowledge of the physical world. The applications of physics are among the main driving forces of new cutting-edge technologies and innovation. The Life Sciences is an exciting field where ongoing technological revolution promises to change human life. Rapid and almost daily advances in Life Science discoveries and developments have opened up new frontiers and are spawning new and exciting bio-industries.</p> <p>This integrated Physics and Life Sciences programme is specially designed for students who have gained entry to read Physics Major, and have keen interest to pursue graduate research in the Life Science-associated areas such as in Computational Biophysics, Molecular and Structural Biophysics, Physics of Bio-Functional Materials, Medical Physics, Bio and Diagnostics imaging, etc.</p> <p>Students participating in the Physics and Life Sciences programme will gain an appreciation of the links between the Life Sciences and emerging technologies such as nano-biotechnology, biomedical revolutions, to name a few. They will benefit from basic grounding in specialised topics of Life Sciences and be able to undertake research work or to take the lead in the industries.</p> <p>Summary of Course Requirements for cohorts matriculated in AY2007/08 and later, under the A*STAR pre-graduate scholarship for Physics and Life Sciences Programme:</p> <table><tr><th>Modular Requirements</th><th>MCs</th></tr><tr><td>University Requirements</td><td>20</td></tr><tr><td>Two General Education Modules (GEMs)</td><td>8</td></tr><tr><td>One Singapore Studies Module (SS)</td><td>4</td></tr><tr><td>Two breadth modules, Choose any two from the following:</td><td>8</td></tr></table>	Modular Requirements	MCs	University Requirements	20	Two General Education Modules (GEMs)	8	One Singapore Studies Module (SS)	4	Two breadth modules, Choose any two from the following:	8
Modular Requirements	MCs												
University Requirements	20												
Two General Education Modules (GEMs)	8												
One Singapore Studies Module (SS)	4												
Two breadth modules, Choose any two from the following:	8												

			BN3401[†]—Biomedical Electronics & Systems	
			BN4402[†]—Electrophysiology	
			BN5207[†]—Medical Imaging Systems	
			Faculty Requirements	16
			LSM1101[†]—Biochemistry of Biomolecules	
			LSM1102[†]—Molecular Genetics	
			ST1232[†]—Statistics For Life Sciences	
			CM1402[†]—General Chemistry	
			English Skills*	—
			Physics Major Requirements	96
			Level 1000 Modules (24 MCs)	
			PC1141—Introduction to Classical Mechanics	4
			PC1142—Introduction to Thermodynamics and Optics	4
			PC1143—Introduction to Electricity & Magnetism	4
			PC1144—Introduction to Modern Physics	4
			MA1505—Mathematics I	4
			MA1506—Mathematics II	4
			Level 2000 Modules (20 MCs)	
			PC2130—Quantum Mechanics I	4
			PC2131—Electricity and Magnetism I	4
			PC2132—Classical Mechanics	4
			PC2193—Experimental Physics I	4
			PC2230—Thermodynamics and Statistical Mechanics	4
			Level 3000 Modules (20 MCs)	
			PC3130—Quantum Mechanics II	4
			PC3193—Experimental Physics II	4
			PC3267—Biophysics II	4

			PC3233 ——Atomic and Molecular Physics I	4
			PC3XXX ——[elective]	4
			Level 4000 Modules (32 MCs)	
			PC4199 ——Honours Project in Physics	12
			PC4130 ——Quantum Mechanics III	4
			PC4267 ——Biophysics III†	4
			PC4268 ——Biophysical Instrumentation and Biomolecular Electronics†	4
			PC4XXX ——[elective]	4
			PC4XXX ——[elective]	4
			Unrestricted Elective Modules	28
			PC2267† ——Biophysics I	
			LSM2102† ——Molecular Biology	
			LSM2103† ——Cell Biology	
			LSM2201A† ——Experimental Biochemistry	
			OR	
			LSM2202A† ——Experimental Molecular and Cell Biology	
			LSM3213† ——Molecular and Cellular Neurobiology	
			OR	
			LSM3231† ——Protein Structure and Function	
			LSM3244† ——Molecular Biotechnology	
			LSM4213† ——System Neurobiology	
			OR	
			LSM4231† ——Structural Biology	
			Total	160
			†. Modules required for the students qualified for this programme. Students without H2 Biology will have to take LSM1301 as a bridging module in Year 1 Semester 1.	

			<p>* Students who do not meet exemption criteria based on their qualifying English test results are not awarded MCs upon completion of module(s) and grades obtained do not contribute to computation of CAP.</p> <p>Successful candidates are eligible for A*STAR scholarships that include (i) tuition fees, (ii) annual book allowance of \$600 and (iii) a monthly stipend of \$460, \$560, \$760 for up to 12 months during Year Two, Year Three and Year Four respectively. The continuation of their scholarship is subject to annual review of their academic results.</p> <p>Suggested Study Plan</p> <p>For Students with H2 Biology:</p> <p><u>Semester 1 (24 MCs)</u> PC1141— Introduction to Classical Mechanics PC1142— Introduction to Thermodynamics and Optics MA1505— Mathematics I LSM1101— Biochemistry of Biomolecules ST1232— Statistics for Life Sciences</p> <p><u>Semester 2 (20 MCs)</u> PC1143— Introduction to Electricity & Magnetism PC1144— Introduction to Modern Physics MA1506— Mathematics II LSM1102— Molecular Genetics CM1402— General Chemistry</p> <p><u>Semester 3 (20 MCs)</u> PC2130— Quantum Mechanics I PC2132— Classical Mechanics PC2267— Biophysics I LSM2103— Cell Biology</p> <p><u>Semester 4 (20 MCs)</u> PC2131— Electricity and Magnetism I PC2193— Experimental Physics I PC2230— Thermodynamics and Statistical Mechanics LSM2102— Molecular Biology LSM2201A— Experimental Biochemistry OR LSM2202A— Experimental Molecular and Cell Biology</p>
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			<p><u>Semester 5 (20 MCs)</u> PC3233—Atomic and Molecular Physics-I PC3193—Experimental Physics-II LSM3244—Molecular Biotechnology PC3XXX—[elective]*</p> <p><u>Semester 6 (20 MCs)</u> PC3130—Quantum Mechanics-II PC3267—Biophysics-II LSM3213—Molecular and Cellular Neurobiology OR LSM3231—Protein Structure and Function BN3401—Biomedical Electronics & Systems# PC4XXX—[Elective]*</p> <p><u>Semester 7 (24 MCs)</u> PC4199—Honours Project in Physics (12 MCs) PC4130—Quantum Mechanics-III PC4267—Biophysics-III PC4XXX—[Elective]*</p> <p><u>Semester 8 (12 MCs)</u> PC4199—Honours Project in Physics† PC4268—Biophysical Instrumentation and Biophysical Electronics LSM4213—System Neurobiology OR LSM4231—Structural Biology BN5207—Medical Imaging Systems#</p> <p>*—Subject to the semester when the elective module is offered. †—Continuation of Honours Project from Semester 7. #—BN3401 or BN5207 can be replaced by BN4402</p> <p>Total MCs = 160</p> <p>For Students without H2 Biology:</p> <p><u>Semester 1 (24 MCs)</u> PC1141—Physics-I PC1142—Physics-II MA1505—Mathematics-I LSM1301—General Biology</p>
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			<p>ST1232—Statistics for Life Sciences SSXxxxx—Singapore Studies</p> <p><u>Semester 2 (24 MCs)</u> PC1143—Physics III PC1144—Physics IV MA1506—Mathematics II LSM1102—Molecular Genetics CM1402—General Chemistry LSM1101—Biochemistry of Biomolecules</p> <p><u>Semester 3 (20 MCs)</u> PC2130—Quantum Mechanics I PC2132—Classical Mechanics PC2267—Biophysics I LSM2103—Cell Biology GEM/Kxxxx—[Unrestricted]</p> <p><u>Semester 4 (20 MCs)</u> PC2131—Electricity and Magnetism I PC2193—Experimental Physics I PC2230—Thermodynamics and Statistical Mechanics LSM2102—Molecular Biology LSM2201A—Experimental Biochemistry or LSM2202A—Experimental Molecular and Cell Biology</p> <p><u>Semester 5 (20 MCs)</u> PC3233—Atomic and Molecular Physics I PC3193—Experimental Physics II LSM3244—Molecular Biotechnology PC3XXX—[Elective]* GEM/Kxxxx—[Unrestricted]</p> <p><u>Semester 6 (20 MCs)</u> PC3130—Quantum Mechanics II PC3267—Biophysics II LSM3213—Molecular and Cellular Neurobiology or</p>
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			<p>LSM3231 Protein Structure and Function BN3401 Biomedical electronics[#] PC4XXX [Elective]*</p> <p>Semester 7 (24 MCs) PC4199 Honours Project in Physics (12 MCs) PC4130 Quantum Mechanics III PC4267 Biophysics III PC4XXX [Elective]*</p> <p>Semester 8 (12 MCs) PC4199 Honours Project in Physics[†] PC4268 Biophysical Instrumentation and Biophysical Electronics LSM4213 System Neurobiology or LSM4231 Structural Biology BN5207 Medical Imaging Systems[#]</p> <p>* Subject to the semester when the elective module is offered. † Continuation of Honours Project from Semester 7. # BN3401 or BN5207 can be replaced by BN4402</p> <p>Total MCs = 164</p>
7.	24 Jun 2016	FoS	<p>1. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/special-programmes/professional-placement-programme-ppp/</p> <p><u>3.5.1 Professional Placement Programme (PPP)</u></p> <p>In order to provide the necessary hands-on training and exposure, professional placement is an integral part of the Food Science and Technology major. The placement period is five to six months.</p> <p>For more information, please visit the URL http://science.nus.edu.sg/undergraduate-studies/ugenh/professional-placement-programme</p>

			<p>http://www.science.nus.edu.sg/undergraduate-studies/ugenh/professional-placement-programme</p> <p>2. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/special-programmes/undergraduate-professional-internship-programme-upip/</p> <p>3.5.2 Undergraduate Professional Internship Programme (UPIP)</p> <p>The Undergraduate Professional Internship Programme (UPIP) aims to provide Science undergraduates* the opportunity to perform structured internship in an organisation during their undergraduate study. Internship helps students craft a fulfilling university journey through meaningful work experience. This programme allows students to engage in career preparation and job seeking exercises, hone their interpersonal, communications and other soft skills, and actively experience day-to-day operations in an organisation's ecosystem. Students will be presented with opportunities to apply their discipline-related knowledge and professionalism in an actual work setting thus allowing students to gain experiential learning that complements their course activity. Upon successful completion of this elective internship module, students will also be awarded with Modular Credit (MC) that would count towards the Unrestricted Elective component of their graduation requirements.</p> <p>The Undergraduate Professional Internship Programme (UPIP) aims to provide Science undergraduates (with the exception of Food Science and Technology majors) the opportunity to perform structured internship in an organisation during their undergraduate study. This elective programme allows students to engage actively in career preparation and job seeking exercises, hone their interpersonal, communications and other soft skills, and experience day-to-day working professional life. Students will be presented the challenges of competing and securing a job position in the organisation, applying their discipline related knowledge and professionalism in a working environment, and thus acquiring experiential learning that complements their course activity.</p> <p>For more information, visit URL: http://science.nus.edu.sg/students/upip *with the exception of Food Science and Technology majors</p> <p>3. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/special-programmes/special-programme-in-science-sps/</p> <p>3.5.3 Special Programme in Science (SPS)</p> <p>SPS is an intense programme designed for a small cohort of undergraduates who have a strong aptitude and passion for science. It is directed at students who delight in rigorous training of the</p>
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		<p>mind and character. The programme introduces participants to some of the broad areas of contemporary scientific concerns through an inter-disciplinary approach. Opportunities abound for participants to participate in scientific investigations and to embark on in-depth studies of advanced topics that are at the forefront of modern scientific endeavour. Participants get to enjoy close interaction with their peers and mentors through project work and seminar discussions. The programme also provides students with a rare opportunity to interact with renowned scientists visiting the university. With the goal of encouraging a free exchange of opinions and ideas, it is hoped that students will imbibe among other things, some of the wit and wisdom that these visitors may bring.</p> <p>Students in the programme will read six modules in all: SP2171 Discovering Science (4 MCs) – read over two semesters in the first year of study SP2173 Atoms to Molecules (4 MCs) – read in semester I of the first year of study SP2174 The Cell (4 MCs) – read in semester II of the first year of study SP3175 The Earth (4 MCs) – read in semester I of the second year of study SP3176 The Universe (4 MCs) – read in semester II of the second year of study SP3172 Integrated Science Project (4 MCs) – can be read in either semester I or II of the second year of study</p> <p><u>Students in the B.Sc. (resp. B.Sc. (Hons.)) Programme who have passed three (resp. four) of the six SPS Programme modules, namely SP2171, SP2173, SP2174, SP3172, SP3175 and SP3176, are deemed to have completed 12 MCs (resp. 16 MCs) of the Faculty Requirement from 3 distinct subject groups outside the group under which their major falls.</u></p> <p><u>Students in the B.Sc. Programme who have passed two or fewer of the SPS Programme modules are required to read modules from any subject group outside the group(s) under which the major falls, to make up 12 MCs.</u></p> <p><u>Students in the B.Sc. (Hons.) Programme who have passed three or fewer of the SPS Programme modules are required to read modules from any subject group outside the group(s) under which the major falls, to make up 16 MCs. Up to one of these modules read may come from the subject group under which the major falls, but not bearing the prefix of the major.</u></p> <p><u>Students who may have part of their Faculty Requirements fulfilled by modules within their majors can use the remaining MCs as Unrestricted Electives.</u></p>
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SP2171 is a module that spans two semesters. Students who withdraw from the Programme while still reading SP2171 will not be allowed to continue enrolling in SP2171.

16 MCs (SP2173, SP2174, SP3175 and SP3176) of the above SPS curriculum may go towards fulfilling the Faculty requirements. Students who have passed SP2173, SP2174, SP3175 and SP3176 are deemed to have completed 16 MCs of the Faculty Requirement from 3 distinct subject groups outside the group under which their major falls. Students who may have part of their Faculty Requirements fulfilled by modules within their majors can use the remaining MCs as Unrestricted Electives.

4. <http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/special-programmes/undergraduate-research-opportunities-programme-in-science-urops/>

	Semester 1 of AY201 65 /176*	Semester 2 of AY201 65 /176*
Application opens for students to meet supervisors	24 May 1 Jun – 30 Jun 201 66	1 86 Nov – 20 3 Dec 201 66
Online Registration (UROPs Only)	1 3 Jul – 1 59 Jul 201 65	2 16 Dec – 2 59 Dec 201 66
Start UROPs project	1 63 Jul 201 65	23 Dec 2015 2 Jan 2017
Drop with “W” (4 or 8 MCs)	Refer to CORS website	Refer to CORS website
Drop with “F” (4 or 8 MCs)	Refer to CORS website	Refer to CORS website
Submission of full report to Dept Coordinator	Before reading week for regular semester	

3.5.4 Undergraduate Research Opportunities Programme in Science (UROPs)

[illegible]

			http://www.usp.nus.edu.sg/aboutusp/index.html https://myportal.nus.edu.sg/studentportal/sci/ug/Academics_USP.html
8.	24 Jun 2016	FoS	<p>1. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/student-awards/deans-list/</p> <p><u>3.7 Student Awards</u></p> <p><u>3.7.1 Dean's List</u></p> <p>A Dean's List will be prepared for both Semesters I and II, but excluding the Special Terms. It comprises the top 5 percent of the total undergraduate Science students and the top 7 percent of the Pharmacy students based on the following criteria:</p> <p>A) Minimum Workload</p> <p>Students reading a workload of at least 19 MCs (for Science Students) and 20 MCs (for Pharmacy Students) will be considered. This workload includes all modules read in the semester under consideration, with the following conditions:</p> <ul style="list-style-type: none"> • Includes at most one General Education module/ Module taken outside Faculty of Science with Satisfactory/Unsatisfactory option; • At least 15MCs for Science students and 16MCs for Pharmacy students must be letter-graded; • Excludes modules ES1000/ES1000FC and ES11032; • Excludes modules with 'EXE', 'IP', 'IC' or 'W' grades; • Includes half of the MCs of an 8 MCs UROPS module, or 4 MCs, in the computation of the student's workload in the first semester, and the remaining 4 MCs in the computation of the second semester's workload; and • No MCs from the Honours project module to be included in the student's workload in the first semester, and the full MCs to be counted in the second semester. <p>B) Semester Average Point (SAP)</p> <p>Semester Average Point (SAP) is computed from grades achieved within the semester under consideration. Only students with SAP of at least 4.30 will be considered.</p>

			<p>Formula for computation of SAP: $\sum(\text{Grade Point} * \text{MCs}) / \sum(\text{MCs})$</p> <p>The computation of SAP for the Dean's List:</p> <ul style="list-style-type: none"> • Excludes modules ES1000/ES1000FC and ES11023; and • Allows students to receive the full contribution to SAP from their 8 MCs UROPS and Honours project modules in the second semester.
9.	24 Jun 2016	FoS	<p>1. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/study-abroad-programmes/student-exchange-programme-sep/</p> <p>3.6.1 Student Exchange Programme (SEP)</p> <p>For more details on the Student Exchange Programme, log on to:</p> <p>http://www.nus.edu.sg/iro/sep/out/index.html</p> <p>http://www.nus.edu.sg/iro/</p> <p>https://share.nus.edu.sg/registrar/student/info/Admin-Details-SEP.pdf and</p> <p>http://www.science.nus.edu.sg/education/undergraduate/ug-programmes/sap-outgoing</p> <p>http://www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/sep</p> <p>2. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/study-abroad-programmes/massachusetts-institute-of-technology-mit-nus-summer-undergraduate-research-exchange-programme/</p> <p>Please help to totally delete this section. Thank you.</p> <p>3.6.5 Massachusetts Institute of Technology (MIT) NUS Summer Undergraduate Research Exchange Programme</p> <p>The MIT-NUS Summer Undergraduate Research Exchange Programme was held for the first time during the summer of 2009. This programme gives students from MIT and NUS the opportunity to conduct individual research projects with faculty mentors at the other university. This programme will enhance and broaden students' undergraduate experiences, provide them with the opportunity to conduct in another culture, conduct research in a different</p>

			<p>academic/research environment, and help them prepare to assume leadership roles in a global economy. Up to three undergraduate students from each university will participate in this exchange every summer.</p> <p>For more information, please visit the website: http://www.nus.edu.sg/iro/oppo/irap/mit/index.html and http://mit.edu/urop/students/</p> <p>3. http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/study-abroad-programmes/french-double-degree-programme/</p> <p><u>3.6.7 French Double Degree Programme</u></p> <p>For more information, please visit the website: http://www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/fddp http://science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/fddp</p>												
10.	28 Jun 2016	BIZ	<p>Changes for AY2016-2017 Bulletin</p> <p>http://www.nus.edu.sg/nusbulletin/school-of-business/key-contact-information/</p> <table border="1"> <tr> <td>Prof HUM Sin Heon Prof Kulwant SINGH</td><td>Deputy Dean</td><td>6601 1255</td><td>bizdd1</td></tr> <tr> <td>Prof Allaudeen HAMEED Assoc Prof Robert KIMMEL</td><td>Head, Finance</td><td>6516 3066</td><td>fnbhead</td></tr> <tr> <td>Prof Kulwant SINGH Prof Andrew DELIOS</td><td>Head, Strategy and Policy</td><td>6516 3094</td><td>bsphead</td></tr> </table>	Prof HUM Sin Heon Prof Kulwant SINGH	Deputy Dean	6601 1255	bizdd1	Prof Allaudeen HAMEED Assoc Prof Robert KIMMEL	Head, Finance	6516 3066	fnbhead	Prof Kulwant SINGH Prof Andrew DELIOS	Head, Strategy and Policy	6516 3094	bsphead
Prof HUM Sin Heon Prof Kulwant SINGH	Deputy Dean	6601 1255	bizdd1												
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Prof Kulwant SINGH Prof Andrew DELIOS	Head, Strategy and Policy	6516 3094	bsphead												
11.	29 Jun 2016	FoS	<p>Amendments are indicated as per the tracked changes below:</p> <p>2 Key Contact Information</p>												

<http://www.nus.edu.sg/nusbulletin/faculty-of-science/key-contact-information/>

TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)
Prof SHEN Zuwei	Dean	3333	scidean
Assoc Prof CHEW Fook Tim	Vice-Dean, Undergraduate Studies and Student Life	66013815	scicft
Prof GOH Say Song	Vice-Dean, Outreach & Admissions	6601 1480	scigohss
Assoc Prof Peter HO Kian Hoon	Vice-Dean, Research	2833	scihop
Assoc Prof Roger TAN Choon Ee	Vice-Dean, Education and Special Duties	6303	scitance
Prof YU Hao	Vice-Dean, Graduate Programmes	4234	sciyuhao

(as a 4 Jun 2020

			Assoc Prof Christina CHAI CHAN Yin	Assistant Dean, Research and Graduate Studies	8780	scichany_seiell
			Assoc Prof FAN Wai Yip	Assistant Dean, Outreach and Student Life	6601-1471 4419	scifanwy
			Dr NG Kah Loon	Assistant Dean, Undergraduate Studies	1306	scingkl
			Assoc Prof Thorsten WOHLAND	Assistant Dean, Research and Graduate Studies	6700	sciwt
TITLE & NAME		DESIGNATION/RESPONSIBILITY		TELEPHONE (6516-XXXX)		EMAIL (XXXX@NUS.EDU.SG)
			Assoc Prof YAP Von Bing	Assistant Dean, Outreach and Admissions	3096	sciyvb
			Dr YEO Ye	Assistant Dean, Student Life	6601 3745	sciyeoy
			Assoc Prof CHUA Tin Chiu	Associate Dean, Undergraduate Matters	1416	scictc

(as a 4 Jun 2020

			Assoc Prof LAI Yee Hing	Associate Dean, Education and International Programmes	2774	scilaiyh																
			Heads of Departments/Directors of Programmes																			
			<table><tr><th>TITLE & NAME</th><th>DESIGNATION/RESPONSIBILITY</th><th>TELEPHONE (6516-XXXX)</th><th>EMAIL (XXXX@NUS.EDU.SG)</th></tr><tr><td>Prof Paul Thomas Matsudaira</td><td>Head, Biological Sciences</td><td>2692</td><td>dbshhead</td></tr><tr><td>Prof WONG Ming Wah Richard of LOH</td><td>Head, Chemistry</td><td>2658</td><td>chmhead</td></tr><tr><td>Prof Zhu Chengbo</td><td>Head, Mathematics</td><td>2737</td><td>mathead</td></tr></table>				TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)	Prof Paul Thomas Matsudaira	Head, Biological Sciences	2692	dbshhead	Prof WONG Ming Wah Richard of LOH	Head, Chemistry	2658	chmhead	Prof Zhu Chengbo	Head, Mathematics	2737	mathead
TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)																			
Prof Paul Thomas Matsudaira	Head, Biological Sciences	2692	dbshhead																			
Prof WONG Ming Wah Richard of LOH	Head, Chemistry	2658	chmhead																			
Prof Zhu Chengbo	Head, Mathematics	2737	mathead																			

			<div> <div> <div>Assoc Prof</div> <div>Chai Li</div> <div>Lin</div> <div>ChristinaA</div> <div>Assoc Prof</div> <div>CHUI Wai</div> </div> <div>Head, Pharmacy</div> <div>2646</div> <div>phahead</div> </div>												
			<div> <div>Assoc Prof</div> <div>SOW Chorng</div> <div>Haur</div> </div> <div>Head, Physics</div> <div>2603</div> <div>phyhead</div>												
			<div> <div>Prof CHAN</div> <div>Hock Peng</div> <div>LOH</div> <div>Wei</div> </div> <div>Acting Head, Statistics and Applied Probability</div> <div>2945</div> <div>stahead</div>												
			<table> <tr> <th>TITLE & NAME</th><th>DESIGNATION/RESPONSIBILITY</th><th>TELEPHONE (6516-XXXX)</th><th>EMAIL (XXXX@NULLNUS.EDU.SG)</th></tr> <tr> <td>Assoc Prof TAN Hwee Huat</td><td>Director, Quantitative Finance Programme</td><td>6144</td><td>mattanh</td></tr> <tr> <td>Prof Zhou Weibiao</td><td>Director, Food Science and Technology Programme</td><td>3501</td><td>chmzwb</td></tr> </table>	TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NULLNUS.EDU.SG)	Assoc Prof TAN Hwee Huat	Director, Quantitative Finance Programme	6144	mattanh	Prof Zhou Weibiao	Director, Food Science and Technology Programme	3501	chmzwb
TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NULLNUS.EDU.SG)												
Assoc Prof TAN Hwee Huat	Director, Quantitative Finance Programme	6144	mattanh												
Prof Zhou Weibiao	Director, Food Science and Technology Programme	3501	chmzwb												
			Academic Advisors												

TITLE & NAME		DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NULLNUS.EDU.SG)
A. Biological Sciences				
Assoc Prof Christoph Wolfram		Level 5 Advisor	7376	dbswcw
B. Chemistry				
Dr HOANG Truong Giang		Level 1 Advisor	4554	chmhoan
Dr CHONG Yuan Yi Mrs Claire Anne TAYLOR		Level 2 Advisor	5148 2843	chmcyyl chmeat
Dr Michael YUDISTIRA & Dr Jeremiah CHEN Lital		Level 3 Advisor	5148/4328	chmmiy/ chmchl
Assoc Prof Ryan Phillip Anthony BETTENS Prof LEE Hian Kee		Level 4 Advisor	2846 2995	chmbrpa chmleehk
Assoc Prof Stephan JAENICKE		Level 5 Advisor	2918	chmsj
C. Computational Biology				

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			Prof CHEN Yu Zong	Advisor for all levels	6877	phacyz
			TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)
			Assoc Prof CHOI Kwok Pui	Advisor for all levels	2770	stackp
			Prof Greg TUCKER-KELLOGG	Advisor for all levels	4740	dbsgtk
			Assoc Prof LOW Boon	Advisor for all levels	7834	dbslowbc
			Assoc Prof ZHANG Louxin	Advisor for all levels	6579	matzlx
			D. Food Science and Technology			
			Dr LEONG Lai Peng	Level 1 Advisor	2917	chmllp
			Dr LIU Mei Hui	Level 2 Advisor	3523	chmlmh
			Asst Prof YANG	Level 3 Advisor	4695	chmynghs

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			Asst Prof YUK Hyun-	Level 4 Advisor	1136	chmyukhg
			Assoc Prof LIU Shao	Level 5 Advisor	2687	chmlsq
			E. Life Sciences			
			Assoc Prof MOK Yu-Keung,	Level 1/2/3/4 Advisor (Biological Sciences)	2967	dbsmokh
			Assoc Prof Maxey CHUNG China Ming	Level 1/2/3/4 Advisor (Biochemistry)	3252	bchcm
			Assoc Prof Norbert LEHMING	Level 2/3/4 Advisor (Microbiology and Immunology)	3499	micln
			Assoc Prof Fred WONG eng Wai Shiu	Level 3/4 Advisor (Pharmacology)	3263	phcwongf

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F. Mathematics			
Dr TAN Ban Pin	Level 1 Advisor	2748	mattbp
Dr NG Wee Seng	Level 1 Advisor	4673	matnws
Dr Yap Weng Yin	Level 1 Advisor	6911	matyapwy
Prof CHAN Heng Huat	Levels 2/3 Advisor	2741	matchh
Assoc Prof Assoc Prof TAN Kai Meng	Levels 2/3 Advisor	2948	mattankm
Assoc Prof Ma Siu Lun	Level 4 Advisor	3338	matmasl
Dr KU Cheng Yeaw	Level 4 Advisor	2750	matkey
Assoc Prof Denny LEUNG	Level 5 Advisor	6252	matlhh
G. Pharmacy			
Assoc Prof Dr HO Han Kiat	Advisor	7963	phahohk
Assoc Prof Dr CHIU Ngar Chee Gigi	Advisor	5536	phacncg

			Ms TAN Mui Ling	Advisor	3877	phatml
H. Physics						
			Dr Cindy NG Shao Chin	Level 1 Advisor (General Education modules)	2822	phynsc
			Dr WANG Qinghai	Level 1 Advisor (PC1141/42/43/44 and	2533	phywq

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			Prof Christian KURTSIEFER	Level 4 Advisor	1250	phyck
			Assoc Prof Kaszlikowski DAGOMIR	Level 5 Advisor	6880	phykd
I. Physics (Minor Programmes)						
			Assoc Prof Edward TEO	Advisor for Minor in Physics	6351	phyteoe
			Prof Ji Wei	Advisor for Minor in Optics and Semiconductor Technology	6373	phyjiwei
			Assoc Prof Sow Chorng Haur	Advisor for Nanoscience Minor	2957	physowch
			Assoc Prof Johan R C VAN DER MAAREL	Advisor for Biophysics	2812	phyjrcvd
J. Quantitative Finance						
			Assoc Prof Tan Hwee Huat	Advisor All levels	6144	mattanh

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TITLE & NAME				DESIGNATION/RESPONSIBILITY		TELEPHONE (6516-XXXX)		EMAIL (XXXX@NULLNUS.EDU.SG)	
K. Statistics and Applied Probability									
Assoc Prof Sanjay CHAUDHURI		Level 1 Advisor			6624		stasc		
Assoc Prof Ajay IASRA Dr HQ Man		Level 2 Advisor			114103953		stajastahwm		
Dr Chan Yiu Man		Level 3 Advisor			2950		stacym		
Assoc Prof LIM Tiong Wee		Level 4 Advisor			7857		stalimtw		
Prof XIA Yingcun		Level 5 Advisor			2943		staxyc		
Assoc Prof LIM Tiong Wee		Overall Advisor			7857		stalimtw		
L. Centre for English Language Communication – Please refer to CELC section of the Bulletin under “Teaching Institutions”									
Department/Programme Coordinators									
Undergraduate Programmes									

TITLE & NAME		ROLE/RESPONSIBILITIES	TELEPHONE 6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)
B. Chemistry				
Assoc Prof LAM Yulin		Faculty Curriculum Committee	2688	chmlamyl
Assoc Prof LAM Yulin		Department Curriculum Committee	2688	chmlamyl
Dr ZHANG Sheng		Class and Examination Timetable	7759	chmzs
Dr Chan Sau Han Edith Dr Emelyn TAN Sue		Student Exchange Programme	2672 2674	chmcsh chmtsge
TITLE & NAME		ROLE/RESPONSIBILITIES	TELEPHONE 6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)
Ms THYAGARAJAN Saradha		Polytechnic Admission	2843	chmthyag
Dr Michael YUDISTIRA		File for Graduation (Level 3)	5148	chmmiy
Prof LEE Hian Kee		File for Graduation (Level 4)	2995	chmleehk

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C. Computational Biology				
Prof Greg TUCKER-KELLOGG	Faculty Curriculum Committee	4740	dbsgtk	
Prof Greg TUCKER-KELLOGG	Department Curriculum Committee	4740	dbsgtk	
Prof Chen Yu Zong		6877	phacyz	
Assoc Prof CHOI Kwok Pui		4387	stackp	
Assoc Prof Low Boon Chuan		7834	dbslowbc	
Assoc Prof Zhang Louxin		6579	matzlx	
Prof Greg TUCKER-KELLOGG	Class and Examination Timetable	4740	dbsgtk	
Prof Greg TUCKER-KELLOGG	Student Exchange Programme	4740	dbsgtk	
Prof Greg TUCKER-KELLOGG	Polytechnic Admission	4740	dbsgtk	

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			Prof Greg TUCKER-KELLOGG	File for Graduation	4740	dbsgtk																																
<table><tr><th>TITLE & NAME</th><th>DESIGNATION/RESPONSIBILITY</th><th>TELEPHONE (6516-XXXX)</th><th>EMAIL (XXXX@NUS.EDU.SG)</th></tr><tr><td colspan="4">D. Food Science and Technology</td></tr><tr><td>Dr YUK Hyun-Gyun</td><td>Faculty Curriculum Committee</td><td>1136</td><td>chmyukhg</td></tr><tr><td>Dr YUK Hyun-Gyun</td><td>Department Curriculum Committee</td><td>1136</td><td>chmyukhg</td></tr><tr><td>Prof ZHOU Weibiao</td><td>Class and Examination Timetable</td><td>3501</td><td>chmzwb</td></tr><tr><td>Prof ZHOU Weibiao</td><td>Professional Placement</td><td>3501</td><td>chmzwb</td></tr><tr><td>Assoc Prof LIU Shao Quan</td><td>Student Exchange Programme</td><td>2687</td><td>chmlsq</td></tr><tr><td>Prof ZHOU Weibiao</td><td>Polytechnic Admission</td><td>3501</td><td>chmzwb</td></tr></table>							TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)	D. Food Science and Technology				Dr YUK Hyun-Gyun	Faculty Curriculum Committee	1136	chmyukhg	Dr YUK Hyun-Gyun	Department Curriculum Committee	1136	chmyukhg	Prof ZHOU Weibiao	Class and Examination Timetable	3501	chmzwb	Prof ZHOU Weibiao	Professional Placement	3501	chmzwb	Assoc Prof LIU Shao Quan	Student Exchange Programme	2687	chmlsq	Prof ZHOU Weibiao	Polytechnic Admission	3501	chmzwb
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			Assoc Prof LIU Shao Quan	File for Graduation	2687	chmlsq								
E. Life Sciences(Biological Sciences)														
			Assoc Prof MOK Yu- Keung, Henry	Faculty Curriculum Committee	2967	dbsmokh								
			Assoc Prof MOK Yu- Keung, Henry	Department Curriculum Committee	2967	dbsmokh								
			Mr LIM Miah Kyan		2698	dbslmk								
<table><thead><tr><th>TITLE & NAME</th><th>DESIGNATION/RESPONSIBILITY</th><th>TELEPHONE (6516-XXXX)</th><th>EMAIL (XXXX@NUS.EDU.SG)</th></tr></thead><tbody><tr><td>Ms Jacqueline LIM Siau Yen</td><td></td><td>2703</td><td>dbsjlsy</td></tr></tbody></table>							TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)	Ms Jacqueline LIM Siau Yen		2703	dbsjlsy
TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)											
Ms Jacqueline LIM Siau Yen		2703	dbsjlsy											

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			Mdm CHUA Ling Lih Ms FOONG Choy Mei	Class and Examination Timetable	2854	dbsfemccl	
			Assoc Prof MOK Yu-Keung, Henry	Student Exchange Programme	2967	dbsmokh	
			Mdm SOH Siew Eng Sally		2788	dbssohse	
			Assoc Prof MOK Yu-Keung, Henry	Polytechnic Admission	2967	dbsmokh	
			Ms Jacqueline LIM Siau Yen		2703	dbsjlsy	
			Mr LIM Miah Kyan	File for Graduation	2698	dbslmk	
F. Mathematics and Applied Mathematics							

			<table><tr><td>Assoc Prof LEUNG Ka Hin</td><td>Faculty Curriculum Committee</td><td>3339</td><td>matlkh</td></tr><tr><td>Assoc Prof TANG Wai Shing</td><td>Department Curriculum Committee</td><td>2992</td><td>mattws</td></tr><tr><td>Assoc Prof TANG Wai Shing</td><td>Class and Examination Timetable</td><td>2992</td><td>mattws</td></tr></table>	Assoc Prof LEUNG Ka Hin	Faculty Curriculum Committee	3339	matlkh	Assoc Prof TANG Wai Shing	Department Curriculum Committee	2992	mattws	Assoc Prof TANG Wai Shing	Class and Examination Timetable	2992	mattws
Assoc Prof LEUNG Ka Hin	Faculty Curriculum Committee	3339	matlkh												
Assoc Prof TANG Wai Shing	Department Curriculum Committee	2992	mattws												
Assoc Prof TANG Wai Shing	Class and Examination Timetable	2992	mattws												
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TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)												
Assoc Prof Fred LEUNG Pui Fai Dr Ku Cheng Yeaw	Student Exchange Programme	2772 2750	matfredl matkey												
Assoc Prof Ma Siu Lun	Student Advice Committee (Undergraduate)	3338	matmasl												

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			Assoc Prof Ma Siu Lun	File for Graduation	8815	matgz
			Dr GONG Zheng	File for Graduation	8815	matgz
G. PHARMACY						
			Assoc Prof Ho Han Kiat Ngar Chee, Gigi	Dr CHIU Faculty Curriculum Committee	79635536	phahohk haeneg
			Assoc Prof Gigi	Dr CHIU Ngar Chee, Class and Examination Timetable	5536	phacnng
			Ms TAN Mui Ling	Professional Placement	3877	phatml
			Dr WONG Lilian	Professional Placement	66011237	phawll
			Dr Ong Pei Shi	FYP Coordinator	66011236	phaops
			Assoc Prof Ho Han Kiat Ngar Chee, Gigi	Dr CHIU Student Exchange Programme	79635536	phahohk haeneg
			Dr CHIU Ngar Chee, Gigi	Polytechnic Admission	5536	phacnng
			Assoc Prof Ho Han Kiat	Admission (All other categories)	7963	phahohk
			Assoc Prof Ho Han Kiat Pui Lai, Rachel	Dr EE File for Graduation	26537963	phahohk haeplr
H. Physics						

			Assoc Prof Thomas Osinowicz	Faculty Curriculum Committee	6745	phyto
			Prof Belal E. BAAQUIE	Department Curriculum Committee	2963	phybeb
			Assoc Prof Edward TEO		6351	phyteoe
			Assoc Prof Tay Seng Chuan	Class and Examination Timetable	6757	phytaysc
			Assoc Prof WANG Zhisong	Student Exchange Programme	2606	phywangz
			Assoc Prof Phil CHAN	Polytechnic Admission	6390	phycahp
			G. PHARMACY			
			Assoc Prof Edward TEO	File for Graduation	6351	phyteoe
			TITLE & NAME ROLE/RESPONSIBILITIES TELEPHONE EMAIL (6516-XXXX) (XXXX@NULLNUS.EDU.SG)			
			I. Quantitative Finance			
			Assoc Prof Tan Hwee Huat	Faculty Curriculum Committee	6144	mattanh
			Assoc Prof Tan Hwee Huat	Class and Examination Timetable	6144	mattanh

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			Assoc Prof Tan Hwee Huat	Student Exchange Programme	6144	mattanh
			Assoc Prof Tan Hwee Huat	File for Graduation	6144	mattanh
J. Statistics						
			Assoc Prof LIM Tiong Wee	Faculty Curriculum Committee	7857	stalimtw
			Assoc Prof Lim Tiong Wee	Department Curriculum Committee	7857	stalimtw
			Assoc Prof LIM Tiong Wee	Class and Examination Timetable	7857	stalimtw
			Assoc Prof Ajay JASRA	Student Exchange Programme	66011410	staja
			Assoc Prof LIM Tiong Wee	File for Graduation	7857	stalimtw
Graduate Programme						

			TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)
			Assoc Prof Christoph Wolfram WINKLER	EXCO member, Biological Sciences	7376	dbswcw
			Assoc Prof YEUNG Ying Yeung	EXCO member, Chemistry	7760	chmyyy
			Assoc Prof LIU Shao Quan	EXCO member, Food Science and Technology	2687	chmlsq
			Prof BAO Weizhu	EXCO member, Mathematics	2765	matbaowz
			Assoc Prof YU Chun Kong, Victor	EXCO member, Pharmacy	8216	phayuv

(as a 4 Jun 2020

			<table><tr><td>Assoc Prof GONG Jiangbin</td><td>EXCO member, Physics</td><td>1154</td><td>phygj</td></tr><tr><td>Prof Sun Defeng</td><td>EXCO member, Risk Management Institute</td><td>3343</td><td>matsundf</td></tr><tr><td>Prof XIA Yingcun</td><td>EXCO member, Statistics and Applied Probability</td><td>2943</td><td>staxyc</td></tr></table>	Assoc Prof GONG Jiangbin	EXCO member, Physics	1154	phygj	Prof Sun Defeng	EXCO member, Risk Management Institute	3343	matsundf	Prof XIA Yingcun	EXCO member, Statistics and Applied Probability	2943	staxyc	
Assoc Prof GONG Jiangbin	EXCO member, Physics	1154	phygj													
Prof Sun Defeng	EXCO member, Risk Management Institute	3343	matsundf													
Prof XIA Yingcun	EXCO member, Statistics and Applied Probability	2943	staxyc													
			<p>UOPS Coordinator</p> <table><tr><th>TITLE & NAME</th><th>DEPARTMENT</th><th>TELEPHONE (6516-XXXX)</th><th>EMAIL (XXXX@NULLNUS.EDU.SG)</th></tr><tr><td>Assoc Prof George YIP Wai Cheong</td><td>Anatomy</td><td>3206</td><td>antyipg</td></tr></table>	TITLE & NAME	DEPARTMENT	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NULLNUS.EDU.SG)	Assoc Prof George YIP Wai Cheong	Anatomy	3206	antyipg					
TITLE & NAME	DEPARTMENT	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NULLNUS.EDU.SG)													
Assoc Prof George YIP Wai Cheong	Anatomy	3206	antyipg													
			<table><tr><th>TITLE & NAME</th><th>DEPARTMENT</th><th>TELEPHONE (6516-XXXX)</th><th>EMAIL (XXXX@NULLNUS.EDU.SG)</th></tr><tr><td>Assoc Prof TANG Bor Luen</td><td>Biochemistry</td><td>1040</td><td>bchtbl</td></tr><tr><td>Dr YEW Wen Shan</td><td>Biochemistry</td><td>8624</td><td>bchyws</td></tr></table>	TITLE & NAME	DEPARTMENT	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NULLNUS.EDU.SG)	Assoc Prof TANG Bor Luen	Biochemistry	1040	bchtbl	Dr YEW Wen Shan	Biochemistry	8624	bchyws	
TITLE & NAME	DEPARTMENT	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NULLNUS.EDU.SG)													
Assoc Prof TANG Bor Luen	Biochemistry	1040	bchtbl													
Dr YEW Wen Shan	Biochemistry	8624	bchyws													

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			Dr HUANG Danwei Assoc Prof LIU Yih-Cheng (regular semesters)	Biological Sciences	26967711	dbsl yehd	
			Dr WU Jinlu (special term)	Biological Sciences	8476	dbswjl	
			Dr CHUI Sin Yin, Stephen	Chemistry	3699	chmcys	
			Prof Greg TUCKER-KELLOGG	Computational Biology (Under Science Dean's Office)	4740	dbsgtk	
			Dr Leong LEONG Lai Peng	Food Science and Technology	2917	chmlp	
			Assoc Prof ZHANG Louxin	Mathematics	6579	matzlx	
			Asst Prof CHU Jang Hann, Justin	Microbiology and Immunology	3278	miccjh	
			Dr LAI Kim Peng Mitchell	Pharmacology	6601 2678	phclkpm	
			Ms TENG Bee Choon, Christine	Pharmacy	1996	phatbcc	
			Assoc Prof PASTORIN, Giorgia	Pharmacy	1876	phapg	
			Assoc Prof Lim LIM Hock Siah	Physics	2614	phylimhs	

Dr Mallilankaraman Karthik Babu Assoc Prof WONG Chong Thim	Physiology	6601 5181 3232	phs mkbwet
	Assoc Prof LIM Tiong Wee	Statistics and Applied Probability	7857 stalimtw
	Dr Adrian Michael LEE Assoc Prof LIOU Yih-Cherng	SPS	51307711 chmam dbslcy
	Assoc Prof LO Mun Hou	USP	4077 usplomh
UPIP Corodinator			
TITLE & NAME		TELEPHONE (6516-XXXX)	EMAIL (XXXX@NULLNUS.EDU.SG)
MAJOR			
Assoc Prof Ryan Phillip Anthony BETTENS		2846	chmbrpa
Ms THYAGARAJAN Saradha		2843	chmthyag
Prof Greg TUCKER-KELLOGG		4740	dbsgtk
Assoc Prof Henry MOK LIOU Yih-Cherng		29677711	dbsmok hlyc

				Assoc Prof CHU Delin	Mathematics, Applied Mathematics	6912	matchudl																				
				Ms TAN Mui Ling	Pharmacy	3877	phatml																				
				Assoc Prof Paul LIM Hock Siah	Physics	2614	phylimhs																				
				Assoc Prof LIM Tiong Wee	Statistics	7857	stalimtw																				
				Administrative Coordinators																							
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TITLE & NAME		DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NULLNUS.EDU.SG)																							
Ms Jacqueline LIM Siau Yen	Assistant	Manager, Biological Sciences (Undergraduate Programmes)	2703	dbsjlisy																							
Mr LIM Miah Kyan		Manager, Biological Sciences (Undergraduate Programmes)	2698	dbslmk																							
Ms Reena Devi A/P SAMYNADAN		Assistant Manager, Biological Sciences (Graduate Programmes)	2711	dbsrds																							

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			Mr Laurence GWEE	Assistant Manager, Biological Sciences (Graduate Programmes)	4439	dbsgel

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			Ms Adreana LIEW Kai Wei	Manager, Pharmacy (Undergraduate Programmes)	5878	phaalkw
			Ms Chew Ying Ying	Senior Manager, Pharmacy (Undergraduate Programme)	8977	phacyy
			Ms Lee Pwei Yeng Angela	Assistant Manager, Pharmacy (Graduate Programmes)	2636	phalpya
			Ms Sng Wee Lee	Manager, Physics	2619	physngwl
			Ms THONG Siok Kay, Melissa	Senior Executive Assistant Manager, Statistics and Applied Probability (Undergraduate	8050	statskm
			Ms Su Kyi WIN	Executive, Statistics and Applied Probability (Graduate Programmes)	4416	staskw
			Ms TEO Chwee Hoon	Senior Manager, Dean's Office (Graduate Programmes)	4092	scitch
			Ms Kasie AU	Assistant Manager, Dean's Office (Graduate Programmes)	2014	sciauk

			TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-	EMAIL (XXXX@NULLNUS.EDU.SG)
			Ms KOH Wei Kee	Associate Director Dean's Office (Outreach and Admissions)	6890	scikwk
			Mr Murugesan SETHU	Senior Manager Dean's Office (Student Life)	8198	scims
			Ms YONG Lai Cheng	Senior Manager, Dean's Office (Student Life)	7643	sciylc
			Dr ONG Chye Sun	Senior Associate Director, Dean's Office (Undergraduate Studies)	8472	sciocs
			Ms Carine Ng	Associate Director (Education and International Programmes)	4930	carine.ng
			Ms Dawn LEE Siok Peng	Manager, Dean's Office (Undergraduate Studies)	4271	scileed
			Ms LAU Pei Rong	Manager, Dean's Office (Undergraduate Studies)	8849	scilpr

(as a 4 Jun 2020

			<table> <tr> <td>Ms SIM Xiu Juan</td><td>Manager, Dean's Office (Undergraduate Studies)</td><td>8201</td><td>scisxj</td></tr> <tr> <td>Ms RAJENDRA Sangeetha</td><td>Assistant Manager, Dean's Office (Undergraduate Studies)</td><td>4930</td><td>scirs</td></tr> <tr> <td>Ms TAN Wei Ling</td><td>Assistant Manager, Dean's Office (Undergraduate Studies)</td><td>8211</td><td>scitwl</td></tr> <tr> <td>Ms GOH Hui Shi, Alista</td><td>Senior Executive, Dean's Office (Undergraduate Studies)</td><td>66012020</td><td>scighsa</td></tr> <tr> <td>Ms ONG Wen Jing</td><td>Senior Executive, Dean's Office (Undergraduate Studies)</td><td>6601 1725</td><td>Sciowj</td></tr> <tr> <td>Ms Yu Wenzhu</td><td>Senior Executive, Dean's Office (Undergraduate Studies)</td><td>8211</td><td>sciyuw</td></tr> <tr> <td>Ms Lorraine Kwan Win Yarn</td><td>Executive, Dean's Office (Undergraduate Studies)</td><td>8420</td><td>scilkwy</td></tr> <tr> <td>Mr Safwan Bin Sulaiman</td><td>Executive, Dean's Office (Undergraduate Studies)</td><td>66018995</td><td>scissm</td></tr> </table>	Ms SIM Xiu Juan	Manager, Dean's Office (Undergraduate Studies)	8201	scisxj	Ms RAJENDRA Sangeetha	Assistant Manager, Dean's Office (Undergraduate Studies)	4930	scirs	Ms TAN Wei Ling	Assistant Manager, Dean's Office (Undergraduate Studies)	8211	scitwl	Ms GOH Hui Shi, Alista	Senior Executive, Dean's Office (Undergraduate Studies)	66012020	scighsa	Ms ONG Wen Jing	Senior Executive, Dean's Office (Undergraduate Studies)	6601 1725	Sciowj	Ms Yu Wenzhu	Senior Executive, Dean's Office (Undergraduate Studies)	8211	sciyuw	Ms Lorraine Kwan Win Yarn	Executive, Dean's Office (Undergraduate Studies)	8420	scilkwy	Mr Safwan Bin Sulaiman	Executive, Dean's Office (Undergraduate Studies)	66018995	scissm
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12.	2 Jun 2016	FGoS	<p><u>1) Updates for new module LSM2234</u></p> <p><u>Background:</u></p>																																

BUS has approved the new LSM module- **LSM2234** Physical Concepts in Biology, via BUS circular 25 of AY15/16. We would like to update this new module in the list of Level 2000 electives in the Life Sciences major, for 2015 and **2016** Bulletin.

Updates made are indicated in **yellow** highlight below:

2016 Bulletin

Under 3.3.3.5 i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Life Sciences, (<http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/life-sciences/>), include **LSM2234** Physical Concepts in Biology in the list of Level 2000 LSM elective modules for the B.Sc and B.Sc. (Hons.) in Life Sciences. **The alignment of the Level 2000 modules in the table for LSM2211, LSM2212, and LSM2231 are also adjusted on the 2016 Online Bulletin.**

Graduation Requirements

To be awarded a B.Sc. with a primary major in Life Sciences, candidates must satisfy the following:

Level 2000 Requirements

Level 2000 (16 MCs)	Pass		36
	LSM2191	Laboratory Techniques in Life Sciences	
	Pass 3		
	LSM2211	Metabolism and Regulation	
	LSM2212	Human Anatomy	
	LSM2231	General Physiology	
	LSM2232	Genes and Genomes	
	LSM2233	Cell Biology	
	LSM2241	Introductory Bioinformatics	
	LSM2234	Physical Concepts in Biology	
	LSM2251	Ecology and Environment	
	LSM2252	Biodiversity	
	LSM2291	Fundamental Techniques in Microbiology	

To be awarded a B.Sc. (Hons.) with a primary major in Life Sciences or Life Sciences (with specialisation in Biomedical Science, Molecular and Cell Biology or Environmental Biology), candidates must satisfy the following:

Level 2000 Requirements

Level 2000 (16 MCs)	Pass LSM2191 Laboratory Techniques in Life Sciences	36
	Pass 3 LSM2211 Metabolism and Regulation LSM2212 Human Anatomy LSM2231 General Physiology LSM2232 Genes and Genomes LSM2233 Cell Biology LSM2241 Introductory Bioinformatics LSM2234 Physical Concepts in Biology LSM2251 Ecology and Environment LSM2252 Biodiversity LSM2291 Fundamental Techniques in Microbiology	

2) Updates for Changes to 2nd major/minor in Physics, to include PC2134

Background:

BUS has approved the changes to the Physics second major and minor requirements, to include PC2134 Mathematical Methods in Physics I, via BUS **Circular 25 of AY15/16** w.e.f cohort 2015. Updates are needed for the 2015 Bulletin.

Amendments made in yellow highlight:

2016 Bulletin

Update 1:

Under 3.4.2.4-> Second Major in Physics, (<http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/second-major-programmes/second-major-in-physics/>)

To be awarded a **B.Sc. with a** second major in Physics, candidates must satisfy the following:

For Level 2000 requirements:

Level-2000 (16 MCs)	Pass	32
	PC2130 Quantum Mechanics I PC2131 Electricity and Magnetism I	

	<div>PC2193 Experimental Physics I Any <u>one</u> from the following: PC2132 Classical Mechanics PC2134 Mathematical Methods in Physics I PC2230 Thermodynamics and Statistical Mechanics</div>	
--	--	--

This second major is not offered with a primary major in Physics **or 'Physics and Life Sciences'** and minor in Optical & Semiconductor Technology or Physics.

Update 2:

Under 3.4.3.14-> Minor in Physics, (<http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/minor-programmes/minor-in-physics/>)

Add PC2134 to the list of modules under Para 3 of the Minor requirements:

Any four modules from the following of which at least two modules must be Level-3000 & above:
PC2130 Quantum Mechanics I
PC2131 Electricity and Magnetism I
PC2132 Classical Mechanics
PC2134 Mathematical Methods in Physics I
PC2230 Thermodynamics and Statistical Mechanics
.

3) Updates to Minor in Engineering Materials

Background:
BUS has approved the changes to the Engineering Materials minor, via BUS Circular 25 of AY15/16 w.e.f cohort 2016. Updates are needed for the 2016 Bulletin.

Amendments made are in yellow highlight:

2016 Bulletin

Under 3.4.3.4-> Minor in Engineering Materials, (<http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/minor-programmes/minor-in-engineering-materials/>)

- 1) **Changes to table- Please delete the third column of the table, with header 'Level'.**
- 2) **Changes to specific requirements as indicated in the table, as follows:**

Requirements

To satisfy the Minor in Engineering Materials, students must read materials-related modules equivalent to at least 24 MCs, including the 8 MCs earned from the two core modules [(MLE1101 or ME2151) and MLE2101], and at least two advanced elective modules (Level-3000 and Level-4000). In addition, they have to select one of three tracks offered, namely, Biomedical and Polymeric Materials, Electronic Materials, and Structural Materials. Modules to be taken, other than the core modules, must be selected from the basket of modules listed under the appropriate track:

Module	Module Title	Level
Biomedical and Polymeric Materials Track		
BN3301	Introduction to Biomaterials	Fundamental
BN4301	Principles of Tissue Engineering	Advanced
CN4203R	Polymer Engineering	Fundamental
CM3264	Petroleum and Industrial Organics	Advanced
CM4262	Advanced Materials Characterisation Techniques	Advanced
CM4251	Characterisation Techniques in Materials Chemistry	Advanced

			CM4264	Speciality Polymers: Synthesis, Characterisation and Applications	Advanced
			CM4253	Materials Chemistry 2	Advanced
			CM4258	Advanced Polymer Science	Advanced
			MLE3104	Polymeric and Composite Materials	Fundamental
			MLE3202	Materials for Biointerfaces (offered from AY17/18)	Advanced
			MLE4202	Selected Advanced Topics on Polymers	Advanced
			MLE4203	Polymeric Biomedical Materials	Advanced
			ME4253	Biomaterials Engineering	Advanced
			Electronic Materials Track		
			CM3263	Chemistry of Semiconductors	Advanced
			CM4254	Chemistry of Semiconductors	Advanced
			CN4216R	Electronic Materials Science	Fundamental
			CN4217R	Processing of Microelectronic Materials	Fundamental
			CN4223R	Microelectronic Thin Films	Advanced

			CN4224	Transport Phenomena in Electronics Processing	Advanced
			EE3406	Microelectronic Materials	Advanced
			EE4411	Silicon Processing Technology	Advanced
			EE4436	Fabrication Process Technology	Advanced
			EE4414	Magnetic Materials and Devices for Information Storage	Advanced
			MLE2105	Electronic Properties of Materials	Fundamental
			MLE3105	Dielectric and Magnetic Materials	Fundamental
			MLE4207	Growth Aspects of Semiconductors	Advanced
			MLE4211	Nanoelectronics and Information Technology	Advanced
			PC3235	Solid State Physics I	Advanced
			PC3241	Solid State Devices	Advanced
			PC3242	Physics of Semiconductor Processing	Advanced
			PC4240	Solid State Physics II	Advanced

			PC4253	Thin Film Technology	Advanced
			PC4264	Advanced Solid State Devices	Advanced
			PC4259	Surface Physics	Advanced
			Structural Materials Track		
			CE2164	Structural Design and Materials	Fundamental
			CE3166	CE Materials and Structural Steel Systems	Fundamental
			CE5604	Advanced Concrete Technology	Advanced
			ME3251	Materials for Engineers	Fundamental
			ME4251	Thermal Engineering of Materials	Advanced
			ME4254	Materials in Engineering Design	Advanced
			ME4255	Materials Failure	Advanced
			MLE2102	Thermodynamics and Phase Diagrams	Fundamental
			MLE2104	Mechanical Properties of Materials	Fundamental
			MLE2106	Metallic Materials and Processing	Fundamental

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MLE2107	Ceramic Materials and Processing	Fundamental
MLE3102	Degradation and Failure of Materials	Advanced
PC4259	Surface Physics	Advanced

Students who wish to apply for the minor in Engineering Materials must complete the application form and return it to the Science Dean's Office, Blk S16 Level 2. Selected students will be notified by email. The form is available from the following website: <http://www.mse.nus.edu.sg/undergraduate.php>

4) Updates to Minor in Medical Physics

Background:

BUS has approved the changes to elective list of the Medical Physics minor, via BUS Circular 26 of AY15/16 w.e.f AY16/17. Updates are needed for the 2014, 2015 and 2016 Bulletin.

Amendments made are in yellow highlight:

2016 Bulletin

Under 3.4.3.10-> Minor in Medical Physics, (<http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/minor-programmes/medical-physics/>)

Students in the Medical Physics minor programme are also required to read at least 12 MCs of modules from the following set of electives:

Module (4 MC each)

1. LSM2212 Human Anatomy
2. LSM1106 Molecular Cell Biology
2. LSM1104 or LSM2231 General Physiology
3. LSM1401 Fundamentals of Biochemistry
4. LSM2103 or LSM2233 Cell Biology
5. LSM4243 Tumour Biology
6. LSM3223 Immunology

- 7. LSM3243 Molecular Biophysics
- 8. EE4603 Biomedical Imaging Systems

5) Updates to Computational Biology major

Background:

BUS has approved the changes to the Comp Bio curriculum for cohort 2016 and after, via BUS **Circular 26 of AY15/16** w.e.f AY2016/17. Updates are needed for the 2016 Bulletin.

Amendments made are in yellow highlight:

2016 Bulletin

Under 3.3.3.2-> Computational Biology major, (<http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/computational-biology/>)

Graduation Requirements

PROGRAMME REQUIREMENTS		MCS
University Requirements		
5 x General Education Modules	20	20
Faculty Requirements		
CM1401 Chemistry for Life Sciences ^[1] LSM1101 Biochemistry Of Biomolecules ^[4] LSM1102 Molecular Genetics ^[1] MA2213 Numerical Analysis 1 MA1101R Linear Algebra I SP1541 Exploring Science Communication through Popular Science ^[2]		16
Major Requirements		
Level-1000 / 2000 Essential ^[1]		40— 44
CS1010S or CS1010FC or CS1010X Programming Methodology	4	32-36

			CS1020E or CS1020 Data Structures And Algorithms I	4		
			CS1231 Discrete Structures or MA1100 Fundamental Concepts of Mathematics	4		
			LSM1102 —Molecular Genetics LSM1106 Molecular Cell Biology	4		
			MA1101R —Linear Algebra-I	4		
			MA1102R Calculus	4		
			CS2220 Introduction to Computational Biology ^[4] OR LSM2241 Introductory Bioinformatics	4		
			LSM2241 —Introductory Bioinformatics	4		
			LSM2101 —Metabolism And Regulation OR LSM2102 —Molecular Biology OR LSM2103 —Cell Biology LSM2211 Metabolism and Regulation OR LSM2232 Genes and Genomes OR LSM2233 Cell Biology	4		
			Either ST2334 Probability and Statistics OR a combined ST2131 Probability and ST2132 Mathematical Statistics*	4 - 8		
			Level-3000 Essential		8	
			MA3259 Mathematical Methods In Genomics	4		
			LSM3231 —Protein Structure and Function LSM3241 Bioinformatics & Biocomputing	4		
			Level-3000 Electives ^[3] (Choose <u>Four</u> Modules) – [Any two modules from option A <u>and</u> any two modules from option B]			

			<div><div><div><div><div>Option A</div><div>CS2102 Database System</div><div>CS3103 Computer Networks Practice</div><div>CS3225 Combinatorial Methods in Bioinformatics</div><div>CS3230 Design and Analysis of Algorithms</div><div>CS3240 Interaction Design</div><div>CS3241 Computer Graphics</div><div>CS3243 Introduction to Artificial Intelligence</div><div>CS3244 Machine Learning</div></div><div><div>Option B</div><div>LSM3211 Fundamental Pharmacology</div><div>LSM3215 Neuronal Signaling and Memory Mechanisms</div><div>LSM3223 Immunology</div><div>LSM3231 Protein Structure and Function</div><div>LSM3232 Microbiology</div><div>LSM3233 Developmental Biology</div><div>LSM3241 Bioinformatics & Biocomputing</div><div>LSM3243 Molecular Biophysics</div><div>LSM3244 Molecular Biotechnology</div><div>PC3267 Biophysics II</div><div>MA3233 Combinatorics and Graphs II</div><div>PR3203 Computer Aided Drug Design and Development</div><div>ST3131 Regression Analysis</div><div>ST3240 Multivariate Statistical Analysis</div><div>ST3232 Design and analysis of experiments</div><div>ST3233 Applied time series analysis</div><div>ST3236 / Stochastic Process 1</div><div>MA3238</div><div>ST3243 Statistical methods in epidemiology</div><div>ST3245 Statistics in molecular biology</div><div>ST3247 Simulation</div></div></div></div></div>		
			<div>Level-4000 Essential</div>		
			<div><div><div>ZB4199Honours Project in Computational Biology</div><div>ZB4171Advanced Topics in Bioinformatics</div></div></div>	<div><div>12</div><div>4</div></div>	<div>20</div>

			LSM4241 Functional Genomics	4		
			<p>Level-4000 Electives (Choose <u>Three</u> Modules) – [Any two modules from either option A or option B or option C, and the remaining third module to be selected from the Option not chosen]</p> <p><u>Option A</u></p> <p>CS4220 Knowledge Discovery Methods in Bioinformatics</p> <p>CS4221 Database Applications Design and Tuning</p> <p>CS4231 Parallel and Distributed Algorithms</p> <p>CS4234 Optimisation Algorithms</p> <p>CS4237 Systems Modelling and Simulations</p> <p>CS4243 Computer Vision and Pattern Recognition</p> <p>CS4244 Knowledge-Based Systems</p> <p>CS4248 Natural Language Processing</p> <p><u>Option B</u></p> <p>LSM4211 Toxicology</p> <p>LSM4212 Pharmacogenetics and Drug Response</p> <p>LSM4213 Systems Neurobiology</p> <p>LSM4221 Drug discovery and Clinical Trials</p> <p>LSM4222 Advanced Immunology</p> <p>LSM4224 Free Radicals and Antioxidant Biology</p> <p>LSM4231 Structural Biology</p> <p>LSM4232 Advanced Cell Biology</p> <p>LSM4242 Protein Engineering</p>	12		
			<p><u>Option C</u></p> <p>MA4251/ Stochastic Processes II</p> <p>ST4238</p> <p>PC4267 Biophysics III</p> <p>ST4231 Computer Intensive Statistical Methods</p> <p>ST4234 Bayesian Statistics</p> <p>ST4235 Simulation</p> <p>ST4240 Data Mining</p> <p>ST4241 Design & Analysis Of Clinical Trials</p> <p>ST4242 Analysis of Longitudinal Data</p> <p>ST4243 Statistical Methods for DNA Microarray Analysis</p>			

			<table><tr><td>Unrestricted Elective Modules ^[4]</td><td>24— 28 32— 36</td></tr><tr><td>Total</td><td>160</td></tr></table>	Unrestricted Elective Modules ^[4]	24— 28 32— 36	Total	160
Unrestricted Elective Modules ^[4]	24— 28 32— 36						
Total	160						
<p>Note 1: Modules are part of the lower division requirements for the Computational Biology Programme.</p> <p>Note 2: The following groups of students who are precluded from reading SP1541/ES1541:</p> <p>Students who are UTown residents and have read and passed the IEM, UTW and UWC modules Students who are RVRC residents and have read and passed ES1601 module Students who are in SPS and have read and passed the SP2171 Students who are in USP and have read and passed the UWC2101% modules will have to read another module instead of SP1541 to fulfil 4 MCs of Faculty requirements, except for students in SPS who have read and passed SP2171 as SP2171 can be used to fulfil 4 MCs of Faculty Requirements.</p> <p>Note 3: ZB3288 UOPS in Computational Biology can be taken in fulfilment of 4 MCs from any of the options in the level-3000 elective list.</p> <p>Note 4: Students may wish to read PC2267 Biophysics I as an unrestricted elective module to meet the prerequisites required for PC3267 Biophysics II (Level-3000 major elective module). Student without computing background may wish to read LSM2241 as a preparatory course before reading CS2220. In addition, as Computational Biology students already have stipulated Faculty requirements, they would read SP1541 as an Unrestricted Elective.</p> <p>* Students should choose the combined ST2131 and ST2132 in place of ST2334 if they plan to pursue higher ST modules. ST2131 is a pre-requisite to ST2132.</p>							
<table><tr><th>Summary of Requirements</th><th>B.Sc. (Hons.)</th></tr><tr><td>University Requirements</td><td>20 MCs</td></tr></table>				Summary of Requirements	B.Sc. (Hons.)	University Requirements	20 MCs
Summary of Requirements	B.Sc. (Hons.)						
University Requirements	20 MCs						

Faculty Requirements	16 MCs
Major Requirements	96-100 MCs 88-92 MCs
Unrestricted Elective Modules	24-28 MCs 32-36 MCs
Total	160 MCs

Update made to the new Data Science and Analytics (DSA) major for the 2016 Bulletin are as follows:

Amendments made are in yellow highlight:

6) Updates to Life Sciences (Hons) level 4000 elective list

Background:
BUS has approved the new LSM modules- **LSM4228** Experimental Models for Human Disease and Therapy, via BUS circular 23 of AY15/16. We would like to update this new module in the list of electives in the Life Sciences major, for 2016 Bulletin.

Updates made are indicated below:

2016 Bulletin
a) Under 3.3.3.5 i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Life Sciences, (<http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/life-sciences/>), include **LSM4228** Experimental Models for Human Disease and Therapy in the list of Level 4000 LSM elective modules within the Biomedical Sciences (BMS) specialisation, for the B.Sc. (Hons.) in Life Sciences. Please also include LSM4217 Functional Ageing which was earlier on approved but not captured in this list on the 2016 Bulletin.

		<div> <div> LSM4210 Topics in Biomedical Science LSM4211 Toxicology LSM4212 Pharmacogenetics and Drug Responses LSM4213 System Neurobiology LSM4214 Cancer Pharmacology LSM4215 Extreme Physiology LSM4216 Molecular Nutrition Science LSM4217 Functional Ageing LSM4221 Drug Discovery and Clinical Trials LSM4222 Advanced Immunology LSM4223 Advances in Antimicrobial Strategies LSM4224 Free Radicals and Antioxidant Biology LSM4225 Genetic Medicine in the Post-Genomic Era LSM4226 Infection and Immunity LSM4227 Stem Cell Biology LSM4228 Experimental Models for Human Disease and Therapy </div> <div>Biomedical Science (BMS)</div> </div>	
		<p>7) Update on Prohibited list for Data Science and Analytics (DSA) major</p> <p>2016 Bulletin</p> <p>Under 3.4.2.5-> Second Major in Statistics, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/second-major-programmes/second-major-in-statistics/) This second major is <u>not</u> offered with a primary major in Statistics, Data Science and Analytics, and minor in Statistics.</p> <p>Under 3.4.3.5-> Minor in Financial Mathematics, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/minor-programmes/minor-in-financial-mathematics/) This minor is <u>not</u> awarded with the primary major in Applied Mathematics, Quantitative Finance, Mathematics, Data Science and Analytics, and second major in Mathematics.</p> <p>Under 3.4.3.9-> Minor in Mathematics, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/minor-programmes/minor-in-mathematics/) This minor is <u>not</u> awarded with the primary major in Applied Mathematics, Computational Quantitative Finance, Mathematics, Data Science and Analytics, and second major in Mathematics or Financial Mathematics.</p> <p>Under 3.4.3.15-> Minor in Statistics, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/minor-programmes/minor-in-statistics/) This minor is <u>not</u> awarded with a primary major in Statistics, Statistics with specialisation in Biostatistics, Statistics with specialisation in Finance and Business Statistics, or Data Science and Analytics, and second major in Statistics.</p>	

13.	1 Jul 2016	BIZ	<p>Amendments are highlighted in red below:</p> <p>Change #1</p> <p>Page: http://www.nus.edu.sg/nusbulletin/faculty-of-science/key-contact-information/</p> <p>Graduate Programme</p> <table border="1"> <thead> <tr> <th>Title & Name</th><th>Designation/Responsibility</th><th>Telephone (6516-XXXX)</th><th>Email (XXXX@nus.edu.sg)</th></tr> </thead> <tbody> <tr> <td>Assoc Prof Christoph Wolfram WINKLER</td><td>EXCO member, Biological Sciences</td><td>7376</td><td>dbswcw</td></tr> <tr> <td>Assoc Prof YEUNG Ying Yeung</td><td>EXCO member, Chemistry</td><td>7760</td><td>chmyyy</td></tr> <tr> <td>Assoc Prof LIU Shao Quan</td><td>EXCO member, Food Science and Technology</td><td>2687</td><td>chmlsq</td></tr> <tr> <td>Prof BAO Weizhu</td><td>EXCO member, Mathematics</td><td>2765</td><td>matbaowz</td></tr> <tr> <td>Assoc Prof YU Chun Kong, Victor</td><td>EXCO member, Pharmacy</td><td>8216</td><td>phayuv</td></tr> <tr> <td>Assoc Prof GONG Jiangbin</td><td>EXCO member, Physics</td><td>1154</td><td>phygj</td></tr> <tr> <td>Prof Sun Defeng</td><td>EXCO member, Risk Management Institute</td><td>3343</td><td>matsundf</td></tr> <tr> <td>Prof XIA Yingcun</td><td>EXCO member, Statistics and Applied Probability</td><td>2943</td><td>staxyc</td></tr> </tbody> </table> <p>Administrative Coordinators</p> <table border="1"> <thead> <tr> <th>TITLE & NAME</th><th>DESIGNATION/RESPONSIBILITY</th><th>TELEPHONE E(6516-XXXX)</th><th>EMAIL(XXXX@NUS.EDU.SG)</th></tr> </thead> <tbody> <tr> <td>Ms Jacqueline LIM Siau Yen</td><td>Assistant Manager, Biological Sciences</td><td>2703</td><td>dbsjlsy</td></tr> </tbody> </table>	Title & Name	Designation/Responsibility	Telephone (6516-XXXX)	Email (XXXX@nus.edu.sg)	Assoc Prof Christoph Wolfram WINKLER	EXCO member, Biological Sciences	7376	dbswcw	Assoc Prof YEUNG Ying Yeung	EXCO member, Chemistry	7760	chmyyy	Assoc Prof LIU Shao Quan	EXCO member, Food Science and Technology	2687	chmlsq	Prof BAO Weizhu	EXCO member, Mathematics	2765	matbaowz	Assoc Prof YU Chun Kong, Victor	EXCO member, Pharmacy	8216	phayuv	Assoc Prof GONG Jiangbin	EXCO member, Physics	1154	phygj	Prof Sun Defeng	EXCO member, Risk Management Institute	3343	matsundf	Prof XIA Yingcun	EXCO member, Statistics and Applied Probability	2943	staxyc	TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE E(6516-XXXX)	EMAIL(XXXX@NUS.EDU.SG)	Ms Jacqueline LIM Siau Yen	Assistant Manager, Biological Sciences	2703	dbsjlsy
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				(Undergraduate Programmes)		
			Mr LIM Miah Kyan	Manager, Biological Sciences (Undergraduate Programmes)	2698	dbslmk
			Ms Reena Devi A/P SAMYNADAN	Assistant Manager, Biological Sciences (Graduate Programmes)	2711	dbsrds
			Mr Laurence GWEE	Assistant Manager, Biological Sciences (Graduate Programmes)	4439	dbsgel
			Ms Carrie WONG Suk Tak	Manager, Chemistry (Undergraduate Programmes)	6361	chmwst
			Ms Linda Janti OEI	Assistant Manager, Chemistry (Graduate Programmes (Coursework))	6318	chmljo
			Ms Suriawati Binte SAAD	Executive, Chemistry (Graduate Programmes)	2660	chmss
			Ms Linda Janti OEI	Assistant Manager, Chemistry (Graduate Programmes)	6318	chmljo
			Ms ENG Pui Leng	Senior Executive, Mathematics	6948	matepl
			Mr SOO Kok Ping	Assistant Manager, Mathematics	6948	TBC

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Change #2

Page: <http://www.nus.edu.sg/nusbulletin/faculty-of-science/graduate-education/coursework-programmes/degree-requirements/master-of-science-in-quantitative-finance-part-time-or-full-time/>

Programme Structure

Students have to fulfil all the following conditions:

1. Read and pass the following six essential modules:

- i MA4269 Mathematical Finance II
- ii QF4102 Financial Modelling
- iii QF5210 Financial Time Series: Theory and Computation
- iv QF5201 Interest Rate Theory and Credit Risk
- v QF5202 Structured Products
- vi QF5203 Risk Management

2. Read and pass four elective modules chosen from the following list:

- ~~i QF5205 Topics in Quantitative Finance I~~
- ~~ii QF5206 Topics in Quantitative Finance II~~
- ~~iii EC5102 Macroeconomic Theory~~
- ~~iv EC5103 Econometric Modelling & Applications I~~
- ~~v EC5332 Money and Banking~~
- ~~vi ECA5315 Financial Econometrics~~
- ~~vii ECA5334 Corporate Finance~~
- ~~viii ST5207 Non-parametric regression~~
- ~~ix ST5210 Multivariate Data Analysis~~

			<p>x ST5218 Advanced Statistical Methods in Finance</p> <p>xi MA5233 Computational Mathematics</p> <p>xii MA5248 Stochastic Analysis in Mathematical Finance</p> <p>i MA5233 Computational Mathematics</p> <p>ii MA5248 Stochastic Analysis in Mathematical Finance</p> <p>iii QF5204 Numerical Methods in Quantitative Finance</p> <p>iv QF5205 Topics in Quantitative Finance I</p> <p>v QF5206 Topics in Quantitative Finance II</p> <p>vi EC5102 Macroeconomic Theory</p> <p>vii EC5103 Econometric Modelling & Applications I</p> <p>viii EC5332 Money and Banking</p> <p>ix ECA5315 Financial Econometrics</p> <p>x ECA5334 Corporate Finance</p> <p>xi ST5207 Non-parametric regression</p> <p>xii ST5210 Multivariate Data Analysis</p> <p>xiii ST5218 Advanced Statistical Methods in Finance</p> <p>0. Obtain a minimum Cumulative Average Point (CAP) of 3.00.</p> <p>Modules coded MAxxxx or QFxxxx are offered by the Department of Mathematics. Modules with codes QF5xxx (except QF5210) are offered exclusively to students in the Master of Science in Quantitative Finance programme.</p> <p>Modules coded ECxxxx or ECAxxxx are offered by the Department of Economics.</p> <p>Modules coded STxxxx are offered by the Department of Statistics and Applied Probability.</p>
14	4 Jul 2016	NUSMed (Nursing)	<p>3.2.2 Bachelor of Science (Nursing) / Bachelor of Science (Nursing) (Honours)</p> <p>http://www.nus.edu.sg/nusbulletin/yong-loo-lin-school-of-medicine/undergraduate-education/degree-requirements/bachelor-of-science-nursing-bachelor-of-science-nursing-honours/</p> <p>The current table on ‘Curriculum Structure for BSc(Nursing)*/ BSc(Nursing) Honours**’ is replaced with the table shown below:</p> <p>Curriculum Structure for BSc (Nursing) * / BSc (Nursing)(Honours) **</p>

[illegible]

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				Year 3	Semester 2	MIC2000	Infection and Immunology
						SC2211	Medical Sociology
					Special Term 1	NUR212 1	Maternal and Child Health Nursing
						NUR212 2	Psychology for Nurses
					NUR210 7A	Nursing Practice Experience 2.2	
					Semester 1	NUR310 9	Introduction to Research, Evidence and Nursing Practice
				NUR311 3		Medical/Surgical Nursing III	
				NUR311 7		Community Integrated Health Care	
				NUR310 5A		Nursing Practice Experience 3.1	
				Semester 2		NUR311 4	Leadership and Management
						NUR311 8	Consolidated Clinical Simulation Nursing Practice
						NUR311 6A	Transition to Professional Practice Experience
				Honours	NUR4101	Evidence-based Health Care Practice (Sem 1 & 2)	
					NUR410 2A	Consolidated Clinical Practice (Sem 2)	
					NUR410 3A	Applied Research Methods (Sem 1 & 2)	
					NUR4104	Honours Project in Nursing (Sem 1 & 2)	
					Unrestricted Elective		

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			<p>*Students have to take 2 General Education or Unrestricted Elective Module to make up 120MCs for the BSc (Nursing) programme requirement.</p>
15.	4 Jul 2016	RO	<p>Updates are as indicated in red below.</p> <p>1. http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-degree-programmes.html</p> <ul style="list-style-type: none"> • Business Administration/Business Administration (Accountancy) & Communications and New Media (to link to http://nus.edu.sg/prog/bizcnm/) <p>2. http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/concurrent-degree-programmes.html</p> <p>Concurrent degree programmes (CDPs) involve a combination of a Bachelor's and a Master's degree from the same Faculty or from two different Faculties. Such programmes allow a student to pursue a Bachelor's and a Master's degree concurrently. The programme structure allows some of the requirements for the Bachelor's degree to be also counted towards the Master's degree so that a student could graduate in four and a half to five years with both degrees, instead of five and a half to six years if pursued separately.</p> <p>The following is a list of available CDPs within NUS:</p> <ul style="list-style-type: none"> ➤ Bachelor of Business Administration with Honours/Bachelor of Business Administration (Accountancy) with Honours & Master in Public Policy ➤ Bachelor of Business Administration with Honours / Bachelor of Business Administration (Accountancy) with Honours & Master of Science (Management) (to link this CDP to http://bba.nus.edu/academic-programmes/bba-msc-mgt-programme/about-msc-mgt (note: to remove the individual link to each of the single degree programme)) ➤ Bachelor of Computing with Honours & Master of Science (Management) ➤ Bachelor of Engineering {any discipline except Engineering Science} and Master of Science (Management) ➤ <p>3. http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-major-programmes.html</p> <p>....</p> <p>....</p>

			<p>The second majors that are currently on offer are:</p> <ul style="list-style-type: none"> ➤ Chemistry ➤ Chinese Language ➤ Chinese Studies ➤ Communications and New Media ➤ Economics ➤ English Language ➤ English Literature ➤ European Studies ➤ Geography ➤ History ➤ Information Security (new insertion - to link to http://www.comp.nus.edu.sg/programmes/ug/major/) ➤ Japanese Studies ➤ Life Sciences ➤ Malay Studies ➤ Management ➤ Management (Technology) ➤ Mathematics ➤ Philosophy ➤ Physics ➤ Political Science - (to link to http://pol.nus.edu.sg/undergraduate/graduation-requirements-cohort-2016-onwards) ➤ Psychology ➤ Recording Arts and Sciences – (to link to http://www.nus.edu.sg/nusbulletin/yong-siew-toh-conservatory-of-music/undergraduate-education/degree-requirements/curriculum-structure-and-requirements/bachelor-of-music-recording-arts-and-sciences-major/) ➤ Social Work ➤ Sociology ➤ Southeast Asian Studies ➤ South Asian Studies ➤ Statistics ➤ Systems Engineering ➤ Theatre Studies <p>4. http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-concurrent-joint-degree-programmes-with-overseas-universities.html</p>
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		<p>CDP with Carnegie Mellon University</p> <ul style="list-style-type: none"> Bachelor of Computing (Computer Science) from NUS and Master of Entertainment Technology from Carnegie Mellon University (to link to http://www.comp.nus.edu.sg/programmes/sp/cdp/carnegie-cs/) <p>JDP with University of North Carolina-Chapel Hill</p> <ul style="list-style-type: none"> Joint Bachelor of Science (Honours) (to link to http://www.lifesciences.nus.edu.sg/info/lsm_jdpuncch.pdf) <p>5. http://www.nus.edu.sg/registrar/education-at-nus/graduate-education/special-graduate-programmes/double-degree-and-joint-degree-programmes-with-overseas-universities.html</p> <p>JDP with Australian National University</p> <ul style="list-style-type: none"> ➤ Master of Arts (Southeast Asian Studies) ➤ Master of Science (Science Communication) ➤ PhD: Physics <p>6. http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/minor-programmes.html</p> <table border="1"> <thead> <tr> <th>Minor</th><th>Host Faculty/Department</th><th>Type (see 'Note' below)</th></tr> </thead> <tbody> <tr> <td>Faculty of Arts & Social Sciences</td><td></td><td></td></tr> <tr> <td><i>Multidisciplinary Minors</i></td><td></td><td></td></tr> <tr> <td>Aquatic Ecology</td><td>Department of Geography and Department of Biological Sciences</td><td>Restricted</td></tr> <tr> <td>Art History</td><td>Department of History</td><td>Open</td></tr> </tbody> </table>	Minor	Host Faculty/Department	Type (see 'Note' below)	Faculty of Arts & Social Sciences			<i>Multidisciplinary Minors</i>			Aquatic Ecology	Department of Geography and Department of Biological Sciences	Restricted	Art History	Department of History	Open
Minor	Host Faculty/Department	Type (see 'Note' below)															
Faculty of Arts & Social Sciences																	
<i>Multidisciplinary Minors</i>																	
Aquatic Ecology	Department of Geography and Department of Biological Sciences	Restricted															
Art History	Department of History	Open															

			China Studies	Office of Programmes	Open	
			Cultural Studies	Department of Sociology	Open	
			English Studies	Department of English Language & Literature	Open	
			Film Studies	Department of English Language & Literature	Open	
			Film Production*	Department of English Language & Literature	Open	
			Gender Studies	Office of Programmes	Open	
			Geographical Information Systems	Department of Geography	Open	
			Geosciences	Department of Geography	Open	
			Global Studies	Department of Political Science	Open	
			Health and Social Sciences	Office of Programmes	Open	
			Interactive Media Development	Department of Communications and New Media & Department of Computer Science	Open	
			Petroleum Exploration	Department of Geography	Open	
			Religious Studies	Office of Programmes	Open	
			Science, Technology and Society	Office of Programmes	Open	
			Urban Studies	Department of Geography and Department of Real Estate	Open	
16.	5 Jul 2016	RO	At http://www.nus.edu.sg/registrar/faqs/ddp-cdp-dm-faq.html , please see amendments highlighted in red/yellow in the relevant FAQs below (<i>note: only those FAQs that have amendments are indicated below</i>):			

(as a 4 Jun 2020

			<p>A. Double Degree Programmes (DDPs)</p> <p>1. What are the specially-designed double degree programmes (DDPs) offered for direct admission to the first year at NUS?</p> <p>NUS offers the following DDPs for direct admission, namely:</p> <ul style="list-style-type: none"> a. Business Administration or Business Administration (Accountancy)/Law b. Business Administration or Business Administration (Accountancy)/Engineering {any discipline except Engineering Science} c. Economics/Engineering {any discipline except Engineering Science} d. Economics/Law (to link to http://www.nus.edu.sg/prog/econlaw/) e. Law/Life Sciences f. Business Administration or Business Administration (Accountancy) /Communications & New Media (to link to http://www.nus.edu.sg/prog/bizcnm) g. Computer Science/Mathematics or Applied Mathematics (to link to http://www.comp.nus.edu.sg/cugresource/per-cohort/ddp-cs-maths/) h. Business Administration or Business Administration (Accountancy)/Computing <u>Computer Science or Information Systems</u> (to link to http://nus.edu.sg/prog/bizsoc/) i. Business Administration or Business Administration (Accountancy) /Economics (to link to http://www.nus.edu.sg/prog/bizecon/index.html) <p>The following DDP is only available for non-direct admission (i.e. opened to those who completed 1st level of study)</p> <ul style="list-style-type: none"> a. Engineering (Materials Science & Engineering)/Physics (to link to http://www.physics.nus.edu.sg/student/double_deg_MSEPhysics.html) <p>Students who are interested to pursue their own double degree combinations may also be able to do so. However, they must have obtained a minimum CAP of 4.00 or 3.75 depending on their admission year after completing between 60 to 80 MCs. Please refer to FAQ question 14 below for more information.</p> <p>3. When can I be admitted to a DDP?</p> <p>You can be admitted at the point of admission to NUS, or just after completion of between 60 MCs to 80 MCs, that is, just after the third semester or fourth semester at the end of your first year of study at NUS.</p>
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			<p>8. What happens if I am not selected for direct admission to a DDP?</p> <p>If you are not selected for direct admission to a DDP, you will be considered for single degree programmes based on the choices you have indicated in your application. This is provided you meet the cut-offs and subject pre-requisites of your choices.</p> <p>Further, you can still apply for a DDP just after completion of between 60 MCs to 80 MCs, that is, just after the third semester or fourth semester at the end of your first year at NUS if you have done well. All the DDPs will consider applications from students who have done well after one year of study in NUS. You must apply to both Faculties and obtain the written approval of both Faculties. Each application will be reviewed on a case-by-case basis.</p>
			<p>9. What are the qualifications I will receive at the end of the programme?</p> <p>Students who complete the course successfully will be awarded two degrees, namely:</p> <ul style="list-style-type: none"> a. Business Administration/Law: <ul style="list-style-type: none"> ○ Bachelor of Business Administration (Hons) and Bachelor of Laws ○ Bachelor of Business Administration and Bachelor of Laws ○ Bachelor of Business Administration (Accountancy)(Hons) and Bachelor of Laws ○ Bachelor of Business Administration (Accountancy) and Bachelor of Laws b. Engineering/Business Administration: <ul style="list-style-type: none"> ○ Bachelor of Engineering and Bachelor of Business Administration or Bachelor of Business Administration (Accountancy) ○ Bachelor of Engineering and Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) c. Engineering/Economics: <ul style="list-style-type: none"> ○ Bachelor of Engineering and Bachelor of Social Sciences (Hons) in Economics ○ Bachelor of Engineering and Bachelor of Arts in Economics d. Economics/Law: (to link to http://www.nus.edu.sg/prog/econlaw/index.html) <ul style="list-style-type: none"> ○ Bachelor of Social Sciences (Hons) in Economics and Bachelor of Laws ○ Bachelor of Arts in Economics and Bachelor of Laws e. Engineering (Materials Science & Engineering)/Physics: <ul style="list-style-type: none"> ○ Bachelor of Engineering (Materials Science & Engineering) and Bachelor of Science (Hons) in Physics ○ Bachelor of Engineering (Materials Science & Engineering) and Bachelor of Science in Physics f. Law/Life Sciences: <ul style="list-style-type: none"> ○ Bachelor of Laws and Bachelor of Science (Hons) in Life Sciences ○ Bachelor of Laws and Bachelor of Science in Life Sciences g. Business Administration/Communications & New Media: (to link to http://www.nus.edu.sg/prog/bizcnm)

			<ul style="list-style-type: none"> ○ Bachelor of Business Administration (Hons) and Bachelor of Social Science (Hons) in Communications & New Media ○ Bachelor of Business Administration and Bachelor of Social Science (Hons) in Communications & New Media ○ Bachelor of Business Administration in Accountancy (Hons) and Bachelor of Social Science (Hons) in Communications & New Media ○ Bachelor of Business Administration in Accountancy and Bachelor of Social Science (Hons) in Communications & New Media ○ Bachelor of Business Administration (Hons) and Bachelor of Arts in Communications & New Media ○ Bachelor of Business Administration in Accountancy (Hons) and Bachelor of Arts in Communications & New Media <p>h. Computer Science/Mathematics or Applied Mathematics</p> <ul style="list-style-type: none"> ○ Bachelor of Computing (Computer Science) (Hons) and Bachelor of Science (Hons) in Mathematics or Bachelor of Science (Hons) in Applied Mathematics ○ Bachelor of Computing (Computer Science) (Hons) and Bachelor of Science in Mathematics or Bachelor of Science in Applied Mathematics <p>i. <u>Business Administration or Business Administration (Accountancy)/Computing Computer Science or Information Systems (to link to http://nus.edu.sg/prog/bizsoc/):</u></p> <ul style="list-style-type: none"> ○ Bachelor of Business Administration (Hons) and Bachelor of Computing (Hons) in Computer Science ○ Bachelor of Business Administration and Bachelor of Computing (Hons) in Computer Science ○ Bachelor of Business Administration in Accountancy (Hons) and Bachelor of Computing (Hons) in Computer Science ○ Bachelor of Business Administration in Accountancy and Bachelor of Computing (Hons) in Computer Science ○ Bachelor of Business Administration (Hons) and Bachelor of Computing (Hons) in Information Systems ○ Bachelor of Business Administration and Bachelor of Computing (Hons) in Information Systems ○ Bachelor of Business Administration in Accountancy (Hons) and Bachelor of Computing (Hons) in Information Systems ○ Bachelor of Business Administration in Accountancy and Bachelor of Computing (Hons) in Information Systems <p>j. Business Administration/Economics:</p> <ul style="list-style-type: none"> ○ Bachelor of Business Administration (Hons) and Bachelor of Social Sciences (Hons) in Economics (to insert) ○ Bachelor of Business Administration (Hons) and Bachelor of Arts in Economics ○ Bachelor of Social Sciences (Hons) in Economics and Bachelor of Business Administration ○ Bachelor of Business Administration in Accountancy (Hons) and Bachelor of Social Sciences (Hons) in Economics ○ Bachelor of Business Administration in Accountancy (Hons) and Bachelor of Arts in Economics ○ Bachelor of Business Administration and Bachelor of Computing (Hons) in Information Systems ○ Bachelor of Social Sciences (Hons) in Economics and Business Administration in Accountancy <p>14. What do I need to know about putting together my own double degree combination?</p>
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		<p>Students interested to pursue their own double degree combinations must have obtained a minimum CAP of 4.00 or 3.75 depending on their admission year after completing between 60 to 80 MCs (excluding MCs earned from student exchange programmes or advanced placement credits). Written approval to embark on the DDP must be obtained from the relevant Faculties. Students are advised to seek proper advice from their academic counsellors in planning their modules as early as possible in their candidature.</p> <ol style="list-style-type: none"> For candidates admitted to NUS before AY2011/12*: if your CAP falls below 4.00 for the home course for two consecutive semesters, you will be required to leave the DDP by withdrawing from the second degree programme. (Students admitted to NUS in AY2010/11 and earlier who are admitted into DDPs after their first year, or who self-design their DDPs <u>will follow this continuation requirement</u>). For candidates admitted to NUS from AY2011/12* onwards: if your CAP falls below 4.00 for the home course, or below 3.50 for the second degree, or both, for two consecutive semesters, you will be required to leave the DDP by withdrawing from the second degree programme. However, this DDP continuation rule is not applicable in the final graduating semester. For candidates admitted to NUS from AY2014/15 onwards: if your CAP falls below 3.75 for the home course, or below 3.25 for the second degree, or both, for two consecutive semesters, you will be required to leave the DDP. However, this DDP continuation rule is not applicable once a student's total cumulative modular credits exceeds 160MCs. <p>S/he will continue with the first degree (i.e., originally offered degree) programme. Upon withdrawal, all the modules which the student has taken to fulfil the requirements of the second degree will be reflected in the transcript and included in the computation of the CAP for the single degree.</p> <p>* Refers to cohort academic year.</p> <p>More details on the Double Degree Programme framework and guidelines can be found here.</p>
		<p>B. Concurrent Degree Programmes (CDPs)</p> <p>1. What is a Concurrent Degree programme (CDP)?</p> <p>CDPs involve a combination of a Bachelor's and a Master's degree from the same Faculty/School or from two different Faculties/Schools and allow a student to pursue a Bachelor's and a Master's degree concurrently. The programme structure allows some of the requirements for the Bachelor's degree to be double counted towards the Master's degree or recognising Masters modules towards Bachelor requirements so that a student could graduate in four and a half to five years with both degrees, something which would normally take between five and a half and six years if pursued separately.</p> <p>Students on CDPs would acquire additional sets of skills and are well-placed for multiple career options upon graduation.</p> <p>The following CDPs are currently being offered –</p>

		<ul style="list-style-type: none"> ▶ Bachelor of Engineering {any discipline except Engineering Science} and Master of Science (Management) ▶ Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master of Science (Management) ▶ Bachelor of Computing (Hons) and Master of Science (Management) ▶ Bachelor of Computing (Communications and Media) from NUS and Master of Entertainment Technology from Carnegie Mellon University ▶ Bachelor of Laws and Master in Public Policy ▶ Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master in Public Policy ▶ Bachelor of Social Sciences (Honours) and Masters in Social Sciences in Psychology (to include this CDP and link to http://www.fas.nus.edu.sg/psy/current/gradresearch/gr_masters_cdp.htm) ▶ Bachelor of Social Sciences (Honours) and Master in Public Policy (to include this CDP and link to https://myportal.nus.edu.sg/studentportal/fas/ug/currentstd/concurrent-degree-programme.html) ▶ Bachelor of Laws / Graduate Bachelor of Laws (Honours) from NUS and Master of Laws from New York University ▶ Bachelor of Science (Honours)/Bachelor of Computing (Honours)/Bachelor of Business Administration (Honours)/Bachelor of Engineering, and Master of Science (Logistics and Supply Chain Management) from NUS, and Master of Science in Industrial Engineering from GeorgiaTech ▶ Bachelor of Science (Computational Biology) Honours/ Bachelor of Computing (Computational Biology) Honours from NUS and Scientiae Magister in Computer Science (Computational Biology) from Brown University (to link to http://www.comp.nus.edu.sg/programmes/sp/cdp/cb-brown/) ▶ Bachelor of Computing (Information Systems) from NUS and Master of Philosophy in Management from Judge Business School, Cambridge University ▶ Bachelor of Science (Honours) in Life Sciences from NUS and Master of Research (M.Res.) in Molecular Biophysics from Department of Biomedical Sciences, King's College London (KCL) (to link to http://www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/cdp-kcl): <p>2. When can I be admitted to a CDP and what are the criteria for admission?</p> <p>For the following CDPs, students will be admitted after a period of study:</p> <ul style="list-style-type: none"> ▶ Bachelor of Engineering {any discipline except Engineering Science} and Master of Science (Management) ▶ Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master of Science (Management) – (direct admission is also available) ▶ Bachelor of Computing (Hons) and Master of Science (Management) <p>A student must have:</p> <ol style="list-style-type: none"> a. informed his/her original Faculty/School by writing to the Vice-Dean (Undergraduate Matters) before applying to the programme
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		<p>b. completed at least 80 modular credits (MCs) for his/her undergraduate programme with his/her original Faculty/School; at least 40 of those completed MCs must be from modules in his/her undergraduate major(s)</p> <p>c. an overall CAP of at least 4.00</p> <p>d. good Graduate Management Admission Test (GMAT) scores Graduate Management Admission Test (GMAT) is recommended but not mandatory</p> <p>e. performed well in an interview</p> <p>If a student is enrolled in the University Scholars programme (USP), he/she must have completed at least 4 modules that can count towards the existing 6-module Minor in Business (to be renamed Minor in Management) programme with an average grade point for those completed modules of at least 4.00</p> <ul style="list-style-type: none"> ▶ Bachelor of Laws / Graduate Bachelor of Laws (Honours) from NUS and Master of Laws from New York University NUS Law students may apply for admission to the NYU LLM in their second or exceptionally in their third year of studies. The admission decision will be made entirely by NYU. ▶ Bachelor of Science (Honours)/Bachelor of Computing (Honours)/Bachelor of Business Administration (Honours)/Bachelor of Engineering, and Master of Science (Logistics and Supply Chain Management) from NUS, and Master of Science in Industrial Engineering from GeorgiaTech <p>Preliminary Acceptance: At end of Year 2 of study, students interested in applying for this programme must achieve the following:</p> <ul style="list-style-type: none"> ▶ Pursuing an honours degree in B.Eng, B.Sc., BBA or B.Comp. (to remove the full stops in the degree abbreviations) ▶ Minimum CAP of 4.00 ▶ Completed at least three of the five prescribed Mathematics modules and have obtained at least an average of A- in these modules <p>Final Acceptance: At end of Year 4 of study, students must have obtained the following:</p> <ul style="list-style-type: none"> ▶ Complete B.Eng, B.Sc., BBA or BComp with 2nd Upper Honours (to remove the full stops in the degree abbreviations) ▶ Completed 5 prescribed Mathematics modules with average of B+ ▶ Obtained a high GRE score (Verbal: 450, Quantitative: 750 and Analytical Writing: 4.0) ▶ Bachelor of Science (Honours) in Life Sciences from NUS and Master of Research (M.Res.) in Molecular Biophysics from Department of Biomedical Sciences, King's College London (KCL) (to link to http://www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/cdp-kcl):
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		<p>Initial Round of Admission: The first round of admission targets Life Sciences students from the matriculation cohort of AY2010/11 at the end of their Year 1. For subsequent rounds of admission, LS students at the end of their Year 1 will be considered for the programme.</p> <p>The selection criteria are as follows:</p> <ul style="list-style-type: none"> ▶ Academic achievements; ▶ Interest profile in biophysical sciences; ▶ An interview to assess student's potential and suitability for the programme; and ▶ Other criteria to be determined by the Joint Programme Committee <p>Interim arrangements will be made to admit suitable and interested current NUS students from matriculation cohorts of AY2009/2010 and earlier. These students may require longer than the typical 4 years to complete the programme. These students can proceed to KCL to read the M.Res. upon completion of the B.Sc. (Hons) degree component. (to remove the full stops in the degree abbreviations)</p>
		<p>8. What are the qualifications I will receive at the end of the programme?</p> <p>Students who complete the course successfully will be awarded two degrees concurrently at the end of the entire programme, namely:</p> <ul style="list-style-type: none"> ▶ Bachelor of Engineering {any discipline except Engineering Science} and Master of Science (Management) (to link to http://www.eng.nus.edu.sg/ugrad/SP_be_msc.html) ▶ Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master of Science (Management) (to link to http://bba.nus.edu/bba-academic-programmes/bba-msc-mgt-programme/about-msc-mgt) ▶ Bachelor of Computing (Hons) and Master of Science (Management) (to link to http://www.comp.nus.edu.sg/programmes/sp/cdp/bcomp-msc/) ▶ Bachelor of Computing (Communications and Media) from NUS and Master of Entertainment Technology from Carnegie Mellon University ▶ Bachelor of Laws and Master in Public Policy ▶ Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master in Public Policy ▶ Bachelor of Social Sciences (Honours) and Masters in Social Sciences in Psychology (to include this programme and link to http://www.fas.nus.edu.sg/psy/current/gradresearch/gr_masters_cdp.htm) ▶ Bachelor of Social Sciences (Honours) and Master in Public Policy (to link to https://myportal.nus.edu.sg/studentportal/fas/ug/currentstd/concurrent-degree-programme.html) ▶ Bachelor of Laws from NUS and Master of Laws from New York University

		<ul style="list-style-type: none"> ▶ Bachelor of Science (Computational Biology) Honours or Bachelor of Computing (Computational Biology) Honours from NUS and Scientiae Magister in Computer Science (Computational Biology) from Brown University (to link to http://www.comp.nus.edu.sg/programmes/sp/cdp/cb-brown/) ▶ Bachelor of Science (Honours) or Bachelor of Computing (Honours) or Bachelor of Business Administration (Honours) or Bachelor of Engineering, and Master of Science (Logistics and Supply Chain Management) from NUS and Master of Science in Industrial Engineering from GeorgiaTech ▶ Bachelor of Computing (Information Systems) from NUS and Master of Philosophy in Management from Judge Business School, Cambridge University ▶ Bachelor of Science (Honours) in Life Sciences from NUS and Master of Research (M.Res.) in Molecular Biophysics from Department of Biomedical Sciences, King's College London (KCL) (to link to http://www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/cdp-kcl) <p>11. What tuition fees will be charged to students doing CDPs? Is there any difference in the tuition fee structure compared with the single degree programmes?</p> <ul style="list-style-type: none"> a. For Concurrent Degree Programmes within NUS, students will pay the prevailing undergraduate tuition fees for the Bachelor's degree programme and pay the prevailing graduate tuition fees when they embark on the Master's degree programme. b. NUS-CMU Bachelor of Computing (Communications and Media) and Master of Entertainment Technology Programme Students in the NUS-CMU Concurrent Bachelor of Computing (Communications and Media) and Master of Entertainment Technology (MET) will pay the prevailing fees for the Bachelor's degree programme and pay the CMU tuition fees during the time that they are undertaking the modules in partial fulfillment of the MET in CMU. A limited number of full scholarships (from IDA Singapore) will support students through the entire five years of study. The scholarship covers tuition fees and miscellaneous expenses at the School of Computing (SoC), NUS and the Entertainment Technology Centre (ETC), CMU. The application period for the scholarships starts from February and ends in April each year. Please click here for details. c. NUS-NYU Bachelor of Laws / Graduate Bachelor of Laws (Honours) (LLB) and Master of Laws (LLM) Programme Students in the NUS-NYU LLB and LLM programme are responsible for the payment of tuition fees charged by NUS for the LL.B. programme and the tuition and fees charged by NYU School of Law for the LL.M. programme. Admitted students are eligible for consideration for NYU's merit-based scholarships for the LL.M. portion of the programme. d. Bachelor of Science (Computational Biology) Honours or Bachelor of Computing (Computational Biology) Honours from NUS and Scientiae Magister in Computer Science (Computational Biology) from Brown University Students will pay Brown tuition fees during the time they undertake instruction at Brown in partial fulfillment of the requirements of the concurrent degree. They will also provide their medical insurance coverage. e. Bachelor of Computing (Information Systems) from NUS and Master of Philosophy in Management from Judge Business School, Cambridge University Students will pay Cambridge tuition fees during the time they undertake instruction at Cambridge in partial fulfillment of the requirements of the concurrent degree. They will also provide their own medical insurance coverage.
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		<p>f. Bachelor of Science (Honours) in Life Sciences from NUS and Master of Research (M.Res.) in Molecular Biophysics from Department of Biomedical Sciences, King's College London (KCL) NUS students enrolled for the M.Res. as part of this concurrent degree will pay UK home student fees.</p> <p>12. What if I do badly or don't like the course?</p> <p>Students can choose to leave the programme, or can be asked to leave the programme if they fail to meet continuation requirements.</p> <p>a. For the Concurrent BEng or BComp (Hons) and MSc (Mgt): If your CAP falls below 4.00 for the home course for two consecutive semesters, you will be required to leave the CDP. For students leaving the programme, your academic advisor will advise you on the modules you need to complete the degree requirements of your home course.</p> <p>b. For the Concurrent BBA (Hons)/BBA (Accountancy) (Hons) and MSc (Mgt): Students must maintain a CAP of at least 3.50 for modules counting towards the MSc(Mgt) degree and an overall CAP of at least 3.50. Students who fail to do so will be required to leave the CDP. For students leaving the programme, your academic advisor will advise you on the modules you need to complete the degree requirements of your home course.</p> <p>c. For the NUS-CMU Bachelor of Computing (Communications and Media) and Master of Entertainment Technology: Students must maintain a CAP of 4.00 or above out of 5.00 and/or demonstrate strong creative talents, that is, strong performance in projects undertaken as part of the academic curriculum. These will be projects in specified courses as set out by SoC. Students who fail to meet the criteria will not be allowed to remain in the CDP, but may continue with their BComp studies at NUS.</p> <p>d. For Bachelor of Laws and Master in Public Policy:</p> <p>The following students will be asked to leave the CDP, even if all other requirements are met, if:</p> <ul style="list-style-type: none"> ○ the student falls below the top 50% of students in modules counting toward the LLB for completed Law modules for 2 consecutive semesters; or ○ CAP falls below 3.00 for completed MPP modules for 2 consecutive semesters; or ○ CAP falls below 3.50 for completed MPP modules for 3 consecutive semesters; or ○ fail any particular MPP module twice; or ○ fail 3 or more MPP modules <p>In addition, a student who, at the point of entry into the MPP component of the programme, does not stand within the top 55% of his cohort will be asked to leave the programme.</p> <p>Students who leave the CDP are permitted to work toward the LLB, while adhering to prevailing regulations. Modular credits completed in the CDP will be counted towards the fulfillment of the degree requirements for LLB, subject to the normal limits of the curriculum.</p>
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			<p>e. For Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master in Public Policy:</p> <p>Students whose academic performance falls under any of the following categories shall be asked to leave the CDP, even if all other requirements are met:</p> <ul style="list-style-type: none"> ○ CAP falls below 4.00 for completed BBA modules for 2 consecutive semesters; or ○ CAP falls below 3.00 for completed MPP modules for 2 consecutive semesters; or ○ CAP falls below 3.50 for completed MPP modules for 3 consecutive semesters; or ○ fail any particular MPP module twice; or ○ fail 3 or more MPP modules <p>f. Bachelor of Social Sciences (Honours) and Masters in Social Sciences in Psychology (to add in this CDP and link to http://www.fas.nus.edu.sg/psy/current/gradresearch/gr_masters_cdp.htm)</p> <ul style="list-style-type: none"> ○ SJAP (based on both undergraduate and graduate PL modules) fall below 4.00 over two consecutive semesters. <p>g. Bachelor of Social Sciences (Honours) and Master in Public Policy (to add in this CDP and link to https://myportal.nus.edu.sg/studentportal/fas/ug/currentstd/concurrent-degree-programme.html)</p> <ul style="list-style-type: none"> ○ CAP falls below 4.00 for completed FASS modules for 2 consecutive semesters; or ○ CAP falls below 3.00 for completed MPP modules for 2 consecutive semesters; or ○ CAP falls below 3.50 for completed MPP modules for 3 consecutive semesters; or ○ fail any particular MPP module twice; or ○ fail 3 or more MPP modules <p>h. For the NUS-NYU Bachelor of Laws / Graduate Bachelor of Laws (Honours) (LLB) and Master of Laws (LLM):</p> <p>Students' eligibility to continue in the LLM will be governed by NYU's regulations governing the LLM. Students who exit from the LLM will be entitled to have any credits successfully completed at NYU (to a maximum of 40 credits) transferred back to NUS towards the LLB on a pro rata basis. Subject to NUS's regulations concerning maximum candidature, they will be permitted to read their remaining credits, if any, toward the LLB at NUS.</p> <p>Students who leave the CDP are permitted to work towards BBA or BBA (Hons) (and for those in the USP, subject to approval, remaining with the USP), while adhering to prevailing regulations. Modular credits completed in the CDP will be counted towards the fulfillment of the degree requirements for BBA or BBA (Hons) (and the programme requirements of the USP, if applicable), subject to the normal limits of the curriculum.</p>
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17.	7 Jul 2016	FoS	<p>Change for Section 4.2.2.2 Master of Science in Chemistry (Part-Time or Full-Time)</p> <p>Page:</p> <p>http://www.nus.edu.sg/nusbulletin/faculty-of-science/graduate-education/coursework-programmes/degree-requirements/master-of-science-in-chemistry-part-time-or-full-time/</p> <p>This programme is designed for students with either a four-year Honours degree, or a three-year degree with two years of working experience, who would like to pursue a graduate degree in Chemistry. It is expected that the graduates of this programme will be well-equipped to secure senior industrial positions, or apply for advanced degree programmes (e.g., Ph.D.).</p> <p>At the end of the course, the student will be equipped with up-to-date knowledge and skills that will enable him/her to execute and lead with confidence and perform leading roles as R&D scientists, managers and entrepreneurs in the practice of complex chemical processes.</p> <p>This programme is designed for Chemistry graduates with a 4-year Honours degree who would like to pursue a postgraduate degree in Chemistry. This programme lays the scientific foundation in chemistry for attendees for senior positions in the chemistry industry as well as to qualify for other advanced degree programmes such as Ph.D. in Chemistry.</p> <p>At the end of the programme, the student will be equipped with advanced knowledge and skills pertaining to recent developments in the Chemical Science which will enable him/her to perform with confidence leading roles as scientists, managers and entrepreneurs in Chemistry R&D and related industries.</p> <p>Admission Requirements & Programme Structures</p> <p>Structure 1</p> <p>For students with a four-year (Hons.) degree:</p> <p>Complete two full-time or four part-time semesters of course requirements. Structure 1 is a 40-modular credit programme consisting of four Level 5000 essential module (each of 4 MCs), four Level 5000 elective modules (each of 4 MCs) of coursework, and a research project equivalent to two coursework modules (8 MCs).</p> <p>Admission Requirements & Programme Structures_#1</p>
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			<p>Structure 2</p> <p>For students with a three year degree and two years of relevant working experience:</p> <p>Complete four full time or eight part time semesters of course requirements. Structure 2 will be an 80 Modular Credit programme consisting of 10 Level 4000 elective modules (each of 4 MCs) (including up to two Level 4000 modules which may be replaced by two Level 3000 modules and up to four Level 4000 modules may be replaced by four Level 5000 modules towards the fulfillment of this requirement), four Level 5000 essential modules (each of 4 MCs), four Level 5000 elective modules (each of 4 MCs) of coursework, and a research project equivalent to two coursework modules (8 MCs).</p> <p>Admission Requirements & Programme Structures_#2</p> <p>Note:</p> <p>Students in Structure 2 have the option to read two Level 3000 modules in lieu of two Level 4000 modules.</p> <p>Area of Specialisation</p> <p>In order to cater to Singapore's growing need for skilled manpower in chemicals, electronics and biomedical industries, there are four areas of specialisation available for students to choose from:</p> <ol style="list-style-type: none"> 1. Analytical Chemistry 2. Synthetic Chemistry 3. Materials Chemistry 4. Medicinal Chemistry <p>To fulfil the requirements for each area of concentration, students are required to read at least three modules from one of the three Level 5000 subject groups (Analytical, Synthetic, Materials or Medicinal).</p> <p>Please refer to the course website: http://www.chemistry.nus.edu.sg/graduates/msc_coursework.htm for more details.</p> <p>Application Requirements</p> <ol style="list-style-type: none"> 1. An applicant must have completed a degree in Chemistry with at least a 2nd Class Honours, or its equivalent,
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2. For applicants who do not fulfil the requirement in point 1, they must have at least 2 years of working experience in a relevant chemistry industry and a GRE Subject Test Score (Chemistry) above 60th percentile.
3. Applicants whose native tongue or medium of undergraduate instruction is not completely in English must have a minimum TOEFL (IBT) score of 85 (with a minimum score of 22 in the writing component) or a minimum IELTS score of 6.

Programme Structure

Complete 2 full-time or 4 part-time semesters of course requirements.

The M.Sc. in Chemistry by Coursework is a 40-modular credit programme. Students may choose to read 8 Level 5000 modules (4 modular credits each) and 1 MSc project equivalent to 2 coursework modules (8 modular credits) or read 6 level 5000 modules (4 modular credits each) and 1 Advanced MSc Project equivalent to 4 coursework modules (16 modular credits).

Option 1

1 x Core Level 5000 module (CM5198)
7 x Elective Level 5000 modules (28 MCs)
1 x MSc Project module (8 MCs)

OR

Option 2

1 x Core Level 5000 module (CM5198)
5 x Elective Level 5000 modules (20 MCs)
1 x Advanced MSc Project module (16 MCs)

Total 40 MCs and CAP >=

M.Sc. in Chemistry

			<p>Please refer to the course website for more details: http://www.chemistry.nus.edu.sg/education/graduates/Programmes/msc_coursework.htm</p> <p>Course of Study The programme will be conducted by coursework. Majority of the courses will be conducted in the evenings during the university semesters.</p> <p>Course of Study The programme will be conducted by coursework. Majority of the courses will be conducted in the evenings during the university semesters.</p> <p>Programme Intake There are two intakes per academic year in August and January.</p> <p>Programme Intake There are two intakes per academic year in August and January.</p>																
18.	12 Jul 2016	FoS	<p>Amendments are highlighted in red below: http://www.nus.edu.sg/nusbulletin/faculty-of-science/key-contact-information/</p> <p>Department/Programme Coordinators</p> <p>Undergraduate Programmes</p> <table border="1"> <thead> <tr> <th>Title & Name</th><th>Role/Responsibilities</th><th>Telephone 6516-XXXX</th><th>Email (XXXX@nus.edu.sg)</th></tr> </thead> <tbody> <tr> <td colspan="4">B. Chemistry</td></tr> <tr> <td>Assoc Prof LAM Yulin</td><td>Faculty Curriculum Committee</td><td>2688</td><td>chmlamyl</td></tr> <tr> <td>Assoc Prof LAM Yulin</td><td>Department Curriculum Committee</td><td>2688</td><td>chmlamyl</td></tr> </tbody> </table>	Title & Name	Role/Responsibilities	Telephone 6516-XXXX	Email (XXXX@nus.edu.sg)	B. Chemistry				Assoc Prof LAM Yulin	Faculty Curriculum Committee	2688	chmlamyl	Assoc Prof LAM Yulin	Department Curriculum Committee	2688	chmlamyl
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Dr ZHANG Sheng	Class and Examination Timetable	7759	chmzs
Dr CHAN han Sau Han Edith	Student Exchange Programme	2672	chmcsh
Ms THYAGARAJAN Saradha	Polytechnic Admission	2843	chmthyag
Dr Michael YUDISTIRA	File for Graduation (Level 3)	5148	chmmiy
Prof LEE Hian Kee	File for Graduation (Level 4)	2995	chmleehk

F. Mathematics and Applied Mathematics

Assoc Prof LEUNG Ka Hin	Faculty Curriculum Committee	3339	matlkh
Assoc Prof TANG Wai Shing	Department Curriculum Committee	2992	mattws
Assoc Prof TANG Wai Shing	Class and Examination Timetable	2992	mattws
Assoc Prof Fred LEUNG Pui Fai	Student Exchange Programme	2772	matfredl
Assoc Prof <u>MAMa</u> Siu Lun	Student Advice Committee (Undergraduate)	3338	matmasl
Assoc Prof <u>MAMa</u> Siu Lun	File for Graduation	88153338	matgzmatmasl

G. Pharmacy

Assoc Prof H <u>Oe</u> Han Kiat	Faculty Curriculum Committee	7963	phahohk
Assoc Prof CHIU Ngar Chee, Gigi	Class and Examination Timetable	5536	phacncg
Ms TAN Mui Ling	Professional Placement	3877	phatml
Dr WONG Lilian	Professional Placement	66011237	phawll
Dr ONG Pei Shi	FYP Coordinator	66011236	phaops
Assoc Prof H <u>Oe</u> Han Kiat	Student Exchange Programme	7963	phahohk
Dr CHIU Ngar Chee, Gigi	Polytechnic Admission	5536	phacncg
Assoc Prof H <u>Oe</u> Han Kiat	Admission (All other categories)	7963	phahohk
Assoc Prof H <u>Oe</u> Han Kiat	File for Graduation	7963	phahohk

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19.	15 Jul 2016	SoC	Update 1: 2 Key Contact Information http://www.nus.edu.sg/nusbulletin/school-of-computing/key-contact-information/ <table border="1"> <thead> <tr> <th>TITLE & NAME</th><th>DESIGNATION/RESPONSIBILITY</th><th>TELEPHONE (6516-XXXX)</th><th>EMAIL</th></tr> </thead> <tbody> <tr> <td>Prof Mohan S KANKANHALLI</td><td>Dean</td><td>4782</td><td>comdean@nus.edu.sg</td></tr> <tr> <td>Prof JAIN, Sanjay</td><td>Vice Dean (Academic Affairs and Undergraduate Studies)</td><td>7842</td><td>sanjay@comp.nus.edu.sg</td></tr> <tr> <td>Assoc Prof Gary TAN</td><td>Vice Dean (Student Life)</td><td>6276</td><td>gtan@comp.nus.edu.sg</td></tr> <tr> <td>Assoc Prof BROWN, Michael Scott</td><td>Vice Dean (Corporate Relations)</td><td>7097</td><td>brown@comp.nus.edu.sg</td></tr> <tr> <td>Assoc Prof GOH Khim Yong</td><td>Vice Dean (Corporate Relations)</td><td>2832</td><td>gohky@comp.nus.edu.sg</td></tr> </tbody> </table>	TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL	Prof Mohan S KANKANHALLI	Dean	4782	comdean@nus.edu.sg	Prof JAIN, Sanjay	Vice Dean (Academic Affairs and Undergraduate Studies)	7842	sanjay@comp.nus.edu.sg	Assoc Prof Gary TAN	Vice Dean (Student Life)	6276	gtan@comp.nus.edu.sg	Assoc Prof BROWN, Michael Scott	Vice Dean (Corporate Relations)	7097	brown@comp.nus.edu.sg	Assoc Prof GOH Khim Yong	Vice Dean (Corporate Relations)	2832	gohky@comp.nus.edu.sg
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(as a 4 Jun 2020

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(as a 4 Jun 2020

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			Dr Alan CHENG	Undergraduate Advisor (for students matriculated in AY2013-14 and AY2015-16)	8732	hcheng@comp.nus.edu.sg
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			Dr RAMCHAND, Anand Mohan	Undergraduate Advisor (for students matriculated in AY2011-2012 and AY2014-15)	2990	anand@comp.nus.edu.sg
			Dr SOO Yuen Jien	Undergraduate Advisor (for students matriculated in AY2014-15 and AY2016-17)	1345	sooyj@comp.nus.edu.sg
			Assoc Prof TAN Sun Teck	Undergraduate Advisor (for students matriculated in AY2011-2012, AY2013-14 and AY2016-17)	2778	tanst@comp.nus.edu.sg
			Dr TAN Gek Woo	Undergraduate Advisor (for students matriculated in AY2012/13 and AY2015-16)	4888	tangw@comp.nus.edu.sg
			Dr WADHWA Bimlesh	Undergraduate Advisor (for students matriculated in AY2012/13 and AY2014-15)	2973	bimlesh@comp.nus.edu.sg
			Assoc Prof Irene WOON	Undergraduate Advisor (for students matriculated in AY2013-	6296	iwoon@comp.nus.edu.sg

(as a 4 Jun 2020

				14 and AY2016-17)		
			Ms TOH Mui Kiat	Senior Associate Director (Undergraduate Studies)	6735	comtohmk@nus.edu.sg
			Ms Agnes ANG	Senior Manager (Graduate Studies)	5242	comanga@nus.edu.sg
			Ms Jane LIM	Senior Manager (Corporate Relations)	4371	comlimls@nus.edu.sg
			Ms Pamela LIM	Senior Manager (Undergraduate Studies)	4370	comlmf@nus.edu.sg
			Mr LOW Mun Bak	Manager (Undergraduate Studies)	5129	comlowmb@nus.edu.sg
			Ms Adele CHIEW	Asst Manager (Student Life)	2728	comcmlla@nus.edu.sg
			Ms CHEUNG Woon Ting	Senior Executive (Graduate Studies)	4426	comcwt@nus.edu.sg
			Update 2 a	3.2.6 Bachelor of Computing in Computational Biology http://www.nus.edu.sg/nusbuletin/school-of-computing/undergraduate-education/degree-requirements/bachelor-of-computing-in-computational-biology/ University Scholars Programme (Computational Biology) Students in the University Scholars Programme (USP) who choose the Bachelor of Computing (Computational Biology) major will take the Computational Biology programme, but with the following variations: 1. They will not be required to read University Level Requirements (20 MCs). These are replaced by 3 USP Inquiry Modules and 2 USP Foundation modules (Quantitative Reasoning Foundation and University Scholars Seminar). They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR		

				<p>are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar).</p> <ol style="list-style-type: none"> 2. They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking. 3. With the special permission from the UROP coordinator and Computational Biology Programme Coordinator, they will read CP3208/CP3209 Undergraduate Research in Computing I/II with a project on computational biology as independent study modules (ISMs), which will be counted as 2 USP Inquiry modules in Sciences and Technologies Basket. 4. They will further complete 3 more USP Inquiry modules (for a total of 8 USP Inquiry modules, including CP3208 and CP3209) and the USP Reflection module (the Senior Seminar). They will have no MCs under the Unrestricted Electives. 	
			Update 2b	<p>Footnote 1 below to be amended as follows:</p> <p>Possible Industry Course includes CP3101A Global Open Source Project and other relevant courses approved by the Department of Computer Science. Students should consult the CS Deputy Head (CS Programmes) in advance if they are interested in this option as industry courses may not be offered every year.</p>	
			Update 3a	<p>3.2.7 Bachelor of Computing in Computer Science</p> <p>http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/degree-requirements/bachelor-of-computing-in-computer-science/</p> <p>University Scholars Programme (Computer Science)</p> <p>Students in the University Scholars Programme who choose the Bachelor of Computing (Computer Science) major will follow the Computer Science programme, but with the following variations:</p>	

				<ol style="list-style-type: none"> 1. They will not be required to read University Level Requirements (20 MCs). These are replaced by the 3 USP Inquiry Modules and 2 USP Foundation modules (Quantitative Reasoning Foundation and University Scholars Seminar). They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar). 2. They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking 3. They will not be required to read two Science Modules (8 MCs). These are replaced by 2 USP Inquiry modules in Sciences and Technologies basket. 4. They will read UROP modules (CP3208 and CP3209) in place of CS3201 and CS3202 or CS3281 and CS3282. CP3208 and CP3209 are independent study modules (ISMs) which will also be counted as 2 USP Inquiry modules in Sciences and Technologies basket.
			Update 3b	<p>Footnote 1 below to be amended as follows:</p> <p>Possible Industry Course includes CP3101A Global Open Source Project and other relevant courses approved by the Department of Computer Science. Students should consult the CS Deputy Head (CS Programmes) in advance if they are interested in this option as industry courses may not be offered every year.</p>
			Update 4	<p>3.2.8 Bachelor of Computing in Computer Science – von Neumann Programme</p> <p>http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/degree-requirements/bachelor-of-computing-in-computer-science-von-neumann-programme/</p> <p>University Scholars Programme (Computer Science)</p>

				<p>Students in the University Scholars Programme who choose the Bachelor of Computing (Computer Science) major will follow the Computer Science programme, but with the following variations:</p> <ol style="list-style-type: none"> 1. They will not be required to read University Level Requirements (20 MCs). These are replaced by the 3 USP Inquiry Modules and 2 USP Foundation modules (Quantitative Reasoning Foundation and University Scholars Seminar). They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar). 2. They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking 3. They will not be required to read two Science Modules (8 MCs). These are replaced by two USP Inquiry modules in Sciences and Technologies basket. 4. They will read CS3281 and CS3282 as independent study modules (ISMs) which will be counted as two USP Inquiry modules in Sciences and Technologies basket.
			Update 5	<p>3.2.9 Bachelor of Computing in Computer Science – Turing Programme</p> <p>http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/degree-requirements/bachelor-of-computing-in-computer-science-turing-programme/</p> <p>University Scholars Programme (Computer Science)</p> <p>Students in the University Scholars Programme who choose the Bachelor of Computing (Computer Science) major will follow the Computer Science programme, but with the following variations:</p> <ol style="list-style-type: none"> 1. They will not be required to read University Level Requirements (20 MCs). These are replaced by the 3 USP Inquiry Modules and 2 USP Foundation modules (Quantitative Reasoning Foundation and University Scholars Seminar). They will read GER1000 Quantitative

				<p>Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar).</p> <ol style="list-style-type: none"> They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking. They will not be required to read two Science Modules (8 MCs). These are replaced by 2 USP Inquiry modules in Sciences and Technologies basket. They will read UROP modules (CP3208 and CP3209) in place of CS3281 and CS3282. CP3208 and CP3209 are independent study modules (ISMs) which will also be counted as 2 USP Inquiry modules in Sciences and Technologies basket. 	
			Update 6a	<p>3.2.10 Bachelor of Computing in Information Security</p> <p>http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/degree-requirements/bachelor-of-computing-in-information-security/</p> <p>University Scholars Programme (Information Security)</p> <p>Students in the University Scholars Programme who choose the Bachelor of Computing (Information Security) major will take the Information Security programme, but with the following variations:</p> <ol style="list-style-type: none"> They will not be required to read University Level Requirements (20 MCs). These are replaced by the 3 USP Inquiry Modules and 2 USP Foundation modules (Quantitative Reasoning Foundation and University Scholars Seminar). They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar). They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking. 	

				<p>3. They will read CS3205 Information Security Capstone Project, which is an 8-MCs independent study modules (ISMs) which will be counted as 2 USP Inquiry modules in Sciences and Technologies Basket.</p> <p>4. They will further complete 3 more USP Inquiry modules (for a total of 8, including CS3205) and the USP Reflection module (the Senior Seminar). They will have 4 MCs under the Unrestricted Electives.</p>
			Update 6b	<p>Footnote 1 below to be amended as follows:</p> <p>Possible Industry Course includes CP3101A Global Open Source Project and other relevant courses approved by the Department of Computer Science. Students should consult the CS Deputy Head (CS Programmes) in advance if they are interested in this option as industry courses may not be offered every year.</p>
			Update 7	<p>3.2.11 Bachelor of Computing in Information Systems</p> <p>http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/degree-requirements/bachelor-of-computing-in-information-systems/</p> <p>University Scholars Programme (Information Systems)</p> <p>Students in the University Scholars Programme who choose the Bachelor of Computing (Information Systems) major will take the IS programme, but with the following variations:</p> <p>1. They will not be required to read University Level Requirements (20 MCs). These are replaced by the 3 USP Inquiry Modules and 2 USP Foundation modules (Quantitative Reasoning Foundation and University Scholars Seminar). They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The</p>

				<p>remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar).</p> <ol style="list-style-type: none"> 2. They will not be required to read IS2101 Business and Technical Communication. It is replaced by USP Foundation module: Writing and Critical Thinking. 3. They will have 8 (instead of 20) MCs under Unrestricted Electives 4. They will read UROP modules (CP3208 and CP3209) in place of the IS team project module (IS3102). CP3208 and CP3209 are independent study modules (ISMs) which will be counted as 2 USP Inquiry modules in Sciences and Technologies Basket. 5. They will be required to take 24 MCs (6 modules) from the Programme Electives. Among these modular credits, at least 12 MCs (3 modules) must be at level-4000. 	
			Update 8	<p>3.2.12 Bachelor of Science in Business Analytics</p> <p>http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/degree-requirements/bachelor-of-science-in-business-analytics/</p> <p>University Scholars Programme (Business Analytics)</p> <p>Students in the University Scholars Programme (USP) who choose the Bachelor of Science (Business Analytics) degree programme will do so with the following variations:</p> <ol style="list-style-type: none"> 1. They will not be required to read IS2101 Business and Technical Communication in the Core modules requirement. It is replaced by USP Foundation module of Writing and Critical Thinking. 2. They will read the UROP module (CP3208) in place of the Business Analytics Capstone Project module (BT3101) in the Core modules requirement. CP3208 is an independent study module (ISM) which will be counted as 1 USP Inquiry module in the Sciences and Technologies domain. 	

			<p>3. They will not be required to read University Level Requirements (20 MCs). These are replaced by the 3 USP Inquiry Modules and 2 USP Foundation modules (Quantitative Reasoning Foundation and University Scholars Seminar). They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar).</p> <p>4. They will not be required to read Unrestricted Electives (20 MCs). These are replaced by the USP Reflection module of Senior Seminar and 4 USP Inquiry modules.</p> <p>5. In summary, the breakdown of 12 USP modules will fit into these MCs requirement categories:</p> <ul style="list-style-type: none"> ○ Core: 1 Foundation module (Writing and Critical Thinking replacing IS2101), 1 Inquiry module (CP3208/USP-ISM replacing BT3101) ○ ULR: 3 Inquiry modules and 2 Foundation modules ○ UE: 1 Reflection module and 4 Inquiry modules
20.	16 Jul 2016	FoS	<p>Change Page: http://www.nus.edu.sg/nusbulletin/faculty-of-science/</p> <p>4 Graduate Education</p> <p>4.1 Research Programmes</p> <p>4.1.1 Degrees Offered</p> <p>4.1.2 Degree Requirements</p> <p>4.1.2.1 Ph.D. Programme in Medicinal Chemistry</p> <p>4.1.2.2 ANU-NUS Joint Ph.D. Programme</p> <p>4.1.3 Financial Assistance and Awards</p> <p>4.2 Coursework Programmes</p> <p>4.2.1 Degrees Offered</p> <p>4.2.2 Degree Requirements</p> <p>4.2.2.1 Master of Science in Applied Physics (Full-Time or Part-Time)</p> <p>4.2.2.2 Master of Science in Chemistry (Full-Time or Part-Time)</p> <p>4.2.2.3 Master of Science in Financial Engineering (Full-Time, Part-Time or Distance Learning)</p>

			<div>4.2.2.4 Master of Science in Mathematics (Full-Time or Part-Time)</div> <div>4.2.2.5 Master of Science in Pharmaceutical Sciences and Technology (Part-Time)</div> <div>4.2.2.6 Master of Science in Physics (Full-Time or Part-Time)</div> <div>4.2.2.7 Master of Science in Quantitative Finance (Full-Time or Part-Time)</div> <div>4.2.2.8 Master of Science in Statistics (Full-Time or Part-Time)</div> <div>4.2.2.9 Joint Masters of Science in Industrial Chemistry (NUS & TUM) (Full-Time)</div> <div>4.2.2.10 Masters of Science in Science Communication (Full-Time or Part-Time)</div> <div>4.2.2.11 Doctor of Pharmacy (PharmD) (Full-Time or Part-Time)</div>						
21	18 Jul 2016	FoE	<div>1. FoE Bulletin MSE Contact submitted some updates to the NUS Bulletin 2016-2017 and the changes are highlighted in red as follows:</div> <div><div>a. NUS Bulletin 2016/17 – Degree Requirements: http://www.nus.edu.sg/nusbulletin/faculty-of-engineering/undergraduate-education/bachelor-of-engineering-degree-programmes/bachelor-of-engineering-materials-science-and-engineering/degree-requirements/</div><div>The following are the requirements for the degree of BEng (Materials Science and Engineering):</div><div><ul style="list-style-type: none">Students in the BEng (Materials Science and Engineering) Programme are required to complete a minimum of 162 MCs with a CAP ≥ 2.0 to graduate from the programme.162 MCs will have to be earned by taking modules in accordance with Table 3.2.9a.A student may obtain a specialisation certificate in Polymeric and Biomedical Materials or Nanostructured Materials/Nanotechnology by reading four modules from the respective group (Table 3.2.9b). The certificate will be issued by the Department.Satisfy all other requirements as prescribed by the Faculty of Engineering or the University.A student must also satisfy other additional requirements that may be prescribed by the Faculty of Engineering or the University.</div><div>Table 3.2.9a: Summary of MSE Module Requirements and Credits</div><table><tr><th>Modular Requirements</th><th>MCs</th></tr><tr><td>University Level Requirements</td><td>20</td></tr><tr><td>General Education Modules (GE) (5 Modules, each of 4MCs)<ul style="list-style-type: none">Human and Cultures (H&C)Quantitative Reasoning (QR)Thinking and Expression (T&E)</td><td>20</td></tr></table></div>	Modular Requirements	MCs	University Level Requirements	20	General Education Modules (GE) (5 Modules, each of 4MCs) <ul style="list-style-type: none">Human and Cultures (H&C)Quantitative Reasoning (QR)Thinking and Expression (T&E)	20
Modular Requirements	MCs								
University Level Requirements	20								
General Education Modules (GE) (5 Modules, each of 4MCs) <ul style="list-style-type: none">Human and Cultures (H&C)Quantitative Reasoning (QR)Thinking and Expression (T&E)	20								

			<ul style="list-style-type: none"> • Singapore Studies (SS) • Asking Questions (AQ) 	
			Unrestricted Electives	20
			Programme Requirements	
			Faculty Requirements:	11
			ES1531 Critical Thinking & Writing ¹	4
			ES2331 Communicating Engineering [#] (UE)	4
			EG2401 Engineering Professionalism	3
			ES1xxx English ²	–
			Foundation Requirements:	24
			MA1506 Mathematics II	4
			PC1432 Physics IIE*	4
			CM1501 Organic Chemistry for Engineers**	4
			CS1010E Programming Methodology	4
			MLE1111 Foundations of Materials Science & Engineering I	4
			MLE1112 Foundations of Materials Science & Engineering II	4
			Materials Science & Engineering Major Requirements	
			MSE Core Modules [#]	27
			MLE2101 Introduction to Structure of Materials	4
			MLE2102 Thermodynamics and Phase Diagrams	3
			MLE2103 Phase Transformation and Kinetics	3
			MLE2104 Mechanical Properties of Materials	4
			MLE2105 Electronic Properties of Materials	3
			MLE2111 Materials Properties Laboratory	3
			MLE3101 Materials Characterization Laboratory	4
			MLE3111 Materials Processing Laboratory	3
			MSE Design and Project Modules	20
			MLE4101 BEng Dissertation (over two semesters)	12

MLE3103	Materials Design and Selection	4
MLE4102	Design Project	4
MSE Electives		28
MLE level 2000/3000 electives		12-16
MLE level 4000 electives		12-16
EG3611	Industrial Attachment ³	12
Total		162

* Bridging Module: Students without A-Level pass in Physics must read PC1221 Fundamentals of Physics I and PC1222 Fundamentals of Physics II as a prerequisite for PC1432.

** Bridging Module: Students without A-level pass in Chemistry must read CM1417 Fundamentals of Chemistry as a prerequisite for CM1501.

The relevant departments reserve the right to decide the modules to be offered in any given semester.

¹ BEng students are required to read a Critical Thinking & Writing module (ES1531 Critical Thinking & Writing) and a Communications module (ES2331 Communicating Engineering). Alternatively, students can read ES1501X Academic Expository Writing in place of both ES1531 and ES2331. USP/UTRP/RVRC students should refer to their respective programmes for USP/UTRP/RVRC modules to be read in place of ES1531 and/or ES2331.

² Students who have not passed or been exempted from the Qualifying English Test at the time of admissions to the Faculty will have to read ES1000 and/or **ES1103**. This will be decided by CELC.

³ For BEng students in the following special programmes: DDPs, CDPs, GEP & CSP, internship / industrial-attachment is optional and the modular credits for the internship/industrial-attachment will be become 'Free Electives' i.e., Unrestricted Electives (UE).

Table 3.2.9b: MSE Elective Modules***

MLE LEVEL 2000/3000 ELECTIVES

MLE2106	Metallic Materials and Processing
MLE2107	Ceramic Materials and Processing
MLE3102	Degradation and Failure of Materials
MLE3104	Polymeric and Composite Materials
MLE3105	Dielectric and Magnetic Materials
MLE3202	Materials for Biointerfaces

MSE LEVEL 4000 ELECTIVES

POLYMERIC AND BIOMEDICAL MATERIALS

(Four modules from this group are required for the specialisation)

MLE4201 Advanced Materials Characterisation
MLE4202 Selected advanced Topics on Polymers
MLE4203 Polymeric Biomedical Materials
ME4253 Biomaterials Engineering
BN3301 Introduction to Biomaterials##
BN4109 Special topics in Bioengineering
BN4301 Principles of Tissue Engineering
CM4266 Current Topics in Materials Chemistry
PC4268 Biophysical Instrumentation and Biomolecular Electronics

NANOSTRUCTURED MATERIALS & NANOTECHNOLOGY

(Four modules from this group are required for the specialisation)

MLE4201 Advanced Materials Characterisation
MLE4204 Synthesis and Growth of Nanostructures
MLE4205 Theory & Modelling of Material Properties
MLE4206 Current topics on Nanomaterials
MLE4208 Photovoltaic Materials
MLE4210 Materials for Energy Storage and Conversion
PC4253 Thin film Technology
CN4223R Microelectronic Thin Films

OTHER ELECTIVE MODULES

MLE4207 Growth Aspects of Semiconductor or **EE4436 Semiconductor Process Technology**
MLE4209 Magnetism and Magnetic Materials
~~EE4411 Silicon Processing Technology~~
~~EE4401 Optoelectronics~~
EE4437 Photonics – Principles and Applications
CN4217R Processing of Microelectronic Materials
CN4203R Polymer Engineering
CN5251 Membrane Science and Technology

ME4283 Micro-fabrication Process
ME4293 Microelectronics Packing

*** Bridging Module: Students without A-level pass in Chemistry must read CM1417 Fundamentals of Chemistry as a prerequisite for CM1121 or CM1501.

Students who wish to do the specialisation in the Polymeric and Biomedical Materials specialisation are recommended to take BN3301 Introduction to Biomaterials.

- b. NUS Bulletin 2016/17 – Graduation Requirements:
<http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/double-degree-programmes/double-degree-in-materials-sciences-and-engineering-and-physics/graduation-requirements/>

Table 1: Summary of Requirements for BEng in MSE and BSc in Physics

Modular Requirements		MCs
University Requirements		20
General Education Modules (GE) (5 Modules, each of 4MCs) <ul style="list-style-type: none">Human Cultures (HC)Quantitative Reasoning (QR)Thinking and Expression (T&E)Singapore Studies (SS)Asking Questions (AQ)		20
ES1103	English for Academic Purposes ^[b]	—
Faculty Requirements (BEng)		11
ES1531	Critical Thinking & Writing ^[a]	4
ES2331	Communicating Engineering	4
EG2401	Engineering Professionalism	3
Faculty Requirements (BSc)		8
MA1101R	Linear Algebra ^[c]	4
CS1010E	Programming Methodology ^[d]	4

			Major Requirements	
			Level-1000 Essential Modules (BEng)	16
			CM1501 Organic Chemistry For Engineers	4
			MA1102R Calculus ^[f]	4
			MLE1111 Foundations of Materials Science & Engineering I	4
			MLE1112 Foundations of Materials Science & Engineering II	4
			Level-1000 Essential Modules (BSc) ^[e]	16
			PC1141 Introduction to Classical Mechanics	4
			PC1142 Introduction to Thermodynamics and Optics	4
			PC1143 Introduction to Electricity & Magnetism	4
			PC1144 Introduction to Modern Physics	4
			Level-2000 Essential Modules (BEng)	20
			MLE2101 Introduction to Structure of Materials	4
			MLE2102 Thermodynamics and Phase Diagrams	3
			MLE2103 Phase Transformation and Kinetics	3
			MLE2104 Mechanical Properties of Materials	4
			MLE2105 Electronic Properties of Materials	3
			MLE2111 Materials Properties Laboratory	3
			Level-2000 Essential Modules (BSc)	24
			PC2130 Quantum Mechanics I	4
			PC2131 Electricity and Magnetism I	4
			PC2132 Classical Mechanics	4
			PC2134 Mathematical Methods in Physics 2	4
			PC2230 Thermodynamics and Statistical Mechanics	4
			PC2193 Experimental Physics I	4
			Level-3000 Essential Modules (BEng)	11
			MLE3101 Materials Characterization Laboratory	4
			MLE3111 Materials Processing Laboratory	3
			MLE3103 Materials Design and Selection	4
			Level-3000 Essential Modules (BSc)	8

				PC3130	Quantum Mechanics II	4
				PC3193	Experimental Physics II	4
				Level-2000/3000 Elective Modules (BEng) ^[9]		12-16
				MLE2106	Metallic Materials and Processing	
				MLE2107	Ceramic Materials and Processing	
				MLE3102	Degradation and Failure of Materials	
				MLE3104	Polymeric and Composite Materials	
				MLE3105	Dielectric and Magnetic Materials	
				MLE3202	Materials for Biointerfaces	
				Level-3000 Elective Modules (BSc)		8
				Choose any <u>TWO</u> modules from the following:		
				(All modules are worth 4 MCs unless otherwise stated)		
				PC3231	Electricity and Magnetism II	
				PC3232	Nuclear and Particle Physics	
				PC3233	Atomic and Molecular Physics I	
				PC3235	Solid State Physics I	
				PC3236	Computational Methods in Physics	
				PC3238	Fluid Dynamics	
				PC3241	Solid State Devices	
				PC3242	Physics of Semiconductor Processing	

				PC3243 Photonics PC3246 Astrophysics I PC3247 Modern Optics PC3251 Nanophysics PC3267 Biophysics II PC3274 Mathematical Methods in Physics II PC3239 Special Problems in Undergraduate Physics II PC3288 UROPS in Physics I PC3289 Advanced UROPS in Physics II		
				Level-4000 Essential Modules (BEng)	16	
				MLE4101 BEng Dissertation (over two semesters)	12	
				MLE4102 Design Project	4	
				Level-4000 Elective Modules (BEng) ^[h]	12-16	
				<p>Complete at least 12-16 MCs (of which at least two modules must be MLE4xxx) from the following group of electives:</p> <p>(All modules are worth 4 MCs unless otherwise stated)</p> <p><u>Polymeric and Biomedical Materials</u></p> <p>(four modules from this group are required for the specialisation, together with BEng specialised Dissertation)</p> <p>MLE4201 Advanced Materials Characterisation</p>		

				<p>MLE4202 Selected advanced Topics on Polymers</p> <p>MLE4203 Polymeric Biomedical Materials</p> <p>ME4253 Biomaterials Engineering</p> <p>BN3301 Introduction to Biomaterials</p> <p>BN4109 Special topics in Bioengineering</p> <p>BN4301 Principles of Tissue Engineering</p> <p>CM4266 Current Topics in Materials Chemistry</p> <p>PC4268 Biophysical Instrumentation and Biomolecular Electronics</p> <p><u>Nanostructured Materials & Nanotechnology</u></p> <p>(four modules from this group are required for the specialisation, together with BEng specialised Dissertation)</p> <p>MLE4201 Advanced Materials Characterisation</p> <p>MLE4204 Synthesis and Growth of Nanostructures</p> <p>MLE4205 Theory & Modelling of Material Properties</p> <p>MLE4206 Current topics on Nanomaterials</p> <p>MLE4208 Photovoltaic Materials</p> <p>MLE4210 Materials for Energy Storage and Conversion</p> <p>PC4253 Thin film Technology</p>		
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CN4223R	Microelectronic Thin Films (3 MCs)	
<u>Other Elective Modules</u>		
MLE4207	Growth Aspects of Semiconductors or EE4436 Semiconductor Process Technology	
MLE4209	Magnetism and Magnetic Materials	
EE4411	Silicon Processing Technology	
EE4401	Optoelectronics	
EE4437	Photonics – Principles and Applications	
CN4217R	Processing of Microelectronic Materials (3 MCs)	
CN4203R	Polymer Engineering	
CN5251	Membrane Science and Technology	
ME4283	Micro-fabrication Process	
ME4293	Microelectronics Packaging	
Total		186

Table 2: Summary of Requirements for BEng in MSE and BSc (Hons) in Physics

Modular Requirements	MCs
University Requirements	20
General Education Modules (GE) (5 Modules, each of 4MCs)	20
<ul style="list-style-type: none"> Human Cultures (HC) Quantitative Reasoning (QR) 	

			<ul style="list-style-type: none"> Thinking and Expression (T&E) Singapore Studies (SS) Asking Questions (AQ) 		
			ES1103 English for Academic Purposes ^[b]	–	
			Faculty Requirements (BEng)	11	
			ES1531 Critical Thinking & Writing ^[a]	4	
			ES2331 Communicating Engineering	4	
			EG2401 Engineering Professionalism	3	
			Faculty Requirements (BSc)	12	
			CM1121 Basic Organic Chemistry OR CM1501 Organic Chemistry For Engineers ^[c]	4	
			MA1101R Linear Algebra I	4	
			CS1010E Programming Methodology ^[d]	4	
			Major Requirements		
			Level-1000 Essential Modules (BEng)	12	
			MA1102R Calculus ^[f]	4	
			MLE1111 Foundations of Materials Science & Engineering I	4	
			MLE1112 Foundations of Materials Science & Engineering II	4	
			Level-1000 Essential Modules (BSc) ^[e]	16	
			PC1141 Introduction to Classical Mechanics	4	
			PC1142 Introduction to Thermodynamics and Optics	4	
			PC1143 Introduction to Electricity & Magnetism	4	
			PC1144 Introduction to Modern Physics	4	
			Level-2000 Essential Modules (BEng)	20	
			MLE2101 Introduction to Structure of Materials	4	
			MLE2102 Thermodynamics and Phase Diagrams	3	
			MLE2103 Phase Transformation and Kinetics	3	
			MLE2104 Mechanical Properties of Materials	4	
			MLE2105 Electronic Properties of Materials	3	

			MLE2111	Materials Properties Laboratory	3
			Level-2000 Essential Modules (BSc)		24
			PC2130	Quantum Mechanics I	4
			PC2131	Electricity and Magnetism I	4
			PC2132	Classical Mechanics	4
			PC2134	Mathematical Methods in Physics 2	4
			PC2230	Thermodynamics and Statistical Mechanics	4
			PC2193	Experimental Physics I	4
			Level-3000 Essential Modules (BEng)		11
			MLE3103	Materials Design and Selection	4
			MLE3101	Materials Characterization Laboratory	4
			MLE3111	Materials Processing Laboratory	3
			Level-3000 Essential Modules (BSc)		8
			PC3130	Quantum Mechanics II	4
			PC3193	Experimental Physics II	4
			Level-2000/3000 Elective Modules (BEng) ^[h]		12-16
			MLE2106	Metallic Materials and Processing	
			MLE2107	Ceramic Materials and Processing	
			MLE3102	Degradation and Failure of Materials	
			MLE3104	Polymeric and Composite Materials	
			MLE3105	Dielectric and Magnetic Materials	
			MLE3202	Materials for Biointerfaces	
			Level-3000 Elective Modules (BSc)		8
			Choose any TWO modules from the following:		.

				<p>(All modules are worth 4 MCs unless otherwise stated)</p> <p>PC3231 Electricity and Magnetism II</p> <p>PC3232 Nuclear and Particle Physics</p> <p>PC3233 Atomic and Molecular Physics I</p> <p>PC3235 Solid State Physics I</p> <p>PC3236 Computational Methods in Physics</p> <p>PC3238 Fluid Dynamics</p> <p>PC3241 Solid State Devices</p> <p>PC3242 Physics of Semiconductor Processing</p> <p>PC3243 Photonics</p> <p>PC3246 Astrophysics I</p> <p>PC3247 Modern Optics</p> <p>PC3251 Nanophysics</p> <p>PC3267 Biophysics II</p> <p>PC3274 Mathematical Methods in Physics II</p> <p>PC3239 Special Problems in Undergraduate Physics II</p> <p>PC3288 UOPS in Physics I</p> <p>PC3289 Advanced UOPS in Physics II</p>		
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			Level-4000 Essential Modules (BEng)	20	
			MLE4102 Design Project	4	
			Level-4000 Essential (BSc)		
			None		
			Level-4000 Essential (Dissertation)		
			MLE4101R Integrated BEng/BSc (Hons) Dissertation (over two semesters) OR PC4199R Integrated BEng/BSc (Hons) Dissertation (over two semesters)	16	
			Level-4000 Elective Modules (BEng) ^[i]	12-16	
			Complete at least 12-16 MCs (of which at least two modules must be MLE4xxx) from the following group of electives: (All modules are worth 4 MCs unless otherwise stated) <u>Polymeric and Biomedical Materials</u> (four modules from this group are required for the specialisation, together with BEng specialised Dissertation)		
			MLE4201 Advanced Materials Characterisation		
			MLE4202 Selected advanced Topics on Polymers		
			MLE4203 Polymeric Biomedical Materials		
			ME4253 Biomaterials Engineering		
			BN3301 Introduction to Biomaterials		
			BN4109 Special topics in Bioengineering		
			BN4301 Principles of Tissue Engineering		
			CM4266 Current Topics in Materials Chemistry		
			PC4268 Biophysical Instrumentation and Biomolecular Electronics		
			<u>Nanostructured Materials & Nanotechnology</u>		

			<p>(four modules from this group are required for the specialisation, together with BEng specialised Dissertation)</p> <p>MLE4201 Advanced Materials Characterisation</p> <p>MLE4204 Synthesis and Growth of Nanostructures</p> <p>MLE4205 Theory & Modelling of Material Properties</p> <p>MLE4206 Current topics on Nanomaterials</p> <p>MLE4208 Photovoltaic Materials</p> <p>MLE4210 Materials for Energy Storage and Conversion</p> <p>PC4253 Thin film Technology</p> <p>CN4223R Microelectronic Thin Films (3 MCs)</p>		
			<p><u>Other Elective Modules</u></p> <p>MLE4207 Growth Aspects of Semiconductors or EE4436 Semiconductor Process Technology</p> <p>MLE4209 Magnetism and Magnetic Materials</p> <p>EE4411 Silicon Processing Technology</p> <p>EE4401 Optoelectronics</p> <p>EE4437 Photonics – Principles and Applications</p> <p>CN4217R Processing of Microelectronic Materials (3 MCs)</p> <p>CN4203R Polymer Engineering</p>		

				CN5251	Membrane Science and Technology		
				ME4283	Micro-fabrication Process		
				ME4293	Microelectronics Packaging		
				Level-4000 Elective Modules (BSc)			20
				Choose any <u>FIVE</u> modules from the following (All modules are worth 4 MCs unless otherwise stated)			
				PC4130	Quantum Mechanics III		
				PC4232	Cosmology		
				PC4240	Solid State Physics II		
				PC4241	Statistical Mechanics		
				PC4242	Electrodynamics		
				PC4243	Atomic and Molecular Physics II		
				PC4245	Particle Physics		
				PC4246	Quantum Optics		
				PC4248	General Relativity		
				PC4249	Astrophysics II		
				PC4253	Thin Film Technology		
				PC4259	Surface Physics		
				PC4262	Remote Sensing		
				PC4267	Biophysics III		
				PC4268	Biophysical Instrumentation and Biomolecular Electronics		
				PC4274	Mathematical Methods in Physics III		
				EE4401	Optoelectronics		
				EE4413	Low-dimensional Electronic Devices		
				MLE4201	Advanced Materials Characterisation[g]		
				MLE4204	Synthesis and Growth of Nanostructures[g]		
				MLE4205	Theory and Modelling of Materials Properties[g]		
				Any approved module offered by other Departments			
				Total			210

			<p>2. FoE Bulletin NOC Contact submitted some updates to the NUS Bulletin 2016-2017 and the changes are highlighted in red as follows:</p> <p>a. NUS Bulletin 2016/17 – NUS Overseas Colleges (Beijing, Israel, Lausanne, Munich, New York, Shanghai, Silicon Valley, Singapore, and Stockholm): http://www.nus.edu.sg/nusbulletin/faculty-of-engineering/undergraduate-education/special-programmes/nus-overseas-colleges-in-silicon-valley-and-bio-valley-usa-shanghai-china-stockholm-europe-and-bangalore-india/ (to update URL according to the new page title)</p> <p>The NUS Overseas Colleges (NOC) programme provides students with the opportunity to work with innovative start-ups or high-growth companies and study at renowned partner universities at one of nine entrepreneurial hotspots across the globe. Students can choose to join the full-year programme or short programme. Under the full-year programme, students will join a company in either Silicon Valley (California), New York, Beijing, Shanghai, or Stockholm for a year. Under the short programme, students will participate in the company for either 6 or 7 months at either Israel, Beijing, Munich, Lausanne or Singapore.</p> <p>During the internship, students will also get to attend courses at partner universities, namely Stanford University, NYU Polytechnic School of Engineering, Fudan University, Tsinghua University, Tel Aviv University, and Royal Institute of Technology (KTH), Technical University of Munich, and Ecole Polytechnique Federale de Lausanne. Course credits will count towards the students' NUS degree academic requirements. At the end of the programme, students will return to NUS to complete their degree.</p> <p>The programme aims to cultivate and nurture students into enterprising, resourceful and independent self-starters, and eventually to blossom into successful entrepreneurs. Through this unique experience, students get the opportunity to immerse in the innovative and fast-paced start-up culture, acquire entrepreneurial skills, and establish business and personal networks.</p> <p>For more information about NOC programme, please visit overseas.nus.edu.sg.</p> <p>3. FoE Bulletin Faculty Contact submitted some updates to the NUS Bulletin 2016-2017 and the changes are highlighted in red as follows:</p> <p>a. NUS Bulletin 2016/17 – Common Engineering: http://www.nus.edu.sg/nusbulletin/faculty-of-engineering/undergraduate-education/bachelor-of-engineering-programme/common-engineering/ * Students who have taken EG1111 & EG1112 will be able to map into EG1108</p> <p>Students who have decided not to enter Mechanical Engineering and Electrical Engineering programmes will be allowed to opt out of EG1111 & EG1112, and to take other engineering modules listed in above Table 3.1.4 to satisfy the entry requirement of other engineering programmes.</p> <p>For students who have not decided on which engineering programmes to enter, it is advisable to take EG1111 & EG1112 to keep their options open. EG1108 will also be last offered in Semester 1 of Academic Year 2016/17.</p>
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22.	19 Jul 2106	FoS	<p>Section S Other Multidisciplinary/Special Programmes</p> <p>http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/joint-degree-programmes-concurrent-degree-programmes-double-degree-programmes-with-overseas-universities/concurrent-programme-in-bachelor-of-science-with-honours-b-sc-hons-in-life-sciences-of-national-university-of-singapore-and-master-of-research-m-res-in-molecular-biophysics-of-kings-college/relevant-website/</p> <p>8.14.4 Relevant website</p> <p>For more information, please visit http://www.lifesciences.nus.edu.sg/cdpkelbiophysics.html http://www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/cdp-kcl:</p>
23.	20 Jul 2016	RO	<p>Amendments are highlighted in red in the para below:</p> <p>http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-major-programmes.html</p> <p>Double Major Programmes A Double Major is a single degree programme, in which a student satisfies the requirements of two Majors. It is conceived as an opportunity for students to broaden their knowledge and capacities by pursuing a second Major alongside their primary Major. The Second Major affords a significant degree of depth, although its MC requirement is set below that of the Major. The Second Major is a non-Honours major. It may be taken in the same faculty that offers the Major or from a different Faculty. A Second Major consist of at least 48 MCs. For students admitted prior to AY2014/15:</p> <ul style="list-style-type: none"> • up to 8 MCs can be counted also towards the Faculty/Major/Minor requirements; and • at least 16 MCs must be at Level 3000. <p>For students admitted from AY2014/15 onwards:</p> <ul style="list-style-type: none"> • up to 16 MCs can be counted also towards the Faculty/Major/Minor requirements (subject to department's approval); and

		<ul style="list-style-type: none"> • at least 16 MCs must be at Level 3000. <p>.....etc.</p> <p>FAQs for DDP, CDP and DM http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/faqs-for-ddp-cdp-and-dm.html#ddp02 Please see amendments highlighted in red below under FAQ#12:</p> <p>12. What tuition fees will be charged to students doing DDPs? Is there any difference in the tuition fee structure compared with the single degree programmes? AY2006/07 cohort and before: For the AY2006/07 cohort, students in a DDP will pay the prevailing tuition fee of the Faculty/School offering the home course (see Question 7 of FAQs) for all five years of study. The prevailing tuition fee refers to the subsidised fee amount after taking into consideration the Tuition Grant provided by the Ministry of Education. For more information on fees, please click here. AY2007/08 cohort: For the AY2007/08 cohort, students in a DDP will pay the prevailing tuition fee of the Faculty/School offering the home course (see Question 7 of FAQs) for the first four years of study. The prevailing tuition fee refers to the subsidised fee amount after taking into consideration the Tuition Grant provided by the Ministry of Education. For more information on fees, please click here. For the fifth year of study, in view of limited or no Tuition Grant from the Ministry of Education, the home course fees payable are pegged as follows:</p> <ul style="list-style-type: none"> ▶ DDPs where one of the degrees is in Engineering or Computing (except for any DDPs involving Law) : two times the prevailing fee ▶ All other DDPs (including all DDPs involving Law) : four times the prevailing fee <p>However, in view of the financial implications for students, NUS will offer scholarships to all DDP students (no application needed) to help offset part of the tuition fee payable in the fifth year. In other words,</p> <ul style="list-style-type: none"> ▶ For DDPs where one of the degrees is in Engineering or Computing, students will only need to pay the prevailing tuition fee of the Faculty/School offering the home course (except for any DDPs involving Law); ▶ For all other DDPs, students will pay two times the prevailing tuition fee of the Faculty/School offering the home course (including all DDPs involving Law). <p>AY2008/09 cohort and AY2009/10 cohorts:</p>
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			<p>For DDPs where one of the degrees is in Engineering or Computing, students will only need to pay the prevailing tuition fee of the Faculty/School offering the home course (except for any DDPs involving Law); For all other DDPs, students will pay two times the prevailing tuition fee of the Faculty/School offering the home course (including all DDPs involving Law).</p> <p>AY2016/17 cohort and after:</p> <p>For the AY2016/17 cohort and after, students in a DDP will pay the tuition fees described above for AY2010/11 cohort to AY2015/16 cohort within the normal candidature (to link to http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/continuation-and-graduation-requirements.html#ResidencyRequirement) period.</p> <p>The fees payable beyond normal candidature for students in a DDP is described here. (to link to http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/fees.html#TuitionFeebeyondNormalCandidature)</p>
24.	20 Jul 2016	RO	<p>Amendments are highlighted in red below:</p> <p>Update 1: Double Degree Programme Framework and Guidelines http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-degree-programmes/double-degree-programme-framework-and-guidelines.html</p> <p>11. Residency Requirement</p> <p>The residency requirement is 50% of the minimum required MCs for the double degree programme that is, 100 MCs for a Double Honours degree (two honours/4-year degrees) and 90 MCs for an Honours and a Bachelor's degree (one honours/4-year + one 3-year degree).</p> <p>For students admitted prior to AY2014/15, MCs which count towards residency must come from graded modules that are factored into a student's CAP. Credits earned from modules taken on S/U basis cannot be used to count towards the residency requirements.</p> <p>For students admitted from AY2014/15 onwards, the MCs used to count towards the residency requirement must be from modules read in NUS. Modules read at NUS include all modules taught, co-taught, supervised or co-supervised by one or more NUS faculty members. These MCs must be earned from graded modules with assigned grade points or modules with an 'S' or 'CS' grade.</p>

			<p>12. Normal Candidature</p> <p>The normal candidature in which double degrees students are expected to complete their programme of study is defined <u>here</u>. (to link to http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/continuation-and-graduation-requirements.html#ResidencyRequirement)</p> <p>123. Maximum Period of Candidature</p> <p>The maximum period of candidature for the double degrees is six years. The two degree programmes must be undertaken and completed within a single continuous candidature period (save for the usual provisions for leave of absence).</p> <p>134. Awards</p> <p>The student will be eligible for award of medals and prizes for both degrees.</p> <p>145. Dean's List</p> <p>The student will be eligible for inclusion on the Dean's List for both degrees.</p> <p>156. Nomenclature for Double Degrees</p> <p>Double degrees will be expressed as two separate degrees, for eg., B.Eng.(Elect.) and BBA Honours. For student-initiated double degrees, the degree the student was originally enrolled in will be mentioned first.</p> <p>167. Conferment of Degree</p> <p>Two separate degrees will be conferred with the same conferment date and two degree scrolls issued, one for each degree.</p>
25.	27 Jul 2016	SCALE	<p>Amendments are as shown in red texts below:</p> <p>1. At http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-electronics-engineering/ as shown in red texts as follows:</p>

Degree Requirements

Candidates must satisfy the following requirements to be conferred the degree of BTech (**Chemical Electronics** Engineering):

(as a 4 Jun 2020

			<p>2. At http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-industrial-management-engineering/</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><i>Degree Requirements</i></p> <p>Candidates must satisfy the following requirements to be conferred the degree of BTech (Chemical Industrial & Management Engineering):</p> </div> <p>3. At http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-mechanical-engineering/</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p><i>Degree Requirements</i></p> <p>Candidates must satisfy the following requirements to be conferred the degree of BTech (Chemical Mechanical Engineering):</p> </div>
26.	11 Aug 2016	FoS	<p><u>Background:</u> BUS, UCEP and Senate has approved the changes to the requirements for the Statistics Major and the offer of a new specialisation in Data Science with removal of the existing Biostatistics specialisation (refer to Senate Circular 11 of AY15/16), w.e.f Cohort 2016. Updates are needed for the 2016 Bulletin.</p> <p><i>Amendments to make</i> (in yellow highlight):</p> <p><u>2016 Bulletin</u></p>

			<p>3.3.3.9 Statistics</p> <p>Statistics is the scientific application of mathematical principles to the collection, analysis, and presentation of numerical data. How does a business determine if an available site for a new restaurant is a potentially successful location? How does the health authority assess statistical evidence for the effectiveness of a new vaccine? How does an insurance company determine the risk level of a new proposal?</p> <p>Statisticians contribute to scientific inquiry by applying their mathematical and statistical knowledge to the design of surveys and experiments; the collection, processing, and analysis of data; and the interpretation of the results. Statisticians may apply their knowledge of statistical methods to a variety of subject areas, such as biology, business, economics, education, engineering, finance, marketing, medicine, psychology, public health, and sports. In particular, biostatistics is a specialization of statistics for quantitative research in the health sciences. The designs and analytic methods of biostatistics enable health scientists and professionals in academia, government, pharmaceutical companies, medical research organizations and elsewhere to efficiently acquire knowledge and draw valid conclusions from their ever-expanding sources of information.</p> <p>Statistics is the scientific application of mathematical principles to the collection, analysis, and presentation of numerical data. How does a business determine if an available site for a new restaurant is a potentially successful location? How does the health authority assess statistical evidence for the effectiveness of a new vaccine? How does an insurance company determine the risk level of a new proposal?</p> <p>Statisticians contribute to scientific inquiry by applying their mathematical and statistical knowledge to the design of surveys and experiments; the collection, processing, and analysis of data; and the interpretation of the results. Statisticians may apply their knowledge of statistical methods to a variety of subject areas, such as biology, business, economics, education, engineering, finance, marketing, medicine, psychology, public health, and sports. In particular, data science is an interdisciplinary field, driven by statistical ideas, for obtaining insights from data in various forms. It is often, but not always, concerned with methodology for big data problems, those which are at the forefront of the challenges of modern science.</p> <p>Programme Structure and Curriculum Rationale</p> <p>Statistics is an interdisciplinary subject by nature. In the development of Statistics, Mathematics and Computer Science respectively provide the theoretical foundation and the computational tools while real-world problems stimulate and guide further research. These considerations are reflected in the Department's curriculum. In addition to Statistics modules, Statistics students are encouraged to read modules in Mathematics and Computer Science.</p> <p>The core statistical education consists of probability and stochastic processes, statistical principles, computer-aided data analysis, regression analysis, and categorical data analysis. Honours students majoring in Statistics have the option to specialise in Biostatistics or in Finance and Business Statistics. The department has particular strengths in survival analysis, epidemiology, clinical trials and longitudinal data analysis for Biostatistics, and in time series analysis, statistical methods for actuarial science and finance, and data mining for Finance and Business Statistics.</p>
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		<p>Statistics is an interdisciplinary subject by nature. In the development of Statistics, Mathematics and Computer Science respectively provide the theoretical foundation and the computational tools while real-world problems stimulate and guide further research. These considerations are reflected in the curriculum. In addition to Statistics modules, Statistics students are encouraged to read modules in Mathematics and Computer Science.</p> <p>The core statistical education consists of probability and stochastic processes, statistical principles, computer-aided data analysis, and regression analysis. Honours students majoring in Statistics have the option to specialise in Data Science or in Finance and Business Statistics. The department has particular strengths in computational statistics, high-dimensional statistical analysis and statistical learning for data science, and in time series analysis, statistical methods for actuarial science and finance, and stochastic processes for Finance and Business Statistics.</p> <p>Career Prospects</p> <p>The world is becoming increasingly quantitative and data-focused. Many professions, organisations and businesses depend on numerical measurements to make decisions in the face of uncertainty. The Chief Economist of Google has pointed out that “statistician is the dream job of the next decade.” Statistics graduates may look forward to being employed as statisticians in government, medical and pharmaceutical industry, manufacturing and engineering companies, banking and financial institutions, research and tertiary institutions.</p> <p>Further, there are many jobs that do not bear the word “statistician” but will rely much on the knowledge and training that a student can acquire from studying Statistics at NUS. Some of these are business analyst, quality assurance engineer, pharmaceutical engineer, marketing professional, financial analyst, banking executive, telecommunication executive, actuary, data analyst, and risk analyst.</p> <p>The world is becoming increasingly quantitative and data-focused. Many professions, organisations and businesses depend on numerical measurements to make decisions in the face of uncertainty. Statistics graduates may look forward to being employed as statisticians in government, medical and pharmaceutical industry, manufacturing and engineering companies, banking and financial institutions, research and tertiary institutions.</p> <p>Further, there are many jobs that do not bear the word “statistician” but will rely much on the knowledge and training that a student can acquire from studying Statistics at NUS. Some of these are business analyst, quality assurance engineer, pharmaceutical engineer, marketing professional, financial analyst, banking executive, telecommunication executive, actuary, data analyst, and risk analyst.</p> <p>Graduation Requirements (Statistics)</p> <p>To be awarded a B.Sc. or B.Sc. (Hons.) with a primary major in Statistics, candidates must satisfy the following:</p>
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			Module Level	Major Requirements	Cumulative Major MCs
			Level-1000 (16 MCs)	Pass ST1131 Introduction to Statistics <u>or</u> ST1232 Statistics for Life Sciences MA1101R Linear Algebra I MA1102R Calculus CS1010 Programming Methodology <u>or</u> CS1010E Programming Methodology <u>or</u> CS1010S Programming Methodology <u>or</u> CS1010FC Programming Methodology <u>or</u> CS1010FX Programming Methodology	16
			Level-2000 (16-17 MCs)	Pass ST2131/ MA2216 Probability ST2132 Mathematical Statistics ST2137 Computer Aided Data Analysis MA2311 Techniques in Advanced Calculus <u>or</u> MA2108 Mathematical Analysis I <u>or</u> MA2108S Mathematical Analysis I (S)	32-33
			Level-3000 (28 MCs)	Pass ST3131 Regression Analysis ST3236 Stochastic Processes I - Three other modules from ST32xx or ST4xxx modules - Two additional modules from ST32xx or ST4xxx modules or List A or List B modules	60-61

			<div> <div> Level-4000 (36 MCs) (32 MCs) </div> <div> Pass ST4199 Honours Project in Statistics ST4231 Computer Intensive Statistical Methods ST4233 Linear Models - Two other modules from ST4xxx modules - Two One additional modules from ST4xxx, ST5xxx or List B modules </div> <div> 96-97 92-93 </div> </div> <div> <u>List A</u> MA3209 Mathematical Analysis III MA3218 Applied Algebra MA3227 Numerical Analysis II MA3229 Introduction to Geometric Modelling MA3233 Combinatorics and Graphs II MA3236 Nonlinear Programming MA3252 Linear and Network Optimisation MA3256 Applied Cryptography MA3259 Mathematical Methods in Genomics MA3269 Mathematical Finance I QF3101 Investment instruments: Theory and Computation CS3230 Design and Analysis of Algorithm CS3223 Database Management Systems CS3243 Introduction to Artificial Intelligence CS3244 Machine Learning and Neural Networks EC3304 Econometrics II <u>List B</u> MA4211 Functional Analysis MA4229 Approximation Theory MA4230 Matrix Computation MA4233 Dynamical Systems MA4254 Discrete Optimisation MA4269 Mathematical Finance II MA4260 Stochastic Operations Research MA4261 Coding and Cryptography MA4262 Measure and Integration MA4269 Mathematical Finance II CS4231 Parallel and Distributed Algorithm CS4220 Knowledge Discovery Methods in Bioinformatics </div>	
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		<p> DSA4211 High-Dimensional Statistical Analysis DSA4212 Optimisation for Large-Scale Data-Driven Inference EC4303 Econometrics III </p> <p>Honours students majoring in Statistics have the option to qualify for specialisation in</p> <p> (A) Biostatistics Data Science or (B) Finance and Business Statistics. </p> <p> (A) To be awarded a specialisation in Biostatistics, a candidate must pass at least six modules (24 MCs) from the following, as part of the major requirements for B.Sc. (Hons.) with a primary major in Statistics: </p> <p> ST3232—Design and Analysis of Experiments ST3242—Introduction to Survival Analysis ST3243—Statistical Methods in Epidemiology ST3244—Demographic Methods ST3245—Statistics in Molecular Biology MA3259—Mathematical Methods in Genomics ST4232—Nonparametric Statistics ST4241—Design and Analysis of Clinical Trials ST4242—Analysis of Longitudinal Data ST4243—Statistical Methods for DNA Microarray Analysis </p> <p> (A) To be awarded a specialisation in Data Science, a candidate must pass at least six modules (24 MCs) from the following two lists, with at least two modules (8 MCs) from list DS 1, as part of the major requirements for B.Sc. (Hons.) with a primary major in Statistics: </p> <p><u>DS 1</u></p> <p> ST3240 Multivariate Statistical Analysis CS3244 Machine Learning* ST4240 Data Mining </p> <p><u>DS 2</u></p> <p> ST3247 Simulation CS3210 Parallel Computing* MA3252 Linear and Network Optimisation ST4234 Bayesian Statistics CS4231 Parallel and Distributed Algorithms* DSA4211 High-Dimensional Statistical Analysis DSA4212 Optimisation for Large-Scale Data-Driven Inference </p>
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MA4268 Mathematics for Visual Data Processing*

*Modules with hidden pre-requisites (indicated in brackets): CS3210 (CS2100 Computer Organisation), CS3244 (CS2010 Data Structures and Algorithms II), CS4231 (CS3230 Design and Analysis of Algorithms or CS3210 Parallel Computing), MA4268 (MA2213 Numerical Analysis I). For students who wish to read these modules for the Data Science specialisation, the Faculty/Department will provide them with academic advice on their study plans (where necessary) as such students would have to read 'additional' pre-requisite modules.

(B) To be awarded a specialisation in Finance and Business Statistics, a candidate must pass at least six modules (24 MCs) from the following two lists, with at least two modules (8 MCs) from each of the lists (FBS 1, FBS 2), as part of the major requirements for B.Sc. (Hons.) with a primary major in Statistics:

FBS 1

ST3233 Applied Times Series Analysis
ST3234 Actuarial Statistics
ST3246 Statistical Models for Actuarial Science
MA3269 Mathematical Finance I
ST4245 Statistical Methods for Finance
MA4269 Mathematical Finance II

FBS 2

ST3232 Design and Analysis of Experiments
ST3239 Survey Methodology
~~ST3240 Multivariate Statistical Analysis~~
ST3242 Introduction to Survival Analysis
ST3244 Demographic Methods
ST4238 Stochastic Processes II
~~ST4240 Data Mining~~

Summary of Requirements	B.Sc.	B.Sc. (Hons.)
University Requirements	20 MCs	20 MCs
Faculty Requirements	8 MCs*	8 MCs*

			<table><tr><td>Major Requirements</td><td>60 -61 MCs</td><td>96 – 97 MCs 92 – 93 MCs</td></tr><tr><td>Unrestricted Elective Modules</td><td>31-32 MCs</td><td>35 – 36 MCs 39 – 40 MCs</td></tr><tr><td>Total</td><td>120 MCs</td><td>160 MCs</td></tr></table> <p>* Faculty requirements of 12 MCs and 16 MCs [required for the B.Sc. and B.Sc. (Hons.) programmes respectively] are partially fulfilled through the reading of CS/IT/CZ/MA modules within the major. Students undertaking the B.Sc. and B.Sc. (Hons.) programmes are required to fulfil the remaining 8 MCs of Faculty requirements from <u>any two</u> (2) of the following subject groups: Chemical Sciences, Life Sciences, Physical Sciences and Multidisciplinary & Interdisciplinary Sciences; but <u>not</u> from the following groups: Computing Sciences and Mathematical & Statistical Sciences.</p>	Major Requirements	60 -61 MCs	96 – 97 MCs 92 – 93 MCs	Unrestricted Elective Modules	31-32 MCs	35 – 36 MCs 39 – 40 MCs	Total	120 MCs	160 MCs
Major Requirements	60 -61 MCs	96 – 97 MCs 92 – 93 MCs										
Unrestricted Elective Modules	31-32 MCs	35 – 36 MCs 39 – 40 MCs										
Total	120 MCs	160 MCs										
27.	11 Aug 2016	FoS	<p><u>Background:</u> BUS has approved the changes to Pharmacy curriculum, which is to increase the MCs for the internship modules from 8 to 12 MCs (reference to BUS Circular 28 of AY15/16), which applies to cohort 2015 and after. Updates are needed for the Pharmacy curriculum for 2015 and 2016 Bulletin. <u>Updates to make</u> (in yellow highlight):</p> <p><u>2016 Bulletin</u> Under 3.3.4-> Bachelor of Science (Pharmacy)- http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-science-pharmacybachelor-of-science-pharmacy-hons-b-sc-pharm-b-sc-pharm-hons/</p> <p>Graduation Requirements</p> <p>To be awarded a B.Sc. (Pharm.) or B.Sc. (Pharm.) (Hons.), candidates must satisfy the following:</p> <table><tr><th>Module Level</th><th>Major Requirements</th><th>Cumulative Major MCs</th></tr><tr><td>Faculty</td><td>Pass</td><td>16</td></tr></table>	Module Level	Major Requirements	Cumulative Major MCs	Faculty	Pass	16			
Module Level	Major Requirements	Cumulative Major MCs										
Faculty	Pass	16										

			Requirement (16 MCs)	AY1130 Human Physiology & Anatomy I PA1113 Basic Pharmacology PY1131 Human Physiology & Anatomy II PX2108 Basic Human Pathology	
			Level-1000 (20 MCs)	Pass PR1110 Foundations for Medicinal Chemistry PR1111 Pharm Biochemistry PR1120 Microbiology for Pharmacy PR1140 Pharmacy Professional Skills Development I PR1142 Pharm Statistics	36
			Level-2000 (30 MCs)	Pass PR2114 Formulation & Technology I PR2115 Medicinal Chemistry for Drug Design PR2122 Biotechnology for Pharmacy PR2131 Pharmacy Professional Skills Development II PR2133 Pharmacotherapeutics I PR2134 Self Care I PR2135 Pharmacotherapeutics II PR2143 Pharmaceutical Analysis for Quality Assurance	66
			Level-3000 (40 MCs)	Pass PR3123 Formulation & Technology II	106

				<div>PR3116 Concepts in Pharmacokinetics and Biopharmaceutics</div> <div>PR3122 Self Care II</div> <div>PR3124 Pharmacotherapeutics III</div> <div>PR3117 Formulation & Technology III</div> <div>PR3136 Pharmacotherapeutics IV</div> <div>PR3137 Pharmacy Professional Skills Development III</div> <div>PR3144 Principles of Research Methods</div> <div>PR3145 Compliance & Good Practices in Pharmacy</div> <div>PR3146 Pharmacy Law in Singapore</div>										
		Level-4000 (26 30 MCs)	<div>Pass</div> <div>PR4138 Pharmacy Professional Skills Development IV</div> <div>PR4197 Pharmacy Internship I</div> <div>PR4198 Pharmacy Internship II</div> <div>PR4196 Pharmacy Research Project and Scientific Communication</div>	432 136										
<table><tr><th>Summary of Requirement</th><th>B.Sc. (Pharm.)/B.Sc. (Pharm.) (Hons.)</th></tr><tr><td>University Requirement</td><td>20 MCs</td></tr><tr><td>Faculty Requirements</td><td>16 MCs</td></tr><tr><td>Major Requirement</td><td>446120 MCs</td></tr><tr><td>Unrestricted Elective Modules</td><td>84 MCs</td></tr></table>					Summary of Requirement	B.Sc. (Pharm.)/B.Sc. (Pharm.) (Hons.)	University Requirement	20 MCs	Faculty Requirements	16 MCs	Major Requirement	446120 MCs	Unrestricted Elective Modules	84 MCs
Summary of Requirement	B.Sc. (Pharm.)/B.Sc. (Pharm.) (Hons.)													
University Requirement	20 MCs													
Faculty Requirements	16 MCs													
Major Requirement	446120 MCs													
Unrestricted Elective Modules	84 MCs													

(as a 4 Jun 2020

			<table><tr><td>Total</td><td>160 MCs</td></tr></table>	Total	160 MCs				
Total	160 MCs								
28.	11 Aug 2017	FoS	<p><i>Updates to make are indicated below:</i></p> <p><u>2016 Bulletin</u></p> <p>Under 3.3.3.1-> Chemistry major requirements (http://www.nus.edu.sg/nusbuletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/chemistry/):</p> <p>3.3.3.1 Chemistry</p> <p>Graduation Requirements</p> <p>To be awarded a BSc or BSc (Hons) with a primary major in Chemistry, candidates must satisfy the following:</p> <p>I. BSC IN CHEMISTRY</p> <table><tr><th>LEVEL</th><th>BSC IN CHEMISTRY MINIMUM REQUIREMENTS</th><th>CUMULATIVE MCS</th></tr><tr><td>1000</td><td>CM1111 Inorganic Chemistry 1 CM1121 Organic Chemistry 1 CM1131 Physical Chemistry 1 CM1191 Experiments in Chemistry 1</td><td>24</td></tr></table>	LEVEL	BSC IN CHEMISTRY MINIMUM REQUIREMENTS	CUMULATIVE MCS	1000	CM1111 Inorganic Chemistry 1 CM1121 Organic Chemistry 1 CM1131 Physical Chemistry 1 CM1191 Experiments in Chemistry 1	24
LEVEL	BSC IN CHEMISTRY MINIMUM REQUIREMENTS	CUMULATIVE MCS							
1000	CM1111 Inorganic Chemistry 1 CM1121 Organic Chemistry 1 CM1131 Physical Chemistry 1 CM1191 Experiments in Chemistry 1	24							

				MA1421 Basic Applied Mathematics for Sciences or MA1102R Calculus LSM1401 Fundamentals of Biochemistry or equivalent	
			2000	CM2101 Physical Chemistry 2 CM2111 Inorganic Chemistry 2 CM2121 Organic Chemistry 2 CM2191 Experiments in Chemistry 2 CM2192 Experiments in Chemistry 3	44
			3000	CM3291 Advanced Experiments in Inorganic and Organic Chemistry CM3292 Advanced Experiments in Analytical and Physical Chemistry *Any other three (3) CM elective modules from Level-3000* (excluding CM3289)#.	64
*Students are allowed to replace 4MCs of Level-3000 CM elective modules with Level-4000 CM prefixed modules.					

#UOPS CM3288 can be counted as 4 MC. However, if two semesters work of UOPS is completed, CM3289 is not counted.

^a Please refer to the Department of Chemistry webpage at <http://www.chemistry.nus.edu.sg/education/undergrads/PrimaryMajor/chemistry.htm> for the list of Level 3 CM modules

II. BSC (HONS) IN CHEMISTRY (NO SPECIALISATION)

LEVEL	BSC (HONS) IN CHEMISTRY MINIMUM REQUIREMENTS	CUMULATIVE MCS
1000	CM1131 Physical Chemistry 1 CM1111 Inorganic Chemistry 1 CM1121 Organic Chemistry 1 CM1191 Experiments in Chemistry 1 MA1421 Basic Applied Mathematics for Sciences or MA1102R Calculus LSM1401 Fundamentals of Biochemistry or equivalent	24
2000	CM2101 Physical Chemistry 2	44

				CM2111 Inorganic Chemistry 2 CM2121 Organic Chemistry 2 CM2191 Experiments in Chemistry 2 CM2192 Experiments in Chemistry 3	
			3000	CM3291 Advanced Experiments in Inorganic and Organic Chemistry CM3292 Advanced Experiments in Analytical and Physical Chemistry	52
			3000/4000	Any <u>seven</u> (7) CM modules (or specified non-CM modules) at Level 3000 or 4000 with at least four such modules at Level 4000. ^{a, b}	80
			4000	CM4199A Honours Project in Chemistry (16 MCs) OR CM4299 Applied Project in Chemistry (16 MCs)	96
^a Students may take up to one level 5000 module in place of a Level 4000 module.					

			<p>^b Please refer to the Department of Chemistry webpage at http://www.chemistry.nus.edu.sg/education/undergrads/PrimaryMajor/chemistry.htm for the list of Levels 3 and 4 CM modules</p> <p><u>* Level 3000 CM elective modules</u></p> <p>CM3201—Principles of Chemical Processes CM3211—Organometallic Chemistry CM3212—Transition Metal Chemistry CM3221—Organic Synthesis and Spectroscopy CM3222—Organic Reaction Mechanisms CM3225—Biomolecules CM3231—Quantum Chemistry and Molecular Thermodynamics CM3232—Physical Chemistry of the Solid State and Interfaces CM3242—Instrumental Analysis II CM3251—Nanoechemistry CM3252—Polymer Chemistry I CM3253—Materials Chemistry I CM3261—Environmental Chemistry CM3288—Advanced UROPS in Chemistry I CM3289—Advanced UROPS in Chemistry II CM3296—Molecular Modelling: Theory & Practice</p> <p><u>Level 4000 CM elective modules</u></p> <p>CM4214—Structural Methods in Inorganic Chemistry CM4215—Bioinorganic Chemistry</p>
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~~GM4225—Organic Spectroscopy~~
~~GM4227—Chemical Biology~~
~~GM4228—Catalysis~~
~~GM4238—Selected Topics in Physical Chemistry~~
~~GM4241—Trace Analysis~~
~~GM4242—Advanced Analytical Techniques~~
~~GM4251—Characterisation Techniques in Materials Chemistry~~
~~GM4252—Polymer Chemistry-2~~
~~GM4253—Materials Chemistry-2~~
~~GM4254—Chemistry of Semi-Conductors~~
~~GM4258—Advanced Polymer Science~~
~~GM4269—Sustainable and Green Chemistry~~
~~GM4271—Medicinal Chemistry~~
~~GM4273—Computational Drug Design~~
~~GM4274—The Art and Methodology in Total Synthesis~~
~~GM4282—Energy Resources~~

To be awarded a BSc (Hons) with Specialisation in Chemistry (in either Materials Chemistry, Medicinal Chemistry or Environment and Energy), candidates must satisfy the following:

LEVEL	BSC (HONS) IN CHEMISTRY WITH SPECIALISATION	
	MINIMUM REQUIREMENTS	CUMULATIVE MCS
1000	Identical to BSc (Hons) in Chemistry	24
2000	Identical to BSc (Hons) in Chemistry	44

			3000	CM3291 Advanced Experiments in Inorganic and Organic Chemistry CM3292 Advanced Experiments in Analytical and Physical Chemistry	52
			3000/4000	<p>(1) If CM4199A Honours Project in Chemistry is in area of Specialisation, any <u>seven</u> (7) CM modules (or specified non-CM modules) at Level 3000 or 4000 with at least <u>four</u> (4) such modules at Level 4000^a and at least <u>four</u> (4) such modules in area of Specialisation^{b,c};</p> <p>Note: Specialisation Requirement is made up of at least four modules or 16MC from Level 3000 or 4000 CM modules in area of specialization plus 8MC from CM4199A, totaling at least 24MC.</p> <p>OR</p> <p>(2) If CM4199A Honours Project in Chemistry is <u>not</u> in area of Specialisation or CM4299 Applied Project in Chemistry is read, any seven (7) CM modules (or specified non-CM modules) at Level 3000 or 4000 with at least <u>four</u> (4) such modules at Level 4000^a and at least <u>six</u> (6) such modules in area of Specialisation^c;</p> <p>Note: Specialisation requirement is made up of at least six modules or 24MC selected from Level 3000 or 4000 CM modules in area of specialization.</p>	80

			<table><tr><td>4000</td><td>CM4199A Honours Project in Chemistry (16 MCs) OR CM4299 Applied Project in Chemistry (16 MCs)</td><td>96</td></tr></table>	4000	CM4199A Honours Project in Chemistry (16 MCs) OR CM4299 Applied Project in Chemistry (16 MCs)	96					
4000	CM4199A Honours Project in Chemistry (16 MCs) OR CM4299 Applied Project in Chemistry (16 MCs)	96									
<p>^aStudents may take up to one level 5000 module in place of a Level 4000 module</p> <p>^b8 MCs of the Honours Project in Chemistry (CM4199A, 16 MCs) could be counted toward Specialisation requirement.</p> <p>^c Please refer to the Department of Chemistry webpage at http://www.chemistry.nus.edu.sg/education/undergrads/PrimaryMajor/chemistry.htm for the list of modules in each area of specialisation.</p> <p>A. BSc (Hons) in Chemistry with Specialisation in Materials Chemistry</p> <p>To be awarded a BSc (Hons) in Chemistry with Specialisation in Materials Chemistry, students are required to read and pass all essential modules at Level 1000 and Level 2000 under Chemistry Major Requirements and the following modules at Level 3000 and Level 4000 as set out in the tables below:</p> <p>(i) For students who complete CM4199A (Honours Project in Chemistry) in the area of Materials Chemistry.</p>											
	<table><tr><th>Level</th><th>Module Code/Title</th><th>Prerequisites</th><th>Requirements</th></tr><tr><td></td><td></td><td></td><td></td></tr></table>	Level	Module Code/Title	Prerequisites	Requirements						
Level	Module Code/Title	Prerequisites	Requirements								

			3000	<p>CM3291 Advanced Experiments in Inorganic and Organic Chemistry-</p> <p>CM3292 Advanced Experiments in Analytical and Physical Chemistry</p>	<p>CM2191 Experiments in Chemistry 2</p> <p>CM2192 Experiments in Chemistry 3</p>	<p>8-MCs</p> <p>Essential modules for Chemistry Major</p>
			3000/4000	<p>CM3251 Nanochemistry-</p> <p>CM3252 Polymer Chemistry 1</p> <p>CM3253 Materials Chemistry 1</p> <p>CM4251 Characterisation Techniques in Materials Chemistry-</p> <p>CM4252 Polymer Chemistry 2</p> <p>CM4253 Materials Chemistry 2</p>	<p>SP2251-</p> <p>CM1131 and CM2121</p> <p>CM1131 and CM2111</p> <p>CM3252 and CM3253</p> <p>CM3252CM3253CM3232CM3252</p>	<p>(1) 28-MCs of Level 3000 and 4000-CM (or non-specified CM) modules, excluding CM4199A, with at least four such modules at Level 4000^a-</p> <p>(2) Specialisation Requirement (24MC)</p> <p>a) At least four modules or 16MC from (1) selected from:</p> <p>CM3251, CM3252,</p>

				CM4254 Chemistry of Semi-Conductors		CM3253, CM4251, CM4252, CM4253, CM4254 and CM4258 b) CM4199A (8MC can be counted towards Specialisation requirement)
				CM4258 Advanced Polymer Science		
				Other CM (or approved) modules		
			4000	CM4199A Honours Project in Chemistry (in the area of Materials Chemistry)	Honours Eligibility Requirements for Specific Cohort	16 MCs- CM4199A is a 16-MC module; 8 MCs could be counted toward Specialisation requirement.
					Total	52 MCs
^a Students may take up to one Level 5000 module in place of a Level 4000 Module. This Level 5000 module cannot be used again to satisfy graduate studies requirement.						
(ii) For students who complete CM4199A (Honours Project in Chemistry) not in the area of Materials Chemistry, or CM4299 (Applied Project in Chemistry)						

			Level	Module Code/Title	Prerequisites	Requirements
			3000	CM3291 Advanced Experiments in Inorganic and Organic Chemistry- CM3292 Advanced Experiments in Analytical and Physical Chemistry	CM2191 Experiments in Chemistry 2 CM2192 Experiments in Chemistry 3	8 MCs- Essential modules for Chemistry Major
			3000/4000	CM3251 Nanochemistry- CM3252 Polymer Chemistry 1 CM3253 Materials Chemistry 1	SP2251- CM1131 and CM2121 CM1131 and CM2111	(1) 28 MCs of Level 3000 and 4000 CM (or specified non-CM) modules, excluding CM4199A, with at least four such modules at Level 4000 ^a - (2) Specialisation Requirement (24MC) a) At least six modules or 24MC from (1) selected from: CM3251, CM3252, CM3253,
				CM4251 Characterisation Techniques in Materials Chemistry-	CM3252 and CM3253 CM3252CM3253CM3232CM3252	

				CM4252 Polymer Chemistry 2 CM4253 Materials Chemistry 2 CM4254 Chemistry of Semi-Conductors CM4258 Advanced Polymer Science		CM4251, CM4252, CM4253, CM4254 and CM4258
				Other CM (or approved) Modules		
			4000	CM4199A Honours Project in Chemistry (<u>not</u> in the area of Materials Chemistry); OR CM4299 Applied Project in Chemistry	Honours Eligibility Requirements for Specific Cohort	16 MCs

					Total	52 MCs
^aStudents may take up to one Level 5000 module in place of a Level 4000 Module. This Level 5000 module cannot be used again to satisfy graduate studies requirement.						
B. BSc (Hons) in Chemistry with Specialisation in Medicinal Chemistry						
To be awarded a BSc (Hons) in Chemistry with Specialisation in Medicinal Chemistry, students are required to read and pass all essential modules at Level 1000 and Level 2000 under Chemistry Major Requirements and the following modules at Level 3000 and Level 4000 as set out in the tables below:						
(i) For students who complete CM4199A (Honours Project in Chemistry) in the area of Medicinal Chemistry						
			Level	Module Code/Title	Prerequisites	Requirements
			3000	CM3291 Advanced Experiments in Inorganic and Organic Chemistry CM3292 Advanced Experiments in Analytical and Physical Chemistry	CM2191 Experiments in Chemistry 2 CM2192 Experiments in Chemistry 3	8 MCs Essential modules for Chemistry Major

				CM3221 Organic Synthesis and Spectroscopy CM3225 Biomolecules	CM2121 CM2121	
			3000/4000	CM4271 Medicinal Chemistry CM4225 Organic Spectroscopy - CM4227 Chemical Biology CM4273 Computational Drug Design CM4274 The Art and Methodology in Total Synthesis CM4215 Bioinorganic Chemistry	CM2121 and CM3225 - CM2121 - CM2121 and CM3225 - CM3221 or CM3222 - CM3221 CM3211 or CM3212 or CM3268	(1) 28 MCs of Level 3000 and 4000 CM (or specified non-CM) modules, excluding CM4199A, with at least four such modules at Level 4000^a. (2) Specialisation Requirement (24MC) a) At least four modules or 16MC from (1) selected from: CM3221, CM3225, CM4271, CM4225, CM4227, CM4273, CM4274, CM4215, CM5224^a, CM5245^a and PR4205 b) CM4199A (8MC can be counted towards Specialisation requirement)

				CM5224 Emerging Concepts of Drug Discovery^a CM5245 Bioanalytical Chemistry^a PR4205 Bioorganic Principles of Medicinal Chemistry	By permission - By permission PR3101	
				Other CM (or approved) modules		
			4000	CM4199A Honours Project in Chemistry (in the area of Medicinal Chemistry)	Honours Eligibility Requirements for Specific Cohort	16 MCs CM4199A is a 16-MC module; 8 MCs could be counted toward Specialisation requirement.
					Total	52 MCs
^aStudents may take up to one Level 5000 module in place of a Level 4000 module. This Level 5000 module cannot be used again to satisfy graduate studies requirement. (ii) For students who complete CM4199A (Honours Project in Chemistry) <u>not</u> in the area of Medicinal Chemistry, or CM4299 (Applied Project in Chemistry).						

			Level	Module Code/Title	Prerequisites	Requirements
			3000	CM3291 Advanced Experiments in Inorganic and Organic Chemistry CM3292 Advanced Experiments in Analytical and Physical Chemistry	CM2191 Experiments in Chemistry 2 CM2192 Experiments in Chemistry 3	8 MCs Essential modules for Chemistry Major
			3000/4000-	CM3221 Organic Synthesis and Spectroscopy CM3225 Biomolecules	CM2121 CM2121	(1) 28 MCs of Level 3000 and 4000 CM (or specified non-CM) modules, excluding CM4199A, with at least four
				CM4271 Medicinal Chemistry CM4225 Organic Spectroscopy - CM4227 Chemical Biology CM4273 Computational Drug Design	CM2121 and CM3225 CM2121 - CM2121 and CM3225 -	such modules at Level 4000^a (2) Specialisation Requirement (24MC) a) At least six modules or 24MC from (1) selected from: CM3221, CM3225, CM4271, CM4225, CM4227, CM4273, CM4274, CM4215, CM5224^a, CM5245^a and PR4205

				CM4274 The Art and Methodology in Total Synthesis CM4215 Bioinorganic Chemistry CM5224 Emerging Concepts of Drug Discovery^a CM5245 Bioanalytical Chemistry^a PR4205 Bioorganic Principles of Medicinal Chemistry	CM3221 or CM3222 CM3221 CM3211 or CM3212 or CM3268 By permission - By permission PR3101 - -	
				Other GM (or approved) modules		
			4000	CM4199A Honours Project in Chemistry (not in the area of	Honours Eligibility Requirements for specific cohort	16 MCs

			<table> <tr> <td></td><td>Medicinal Chemistry); OR CM4299 Applied Project in Chemistry</td><td></td><td></td></tr> <tr> <td></td><td></td><td>Total</td><td>52 MCs</td></tr> </table> <p>^aStudents may take up to one Level 5000 module in place of a Level 4000 module. This Level 5000 module cannot be used again to satisfy graduate studies requirement.</p> <p>C. BSc (Hons) in Chemistry with Specialisation in Environment and Energy</p> <p>To be awarded a BSc (Hons) in Chemistry with Specialisation in Environment and Energy, students are required to read and pass all essential modules at Level 1000 and Level 2000 under Chemistry Major Requirements and the following modules at Level 3000 and Level 4000 as set out in the tables below:</p> <p>(i) For students who complete CM4199A (Honours Project in Chemistry) in the area of Environment and Energy:</p> <table> <tr> <th>Level</th><th>Module Code/Title</th><th>Prerequisites</th><th>Requirements</th></tr> <tr> <td>3000</td><td>CM3291 Advanced Experiments in Inorganic and Organic Chemistry</td><td>CM2191 Experiments in Chemistry 2 CM2192 Experiments in Chemistry 3</td><td>8 MCs Essential modules for Chemistry Major</td></tr> </table>		Medicinal Chemistry); OR CM4299 Applied Project in Chemistry					Total	52 MCs	Level	Module Code/Title	Prerequisites	Requirements	3000	CM3291 Advanced Experiments in Inorganic and Organic Chemistry	CM2191 Experiments in Chemistry 2 CM2192 Experiments in Chemistry 3	8 MCs Essential modules for Chemistry Major
	Medicinal Chemistry); OR CM4299 Applied Project in Chemistry																		
		Total	52 MCs																
Level	Module Code/Title	Prerequisites	Requirements																
3000	CM3291 Advanced Experiments in Inorganic and Organic Chemistry	CM2191 Experiments in Chemistry 2 CM2192 Experiments in Chemistry 3	8 MCs Essential modules for Chemistry Major																

				CM3292 Advanced Experiments in Analytical and Physical Chemistry		
				CM3242 Instrumental Analysis II	CM2142 or CM2166	
				CM3261 Environmental Chemistry	CM3241 or CM2142 or CM2166 or by permission	(1) 28 MCs of Level 3000 and 4000 CM (or specified non-CM) modules, excluding
				CM4241 Trace Analysis	CM3242 or by permission	CM4199A, with at least four such modules at Level 4000 ^a .
				CM4242 Advanced Analytical Techniques	CM3242 or by permission	(2) Specialisation Requirement (24MC)
				CM4269 Sustainable and Green Chemistry	CM1121	a) At least four modules or 16MC from (1) selected from:
				CM4282 Energy Resources	CM1311 and CM2111	CM3242, CM3261, CM4241, CM4242, CM4269 and CM4282
				Other CM (or approved) modules		b) CM4199A (8MC can be counted towards Specialisation requirement)

			4000	CM4199A Honours Project in Chemistry (in the area of Environment and Energy)	Honours Eligibility Requirements for Specific Cohort	16 MCs CM4199A is a 16-MC module; 8 MCs could be counted toward Specialisation requirement.
					Total	52 MCs
<p>*Students may take up to one Level 5000 module in place of a Level 4000 module. This Level 5000 module cannot be used again to satisfy graduate studies requirement.</p> <p>(iii) For students who complete CM4199A (Honours Project in Chemistry) <u>not</u> in the area of Environment and Energy, or CM4299 (Applied Project in Chemistry).</p>						
			Level	Module Code/Title	Prerequisites	Requirements
			3000	CM3291 Advanced Experiments in Inorganic and Organic Chemistry- CM3292 Advanced Experiments in Analytical and Physical Chemistry	CM2191 Experiments in Chemistry 2 CM2192 Experiments in Chemistry 3	8 MCs Essential modules for Chemistry Major

				<p>CM3242 Instrumental Analysis II</p> <p>CM3261 Environmental Chemistry</p>	<p>CM2142 or CM2166</p> <p>CM3241 or CM2142 or CM2166 or by permission</p>	<p>(1) 28 MCs of Level 3000 and 4000 CM (or non-specified non-CM) modules, excluding CM4199A, with at least four such modules at Level 4000^a.</p> <p>(2) Specialisation Requirement (24MC)</p> <p>a) 24MC from (1) read from: CM3242, CM3261, CM4241, CM4242, CM4269 and CM4282</p>
		3000/4000	<p>CM4241 Trace Analysis</p> <p>CM4242 Advanced Analytical Techniques</p> <p>CM4269 Sustainable and Green Chemistry</p> <p>CM4282 Energy Resources</p>	<p>CM3242 or by permission</p> <p>CM3242 or by permission</p> <p>CM1121</p> <p>CM1131 and CM2111</p>		
			Other CM (or approved) modules			
			4000	<p>CM4199A Honours Project in Chemistry (not in the area of Environment and Energy)</p> <p>OR</p>	<p>Honours Eligibility Requirements for Specific Cohort</p>	16 MCs

				CM4299 Applied Project in Chemistry		
					Total	52 MCs
^a Students may take up to one Level 5000 module in place of a Level 4000 module. This Level 5000 module cannot be used again to satisfy graduate studies requirement.						
			SUMMARY OF REQUIREMENTS	BSC	BSC (HONS)	BSC (HONS) WITH SPECIALISATION
			University Requirements	20 MCs	20 MCs	20MCs
			Faculty Requirements	4 MCs*	8 MCs	8 MCs*
			Major Requirements	64 MCs	96 MCs	96 MCs
			Unrestricted Elective Modules	32 MCs	36 MCs	36 MCs
			Total	120 MCs	160 MCs	160 MCs

			<p>* Faculty requirements of 12 MCs and 16 MCs required for the BSc and BSc (Hons) programmes respectively are partially fulfilled through the reading of MA1421 and LSM1401 within the major.</p> <p>Students undertaking the BSc programme are required to fulfil the remaining 4 MCs of Faculty requirements from <u>any one</u> of the following subject groups: Computing Sciences, Physical Sciences and 'Multidisciplinary & Interdisciplinary Sciences'; but <u>not</u> from the following subject groups: Chemical Science, Life Sciences, Mathematical and Statistical Sciences.</p> <p>Students undertaking the BSc (Hons) programme are required to fulfil the remaining 8 MCs of Faculty requirements as such:</p> <ol style="list-style-type: none"> 1. 4 MCs from <u>any one</u> of the following subject groups: Computing Sciences, Physical Sciences and Multidisciplinary & Interdisciplinary Sciences; but <u>not</u> from the following subject groups: Chemical Sciences, Life Sciences, Mathematical and Statistical Sciences 2. 4 MCs of Non-CM prefixed module from any subject group
29.	11 Aug 2016	FoS	<p><i>Amendments to make</i> (in yellow highlight):</p> <p><u>2016 Bulletin</u></p> <p>Under 3.4.1-> Double Major and Major-Minor Combinations, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/double-major-and-major-minor-combinations/)</p> <p>While the minimum requirement for graduation is at least one major, students may read double majors or major-minor combinations during their candidature if they wish to enhance and broaden their undergraduate education.</p>

~~Up to 8 MCs of the modules in the second major or minor can be used to double count towards the primary major requirements. Please refer to the following Faculty of Science website for the double-counting rules:~~

~~<http://www.science.nus.edu.sg/undergraduate-studies/ugfaq/faq-current#dblcoun>~~

Up to 8MC of the Minor may be double counted with the Primary Major or Second Major requirements, and up to 16 MCs of the Second Major may be double counted with the Primary Major requirements. Please refer to the following Faculty of Science website for the double-counting rules: <http://www.science.nus.edu.sg/undergraduate-studies/ugfaq/faq-current#dblcoun>.

For certain major-minor combinations, departments have specified the number as well as the type of modules that can be read to fulfil two sets of requirements simultaneously (refer to Table 1).

Table 1: Major-Minor Combinations

MAJOR-MINOR COMBINATIONS	RESTRICTIONS
Major in Quantitative Finance and Minor in Statistics	Only MA1102R, ST2131/MA2216 and ST3131 can be used to satisfy both major and minor requirements. Please refer to http://www.stat.nus.edu.sg/opencms/currentstudents/cs_ugradfaq.html#majorMinor for more details.
Major in Mathematics/Applied Mathematics and Minor in Statistics	Only MA1102R and ST2131/MA2216 can be used to satisfy both major and minor requirements. Please refer to

				http://www.stat.nus.edu.sg/opencms/currentstudents/cs_ugradfaq.html#majorMinor for more details.
			Major in Statistics and Minor in Mathematics	Only MA1102R and ST2131/MA2216 can be used to satisfy both major and minor requirements. Please refer to http://www.stat.nus.edu.sg/opencms/currentstudents/cs_ugradfaq.html#majorMinor and http://www1.math.nus.edu.sg/undergrad.aspx?f=FAQ-Minor for more details.
			Major in Statistics and Minor in Financial Mathematics	Only MA1102R, ST2131/MA2216 and ST3131 can be used to satisfy both major and minor requirements. Please refer to http://www.stat.nus.edu.sg/opencms/currentstudents/cs_ugradfaq.html#majorMinor and http://www1.math.nus.edu.sg/undergrad.aspx?f=FAQ-Minor for more details.
			For certain major-second major combinations, departments have specified the number as well as the type of modules that can be read to fulfil two sets of requirements simultaneously:	
			Students reading a double major combination involving a Primary major in Statistics and Second Major in Mathematics may refer to the FAQ at http://www1.math.nus.edu.sg/undergrad.aspx?f=FAQ-2major for more information.	

			<p>Students reading a double major combination involving a primary major in Applied Mathematics/Mathematics/Quantitative Finance and a second major in Statistics should refer to the FAQ at http://www.stat.nus.edu.sg/opencms/currentstudents/cs_ugradfaq.html#course for more information.</p>
30.	16 Aug 2016	FoE	<p>FoE Bulletin ChBE Contact submitted some updates to the NUS Bulletin 2016-2017 and the changes are highlighted in red as follows:</p> <p>a) 3.2.2.2 Degree Requirements http://www.nus.edu.sg/nusbulletin/faculty-of-engineering/undergraduate-education/bachelor-of-engineering-degree-programmes/bachelor-of-engineering-chemical-engineering/degree-requirements/</p> <p>The following are the requirements for the degree of BEng (ChE):</p> <p>Students in the BEng (ChE) programme are required to complete a minimum of 162 MCs with a CAP ≥ 2.0 to graduate from the programme.</p> <p>162 MCs will have to be earned by reading modules in accordance with Table 3.2.2a.</p> <p>Students are free to choose any combination of the offered modules from Table 3.2.2b to satisfy the technical electives requirement.</p> <p>A student may choose to specialise in Biomolecular Engineering or Process Systems Engineering by taking 4 technical electives from the specified basket of electives and the BEng Dissertation (Research Project) in the specialisation area.</p> <p>A student must also satisfy other additional requirements that may be prescribed by the Faculty of Engineering or the University.</p> <p>Table 3.2.2a: Summary of Modular Requirements and Credits</p>

MODULAR REQUIREMENTS			MCS
University Level Requirements			20
General Education Modules (GE) (5 Modules, each of 4MCs)			20
Human Cultures (HC) Quantitative Reasoning (QR) Thinking and Expression (T&E) Singapore Studies (SS) Asking Questions (AQ)			
Unrestricted Electives			20
Programme Requirements			
Faculty Requirements:			11
ES1531 Critical Thinking & Writing ¹			4
ES2331 Communicating Engineering			4
EG2401 Engineering Professionalism			3
ES1103 English for Academic Purpose²			—
HR2002 Human Capital in Organizations			3
Foundation Requirements:			24
MA1505 Mathematics I			4
MA1506 Mathematics II			4

			CM1502	General and Physical Chemistry for Engineers	4	
			LSM1401	Fundamentals of Biochemistry	4	
			MLE1101	Introductory Materials Science & Engineering	4	
			IT1005	Introduction to Programming with Matlab	4	
			Chemical Engineering Major Requirements:			87
			CHE Core Subjects:			55
			CN1111	Chemical Engineering Principles	4	
			CN2108	Chemical Engineering Laboratory I	2	
			CN2116	Chemical Kinetics and Reactor Design	4	
			CN2121	Chemical Engineering Thermodynamics	4	
			CN2122	Fluid Mechanics	4	
			CN2125	Heat and Mass Transfer	4	
			CN3108	Chemical Engineering Laboratory II	4	
			CN3109	Chemical Engineering Laboratory III	2	
			CN3124	Fluid-Solid Systems	3	
			CN3121	Process Dynamics and Control	4	
			CN3132	Separation Processes	4	
			CN3135	Process Safety, Health & Environment	3	
			CN3421	Process Modelling and Numerical Simulation	4	

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			CN4122 Process Synthesis and Simulation	3
			CN4123R Final Year Design Project	6
			CHE Technical Electives/BEng Dissertation ³²	20
			CN4118 BEng Dissertation or 2 Technical Electives (from Table 3.2.2b)	8
			3 Technical Electives (from Table 3.2.2b)	
			EG3611 Industrial Attachment ⁴³	12
			Total	162

¹Students who score a Band 1 or Band 2 in Qualifying English Test (QET) will need to take ES1103 English for Academic Purposes (4 MC) before taking ES1531 Critical Thinking & Writing. ES1103 will be counted as 1 UEM.

BEng students are required to read a Critical Thinking & Writing module (Compulsory ES1531 Critical Thinking & Writing ~~which also satisfies the General Education (Thinking & Expression) requirement~~) and a Communications module (ES2331 Communicating Engineering). Alternatively, students can read ES1501X Academic Expository Writing in place of both ES1531 and ES2331. USP/UTRP/RVRC students should refer to their respective programmes for USP/UTRP/RVRC modules to be read in place of ES1531 and/or ES2331.

~~²For students who have not passed or been exempted from the Qualifying English Test at the time of admission to the Faculty.~~

			<p>²³ CN4118 BEng Dissertation is optional. Interested students can take CN4118 (8MC), and others can take 2 Technical Electives, each of 4MC, in lieu of CN4118.</p> <p>³⁴ For BEng students in the following special programmes: DDPs, CDPs, GEP & CSP, internship/industrial-attachment is optional and the modular credits for the internship/industrial-attachment will be become 'Free Electives' i.e., Unrestricted Electives (UE).</p> <p>Table 3.2.2b: Technical Elective Modules in ChE[#]</p> <p><u>Biomolecular Engineering</u></p> <p>CN4233R Good Manufacturing Practices in Pharmaceutical Industry</p> <p>CN4238R Chemical and Biochemical Process Modeling</p> <p>CN4241R Engineering Principles for Drug Delivery</p> <p>CN4246R Chemical and Bio-Catalysis</p> <p>CN4247R Enzyme Technology</p> <p>CN4249 Engineering Design in Molecular Biotechnology</p> <p>CN5172 Biochemical Engineering</p> <p>CN5173 Downstream Processing of Biochemical and Pharmaceutical Products</p> <p>CN5222 Pharmaceuticals and Fine Chemicals</p> <p><u>Microelectronics Processing</u></p> <p>BN4404 Bioelectromechanicals systems — BioMEMs</p> <p>CN4216R Electronics Materials Science</p> <p>CN4217R Processing of Microelectronic Materials</p> <p>CN4223R Microelectronic Thin Films</p> <p><u>Process Engineering</u></p> <p>CN4205R Process Systems Engineering</p>
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			CN4227R	Advanced Process Control
			CN4238R	Chemical & Biochemical Process Modelling
			CN4245R	Data Based Process Characterisation
			CN4248	Sustainable Process Development
			CN4250	Chemical Product Design
			CN5111	Optimisation of Chemical Processes
			CN5181	Computer Aided Chemical Engineering
			CN5185	Batch Process Engineering
			CN5186	Design and Operation of Process Networks
			CN5191	Project Engineering
			ESP4402	Transport Phenomena in Energy Systems
			<u>Process Technology</u>	
			CN4201R	Petroleum Refining
			CN4203R	Polymer Engineering
			CN4211R	Petrochemicals and Processing Technologies
			CN4215R	Food Technology and Engineering
			CN4240R	Unit Operations and Processes for Effluent Treatment
			CN4243	Oil Field Processing
			CN4291	Selected Topics in Chemical Engineering
			CN5173	Downstream Processing of Biochemical and Pharmaceutical Products
			CN5222	Pharmaceuticals & Fine Chemicals
			CN5251	Membrane Science and Engineering
			<u>Others</u>	
			BN4404	Bioelectromechanicals systems – BioMEMs
			CN4216R	Electronics Materials Science
			CN4217R	Processing of Microelectronic Materials

CN4223R Microelectronic Thin Films

The department reserves the right to decide on the modules to be offered in any given semester.

b) 3.2.2.3 Recommended Semester Schedule

<http://www.nus.edu.sg/nusbulletin/faculty-of-engineering/undergraduate-education/bachelor-of-engineering-degree-programmes/bachelor-of-engineering-chemical-engineering/recommended-semester-schedule/>

Table 3.2.2c: Recommended Semester Schedule for Direct Entry ChE Students

Modules	MCs	Modules	MCs
Semester 1		Semester 2	
ES1531 Critical Thinking & Writing ¹	4	GE on T&E or QR	4
GE on HC OR CN1111 Chemical Engineering Principles	4	CM1502 General and Physical Chemistry for Engineers	4
IT1005 Introduction to Programming with Matlab	4	CN1111 Chemical Engineering Principles or GE on HC	4
MA1505 Mathematics	4	MA1506 Mathematics II	4
GE on SS	4	MLE1101 Introductory Materials Science and Engineering	4

			ES1102 English for Academic Purposes	-			
			Sub-total	20	Sub-total	20	
			Semester 3		Semester 4		
			CN2121 Chemical Engineering Thermodynamics	4	CN2108 Chemical Eng Lab I	2	
			CN2122 Fluid Mechanics	4	CN2116 Chemical Kinetics and Reactor Design	4	
			LSM1401 Fundamentals of Biochemistry	4	CN2125 Heat and Mass Transfer	4	
			ES2331 Communicating Engineering	4	CN3124 Fluid-Solid Systems	3	
			GE on T&E	4	EG2401 Engineering Professionalism	3	
					UE 1	4	
			Sub-total	20	Sub-total	20	
			Semester 5		Semester 6#		

			CN3108 Chemical Eng Lab II	4	CN3109 Chemical Eng Lab III	2	
			CN3121 Process Dynamics and Control	4	[^] CN4118 BEng Dissertation or Technical Elective	4-7	
			CN3132 Separation Processes	4	CN4122 Process Synthesis and Simulation	3	
			CN3135 Process Safety, Health & Environment	3	UE 2	4	
			CN3421 Process Modelling and Numerical Simulation	4	GE on AQ	4	
					UE 3 (can be taken in Special Term to have a lower workload in this semester)	4	
			Sub-total	19	Sub-total	21-24	
			Semester 7 [#]		Semester 8		
			Technical Elective 1	4	[^] CN4118 BEng Dissertation (continued) or Technical Elective	1-4	
			Technical Elective 2	4	CN4123R Design Project	6	

			EG3611 Industrial Attachment	12	Technical Elective 3	4
					UE 4	4
					UE 5	4
			Sub-total	20	Sub-total	19-22
			¹ Students who score a Band 1 or Band 2 in Qualifying English Test (QET) will need to take ES1103 English for Academic Purposes (4MC) before taking ES1531 Critical Thinking & Writing. ES1103 will be counted as 1 UEM [#] Modules scheduled in Semesters 6 and 7 can be swapped, thus students can also choose to go on Industrial Attachment in Semester 6. [^] CN4118 BEng Dissertation is optional. Interested students can take CN4118 (8MC), and others can take 2 Technical Electives, each of 4MC in-lieu of CN4118.			
31.	16 Aug 2016	SDE	Update NUS Bulletin 2016-17 School of Design and Environment UPDATE 1 http://www.nus.edu.sg/nusbulletin/school-of-design-and-environment/key-contact-information/			

			TITLE & NAME	DESIGNATION/RESPONSIBILITY	TELEPHONE (6516-XXXX)	EMAIL (XXXX@NUS.EDU.SG)
			Prof HENG Chye Kiang Prof LAM Khee Poh	Dean	3475	sdedean
			Assoc Prof LIM Ee Man, Joseph Assoc Prof OOI Thian Leong, Joseph	Vice Dean (Academic Affairs)	3439	sdelimems sdeooi
			Assoc Prof KUA Harn Wei	Asst Dean (Academic Affairs)	5081	sdekuahw
			Assoc Prof CHEONG Kok Wai, David	Vice Dean (Admin & Finance)	3401	sdeckw
			Assoc Prof FU Yuming Prof WONG Nyuk Hien	Vice Dean (Research)	4412	sdefuym sdewnh
			Assoc Prof Nirmal Tulsidas KISHNANI	Vice Dean (Special Projects)	3403	sdentk
			Assoc Prof WONG Yunn Chii	Head, Dept. of Architecture	3452	akihead
			Prof Willie TAN	Head, Dept. of Building	3487 / 3413	bdgtanw
			Prof DENG Yong Heng	Head, Dept. of Real Estate	3469	rsthead
			Assoc Prof YEN Ching Chiuan Assoc Prof Christian Gilles BOUCHARENC	Head, Division of Industrial Design	3524 3533	didhead
			Assoc Prof CHEAH Kok Ming	Dy Head, Dept. of Architecture	3455	akickm
			Prof WONG Nyuk Hien Assoc Prof Jonathan LIAN Khin Ming	Dy Head, Dept. of Building	3423 66014931	bdgwnh bdgjikm

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			<div> <div> <div>Assoc Prof OOI Thian Leong, Joseph</div> <div>Assoc Prof LIAO Wen-Chi</div> </div> <div>Dy Head, Dept. of Real Estate</div> <div>35643435</div> <div>rstooitlrstlwc</div> </div>
			<div> <div> <div>Assoc Prof Christian Gilles BOUCHARENC</div> <div>Mr TAN Yan Han, Hans</div> </div> <div>Dy Head, Division of Industrial Design</div> <div>35333525</div> <div>didegbdidtyhh</div> </div>
			<p>UPDATE 2</p> <p>http://www.nus.edu.sg/nusbulletin/school-of-design-and-environment/undergraduate-education/financial-assistance-scholarships/raffles-quay-asset-management-study-grant-department-of-real-estate/</p> <p><u>Raffles Quay Asset Management (RQAM) Study Grant</u></p> <p>Raffles Quay Asset Management Pte Ltd has made an endowed gift of S\$250,000 to the Department of Real Estate to establish a bursary fund to support financially needy students who are “middle achievers” in the Department of Real Estate. Raffles Quay Asset Management Pte Ltd has made a generous endowed gift to the Department of Real Estate to establish the study grant in support of financially needy BSc (Real Estate) undergraduate students with good academic standing.</p> <p>One bursary will be awarded to full-time Singaporean undergraduate undertaking the Bachelor of Science (Real Estate) programme in Year 2 and above in each academic year, starting from AY2014/2015. Each Bursary is valued at \$7,500 per annum and is tenable for up to three years from the academic year in which it is awarded.</p> <p>UPDATE 3</p> <p>http://www.nus.edu.sg/nusbulletin/school-of-design-and-environment/undergraduate-education/financial-assistance-scholarships/</p> <p>TO ADD NEW SECTION</p> <p>Title: <u>Melvin Poh and Francine Lee Real Estate Scholarship</u></p> <p><u>Melvin Poh and Francine Lee Real Estate Scholarship</u></p> <p>Mr Melvin Poh and Ms Francine Lee are alumni of the former Building & Estate Management Department of NUS and have made an endowed gift in 2014 to establish a scholarship for undergraduate students at the Department of Real Estate.</p>

			<p>Every academic year, one scholarship will be awarded to an outstanding A' Level or equivalent students who wish to pursue their undergraduate studies in BSc (Real Estate) programme, subject to sufficiency of funds and the University's prevailing spending policies.</p> <p>Each scholarship is tenable for four years from the academic year in which it is awarded. The scholarship holders must maintain a Cumulative Average Point (CAP) of at least 3.50 every semester and is subject to the NUS Scholarships' renewal guidelines.</p>						
32.	18 Aug 2016	SCALE	<p>Amendments are as follows:</p> <p>1) At http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-electronics-engineering/ (highlighted in yellow with red texts)</p> <hr/> <p>A. Sample Study Schedule (4-year candidature beginning in Semester 1 of an AY):</p> <p>1. The number of Modular Credits (MC) of a module is denoted by the number in the bracket.</p> <p>2. Modules marked with an asterisk (*) are modules stretching over more than one semester and the total number of MCs will only be given upon completion of the module.</p> <table><tr><th colspan="2">1st Year of studies</th></tr><tr><td>Sem 1:</td><td>General Education Module 1 (4) TG1401 Engineering Mathematics I (4) EE1001E Emerging Technologies in EE (4)</td></tr><tr><td>Sem 2:</td><td>TE2002 Engineering Mathematics II (4) EE2020E Digital Fundamentals (5) TE2101 Programming Methodology (4)</td></tr></table>	1 st Year of studies		Sem 1:	General Education Module 1 (4) TG1401 Engineering Mathematics I (4) EE1001E Emerging Technologies in EE (4)	Sem 2:	TE2002 Engineering Mathematics II (4) EE2020E Digital Fundamentals (5) TE2101 Programming Methodology (4)
1 st Year of studies									
Sem 1:	General Education Module 1 (4) TG1401 Engineering Mathematics I (4) EE1001E Emerging Technologies in EE (4)								
Sem 2:	TE2002 Engineering Mathematics II (4) EE2020E Digital Fundamentals (5) TE2101 Programming Methodology (4)								

			SpTerm :	General Education Module 2 (4)	
			2nd Year of studies		
			Sem 1:	TE2003 Advanced Mathematics for Engineers (4) EE2024E Programming for Computer Interfaces (5) EE2021E Devices & Circuits (4)	
			Sem 2:	EE2011E Engineering Electromagnetics (4) EE2031E Circuits and Systems Design Lab (3) EE2023E Signals & Systems (4)	
			SpTerm :	TG2415 Ethics in Engineering (4) / General Education Module 3 (4)	
			3rd Year of studies		
			Sem 1:	Elective 1 (4) Elective 2 (4) / General Education Module 3/4 (4) TG3001 TG3002* Industrial Practice EE2032E Signals and Communications Design Lab (3)	
			Sem 2:	EE3031E Innovation & Enterprise I (4) Elective 2 (4) / General Education Module 3/4/5 (4)	

	Elective 3 (4) TG3001 TG3002* Industrial Practice
SpTerm :	TG2415 Ethics in Engineering (4)/ General Education Module 4/5 (4) TG3001 TG3002* Industrial Practice (12 8)

2) At <http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-mechanical-engineering/> (highlighted in yellow with red texts):

B. Sample Study Schedule (4-year candidature beginning in Semester 2 of an AY):

- The number of Modular Credits (MC) of a module is denoted by the number in the bracket.
- Modules marked with an asterisk (*) are modules stretching over more than one semester and the total number of MCs will only be given upon completion of the module.

1 st Year of studies	
Sem 2:	TG1401 Engineering Mathematics I (4) ME2114E Mechanics of Materials II (3) ME2101E Fundamentals of Mechanical Design (4)
SpTerm:	General Education Module 1 (4) General Education Module 2 (4)

				Sem 1:	TM2401 Engineering Mathematics II (4) ME2121E Engineering Thermodynamics (4) ME2134E Fluid Mechanics I (4)	
				2nd Year of studies		
				Sem 2:	ME2143E Sensors and Actuators (4) ME2135E Fluid Mechanics II (4) TM3101 Mechanical Systems Design (6)	
				SpTerm:	General Education Module 3 (4)	
				Sem 1:	ME2151E Principles of Mechanical Engineering Materials (4) ME3112E Mechanics of Machines (4) ME3162E Manufacturing Processes (4) TG3001 TG3002* Industrial Practice	
				3rd Year of studies		
				Sem 2:	Elective 1 (4) Elective 2 (4) TG2415 Ethics in Engineering (4) TG3001 TG3002* Industrial Practice	

			<div> <div>SpTerm:</div> <div> General Education Module 4 (4) TG3001 TG3002* Industrial Practice (12 8) </div> </div>
33.	1 Sep 2016	RO	<p>Amendments are indicated in red below:</p> <p>Update (1) At: http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/minor-programmes.html</p> <p>The MC requirement for a Minor Programme is as follows:</p> <ul style="list-style-type: none"> At least 24 MCs, of which up to 8 MCs may be used to meet the requirements for both the Minor and Faculty Requirements, a Major/Second Major, or another Minor, subject to the agreement of the particular department(s)/programme(s) or Faculty/School hosting the Minor.
34.	1 Sep 2016	FoS	<p>There is a broken link in the Bulletin website (FoS) for the JDP in Life Sciences with UNC: http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/joint-bachelor-of-science-honours-in-life-sciences-from-national-university-of-singapore-and-bachelor-of-science-in-biology-from-the-university-of-north-carolina-at-chapel-hill/.</p> <p><i>More information on this joint degree programme is available at “Other Multidisciplinary / Special Programmes” of the Bulletin.</i></p> <p>The above link to relevant section in ‘Other Multidisciplinary/Special Programmes’ website is broken. Please help to update the link to http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/joint-degree-programmes-concurrent-degree-programmes-double-degree-programmes-with-overseas-universities/joint-bachelor-of-science-honours-in-life-sciences-from-national-university-of-singapore-and-bachelor-of-science-in-biology-from-the-university-of-north-carolina-chapel-hill/</p>

35.	1 Oct 2016	RVRC	<p>Updates to the NUS Bulletin 2016/17 for the Ridge View Residential College Programme are indicated below:</p> <p><u>Update 1</u></p> <table><tr><td>URL for the change</td><td>http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/ridge-view-residential-college-programme/programme-requirements/</td></tr><tr><td>Screenshot of current page</td><td><div><p>All Year One students admitted to RVRC must read three compulsory RVRC modules across two s deemed as successfully completed the programme. These modules are:</p><ul style="list-style-type: none">• GEM1917 Understanding and Critiquing Sustainability• ES1601 Professional and Academic Communication• WR1401 Workplace Readiness<p>For selected students who may need to read ES1102 after the Qualifying English Test (QET), ES1 instead.</p></div></td></tr><tr><td>Description of change (with changes tracked in red)</td><td><p><i>To update the module codes (with no change in programme requirements).</i></p><p>All Year One students admitted to RVRC must read three compulsory RVRC modules across two semesters or one academic year, to be deemed as successfully completed the programme. These modules are:</p><ul style="list-style-type: none">• GEM1917GEM1917 Understanding and Critiquing Sustainability (formerly GEM1917)• ES1601 Professional and Academic Communication• WR1401 Workplace Readiness<p>For selected students who may need to read ES1103ES1103 after the Qualifying English Test (QET), ES1601 will be read in Semester Two instead.</p></td></tr></table> <p><u>Update 2</u></p>	URL for the change	http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/ridge-view-residential-college-programme/programme-requirements/	Screenshot of current page	<div><p>All Year One students admitted to RVRC must read three compulsory RVRC modules across two s deemed as successfully completed the programme. These modules are:</p><ul style="list-style-type: none">• GEM1917 Understanding and Critiquing Sustainability• ES1601 Professional and Academic Communication• WR1401 Workplace Readiness<p>For selected students who may need to read ES1102 after the Qualifying English Test (QET), ES1 instead.</p></div>	Description of change (with changes tracked in red)	<p><i>To update the module codes (with no change in programme requirements).</i></p> <p>All Year One students admitted to RVRC must read three compulsory RVRC modules across two semesters or one academic year, to be deemed as successfully completed the programme. These modules are:</p> <ul style="list-style-type: none">• GEM1917GEM1917 Understanding and Critiquing Sustainability (formerly GEM1917)• ES1601 Professional and Academic Communication• WR1401 Workplace Readiness <p>For selected students who may need to read ES1103ES1103 after the Qualifying English Test (QET), ES1601 will be read in Semester Two instead.</p>
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			<div>URL for the change</div> <div>http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/ridge-view-residential-college-programme/rvrc-and-fulfilment-of-graduation-requirements/</div>
		<div>Screenshot of current page</div> <div><div><p>For the AY2015/2016 cohort, GEM1917 fulfils the 'Asking Questions' pillar, which of all undergraduates. For the AY2016/2017 cohort, the module that RVRC resid is under review and will be made known in due course.</p><p>ES1601 has been mapped to the compulsory writing and communication module (module to be confirmed), School of Computing (CS2101 and IS2101) and Scho students in the RVRC Programme will have satisfied their respective faculty's wr ES1601.</p><p>WR1401 encompasses the CFG1010 Roots & Wings 1.0, which is a mandatory bid for this module separately on CORS.</p></div></div>	
		<div>Description of change (with changes tracked in red)</div> <div><p><i>To update the Bulletin in view of two curriculum changes: (i) recognising GEM1917 towards fulfilment of GE Asking Questions pillar and consequential conversion of module code from GEM1917 to GEQ1917; and (ii) updating the list of writing modules that ES1601 can be taken in lieu of.</i></p><p>For the AY2015/2016 cohort, GEQ1917 (formerly GEM1917) fulfils the 'Asking Questions' pillar, which is one of the five General Education modules required of all undergraduates. For the AY2016/2017 cohort, the module that RVRC residents will read in fulfilment of the "Asking Questions" pillar is under review and will be made known in due course. RVRC students who have read and completed this module would have satisfied the "Asking Questions" pillar.</p><p>ES1601 has been mapped to can be taken in lieu of the compulsory writing and/or communication module(s) in Faculty of Arts and Social Sciences (FAS1102), Faculty of Science (SP1541), Faculty of Engineering (module to be confirmed both ES1531 and ES2331), School</p></div>	

			<p>of Computing (CS2101 and/or IS2101) and School of Design and Environment (ES2007D). Thus students in the RVRC Programme will have satisfied their respective faculty's writing and/or communication equivalents having read ES1601.</p> <p>WR1401 encompasses the CFG1010 Roots & Wings 1.0, which is a mandatory module for all freshmen in RVRC. Students from RVRC need not bid for this module separately on CORS</p>
36.	7 Oct 2016	FoS	<p>Background: BUS has approved the following new LSM modules: - LSM3247 Practical Synthetic Biology - LSM3234 Biological Imaging of Growth and Form - LSM4229 Therapeutic and diagnostic agents from animal toxins - LSM4256 Evolution of Development</p> <p>via BUS circular 6 of AY16/17. We would like to update these new modules in the elective lists in the Life Sciences major, for 2014, 2015 and 2016 Bulletins.</p> <p>Updates are indicated in yellow highlight below: 1) For LSM3247 and LSM3234 2016 Online Bulletin Under 3.3.3.4 i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Life Sciences, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/life-sciences/), include LSM3247 Practical Synthetic Biology and LSM3234 Biological Imaging of Growth and Form in the list of Level 3000 LSM elective modules for the B.Sc and B.Sc. (Hons.) in Life Sciences.</p> <p>.</p> <p>.</p> <p>LSM3233 Developmental Biology LSM3234 Biological Imaging of Growth and Form LSM3241 Bioinformatics and Biocomputing</p> <p>.</p> <p>.</p> <p>LSM3245 RNA Biology and Technology LSM3246 Synthetic Biology LSM3247 Practical Synthetic Biology LSM3252 Evolution and Comparative Genomics</p>

			<p>LSM3254 Ecology of Aquatic Environments</p> <p>.</p> <p><u>2) For LSM4229 and LSM4256</u> <u>2016 Online Bulletin</u> Under 3.3.3.4 i.e. Bachelor of Science (Hons) Programme requirements for Life Sciences, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/life-sciences/), include the following: - LSM4256 Evolution of Development in the list of Level 4000 LSM elective modules under the Environmental Biology (EVB) specialisation, for the B.Sc. (Hons.) in Life Sciences. - LSM4229 Therapeutic and diagnostic agents from animal toxins in the list of Level 4000 LSM elective modules under the Biomedical Sciences (BMS) specialisation, for the B.Sc. (Hons.) in Life Sciences. List of Electives under the EVB specialisation:</p> <p>LSM4254 Principles of Taxonomy and Systematics LSM4255 Methods in Mathematical Biology LSM4256 Evolution of Development LSM4261 Marine Biology LSM4262 Tropical Conservation Biology LSM4263 Field Studies in Biodiversity LSM4264 Freshwater Biology LSM4265 Urban Ecology LSM4266 Aquatic Biodiversity LSM4267 Animal Communications & Sensory Ecology</p> <p>List of Electives under the BMS specialisation:</p> <p>LSM4210 Topics in Biomedical Science LSM4211 Toxicology LSM4212 Pharmacogenetics and Drug Responses LSM4213 System Neurobiology LSM4214 Cancer Pharmacology LSM4215 Extreme Physiology LSM4216 Molecular Nutrition Science LSM4217 Functional Ageing LSM4221 Drug Discovery and Clinical Trials LSM4222 Advanced Immunology LSM4223 Advances in Antimicrobial Strategies LSM4224 Free Radicals and Antioxidant Biology LSM4225 Genetic Medicine in the Post-Genomic Era</p>
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			LSM4226 Infection and Immunity LSM4227 Stem Cell Biology LSM4228 Experimental Models for Human Disease and Therapy LSM4229 Therapeutic and diagnostic agents from animal toxins																																
37.	10 Oct 2016	UTown	<div>NUS Bulletin 2016-17 - UTown College Programme: Amendments are indicated in red below.</div> <table><tr><td>URL for the change</td><td colspan="3">http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/university-town-college-programme/utcp-and-fulfilment-of-graduation-requirements/</td></tr><tr><td>Screenshot of current page</td><td colspan="3"><table><tr><td>UTCP Module</td><td>Graduation Requirement to Fulfil</td><td>Module to Substitute</td></tr><tr><td rowspan="3">Ideas & Exposition 1 (UTW1001x)</td><td>Engineering: Critical Thinking and Writing requirement</td><td>ES1531</td></tr><tr><td>Art and Social Sciences: Writing, Expression and Communication requirement</td><td>FAS1101</td></tr><tr><td>Science (except Pharmacy and Environmental Studies): Faculty writing requirement</td><td>SP1541</td></tr></table></td></tr><tr><td>Description of change (with changes tracked in red)</td><td colspan="3"><table><tr><td>UTCP Module</td><td>Graduation Requirement to Fulfil</td><td>Module to Substitute</td></tr><tr><td rowspan="3">Ideas & Exposition 1 (UTW1001x) OR Ideas & Exposition 2 (UTW2001x)</td><td>Engineering: Critical Thinking and Writing requirement</td><td>ES1531</td></tr><tr><td>Art and Social Sciences: Writing, Expression and Communication requirement</td><td>FAS1101</td></tr><tr><td>Science (except Pharmacy and Environmental Studies): Faculty writing requirement</td><td>SP1541</td></tr></table></td></tr></table>	URL for the change	http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/university-town-college-programme/utcp-and-fulfilment-of-graduation-requirements/			Screenshot of current page	<table><tr><td>UTCP Module</td><td>Graduation Requirement to Fulfil</td><td>Module to Substitute</td></tr><tr><td rowspan="3">Ideas & Exposition 1 (UTW1001x)</td><td>Engineering: Critical Thinking and Writing requirement</td><td>ES1531</td></tr><tr><td>Art and Social Sciences: Writing, Expression and Communication requirement</td><td>FAS1101</td></tr><tr><td>Science (except Pharmacy and Environmental Studies): Faculty writing requirement</td><td>SP1541</td></tr></table>			UTCP Module	Graduation Requirement to Fulfil	Module to Substitute	Ideas & Exposition 1 (UTW1001x)	Engineering: Critical Thinking and Writing requirement	ES1531	Art and Social Sciences: Writing, Expression and Communication requirement	FAS1101	Science (except Pharmacy and Environmental Studies): Faculty writing requirement	SP1541	Description of change (with changes tracked in red)	<table><tr><td>UTCP Module</td><td>Graduation Requirement to Fulfil</td><td>Module to Substitute</td></tr><tr><td rowspan="3">Ideas & Exposition 1 (UTW1001x) OR Ideas & Exposition 2 (UTW2001x)</td><td>Engineering: Critical Thinking and Writing requirement</td><td>ES1531</td></tr><tr><td>Art and Social Sciences: Writing, Expression and Communication requirement</td><td>FAS1101</td></tr><tr><td>Science (except Pharmacy and Environmental Studies): Faculty writing requirement</td><td>SP1541</td></tr></table>			UTCP Module	Graduation Requirement to Fulfil	Module to Substitute	Ideas & Exposition 1 (UTW1001x) OR Ideas & Exposition 2 (UTW2001x)	Engineering: Critical Thinking and Writing requirement	ES1531	Art and Social Sciences: Writing, Expression and Communication requirement	FAS1101	Science (except Pharmacy and Environmental Studies): Faculty writing requirement	SP1541
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38.	18 Oct 2016	FoS	<p>Background: BUS has approved the changes to LSM3257 via BUS Cir 7 of AY16/17 (recode to LSM2253), for Cohort 2016/17 and onwards. Updates to the 2016 Bulletin are indicated in yellow highlight below:</p> <p>2016 Online Bulletin Under 3.3.3.4 i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Life Sciences, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/life-sciences/),</p> <p>Update 1: Add LSM2253 Applied Data Analysis in Ecology and Evolution to the list of Level 2000 LSM elective modules for the B.Sc and B.Sc. (Hons.) in Life Sciences.</p> <p>Pass 3</p> <table><tr><td>LSM2211</td><td>Metabolism and Regulation</td></tr><tr><td>LSM2212</td><td>Human Anatomy</td></tr><tr><td>LSM2231</td><td>General Physiology</td></tr><tr><td>LSM2232</td><td>Genes and Genomes</td></tr><tr><td>LSM2233</td><td>Cell Biology</td></tr><tr><td>LSM2241</td><td>Introductory Bioinformatics</td></tr><tr><td>LSM2234</td><td>Physical Concepts in Biology</td></tr><tr><td>LSM2251</td><td>Ecology and Environment</td></tr><tr><td>LSM2252</td><td>Biodiversity</td></tr><tr><td>LSM2253</td><td>Applied Data Analysis in Ecology and Evolution</td></tr><tr><td>LSM2291</td><td>Fundamental Techniques in Microbiology</td></tr></table> <p>Update 2: Remove LSM3257 Quantitative Methods for Ecological Research from the list of Level 3000 LSM elective modules for the B.Sc and B.Sc. (Hons.) in Life Sciences</p> <p>Pass 4 LSM32XX elective modules (except LSM3289), one of which may be a LSM-recognised elective module (up to 4 MCs).</p> <p>.</p> <table><tr><td>LSM3255</td><td>Ecology of Terrestrial Environments</td></tr><tr><td>LSM3256</td><td>Tropical Horticulture</td></tr></table>	LSM2211	Metabolism and Regulation	LSM2212	Human Anatomy	LSM2231	General Physiology	LSM2232	Genes and Genomes	LSM2233	Cell Biology	LSM2241	Introductory Bioinformatics	LSM2234	Physical Concepts in Biology	LSM2251	Ecology and Environment	LSM2252	Biodiversity	LSM2253	Applied Data Analysis in Ecology and Evolution	LSM2291	Fundamental Techniques in Microbiology	LSM3255	Ecology of Terrestrial Environments	LSM3256	Tropical Horticulture
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			<div>LSM3257 — Quantitative Methods for Ecological Research</div> <div>LSM3258 Comparative Botany</div> <div>LSM3262 Environmental Animal Physiology</div>									
39.	14 Nov 2016	FoS	<div><div><div>Update 1</div><div>Background:</div></div><div>BUS has approved the changes to the Pharmacy curriculum arising from their review to expand UE space for Cohort 2015 (increase by 8 MCs), and Cohort 2016 onwards (increase by 12 MCs). Updates to the 2015 and 2016 Bulletins are required.</div><div>Amendments made (in yellow highlight):</div><div>Under 3.3.4-> Bachelor of Science (Pharmacy)</div><div>(http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-science-pharmacybachelor-of-science-pharmacy-hons-b-sc-pharm-b-sc-pharm-hons/)</div><div>Graduation Requirements</div><div>To be awarded a B.Sc. (Pharm.) or B.Sc. (Pharm.) (Hons.), candidates must satisfy the following:</div><table><tr><th>Module Level</th><th>Major Requirements</th><th>Cumulative Major MCs</th></tr><tr><td>Faculty Requirement (16 MCs)</td><td><div>Pass</div><div>AY1130 Human Physiology & Anatomy I</div><div>PA1113 Basic Pharmacology</div><div>PY1131 Human Physiology & Anatomy II</div><div>PX2108 Basic Human Pathology</div></td><td>16</td></tr><tr><td>Level-1000 (20 16 MCs)</td><td><div>Pass</div><div>PR1110 Foundations for Medicinal Chemistry</div></td><td>3632</td></tr></table></div>	Module Level	Major Requirements	Cumulative Major MCs	Faculty Requirement (16 MCs)	<div>Pass</div> <div>AY1130 Human Physiology & Anatomy I</div> <div>PA1113 Basic Pharmacology</div> <div>PY1131 Human Physiology & Anatomy II</div> <div>PX2108 Basic Human Pathology</div>	16	Level-1000 (20 16 MCs)	<div>Pass</div> <div>PR1110 Foundations for Medicinal Chemistry</div>	3632
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				PR1111 Pharm Biochemistry PR1120 Microbiology for Pharmacy PR1140 Pharmacy Professional Skills Development I PR1142 Pharm Statistics	
			Level-2000 (30 32 MCs)	Pass PR2114 Formulation & Technology I PR2115 Medicinal Chemistry for Drug Design PR2122 Biotechnology for Pharmacy PR2131 Pharmacy Professional Skills Development II PR2133 Pharmacotherapeutics I PR2134 Self Care I Self Care PR2135 Pharmacotherapeutics II PR2143 Pharmaceutical Analysis for Quality Assurance	66 64
			Level-3000 (40 32 MCs)	Pass PR3123 Formulation & Technology II PR3116 Concepts in Pharmacokinetics and Biopharmaceutics PR3122 Self Care II PR3124 Pharmacotherapeutics III PR3117 Formulation & Technology III II PR3136 Pharmacotherapeutics IV PR3137 Pharmacy Professional Skills Development III PR3144 Principles of Research Methods PR3145 Compliance & Good Practices in Pharmacy PR3146 Pharmacy Law in Singapore	106 96

Level-4000 (30 28 MCs)	Pass PR4138 Pharmacy Professional Skills Development IV PR4197 Pharmacy Internship I PR4198 Pharmacy Internship II PR4196 Pharmacy Research Project and Scientific Communication	136 124

Summary of Requirement	B.Sc. (Pharm.)/B.Sc. (Pharm.) (Hons.)
University Requirement	20 MCs
Faculty Requirements	16 MCs
Major Requirement	420 108 MCs
Unrestricted Elective Modules	4 16 MCs
Total	160 MCs

Update 2
Amendments made to the new Data Science and Analytics (DSA) major are as follows (in yellow highlight):

Under 3.4.2.3-> Second Major in Mathematics, (<http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/second-major-programmes/mathematics/>)

Below the table of requirements, please update this statement to:

			<p>This second major is <u>not</u> offered with a primary major in Applied Mathematics, Mathematics, Quantitative Finance or Data Science and Analytics, and minor in Mathematics or Financial Mathematics.</p> <p><u>Update 3</u></p> <p><u>Background:</u> BUS has approved the following new LSM module and hence updates are needed for the 2014, 2015 and <u>2016 Bulletin:</u> LSM3259 Fungal Biology; via BUS circular 9 of AY16/17 (offered from Sem 2 AY16/17)</p> <p>Updates to make are indicated in yellow highlight below:</p> <p><u>2016 Online Bulletin</u> Under 3.3.3.4 i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Life Sciences, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/life-sciences/), include LSM3259 Fungal Biology in the list of Level 3000 LSM elective modules for the B.Sc and B.Sc. (Hons.) in Life Sciences.</p> <p>LSM3256 Tropical Horticulture LSM3258 Comparative Botany LSM3259 Fungal Biology LSM3262 Environmental Animal Physiology</p>
40.	31 Oct 2016	SoC	<p><u>NUS Bulletin 2016-17 updates</u></p> <p>3.2.9 Bachelor of Computing in Computer Science – Turing Programme http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/degree-requirements/bachelor-of-computing-in-computer-science-turing-programme/</p> <p>Update #1: To replace the degree requirement below</p> <p>Degree Requirements</p> <p>Students in the programme must maintain a minimum CAP of 4.00 in every semester of their studies and must complete the requirements of Bachelor of Computing (Computer Science), with the following variations:</p>

		<ul style="list-style-type: none"> • They will read CS1101S Programming Methodology (5 MCs) instead of CS1010* • They will read CS2020 Data Structures and Algorithms Accelerated (6 MCs) instead of CS1020 and CS2010* • They will read CS3230R Design and Analysis of Algorithms (1 MC) following CS3230 Design and Analysis of Algorithms • They will read CS4232 Theory of Computation (4 MCs) towards the Breadth and Depth requirement. • They will read CS2309 CS Research Methodology (4 MCs) and 2 R-modules (1 MC each). They will have 14 MCs remaining in the Unrestricted Electives. • They will take either: <ul style="list-style-type: none"> ○ CS3281 and CS3282 Thematic Systems Project I and II (8 MCs) with research content, or ○ CP3208 and CP3209 Undergraduate Research in Computing I and II (8 MCs) to meet the Software Engineering Team Project requirement • They will take CP4101 BComp Dissertation (12 MCs) with research content to meet the Industrial Experience Training Requirement. Students who complete the 3-module series CS1010, CS1020, and CS2010 with good grades may also apply for admission into TP; they will be exempted from taking CS1101S and CS2020. <p>With:</p> <p>Degree Requirements</p> <p>Students in the programme must maintain a minimum CAP of 4.00 in every semester of their studies and must complete the requirements of Bachelor of Computing (Computer Science), with the following variations:</p> <ul style="list-style-type: none"> • They may read CS1101S Programming Methodology in place of CS1010. • They will read CS2020 Data Structures and Algorithms Accelerated (6 MCs) instead of CS1020 and CS2010 • They will read CS2309 CS Research Methodology (4 MCs). They will have 22 MCs remaining in the Unrestricted Electives. • They will take CP3208 and CP3209 Undergraduate Research in Computing I and II (8 MCs) to meet the Software Engineering Team Project requirement..
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Update #2: To update this section as follows:
University Scholars Programme (Computer Science)

Students in the University Scholars Programme who choose the Bachelor of Computing (Computer Science) major will follow the Computer Science programme, but with the following variations:

1. They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar).
2. They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking.
3. They will not be required to read two Science Modules (8 MCs). These are replaced by 2 USP Inquiry modules in Sciences and Technologies basket.
4. ~~They will read UROP modules (CP3208 and CP3209) in place of CS3281 and CS3282.~~ CP3208 and CP3209 are independent study modules (ISMs) which will also be counted as 2 USP Inquiry modules in Sciences and Technologies basket.

Update #3: To update Table 4:

Table 4: Summary of degree requirements for Bachelor of Computing (Computer Science) – Turing Programme

MODULES	MCS	SUBTOTALS
UNIVERSITY LEVEL REQUIREMENTS		20
PROGRAMME REQUIREMENTS		126 118

			Computer Science Foundation	36 34		
			CS1101S CS1010 Programming Methodology	5 4		
			CS1231 Discrete Structures	4		
			CS2020 Data Structures and Algorithms Accelerated	6		
			CS2100 Computer Organisation	4		
			CS2103T Software Engineering	4		
			CS2105 Introduction to Computer Networks	4		
			CS2106 Introduction to Operating Systems	4		
			CS3230 & CS3230R Design and Analysis of Algorithms	5 4		

			Computer Science Breadth & Depth	60 48		
			CS2309 CS Research Methodology	4		
			Satisfy 1 CS Focus Area, with 3 CS modules at Level – 4000 or above, with 2 R- modules, with CS4232 Theory of Computation	26 24		
			CS3281 Thematic Systems Project I (with research content) CP3208 Undergraduate Research in Computing I	4		
			CS3282 Thematic Systems Project II (with research content) CP3209 Undergraduate Research in Computing II	4		
			CP4101 B.Comp. Dissertation (with research content)	12		
			IT Professionalism	12		
			IS1103/FC/X Computing and Society	4		

			CS2101 Effective Communication for Computing Professionals	4		
			ES2660 Communicating in the Information Age	4		
			Mathematics and Sciences	28		
			MA1301/FC/X Introductory Mathematics ¹	4		
			MA1521 Calculus for Computing ²	4		
			MA1101R Linear Algebra I	4		
			Either ST2334 Probability and Statistics and a Science Module ³ or ST2131 Probability and ST2132 Mathematical Statistics ⁴	8		

PC1221/FC/X Fundamentals of Physics I or PC1222/X Fundamentals of Physics II	4	
1 Science Module⁴	4 0	
UNRESTRICTED ELECTIVES		14 22
Grand Total		160

¹ MA1301/FC/X is waived for students with A-level Mathematics. The 4 MCs gained from the waiver should be used to read another module.
² Students pursuing a double degree in Computer Science and Mathematics/Applied Mathematics are recommended to replace MA1521 Calculus for Computing by MA1102R Calculus.
³ Science modules must be either Physics, Chemistry or Life-Science or Mathematics modules. Science modules must be modules from List S1 (recommended) or List S2. Please refer to: http://www.comp.nus.edu.sg/images/resources/content/undergraduates/Sciencemodules_S1_S2.pdf for details.
⁴ Students pursuing a double degree in Computer Science and Mathematics/Applied Mathematics will take ST2131 Probability and ST2132 Mathematical Statistics in place of ST2334 Probability and Statistics

3.2.10 Bachelor of Computing in Information Security

<http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/degree-requirements/bachelor-of-computing-in-information-security/>

Update #1:

To insert a new module: CS3236 to the list below and in **Table 4: Summary of degree requirements for Bachelor of Computing (Information Security)**

		<p>Complete 16 MCs from the following list of modules:</p> <p>CS3236 Introduction to Information Theory</p> <p>CS4236 Cryptography Theory and Practice</p> <p>CS4238 Computer Security Practices</p> <p>CS4239 Software Security</p> <p>CS5231 Systems Security</p> <p>CS5321 Network Security</p> <p>CS5322 Database Security</p> <p>CS5331 Web Security</p> <p>IFS4101 Legal Aspects of Information Security</p> <p>IS4204 IT Governance</p> <p>IS4232 Topics in Information Security Management</p> <p>IS4233 Legal Aspects of Information Technology</p> <p>IS4234 Control and Audit of Information Systems</p> <p>Other modules approved by the SoC UG Office</p> <p>Table 4: Summary of degree requirements for Bachelor of Computing (Information Security) Programme Electives</p> <p>Complete 16 MCs from the following list of modules:</p> <p>CS3236 Introduction to Information Theory</p> <p>CS4236 Cryptography Theory and Practice</p> <p>CS4238 Computer Security Practices</p> <p>CS4239 Software Security</p> <p>CS5231 Systems Security</p> <p>CS5321 Network Security</p> <p>CS5322 Database Security</p> <p>CS5331 Web Security</p> <p>IS4204 IT Governance</p> <p>IFS4101 Legal Aspects of Information Security</p> <p>IS4204 IT Governance</p> <p>IS4232 Topics in Information Security Management</p> <p>IS4233 Legal Aspects of Information Technology</p> <p>IS4234 Control and Audit of Information Systems</p> <p>Other modules approved by the SoC UG Office</p> <p>NUS Bulletin 2015-16 Updates</p> <p>3.2.9 Bachelor of Computing in Computer Science – Turing Programme</p> <p>http://www.nus.edu.sg/registrar/info/nusbulletin/AY201516_SoC.pdf: Page 34 and beyond</p>
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			<p>Update #1: To replace the degree requirement below with new sections below</p> <p>Degree Requirements</p> <p>The Turing Programme for Bachelor of Computing (Computer Science) requires at least 160 MCs. Students in the programme must maintain a minimum CAP of 4.00 in every semester of their studies.</p> <p>(i) PROGRAMME REQUIREMENTS (Total of 118 MCs)</p> <p>Computer Science Foundation</p> <p>CS1010 Programming Methodology²</p> <p>CS1231 Discrete Structures</p> <p>CS2020 Data Structures and Algorithms Accelerated²</p> <p>CS2100 Computer Organisation</p> <p>CS2103T Software Engineering³</p> <p>CS2105 Introduction to Computer Networks</p> <p>CS2106 Introduction to Operating Systems</p> <p>CS3230 Design and Analysis of Algorithms</p> <p>Computer Science Breadth & Depth</p> <p>Complete 24 MCs of CS modules by satisfying the following conditions⁴</p> <ul style="list-style-type: none"> ○ Satisfy at least one CS Focus Area for BComp(CS) by completing 3 modules in the Area Primaries, with at least one module at level-4000 or above. Computer Science Foundation modules that appear in Area Primaries can be counted as one of the 3 modules towards satisfying a Focus Area ○ At least 12 MCs are at level-4000 or above. <p>CS2309 CS Research Methodology</p> <p>CS3208 Undergraduate Research in Computing I</p> <p>CS3209 Undergraduate Research in Computing II</p> <p>CP4101 BComp Dissertation (with research content)</p> <p>IT Professionalism</p> <p>IS1103/FC/X Computing and Society</p> <p>CS2101 Effective Communication for Computing Professionals</p>
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			<p>Mathematics & Sciences MA1301/FC/X Introductory Mathematics 5 MA1521 Calculus for Computing 6 MA1101R Linear Algebra I</p> <p>Either PC1221/FC/X Fundamentals of Physics 7 or PC1222/X Fundamentals of Physics II</p> <p>Either (ST2334 Probability and Statistics and a Science Module) or (ST2131 Probability and ST2132 Mathematical Statistics)8</p> <p>One Science module9</p> <p>(ii) UNIVERSITY LEVEL REQUIREMENTS (20 MCs) (iii) UNRESTRICTED ELECTIVES (22 MCs)</p> <p>University Scholars Programme (Computer Science)</p> <p>Students in the University Scholars Programme who choose the Bachelor of Computing (Computer Science) major will follow the Computer Science programme, but with the following variations:</p> <ul style="list-style-type: none"> • They will not be required to read University Level Requirements (20 MCs). These are replaced by the 3 USP Inquiry Modules and 2 USP Foundation modules (Quantitative Reasoning Foundation and University Scholars Seminar). • They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking. • They will not be required to read two Science Modules (8 MCs). These are replaced by 2 USP Inquiry modules in Sciences and Technologies basket. • They will read CP3208 and CP3209 as independent study modules (ISMs) which will also be counted as 2 USP Inquiry modules in Sciences and Technologies basket.
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Table 4: Summary of degree requirements for Bachelor of Computing (Computer Science) – Turing Programme

Modules	MC s	Subtotal s
UNIVERSITY LEVEL REQUIREMENTS¹		20
PROGRAMME REQUIREMENTS		118
<i>Computer Science Foundation</i>	34	
CS1010 Programming Methodology ²	4	
CS1231 Discrete Structures	4	
CS2020 Data Structures and Algorithms Accelerated ²	6	
CS2100 Computer Organisation	4	
CS2103T Software Engineering ³	4	
CS2105 Introduction to Computer Networks	4	
CS2106 Introduction to Operating Systems	4	
CS3230 Design and Analysis of Algorithms	4	
<i>Computer Science Breadth & Depth⁴</i>	48	
CS2309 CS Research Methodology	4	
Satisfy 1 CS Focus Area, with 3 CS modules at level-4000 or above.	24	
CS3208 Undergraduate Research in Computing I	4	
CS3209 Undergraduate Research in Computing II	4	
CP4101 BComp Dissertation (with research content)	12	
<i>IT Professionalism</i>	8	
IS1103/FC/X Computing and Society	4	

			CS2101 Effective Communication for Computing Professionals	4		
			Mathematics and Sciences	28		
			MA1301/FC/X Introductory Mathematics 5	4		
			MA1521 Calculus for Computing 6	4		
			MA1101R Linear Algebra I	4		
			Either PC1221/FC/X Fundamentals of Physics I 7 or PC1222/X Fundamentals of Physics II	4		
			Either (ST2334 Probability and Statistics and a Science Module) or (ST2131 Probability and ST2132 Mathematical Statistics) 8	8		
			One Science module 9	4		
			UNRESTRICTED ELECTIVES		22	
			Grand Total		160	
			<ol style="list-style-type: none"> Students must complete an approved GE module within the Thinking and Expression pillar. The current approved module list includes GET1006 Critical Thinking in the Information Age and GET1021 Critical Thinking and Writing. CS1010 can be replaced by CS1101S Programming Methodology. CS2020 can be replaced by CS1020 Data Structures and Algorithms I (4 MCs) and CS2010 (data Structures and Algorithms II (4 MCs). The additional 2 MCs will be taken from the Unrestricted Electives requirements. Students taking CS2103T Software Engineering must take CS2101 Effective Communication for Computing Professionals in the same semester. The 24 MCs of CS modules refer to CS-coded modules listed in the 11 CS Focus areas. The listing of IS-coded modules in the CS focus areas provide a guide to students should they be interested in taking more related modules in the respective areas for depth. These IS modules, if taken, will be used to fulfill unrestricted electives. MA1301/FC/X is waived for students with A-level Mathematics. The 4 MCs gained from the waiver should be used to read an unrestricted elective. Students pursuing double degree in Computer Science and Mathematics/Applied Mathematics are recommended to replace MA1521 Calculus for Computing by MA1102R Calculus. PC1221/FC/X or PC1222/X is waived for students with A-level Physics. The 4 MCs gained from the waiver should be used to read an unrestricted elective. 			

		<p>8. Students pursuing double degree in Computer Science and Mathematics/Applied Mathematics will take ST2131 Probability and ST2132 Mathematical Statistics in place of ST2334 Probability and Statistics.</p> <p>9. Science modules must be either Physics, Chemistry or Life-Science or Mathematics modules. Science modules must be modules from List S1 (recommended) or List S2. Please refer to: http://www.comp.nus.edu.sg/images/resources/content/undergraduates/Sciencemodules_S1_S2.pdf for details.</p> <p>Update #2: To update this section as follows: University Scholars Programme (Computer Science)</p> <p>Students in the University Scholars Programme who choose the Bachelor of Computing (Computer Science) major will follow the Computer Science programme, but with the following variations:</p> <ol style="list-style-type: none"> 1. They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar). 2. They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking. 3. They will not be required to read two Science Modules (8 MCs). These are replaced by 2 USP Inquiry modules in Sciences and Technologies basket. 4. They will read UROP modules (CP3208 and CP3209) in place of CS3281 and CS3282. CP3208 and CP3209 are independent study modules (ISMs) which will also be counted as 2 USP Inquiry modules in Sciences and Technologies basket. <p>3.2.10 Bachelor of Computing in Information Security http://www.nus.edu.sg/registrar/info/nusbulletin/AY201516_SoC.pdf: Page 41 and Page 43</p> <p>To insert a new module: CS3236 to the list below and in Table 4: Summary of degree requirements for Bachelor of Computing (Information Security)</p> <p>Complete 16 MCs from the following list of modules:</p> <p>CS3236 Introduction to Information Theory CS4236 Cryptography Theory and Practice</p>
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			<p> CS4238 Computer Security Practices CS4239 Software Security CS5231 Systems Security CS5321 Network Security CS5322 Database Security CS5331 Web Security IFS4101 Legal Aspects of Information Security IS4204 IT Governance IS4232 Topics in Information Security Management IS4233 Legal Aspects of Information Technology IS4234 Control and Audit of Information Systems Other modules approved by the SoC UG Office </p> <p>Table 4: Summary of degree requirements for Bachelor of Computing (Information Security) Programme Electives</p> <p>Complete 16 MCs from the following list of modules:</p> <p>CS3236 Introduction to Information Theory</p> <p> CS4236 Cryptography Theory and Practice CS4238 Computer Security Practices CS4239 Software Security CS5231 Systems Security CS5321 Network Security CS5322 Database Security CS5331 Web Security IFS4101 Legal Aspects of Information Security IS4204 IT Governance IS4232 Topics in Information Security Management IS4233 Legal Aspects of Information Technology IS4234 Control and Audit of Information Systems Other modules approved by the SoC UG Office </p>
41.	3 Nov 2016	RO	<p><u>RO website – To include new second major offered by SoC under ‘Double Major Programmes website (3 Nov 2016)’</u></p> <p>Please insert the new second major in ‘Computer Science’ as indicated in red below and link to the stipulated URL.</p>

<http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-major-programmes.html>

Double Major Programmes

A Double Major is a single degree programme, in which a student satisfies the requirements of two Majors. It is conceived as an opportunity for students to broaden their knowledge and capacities by pursuing a second Major alongside their primary Major. The Second Major affords a significant degree of depth, although its MC requirement is set below that of the Major. The Second Major is a non-Honours major. It may be taken in the same faculty that offers the Major or from a different Faculty. A Second Major consist of at least 48 MCs.

For students admitted prior to AY2014/15:

- ▶ up to 8 MCs can be counted also towards the Faculty/Major/Minor requirements; and
- ▶ at least 16 MCs must be at Level 3000.

For students admitted from AY2014/15 onwards:

- ▶ up to 16 MCs can be counted also towards the Faculty/Major/Minor requirements; and
- ▶ at least 16 MCs must be at Level 3000.

The second majors that are currently on offer are:

- Chemistry
- Chinese Language
- Chinese Studies
- Communications and New Media
- Computer Science (to link to <http://www.comp.nus.edu.sg/programmes/ug/major/cs-secmajor/>.)
- Economics
- English Language
- English Literature
- European Studies
- Geography
- History
- Information Security
- Japanese Studies.....

42.	3 Nov 2016	SoC	<p><u>NUS Bulletin 2016-17 Updates submitted by SoC (3 November 2016)</u></p> <p>Update 1:</p> <p>SoC Content page: http://www.nus.edu.sg/nusbulletin/school-of-computing/</p> <p>Please create items: 3.3.5.4.1 and 3.3.5.4.2 as highlighted below:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>3.3.5 Double Major Programmes</p> <p>3.3.5.1 Double Major in either Management or Management (Technology)</p> <p>3.3.5.2 Double Majors in the Faculty of Arts and Social Sciences</p> <p>3.3.5.3 Double Majors in the Faculty of Science</p> <p>3.3.5.4 Double Major s in the School of Computing</p> <p style="padding-left: 40px;">3.3.5.4.1 Double Major in Computer Science <i>(to link to the newly created page/subsection – see Pt(iv) under Update 3 below)</i></p> <p style="padding-left: 40px;">3.3.5.4.2 Double Major in Information Security <i>(to link to the newly created page/subsection – see Pt(ii) under Update 3 below)</i></p> </div> <p>Update 2:</p> <p>3.3.5 Double Major Programmes</p> <p>http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/multidisciplinary-programmes/double-major-programmes/</p> <p>Towards the end of this page, to change 3.3.5.4 as follows</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>.....</p> <p>.....</p> </div>
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		<p>3.3.5.1 Double Major in either Management or Management (Technology)</p> <p>3.3.5.2 Double Majors in the Faculty of Arts and Social Sciences</p> <p>3.3.5.3 Double Majors in the Faculty of Science</p> <p>3.3.5.4 Double Majors in the School of Computing</p>	
		<p>Update 3:</p> <p>3.3.5.4 Double Major in the School of Computing</p> <p>http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/multidisciplinary-programmes/double-major-programmes/double-major-in-the-school-of-computing/</p> <p>(i) Change the heading to 3.3.5.4 Double Majors in the School of Computing</p> <p>(ii) Shift the current content in this section 3.3.5.4 to a new page (see an extract of the current content in the attached file) and name it as sub-section 3.3.5.4.2 Double Major in Information Security</p> <div> <p>The contents for new sub-section 3.3.5.4.2 Double major in Information Security which is currently residing at: http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/multidisciplinary-programmes/double-major-programmes/double-major-in-the-school-of-computing/ are as follows:</p> <p>3.3.5.4.2 Double major in Information Security</p> <p>The School of Computing offers a second major in Information Security (InfoSec) for non-SoC students.</p> <p><u>Objective</u></p> <p>The objectives for a Second Major in InfoSec are as follows:</p> <ul style="list-style-type: none"> • To provide an information security programme within NUS for non-computing students; • To contribute to the national focus on growing the pool of cyber security professionals in Singapore; and • To produce graduates who are able to understand information security issues and practices from an inter-disciplinary point of view. <p><u>Student Learning Outcomes</u></p> <p>The Second Major in InfoSec enables students to attain, by the time of graduation:</p> </div>	

				CS2100 Computer Organisation ²	4
				CS2105 Introduction to Computer Networks ³	4
				CS2106 Introduction to Operating Systems ⁴	4
				Information Security Requirements	16
				CS2107 Introduction to Information Security	4
				CS3235 Computer Security	4
				CS3205 Information Security Capstone Project	8
				Information Security Electives	12
				Complete 12 MCs of modules from one of the following group, with at least 4 MCs at level-3000 or above.	
				Group I: Data and Software Security	
				CS2010 Data Structures and Algorithms II	
				CS2102 Database Systems	
				CS2103 Software Engineering	
				CS4239 Software Security	
				Group II: Foundation of Information Security	
				CS1231 Discrete Structures ⁵	
				CS2010 Data Structures and Algorithms II	
				CS4236 Cryptography Theory and Practice	
				Group III: Information Systems and Security Management	
				IS1103/FC/X Computing and Society	
				IS1105 Strategic IT Applications	
				IS4231 Information Security Management	
				Grand Total	48
				1. CS2020 <i>Data Structures and Algorithms Accelerated</i> can be used in place of CS1020/E. 2. EE2024 <i>Programming for Computer Interfaces</i> can be used in place of CS2100 <i>Computer Organisation</i> . 3. EE3204/E <i>Computer Communication Networks I</i> can be used in place of CS2105.	

		<p>4. CG2271 <i>Real-Time Operating Systems</i> can be used in place of CS2106.</p> <p>5. MA1100 can be used in place of CS1231. Students without A-level mathematics are required to complete MA1301 <i>Introductory Mathematics</i> before completing CS1231.</p> <p><u>Continuation and Graduation Requirements</u> The Second Major in InfoSec is a non-Honours major programme.</p> <p>Students must complete CS1020 or its equivalent, and CS2107 with a grade of at least B+ or above in each of the modules to continue the Second Major in InfoSec programme.</p> <p>The Second Major in InfoSec will be awarded to students who completed the 48 MCs second major requirement. Students will need to complete the primary major requirements to graduate. Students who did not complete the Second Major in InfoSec requirement but completed the Minor in InfoSec requirement will be awarded the Minor in InfoSec.</p> <p><u>Double Counting Framework for Double Major Programme</u> For 2014 cohort and beyond, 16 MCs of the 48-MC second major can be double counted with the primary major/programme requirements.</p>
		<p>(iii) Include the following new content for section 3.3.5.4 Double Majors in the School of Computing:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>3.3.5.4 Double Majors in the School of Computing</p> <p>The School of Computing offers the following double (or second) majors to non-SoC students:</p> <p>3.3.5.4.1 Double Major in Computer Science <i>(to link to the newly created page/subsection- see Pt(iv) below)</i></p> <p>3.3.5.4.2 Double Major in Information Security <i>(to link to the newly created page/subsection- see Pt(ii) above)</i></p> <p>Students should follow the University's double counting framework for double major programmes that is applicable to their cohort.</p> </div> <p>(iv) Create a new page to hold the new contents for sub-section 3.3.5.4.1 Double Major in Computer Science which are as follows:</p>

			<p>3.3.5.4.1 Double Major in Computer Science</p> <p>The School of Computing offers a Second Major in Computer Science (CS) for non-SoC students.</p> <p><u>Objective</u></p> <p>The objectives for a Second Major in CS are as follows:</p> <ul style="list-style-type: none"> • To provide a computer science programme within NUS for non-computing students; • To contribute to the national focus on growing the pool of technical ICT specialists in Singapore; • To produce graduates who are able to understand computer science principles and practices and apply it in a multi-disciplinary context. <p><u>Student Learning Outcomes</u></p> <p>The Second Major in CS enables students to attain, by the time of graduation:</p> <ol style="list-style-type: none"> Strong knowledge of computer science foundations and fundamentals, including (a) familiarity with common computer science themes and principles, (b) high-level understanding of systems as a whole, (c) understanding of the theoretical underpinnings of computer science and their influences in practice. Individual competence in applying sound principles and rigorous thinking to (a) analyse an application problem, (b) understand user's requirement, (c) formulate the problem in terms of computation requirements, (c) conceive novel solution ideas, (e) design appropriate solutions that meet the requirements, (f) implement the solution, (g) evaluate the effectiveness of the solution. Strong communication skills and ability to work with, and contribute to, a multi-disciplinary team to bring a range of technologies together to develop computer systems and solutions of multi-disciplinary nature. Ability to engage in continuous professional development. <p><u>Admission Requirements</u></p> <p>Students who has taken CS1010/S/E and CS1020/E as either part of their degree requirements or Minor in Computer Science can apply for entry into Second Major in Computer Science if they obtain B+ or above in both modules.</p> <p><u>Structure</u></p> <p>The Second Major in CS is structured as follows:</p> <ul style="list-style-type: none"> • Computer Science Foundation = 32 MCs • Computer Systems Team Project = 8 MCs • Computer Science Electives = 8 MCs
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In total, the 48 MCs requirement for graduation are broken down as follows:

- Core modules = 40 MCs
- Elective modules = 8 MCs

The table below shows the programme structure in details.

Modules	MCs
Computer Science Foundation	32
CS1010/S/E Programming Methodology ¹	4
CS1020/E Data Structures and Algorithms I ²	4
CS1231 Discrete Structure ³	4
CS2100 Computer Organisation ⁴	4
CS2010 Data Structure and Algorithms II ²	4
CS2103 Software Engineering	4
CS2106 Introduction to Operating Systems ⁵	4
CS3230 Design and Analysis of Algorithms	4
Computer Systems Team Project	8
Complete 8 MCs of the following pairs, or modules approved by the Department of Computer Science: CS3201/2 Software Engineering Project I/II CS3281/2 Thematic Systems Project I/II CS3283/4 Media Technology Project I/II CS3216 Software Product Engineering for Digital Markets and CS3217 Software Engineering on Modern Application Platform	8
Computer Science Focus Areas	8
Complete 8 MCs of CS coded modules with at least one module at level-3000 or above.	

			<table><tr><td>Grand Total</td><td>48</td></tr></table> <ol style="list-style-type: none">1. CS1010/S/E Programming Methodology can be replaced by CS1101S, CS1010J, or CS1010X.2. CS1020 and CS2010 can be replaced by CS2020 Data Structures and Algorithms Accelerated (6 MCs). The remaining 2 MCs will be added to either the Computer Systems Team Project requirement or the Computer Science Focus Areas requirement.3. CS1231 can be replaced by MA1100. Students without A-level Mathematics are required to complete MA1301 Introductory Mathematics before completing CS1231.4. CS2100 Computer Organisation can be replaced by EE2024 Programming for Computer Interfaces.5. CS2106 Introduction to Operating Systems can be replaced by CG2271 Real-Time Operating Systems. <p><u>Continuation and Graduation Requirements</u></p> <p>The Second Major in CS is a non-Honours major programme.</p> <p>The Second Major in CS will be awarded to students who completed the 48 MCs Second Major requirement. Students will need to complete the primary major requirements to graduate.</p> <p><u>Double Counting Framework for Double Major Programme</u></p> <p>For 2014 cohort and beyond, 16 MCs of the 48 MC Second Major can be double counted with the primary major/programme requirements.</p>	Grand Total	48
Grand Total	48				
43.	3 Nov 2016	SoC	<p>3.2.9 Bachelor of Computing in Computer Science – Turing Programme http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/degree-requirements/bachelor-of-computing-in-computer-science-turing-programme/</p> <p>Update #1: To replace the degree requirement below</p> <p>Degree Requirements</p> <p>Students in the programme must maintain a minimum CAP of 4.00 in every semester of their studies and must complete the requirements of Bachelor of Computing (Computer Science), with the following variations:</p> <ul style="list-style-type: none">• They will read CS1101S Programming Methodology (5 MCs) instead of CS1010*		

		<ul style="list-style-type: none"> • They will read CS2020 Data Structures and Algorithms Accelerated (6 MCs) instead of CS1020 and CS2010* • They will read CS3230R Design and Analysis of Algorithms (1 MC) following CS3230 Design and Analysis of Algorithms • They will read CS4232 Theory of Computation (4 MCs) towards the Breadth and Depth requirement. • They will read CS2309 CS Research Methodology (4 MCs) and 2 R-modules (1 MC each). They will have 14 MCs remaining in the Unrestricted Electives. • They will take either: <ul style="list-style-type: none"> ○ CS3281 and CS3282 Thematic Systems Project I and II (8 MCs) with research content, or ○ CP3208 and CP3209 Undergraduate Research in Computing I and II (8 MCs) to meet the Software Engineering Team Project requirement • They will take CP4101 BComp Dissertation (12 MCs) with research content to meet the Industrial Experience Training Requirement. Students who complete the 3-module series CS1010, CS1020, and CS2010 with good grades may also apply for admission into TP; they will be exempted from taking CS1101S and CS2020. <p>With:</p> <p>Degree Requirements</p> <p>Students in the programme must maintain a minimum CAP of 4.00 in every semester of their studies and must complete the requirements of Bachelor of Computing (Computer Science), with the following variations:</p> <ul style="list-style-type: none"> • They may read CS1101S Programming Methodology in place of CS1010. • They will read CS2020 Data Structures and Algorithms Accelerated (6 MCs) instead of CS1020 and CS2010 • They will read CS2309 CS Research Methodology (4 MCs). They will have 22 MCs remaining in the Unrestricted Electives. • They will take CP3208 and CP3209 Undergraduate Research in Computing I and II (8 MCs) to meet the Software Engineering Team Project requirement.. <p>Update #2: To update this section as follows:</p>
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University Scholars Programme (Computer Science)

Students in the University Scholars Programme who choose the Bachelor of Computing (Computer Science) major will follow the Computer Science programme, but with the following variations:

5. They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar).
6. They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking.
7. They will not be required to read two Science Modules (8 MCs). These are replaced by 2 USP Inquiry modules in Sciences and Technologies basket.
8. ~~They will read UROP modules (CP3208 and CP3209) in place of CS3281 and CS3282.~~ CP3208 and CP3209 are independent study modules (ISMs) which will also be counted as 2 USP Inquiry modules in Sciences and Technologies basket.

Update #3: To update Table 4:

Table 4: Summary of degree requirements for Bachelor of Computing (Computer Science) – Turing Programme

MODULES	MCS	SUBTOTALS
UNIVERSITY LEVEL REQUIREMENTS		20
PROGRAMME REQUIREMENTS		126 118
Computer Science Foundation	36 34	

			CS1101S CS1010 Programming Methodology	5 4		
			CS1231 Discrete Structures	4		
			CS2020 Data Structures and Algorithms Accelerated	6		
			CS2100 Computer Organisation	4		
			CS2103T Software Engineering	4		
			CS2105 Introduction to Computer Networks	4		
			CS2106 Introduction to Operating Systems	4		
			CS3230 & CS3230R Design and Analysis of Algorithms	5 4		
			Computer Science Breadth & Depth	50 48		

			CS2309 CS Research Methodology	4		
			Satisfy 1 CS Focus Area, with 3 CS modules at Level – 4000 or above, with 2 R-modules, with CS4232 Theory of Computation	26 24		
			CS3281 Thematic Systems Project I (with research content) CP3208 Undergraduate Research in Computing I	4		
			CS3282 Thematic Systems Project II (with research content) CP3209 Undergraduate Research in Computing II	4		
			CP4101 B.Comp. Dissertation (with research content)	12		
			IT Professionalism	12		
			IS1103/FC/X Computing and Society	4		
			CS2101 Effective Communication for Computing Professionals	4		

			ES2660 Communicating in the Information Age	4		
			Mathematics and Sciences	28		
			MA1301/FC/X Introductory Mathematics ¹	4		
			MA1521 Calculus for Computing ²	4		
			MA1101R Linear Algebra I	4		
			Either ST2334 Probability and Statistics and a Science Module ³ or ST2131 Probability and ST2132 Mathematical Statistics ⁴	8		
			PC1221/FC/X Fundamentals of Physics I or PC1222/X Fundamentals of Physics II	4		

1 Science Module⁴	4 0	
UNRESTRICTED ELECTIVES		14 22
Grand Total		160

¹ MA1301/FC/X is waived for students with A-level Mathematics. The 4 MCs gained from the waiver should be used to read another module.
² Students pursuing a double degree in Computer Science and Mathematics/Applied Mathematics are recommended to replace MA1521 Calculus for Computing by MA1102R Calculus.
³ Science modules must be either Physics, Chemistry or Life-Science or Mathematics modules. Science modules must be modules from List S1 (recommended) or List S2. Please refer to: http://www.comp.nus.edu.sg/images/resources/content/undergraduates/Sciencemodules_S1_S2.pdf for details.
⁴ Students pursuing a double degree in Computer Science and Mathematics/Applied Mathematics will take ST2131 Probability and ST2132 Mathematical Statistics in place of ST2334 Probability and Statistics

3.2.10 Bachelor of Computing in Information Security

<http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/degree-requirements/bachelor-of-computing-in-information-security/>

Update #1:

To insert a new module: CS3236 to the list below and in **Table 4: Summary of degree requirements for Bachelor of Computing (Information Security)**

Complete 16 MCs from the following list of modules:

CS3236 Introduction to Information Theory
 CS4236 Cryptography Theory and Practice
 CS4238 Computer Security Practices
 CS4239 Software Security
 CS5231 Systems Security

		<p>CS5321 Network Security CS5322 Database Security CS5331 Web Security IFS4101 Legal Aspects of Information Security IS4204 IT Governance IS4232 Topics in Information Security Management IS4233 Legal Aspects of Information Technology IS4234 Control and Audit of Information Systems Other modules approved by the SoC UG Office</p> <p>Table 4: Summary of degree requirements for Bachelor of Computing (Information Security) Programme Electives</p> <p>Complete 16 MCs from the following list of modules:</p> <p>CS3236 Introduction to Information Theory CS4236 Cryptography Theory and Practice CS4238 Computer Security Practices CS4239 Software Security CS5231 Systems Security CS5321 Network Security CS5322 Database Security CS5331 Web Security IS4204 IT Governance IFS4101 Legal Aspects of Information Security IS4204 IT Governance IS4232 Topics in Information Security Management IS4233 Legal Aspects of Information Technology IS4234 Control and Audit of Information Systems Other modules approved by the SoC UG Office</p> <p>Update #2: To update this section as follows: University Scholars Programme (Computer Science) Students in the University Scholars Programme who choose the Bachelor of Computing (Computer Science) major will follow the Computer Science programme, but with the following variations:</p> <p>5. They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar).</p>
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			<p>6. They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking.</p> <p>7. They will not be required to read two Science Modules (8 MCs). These are replaced by 2 USP Inquiry modules in Sciences and Technologies basket.</p> <p>8. They will read UROP modules (CP3208 and CP3209) in place of CS3281 and CS3282. CP3208 and CP3209 are independent study modules (ISMs) which will also be counted as 2 USP Inquiry modules in Sciences and Technologies basket.</p>
44.	12 Dec 2016	RO	<p>As BBA (Accountancy) DDPs/CDPs will not be offered as entry level options for AY2017 applications, amendments are made to the following DDP/CDP FAQs as indicated in red below:</p> <p>Update 1 http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/faqs-for-ddp-cdp-and-dm.html#ddp01 (Qn.1)</p> <p>1. What are the specially-designed double degree programmes (DDPs) offered for direct admission to the first year at NUS?</p> <p>NUS offers the following DDPs for direct admission, namely:</p> <ul style="list-style-type: none"> a. Business Administration or Business Administration (Accountancy)/Law b. Business Administration or Business Administration (Accountancy)/Engineering {any discipline except Engineering Science} c. Economics/Engineering {any discipline except Engineering Science} d. Economics/Law e. Law/Life Sciences f. Business Administration or Business Administration (Accountancy) /Communications & New Media g. Computer Science/Mathematics or Applied Mathematics h. Business Administration or Business Administration (Accountancy)/Computer Science or Information Systems i. Business Administration or Business Administration (Accountancy) /Economics <p>The following DDPs is are only available for non-direct admission (i.e. opened to those who completed 1st level of study)</p> <ul style="list-style-type: none"> a. Engineering (Materials Science & Engineering)/Physics

		<p>b. Business Administration (Accountancy)/Law</p> <p>c. Business Administration (Accountancy)/Engineering {any discipline except Engineering Science}</p> <p>d. Business Administration (Accountancy) /Communications & New Media</p> <p>e. Business Administration (Accountancy)/Computer Science or Information Systems</p> <p>f. Business Administration (Accountancy) /Economics</p> <p>Students who are interested to pursue their own double degree combinations may also be able to do so. However, they must have obtained a minimum CAP of 4.00 or 3.75 depending on their admission year after completing between 60 to 80 MCs. Please refer to FAQ question 14 below for more information.</p> <p>-----</p> <p>Update 2</p> <p>http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/faqs-for-ddp-cdp-and-dm.html#cdp02</p> <p>(Qn.2)</p> <p>2. When can I be admitted to a CDP and what are the criteria for admission?</p> <p>For the following CDPs, students will be admitted after a period of study:</p> <ul style="list-style-type: none"> ▶ Bachelor of Engineering {any discipline except Engineering Science} and Master of Science (Management) ▶ Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master of Science (Management) – (direct admission is also available for Bachelor of Business Administration (Hons) and Master of Science (Management)) ▶ Bachelor of Computing (Hons) and Master of Science (Management) <p>A student must have:</p> <ol style="list-style-type: none"> a. informed his/her original Faculty/School by writing to the Vice-Dean (Undergraduate Matters) before applying to the programme b. completed at least 80 modular credits (MCs) for his/her undergraduate programme with his/her original Faculty/School; at least 40 of those completed MCs must be from modules in his/her undergraduate major(s) c. an overall CAP of at least 4.00 d. Graduate Management Admission Test (GMAT) is recommended but not mandatory e. performed well in an interview <p>If a student is enrolled in the University Scholars programme (USP), he/she must have completed at least 4 modules that can count towards the existing 6-module Minor in Business (to be renamed Minor in Management) programme with an average grade point for those completed modules of at least 4.00</p>
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45	12 Dec 2016	FoS	<p><u>Background:</u></p> <p>UCEP and BUS has approved the new FoS Second Major in Data Analytics for Cohort 2016 and onwards, w.e.f Sem 1 AY17/18. This new Second Major needs to be created in the 2016 Online Bulletin.</p> <p>Updates made are as follows:</p> <p><u>2016 Bulletin</u></p> <p>1) Under 3.4.2 Second Major Programmes in the content page (http://www.nus.edu.sg/nusbulletin/faculty-of-science/), please insert 'Second Major in Data Analytics' as the second in the list, i.e. after the Second Major in Chemistry and before the Second Major in Life Sciences, and re-number them accordingly. Please also amend the numbering in the respective sections accordingly.</p> <p>3.4.2 Second Major Programmes</p> <p>3.4.2.1 Second Major in Chemistry</p> <p>3.4.2.2 Second Major in Data Analytics (to create a new webpage for this item and hyperlink to it – see #Pt(3) below for the details)</p> <p>3.4.2.23 Second Major in Life Sciences</p> <p>3.4.2.34 Second Major in Mathematics</p> <p>3.4.2.45 Second Major in Physics</p> <p>3.4.2.56 Second Major in Statistics</p> <p>-----</p> <p>2) Under 3.4.2 Second Major Programmes, Pre-requisites at http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/second-major-programmes/, please update as follows:</p> <p>Prerequisites for Second Major Programmes:</p> <table><tr><th>Second Major</th><th>Prerequisites</th></tr><tr><td>1. Chemistry</td><td>H2 pass in Chemistry or equivalent</td></tr><tr><td>2. Data Analytics</td><td>A very good pass in H2 Mathematics or equivalent.</td></tr></table>	Second Major	Prerequisites	1. Chemistry	H2 pass in Chemistry or equivalent	2. Data Analytics	A very good pass in H2 Mathematics or equivalent.
Second Major	Prerequisites								
1. Chemistry	H2 pass in Chemistry or equivalent								
2. Data Analytics	A very good pass in H2 Mathematics or equivalent.								

				<div>Existing students from cohort 2016/2017 or later may apply to read a Second Major in Data Analytics after completing CS1010 (or its equivalent), MA1101R (or its equivalent) and MA1102R (or its equivalent) with a B+ grade or above in each of these modules.</div>						
			23. Life Sciences	H2 passes or equivalent in Biology, Chemistry AND either Mathematics or Physics						
			34. Mathematics	H2 pass in Mathematics or equivalent						
			45. Physics	H2 pass in Physics or equivalent						
			56. Statistics	H2 pass in Mathematics or equivalent						
			<div>3.4.2.1 Second Major in Chemistry</div> <div>3.4.2.2 Second Major in Data Analytics</div> <div>3.4.2.23 Second Major in Life Sciences</div> <div>3.4.2.34 Second Major in Mathematics</div> <div>3.4.2.45 Second Major in Physics</div> <div>3.4.2.56 Second Major in Statistics</div> <div>-----</div> <div>#3) The content to be included in the newly created website for the Second Major in Data Analytics is as follows in blue:</div> <div>Host Department: Statistics</div> <div>To be awarded a B.Sc. with a second major in Data Analytics, candidates must satisfy the following:</div>							
				<table><tr><th>Levels</th><th>Second Major Requirements</th><th>Cumulative Major MCs</th></tr><tr><td>Level 1000 (16 MCs)</td><td>Pass - CS1010/CS1010E/CS1010S/CS1010X Programming Methodology</td><td>16</td></tr></table>	Levels	Second Major Requirements	Cumulative Major MCs	Level 1000 (16 MCs)	Pass - CS1010/CS1010E/CS1010S/CS1010X Programming Methodology	16
Levels	Second Major Requirements	Cumulative Major MCs								
Level 1000 (16 MCs)	Pass - CS1010/CS1010E/CS1010S/CS1010X Programming Methodology	16								

				<ul style="list-style-type: none"> - CS1020/CS1020E Data Structures and Algorithms I - One of the following modules: <ul style="list-style-type: none"> + MA1101R Linear Algebra I + MA1311 Matrix Algebra + MA1506 Mathematics II + MA1508 Linear Algebra with Applications - One of the following modules: <ul style="list-style-type: none"> + MA1102R Calculus + MA1312 Calculus with Applications + MA1505 Mathematics I + MA1507 Advanced Calculus + MA1521 Calculus for Computing 	
			Level 2000 (16 MCs)	Pass <ul style="list-style-type: none"> - CS2010 Data Structures and Algorithms II - ST2131/MA2216 Probability - ST2132 Mathematical Statistics - One of the following modules: <ul style="list-style-type: none"> + DSA2101 Essential Data Analytics Tools: Data Visualisation + DSA2102 Essential Data Analytics Tools: Numerical Computation 	32
			Levels 3000 and 4000 (16 MCs)	Pass <ul style="list-style-type: none"> - ST3131 Regression Analysis - One of the following modules: <ul style="list-style-type: none"> + DSA3102 Essential Data Analytics Tools: Convex Optimisation* + DSC3214 Introduction to Optimisation + MA3236 Nonlinear Programming* + MA3252 Linear and Network Optimisation - One module from List I - One module from List I or List II 	48
			List I^ DSA4211 High-Dimensional Statistical Analysis DSA4212 Optimisation for Large-Scale Data-Driven Inference* List II CS3244 Machine Learning ST3240 Multivariate Statistical Analysis		

			<p>ST3247 Simulation ST4240 Data Mining</p> <p>* Students may need to read additional modules outside the second major requirements to satisfy the pre-requisites of these modules.</p> <p>^ (1) As part of the Data Science and Analytics programme, FoS is planning to co-develop modules on data analytics for functional areas such as business, healthcare and public policy making with other Faculties/Schools. These modules will be coded as DSA modules and added to List I. (2) Students who participate in credit-bearing full-time internships/industrial attachments/professional placements as part of their degree requirements may be approved to double-count up to 8 MCs into List I if their internships/industrial attachments/professional placements have substantial data-analytics content, provided the limit of 16 MCs of double-counting in primary and second major requirements is not exceeded.</p> <p>This second major is <u>not</u> offered with the following primary majors and minors:</p> <p>Primary Majors: Applied Mathematics, Computational Biology, Data Science and Analytics, Mathematics, Quantitative Finance, Statistics.</p> <p>Minors: Financial Mathematics, Mathematics, Statistics.</p>
46.	20 Dec 2016	FoS	<p><u>Background:</u> BUS has approved the new LSM module- LSM3222 Human Neuroanatomy via BUS circular 12 of AY16/17 and hence updates are needed for the 2015 and 2016 Bulletin:</p> <p>Updates made are indicated in yellow highlight below:</p> <p><u>2016 Online Bulletin</u> Under 3.3.3.4 i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Life Sciences, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/life-sciences/), include LSM3222 Human Neuroanatomy in the list of Level 3000 LSM elective modules for the B.Sc and B.Sc. (Hons.) in Life Sciences.</p> <p>.</p> <p>.</p> <p>.</p> <p>LSM3221 Human Pharmacology LSM3222 Human Neuroanatomy LSM3223 Immunology LSM3224 Molecular Basis of Human Diseases</p>

		<div>LSM3225 Molecular Microbiology in Human Diseases</div> <div>LSM3231 Protein Structure and Function</div> <div>.</div> <div>.</div> <div>.</div> <div>.</div> <div>Background:</div> <div>The Science Faculty Curriculum Committee has approved the change to the title of LSM3241 from 'Bioinformatics & Biocomputing' to 'Genomic Data Analysis' via SFCC circular 5 of AY16/17 with effect from Semester 2 of AY16/17 and hence updates are needed for the 2014, 2015 and 2016 Bulletin:</div> <div>Updates made are indicated in yellow highlight below:</div> <div>2016 Online Bulletin</div> <div><u>Update 1:</u></div> <div>Under 3.3.3.2 i.e. Bachelor of Science (Hons) Programme requirements for Computational Biology, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/computational-biology/), to change the title of LSM3241 from 'Bioinformatics an Biocomputing' to 'Genomic Data Analysis'.</div> <table><tr><td colspan="2">Level-3000 Essential</td></tr><tr><td>MA3259 Mathematical Methods In Genomics</td><td>4</td></tr><tr><td>LSM3241 Bioinformatics & Biocomputing Genomic Data Analysis</td><td>4</td></tr></table> <div><u>Update 2:</u></div>	Level-3000 Essential		MA3259 Mathematical Methods In Genomics	4	LSM3241 Bioinformatics & Biocomputing Genomic Data Analysis	4
Level-3000 Essential								
MA3259 Mathematical Methods In Genomics	4							
LSM3241 Bioinformatics & Biocomputing Genomic Data Analysis	4							

			<p>Under 3.3.3.5 i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Life Sciences, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/life-sciences/), to change the title of LSM3241 from 'Bioinformatics an Biocomputing' to 'Genomic Data Analysis'.</p> <p>.</p> <p>.</p> <p>.</p> <p>LSM3233 Developmental Biology</p> <p>LSM3234 Biological Imaging of Growth and Form</p> <p>LSM3241 Bioinformatics and Biocomputing Genomic Data Analysis</p> <p>LSM3242 Translational Microbiology</p> <p>LSM3243 Molecular Biophysics</p> <p>LSM3245 RNA Biology and Technology</p> <p><u>Rectify Error:</u></p> <p>There is an error in the 2016 Online Bulletin under section 3.3.1.10 Degree Classification (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/curriculum-structure-and-graduation-requirements/degree-classification/). The change to be made to rectify the error is as follows in red:</p> <p>All students are on a track that leads to either the B.Sc./B.Sc. (Pharm.) or B.Sc. (Hons.)/B.Sc. (Pharm.) (Hons.) degree. CAP computation is based on all modules completed at all levels, <u>excluding</u>:</p> <ol style="list-style-type: none"> 1. Modules for which grades obtained have no assigned grade points (for e.g. EXE, OCT, OVS, S/U, CS/CU, IC, IP); and 2. ES1000 Basic English Course. and ES1103 English for Academic Purposes.
47.	20 Dec 2016	LKYSPP	<p>http://www.nus.edu.sg/nusbulletin/lee-kuan-yew-school-of-public-policy/graduate-education/degree-requirements/master-in-public-management/</p> <p>3.2.3 Master in Public Management</p> <p>Admission Policy</p>

			<p>For the Master in Public Management (MPM) programme, the School seeks a diverse group of candidates who hold leadership positions within their organisations and are committed to serving their community.</p> <p>The MPM Candidate</p> <p>The Admissions Committee selects candidates for this programme using a broad set of criteria. In general, the candidate should be an accomplished senior official, holding a decision-making position. He or she should be ready to contribute a unique perspective and experience to the programme to benefit other students, and be ready to contribute back to his organisation and country at the end of his or her training. The ideal candidate is a key member of the organisation and whose MPM training will be seen as vital in the organisation's next step forward.</p> <p>Applicants seeking admission to the course for the degree of Master in Public Management must have:</p> <ul style="list-style-type: none"> • A good NUS honours degree (second class and above) or equivalent (e.g., a four-year Bachelors degree with at least an average grade of B or equivalent), and at least eight years of relevant work experience; or • A good Bachelors degree and successful completion of a placement test, and at least eight years of relevant work experience; or exceptionally <p>Other qualifications and experience may be accepted subject to approval by the NUS Board of Graduate Studies.</p> <p>Requirements</p> <p>The minimum candidature for the MPM programme is one year and the maximum is 18 months. Within that time, he or she must earn at least 44 graduate-level Modular Credits (MCs) by completing at least seven modules at NUS (of which 4 are core modules) and four modules at the Harvard Kennedy School of Government (KSG), Harvard University or School of International and Public Affairs (SIPA), Columbia University. In addition, he or she must complete an attachment programme and present a paper pertaining to the attachment at the Public Management Seminar Series.</p> <p>Structure of the MPM Programme</p>
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The Programme consists of two components: an NUS component, and a specially designed programme at a partner university.

The NUS Component

MPM candidates will go through an orientation programme, one full semester and a condensed semester of coursework at the Lee Kuan Yew School of Public Policy, Singapore. Candidates will also be required to participate in an attachment programme.

The Partner University Component

The programme taps into the established strengths in public policy training at a partner university, for example, the Harvard Kennedy School of Government (KSG), Harvard University or the School of International and Public Affairs (SIPA), Columbia University and complements the training provided at NUS. For this component, the MPM candidate will spend a semester at a partner university on a specially designed academic programme

National University of Singapore		
Semester One	July – December	Orientation and Review Programme 3 core modules and 1 MPM elective 2 electives Examinations and Break
Partner University		
Semester Two	January – mid-May	4 electives Examinations and Break
National University of Singapore		
Special Term	June – July	1 core module Attachment Programme
	July – August	Completion and presentation of attachment paper Examinations

				Valedictory Dinner
			<p>-----</p> <p>http://www.nus.edu.sg/nusbulletin/lee-kuan-yew-school-of-public-policy/graduate-education/degree-requirements/doctor-of-philosophy-in-public-policy/</p> <p>3.2.5 Doctor of Philosophy in Public Policy</p> <p>Admission Policy</p> <p>Applicants seeking admission to the Doctor of Philosophy (Ph.D.) programme must have a good Master's degree in a relevant discipline or a Second Class Upper Honours degree or equivalent in a relevant discipline. Applicants will be evaluated on their ability to undertake a rigorous academic programme as demonstrated by references, and the applicant's written analysis of past research experience. The candidate should be motivated, outward-looking, and open to new ideas. Additionally, the candidate should preferably have some background in Mathematics and Economics.</p> <p>Requirements</p> <p>The PhD programme is conducted on a full-time basis. The PhD coursework curriculum comprises eight core modules, two electives and a PhD Qualifying Examination (QE). The usual candidature period is 4 years (maximum candidature period is 5 years).</p> <p>Core Modules</p> <p>The coursework modules read should include the following eight core modules:</p> <p>PP6701 Research Methods in Public Policy I</p> <ul style="list-style-type: none"> • PP6702 Foundations of Public Policy • PP6703 Foundations of Public Administration • PP6704 The Economics of Public Policy 	

			<ul style="list-style-type: none"> • PP6705 The Politics of Public Policy • PP6706 Quantitative Methods for Public Policy Research • PP6707 Qualitative Methods for Public Policy Research • PP6708 Research Design in Public Policy • PP6770 Public Policy Graduate Seminar <p>In addition, students have to pass the PP6770 Public Policy Graduate Seminar</p> <p>PhD Qualifying Examination (QE) The PhD Qualifying Examination (QE) shall comprise:</p> <ul style="list-style-type: none"> • A comprehensive written examination; and • An oral defense of the PhD thesis proposal • <p>Candidates must complete the eight core coursework modules (or equivalent) with a Cumulative Average Point (CAP) of 3.5 before proceeding to the QE. The comprehensive written examination will be designed to test the candidate's analytical, conceptual and integrative skills in the discipline of public policy. A candidate will undertake the oral defense of his / her thesis proposal after passing the comprehensive examination.</p>
48.	21 Dec 2016	FoS	<p><u>Background</u> FoS Math dept has recently updated their website and hence the links to their webpages need to be updated for the 2016 Bulletin.</p> <p><i>Updates made are as follows:</i></p> <p><u>Update 1:</u></p> <p>Under 3.3.3.8-> Quantitative Finance (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/quantitative-finance/), the website link in the last paragraph needs to be updated to the yellow highlighted.</p> <p>To apply for this major, please refer to the application procedure given in http://www1.math.nus.edu.sg/undergraduates.aspx?f=UP-QF#scrolltop http://www1.math.nus.edu.sg/undergrad.aspx?f=UP-QF#Application_Procedure for details regarding the admission requirements and the application form.</p> <p><u>Update 2:</u></p>

Under 3.4.1-> Double Major and Major-Minor Combinations (<http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/double-major-and-major-minor-combinations/>), the website links to update are in yellow highlight:

Table 1: Major-Minor Combinations

MAJOR-MINOR COMBINATIONS	RESTRICTIONS
Major in Quantitative Finance and Minor in Statistics	Only MA1102R, ST2131/MA2216 and ST3131 can be used to satisfy both major and minor requirements. Please refer to http://www.stat.nus.edu.sg/opencms/currentstudents/cs_ugradfaq.html#majorMinor for more details.
Major in Mathematics/Applied Mathematics and Minor in Statistics	Only MA1102R and ST2131/MA2216 can be used to satisfy both major and minor requirements. Please refer to http://www.stat.nus.edu.sg/opencms/currentstudents/cs_ugradfaq.html#majorMinor for more details.
Major in Statistics and Minor in Mathematics	Only MA1102R and ST2131/MA2216 can be used to satisfy both major and minor requirements.

			<p>Please refer to http://www.stat.nus.edu.sg/opencms/currentstudents/cs_ugradfaq.html#majorMinor and http://www1.math.nus.edu.sg/undergrad.aspx?f=FAQ-Minor http://www1.math.nus.edu.sg/undergraduates.aspx?f=UP-MAminor#scrolltop for more details.</p>
		<p>Major in Statistics and Minor in Financial Mathematics</p>	<p>Only MA1102R, ST2131/MA2216 and ST3131 can be used to satisfy both major and minor requirements.</p> <p>Please refer to http://www.stat.nus.edu.sg/opencms/currentstudents/cs_ugradfaq.html#majorMinor and http://www1.math.nus.edu.sg/undergrad.aspx?f=FAQ-Minor http://www1.math.nus.edu.sg/undergraduates.aspx?f=UP-FMminor#scrolltop for more details.</p>

For certain major-second major combinations, departments have specified the number as well as the type of modules that can be read to fulfil two sets of requirements simultaneously:

Students reading a double major combination involving a Primary major in Statistics and Second Major in Mathematics may refer to the FAQ at <http://www1.math.nus.edu.sg/undergrad.aspx?f=FAQ-2major>
<http://www1.math.nus.edu.sg/undergraduates.aspx?f=UP-MA2#scrolltop> for more information.

Students reading a double major combination involving a primary major in Applied Mathematics/Mathematics/Quantitative Finance and a second major in Statistics should refer to the FAQ at
http://www.stat.nus.edu.sg/opencms/currentstudents/cs_ugradfaq.html#course for more information.

			<p>For prohibited double major and major-minor combinations, students should refer to departments offering the minor/major programmes.</p> <p><u>Update 3:</u></p> <p>Under 3.4.2.3-> Second Major in Mathematics (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/second-major-programmes/mathematics/), the website link in the last paragraph needs to be updated to the one in yellow highlight:</p> <p>Students reading a primary major in Statistics with second major in Mathematics should refer to the FAQ at http://www1.math.nus.edu.sg/undergrad.aspx?f=FAQ-2major http://www1.math.nus.edu.sg/undergraduates.aspx?f=UP-MA2.</p>
49.	30 Dec 2016	FoS	<p>NUS Bulletin 2016-17 Updates submitted by FoS (30 Dec 2016)</p> <p><u>Background</u></p> <p>We noticed that some of the Level MCs and Cumulative MCs for the Applied Math and Statistics majors are inaccurate, and would like to amend starting from the 2016 Bulletin.</p> <p><i>Updates to make are as follows:</i></p> <p><u>Update 1:</u> Changes to the Level 2000 MCs and Cumulative MCs for the Applied Mathematics major</p> <p>Under 3.3.3.6-> Mathematics and Applied Mathematics (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/mathematics-and-applied-mathematics/), the level MCs and Cumulative MCs for the Applied Mathematics major (inclusive of its 2 specialisations) requires amendment as follows (in red):</p> <p>I. BSc or BSc (Hons) with major in Applied Mathematics</p>

			MODULE LEVEL	MAJOR REQUIREMENTS	LEVEL MCS	CUMULATIVE MAJOR MCS
			Level-1000	1. Pass the four modules in List I 2. Pass CS1010/CS1010E/CS1010S/CS1010X Programming Methodology	20	20
			Level-2000	3. Pass all the following modules: MA2101/MA2101S Linear Algebra II MA2108/MA2108S Mathematical Analysis I MA2213 Numerical Analysis I MA2216/ST2131 Probability 4. Pass one additional module from List II, III, IV	20-24 20- 23	40-44 40- 43
			Level-3000	5. Pass all the following modules: MA3110/MA3110S Mathematical Analysis II MA3111/MA3111S Complex Analysis I	20-23	60-66

(as a 4 Jun 2020

				6. Pass two modules from List AM3 7. Pass one additional module from List III, IV		
			Level-4000	8. Pass MA4199 Honours Project in Mathematics 9. Pass four modules from List AM4 10. Pass one additional module from List IV	32-33	92-98
			UOPS	At most one Mathematics UOPS module may be used to fulfil the requirements of Major in Applied Mathematics		
II. BSc (Hons) with major in Applied Mathematics with specialisation in Mathematical Modelling and Data Analytics, MMDA						
			MODULE LEVEL	MAJOR REQUIREMENTS	LEVEL MCS	CUMULATIVE MAJOR MCS
			Level 1000	1. Pass the 4 modules in List I 2. Pass CS1010/CS1010E/CS1010S/CS1010X Programming Methodology	20	20

			<p>Level 2000</p> <p>3. Pass all the following modules:</p> <p>MA2101/MA2101S Linear Algebra II</p> <p>MA2108/MA2108S Mathematical Analysis I</p> <p>MA2213 Numerical Analysis I</p> <p>MA2216/ST2131 Probability</p> <p>4. Pass one additional module from List II, III, IV</p>	<p>20-24</p> <p>20-23</p>	<p>40-44</p> <p>40-43</p>
			<p>Level 3000</p> <p>5. Pass all the following modules:</p> <p>MA3110/MA3110S Mathematical Analysis II</p> <p>MA3111/MA3111S Complex Analysis I</p> <p>6. Pass two modules from List AM3-MMDA</p> <p>7. Pass one additional module from List III, IV</p>	20-23	60-66
			<p>Level 4000</p> <p>8. Pass MA4199 Honours Project in Mathematics</p> <p>9. Pass four modules from AM4-MMDA</p>	32-33	92-98

				10. Pass one additional module from List IV		
			UROPS	At most one Mathematics UROPS module may be used to fulfil the requirements of Major in Applied Mathematics		
			III. BSc (Hons) with major in Applied Mathematics with specialisation in Operations Research and Financial Mathematics, ORFM			
			MODULE LEVEL	MAJOR REQUIREMENTS	LEVEL MCS	CUMULATIVE MAJOR MCS
			Level 1000	1. Pass the 4 modules in List I 2. Pass CS1010/CS1010E/CS1010S/CS1010X Programming Methodology	20	20
			Level 2000	3. Pass all the following modules: MA2101/MA2101S Linear Algebra II MA2108/MA2108S Mathematical Analysis I MA2213 Numerical Analysis I	40-44 40- 43	40-44 40- 43

				MA2216/ST2131 Probability		
				4. Pass one additional module from List II, III, IV		
			Level 3000	5. Pass all the following modules: MA3110/MA3110S Mathematical Analysis II MA3111/MA3111S Complex Analysis I 6. Pass two modules from List AM3-ORFM 7. Pass one additional module from List III, IV	20-23	60-66
			Level 4000	8. Pass MA4199 Honours Project in Mathematics 9. Pass four modules from AM4-ORFM 10. Pass one additional module from List IV	32-33	92- 98
			UROPS	At most one Mathematics UROPS module may be used to fulfil the requirements of Major in Applied Mathematics		
Update 2: Changes to the Level 3000 and Level 4000 MCs and Cumulative MCs for the Statistics major						

Under 3.3.3.9-> Statistics (<http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/statistics/>), the level MCs and Cumulative MCs for the Statistics major (as well as the summary MCs table) requires amendment as follows (in red):

Graduation Requirements (Statistics)

To be awarded a B.Sc. or B.Sc. (Hons.) with a primary major in Statistics, candidates must satisfy the following:

MODULE LEVEL	MAJOR REQUIREMENTS	CUMULATIVE MAJOR MCS
Level-1000 (16 MCs)	Pass ST1131 Introduction to Statistics <u>or</u> ST1232 Statistics for Life Sciences MA1101R Linear Algebra I MA1102R Calculus CS1010 Programming Methodology <u>or</u> CS1010E Programming Methodology <u>or</u>	16

				CS1010S Programming Methodology <u>or</u> CS1010FC Programming Methodology <u>or</u> CS1010FX Programming Methodology	
			Level-2000 (16-17 MCs)	Pass ST2131/ Probability MA2216 ST2132 Mathematical Statistics ST2137 Computer Aided Data Analysis MA2311 Techniques in Advanced Calculus <u>or</u> MA2108 Mathematical Analysis I <u>or</u> MA2108S Mathematical Analysis I (S)	32-33
			Level-3000	Pass	60-61 60-62

			<div>(28 MCs)</div> <div>(28-29 MCs)</div>	ST3131 Regression Analysis ST3236 Stochastic Processes I Three other modules from ST32xx or ST4xxx modules Two additional modules from ST32xx or ST4xxx modules or List A or List B modules									
			Level-4000 <div>(32 MCs)</div> <div>(32-33 MCs)</div>	Pass ST4199 Honours Project in Statistics ST4231 Computer Intensive Statistical Methods ST4233 Linear Models Two other modules from ST4xxx modules One additional module from ST4xxx, ST5xxx or List B modules	<div>92-93</div> <div>92-94</div>								
<table><tr><th colspan="2">SUMMARY OF REQUIREMENTS</th><th>B.SC.</th><th>B.SC. (HONS.)</th></tr><tr><td colspan="2">University Requirements</td><td>20 MCs</td><td>20 MCs</td></tr></table>						SUMMARY OF REQUIREMENTS		B.SC.	B.SC. (HONS.)	University Requirements		20 MCs	20 MCs
SUMMARY OF REQUIREMENTS		B.SC.	B.SC. (HONS.)										
University Requirements		20 MCs	20 MCs										

			<table><tr><td>Faculty Requirements</td><td>8 MCs*</td><td>8 MCs*</td></tr><tr><td>Major Requirements</td><td>60–61 MCs 60 – 62 MCs</td><td>92—93 MCs 92 – 94 MCs</td></tr><tr><td>Unrestricted Elective Modules</td><td>31–32 MCs 30 – 32 MCs</td><td>39–40 MCs 38 – 40 MCs</td></tr><tr><td>Total</td><td>120 MCs</td><td>160 MCs</td></tr></table>	Faculty Requirements	8 MCs*	8 MCs*	Major Requirements	60–61 MCs 60 – 62 MCs	92—93 MCs 92 – 94 MCs	Unrestricted Elective Modules	31–32 MCs 30 – 32 MCs	39–40 MCs 38 – 40 MCs	Total	120 MCs	160 MCs
Faculty Requirements	8 MCs*	8 MCs*													
Major Requirements	60–61 MCs 60 – 62 MCs	92—93 MCs 92 – 94 MCs													
Unrestricted Elective Modules	31–32 MCs 30 – 32 MCs	39–40 MCs 38 – 40 MCs													
Total	120 MCs	160 MCs													
50.	5 Jan 2017	FoS	<p><u>Background:</u> The Science Faculty Curriculum Committee has approved the change to the title of LSM3241 from ‘Bioinformatics & Biocomputing’ to ‘Genomic Data Analysis’ via SFCC circular 5 of AY16/17 with effect from Semester 2 of AY16/17 and hence updates are needed for the 2014, 2015 and 2016 Bulletin:</p> <p>Updates made are as follows:</p> <p><u>2016 Online Bulletin</u> Under 3.4.3.15 i.e. Minor in Statistics, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/minor-programmes/minor-in-statistics/), to change the title of LSM3241 from ‘Bioinformatics an Biocomputing’ to ‘Genomic Data Analysis’.</p> <p>To be awarded this minor, students must:</p>												

			<p>1.Pass one of the following: a.MA1102R Calculus b.MA1312 Calculus with Applications c.MA1507 Advanced Calculus d.MA1505 Mathematics I e.MA1521 Calculus for Computing</p> <p>2.Pass ST2131 Probability or ST2334 Probability and Statistics; 3.Pass ST2132 Mathematical Statistics and ST3131 Regression Analysis; and 4.Pass one module from ST32xx, and one other module from ST32xx/ST4xxx, EC3304 Econometrics II, EC4303 Econometrics III, IE3101 Statistics for Engineering Applications, DSC3215 Stochastic Models in Management, FIN3116 Options and Future, FIN3119 Risk and Insurance, MA3259 Mathematical Methods in Genomics and LSM3241 Bioinformatics and Biocomputing Genomic Data Analysis.</p>
51.	9 Jan 2017	RO	<p>http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-major-programmes.html The new Second Majors are indicated in red below:</p> <p>Double Major Programmes</p> <p>.....</p> <p>The second majors that are currently on offer are:</p> <ul style="list-style-type: none"> • Business Analytics (to hyperlink to http://www.comp.nus.edu.sg/programmes/ug/major/ba-secmajor/) • Chemistry • Chinese Language • Chinese Studies • Communications and New Media • Computer Science • Data Analytics • Economics • English Language • English Literature • European Studies • Geography • History.... <p>.....etc.</p>

52.	10 Jan 2017	SCALE	<p>http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-chemical-engineering/</p> <p>3.3.1 Bachelor of Technology (Chemical Engineering) Home / NUS Bulletin AY2016/17 / School of Continuing and Lifelong Education / Undergraduate Education / Degree Requirements / Bachelor of Technology (Chemical Engineering)</p> <p>The BTech (Chemical Engineering) programme is offered in partnership with the Department of Chemical and Biomolecular Engineering. The programme is accredited by the Engineering Accreditation Board (EAB) of the Institution of Engineers Singapore (IES). Via this accreditation, all signatories in the Washington Accord recognize the substantial equivalence of this programme in satisfying the academic requirements for the practice of engineering at the professional level in many countries including Canada, United States of America, United Kingdom, Hong Kong, New Zealand, Australia and others.</p> <p>The educational objectives of the BTech (Chemical Engineering) programme are to:</p> <ul style="list-style-type: none"> • develop knowledge and skills required for immediate employment as a professional engineer in Chemical Engineering; • develop an understanding of and an ability to apply basic mathematics, chemical, physical and information sciences to the practice of Chemical Engineering; • prepare students for future career paths and life-long learning; and • enable students to better contribute to national development in the context of globalisation. <p>The programme aims to achieve the following learning outcomes:</p> <ul style="list-style-type: none"> • Core: Understanding of and ability to apply the science, mathematics and engineering knowledge fundamental to the discipline. • Breadth: Basic competence in a range of technical areas relevant to Chemical Engineering. • Depth: Be able to understand and apply in-depth knowledge of one or more specialisations within Chemical Engineering. • Design: An enhanced ability to perform engineering design by the process of creative thinking, synthesis and integration of interdisciplinary knowledge. <p>Degree Requirements Candidates must satisfy the following requirements to be conferred the degree of BTech (Chemical Engineering):</p> <ul style="list-style-type: none"> • Complete a minimum of 121 MCs with a minimum CAP of 2.00 by taking modules as listed below; • Comply with the requirement that the limit on the number of Level-1000 modules to be counted towards fulfillment of graduation requirements being 60 MCs (including exemption of 20 MCs for polytechnic diploma holders); and
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			<ul style="list-style-type: none"> Satisfy any other additional requirements that may be prescribed by SCALE, the Faculty of Engineering, or the University. <p>List of modules – BTech (Chemical Engineering), comprise:</p> <ol style="list-style-type: none"> All modules are 4MCs, except when otherwise stated. A module with module code <u>TCNxxxxE</u> is equivalent to the module CNxxxx/CNxxxxR offered to full-time students. Subject to the approval from the Dean of SCALE and the ChBE Department, a student may select a full-time equivalent module in place of any <u>TCNxxxxE</u> module. <p>A. <u>University Level Requirements (20MCs)</u></p> <ul style="list-style-type: none"> Quantitative Reasoning (module with prefix GER) Thinking and Expression (module with prefix GET) Human Cultures (module with prefix GEH) Asking Questions (module with prefix GEQ) Singapore Studies (module with prefix GES) <p>B. <u>Programme Requirements (89MCs), comprising</u></p> <ol style="list-style-type: none"> <u>Faculty Requirements (4MCs)</u> <ul style="list-style-type: none"> <u>ITG2415</u> Ethics in Engineering <u>Major Requirements – Essential Modules (65MCs)</u> <ul style="list-style-type: none"> <u>TCN1111E</u> Chemical Engineering Principles <u>TCN1005</u> MatLab Programming for Chemical Engineers <u>TCN1411</u> Mathematics for Chemical Engineers 1 <u>TCN2411</u> Mathematics for Chemical Engineers 2 <u>TCN1422</u> Materials for Chemical Engineers <u>TCN2116E</u> Chemical Kinetics and Reactor Design <u>TCN2121E</u> Chemical Engineering Thermodynamics <u>TCN2122E</u> Fluid Mechanics <u>TCN2125E</u> Heat and Mass Transfer <u>TCN3121E</u> Process Dynamics and Control <u>TCN3124E</u> Particle Technology <u>TCN3132E</u> Separation Processes (5MCs) <u>TCN3421E</u> Process Modelling & Numerical Simulation <u>TCN3135E</u> Process Safety, Health and Environment (3MCs) <u>TCN4122E</u> Process Synthesis and Simulation (3MCs) <u>TCN4124E</u> Design Project (6MCs)
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			<p><u>Major Requirements – Elective Modules (20MCs, selected from the list below)</u></p> <p>Not all electives modules may be offered in any semester/year. An elective module may not be offered if there is insufficient number of students opting for that module at any particular time. Subject to the approval of the Dean of SCALE, a student may select one Level-3000 or higher module from other programmes within the Faculty of Engineering.</p> <ul style="list-style-type: none"> • TCN4119E BTech Dissertation (8MCs) • TCN4203E Polymer Engineering • TCN4205E Pinch Analysis and Process Integration • TCN4208E Biochemical Engineering • TCN4210E Membrane Science and Engineering • TCN4211E Petrochemicals & Processing Technology • TCN4215E Food Technology and Engineering • TCN4216E Electronic Materials Science • TCN4217E Processing of Microelectronic Materials • TCN4227E Advanced Process Control • TCN4231E Downstream Processing of Biochemical and Pharmaceutical Products • TCN4238E Chemical & Biochemical Process Modeling • TCN4240E Unit Operations and Processes for Effluent Treatment • TCN4242E Optimization of Chemical Processes • TCN4246E Chemical and Bio-Catalysis • TCN4229E Computer Aided Chemical Engineering • TCN4233E Good Manufacturing Practices in Pharmaceutical Industry <p><u>Unrestricted Elective Modules (12MCs)</u></p> <p><i>Study Schedule</i></p> <p>There is only one intake per academic year in Semester 2 (i.e. January). One sample study schedule for a four-year candidature is shown below. This assumes the students' work and other commitments allow them sufficient time to properly cope with their studies. Students are strongly advised to slow down if necessary so that they progress at their own comfortable pace.</p> <p>Sample Study Schedule (4-year candidature beginning in Semester 2 of an AY):</p> <ol style="list-style-type: none"> 1. The number of Modular Credits (MC) of a module is denoted by the number in the bracket. 2. Modules marked with an asterisk (*) are modules stretching over more than one semester and the total number of MCs will only be given upon completion of the module. <div>1st Year of studies</div>
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				<p>Sem 2: TCN1411 Mathematics for Chemical Engineers 1 (4) TCN1422 Materials for Chemical Engineers (4) TCN1111E Chemical Engineering Principles (4)</p>	
				<p>SpTerm: TCN2411 Mathematics for Chemical Engineers 2 (4) General Education Module 1 – Quantitative Reasoning (4)</p>	
				<p><u>Sem 1:</u> TCN1005 MatLab Programming for Chemical Engineers (4) CN2121E Chemical Engineering Thermodynamics (4) CN2122E Fluid Mechanics (4)</p>	
				<u>2nd Year of studies</u>	
				<p><u>Sem 1:</u> TC1005 MatLab Programming for Chemical Engineers (4) CN2121E Chemical Engineering Thermodynamics (4) CN2122E Fluid Mechanics (4)</p>	
				<p>Sem 2: CN2116E Chemical Kinetics & Reactor Design (4) CN2125E Heat and Mass Transfer (4) CN3124E Particle Technology (4)</p>	
				<p>SpTerm: CN3135E Process Safety, Health and Environment (3) General Education Module 2 – Asking Questions (4)</p>	
				<p><u>Sem 1:</u> CN3121E Process Dynamics & Control (4) CN3132E Separation Processes (5) CN3421E Process Modelling & Numerical Simulation (4)</p>	
				<u>3rd Year of studies</u>	
				<p><u>Sem 1:</u> CN3121E Process Dynamics & Control (4) CN3132E Separation Processes (5) CN3421E Process Modelling & Numerical Simulation (4)</p>	
				<p>Sem 2: CN4119E* BTech Dissertation / Technical Elective Module (4) Technical Elective Module 1 (4) General Education Module 3 – Thinking & Expression (4)</p>	

			<table><tr><td>SpTerm:</td><td>TG2415 Ethics in Engineering (4) CN4119E* BTech Dissertation</td></tr><tr><td>Sem 1:</td><td><u>CN4119E* BTech Dissertation (8) / Technical Elective Module (4)</u> <u>CN4122E Process Synthesis and Simulation (3)</u> <u>TG3001* Industrial Practice / Unrestricted Elective Module (4)</u></td></tr><tr><td colspan="2">4th Year of studies</td></tr><tr><td>Sem 1:</td><td>CN4119E* BTech Dissertation (8) / Technical Elective Module (4) CN4122E Process Synthesis and Simulation (3) TG3001* Industrial Practice / Unrestricted Elective Module (4)</td></tr><tr><td>Sem 2:</td><td>CN4124E* Final Year Design Project TG3001* Industrial Practice / Unrestricted Elective Module (4) General Education Module 4 – Human Cultures (4)</td></tr><tr><td>SpTerm:</td><td>CN4124E* Final Year Design Project (6) TG3001* Industrial Practice (12) / Unrestricted Elective Module (4)</td></tr><tr><td>Sem 1:</td><td><u>Technical Elective Module 2 (4)</u> <u>Technical Elective Module 3 (4)</u> <u>General Education Module 5 – Singapore Studies (4)</u></td></tr><tr><td colspan="2">5th Year of studies</td></tr><tr><td>Sem 1:</td><td>Technical Elective Module 2 (4) Technical Elective Module 3 (4) General Education Module 5 – Singapore Studies (4)</td></tr></table>	SpTerm:	TG2415 Ethics in Engineering (4) CN4119E* BTech Dissertation	Sem 1:	<u>CN4119E* BTech Dissertation (8) / Technical Elective Module (4)</u> <u>CN4122E Process Synthesis and Simulation (3)</u> <u>TG3001* Industrial Practice / Unrestricted Elective Module (4)</u>	4th Year of studies		Sem 1:	CN4119E* BTech Dissertation (8) / Technical Elective Module (4) CN4122E Process Synthesis and Simulation (3) TG3001* Industrial Practice / Unrestricted Elective Module (4)	Sem 2:	CN4124E* Final Year Design Project TG3001* Industrial Practice / Unrestricted Elective Module (4) General Education Module 4 – Human Cultures (4)	SpTerm:	CN4124E* Final Year Design Project (6) TG3001* Industrial Practice (12) / Unrestricted Elective Module (4)	Sem 1:	<u>Technical Elective Module 2 (4)</u> <u>Technical Elective Module 3 (4)</u> <u>General Education Module 5 – Singapore Studies (4)</u>	5th Year of studies		Sem 1:	Technical Elective Module 2 (4) Technical Elective Module 3 (4) General Education Module 5 – Singapore Studies (4)
SpTerm:	TG2415 Ethics in Engineering (4) CN4119E* BTech Dissertation																				
Sem 1:	<u>CN4119E* BTech Dissertation (8) / Technical Elective Module (4)</u> <u>CN4122E Process Synthesis and Simulation (3)</u> <u>TG3001* Industrial Practice / Unrestricted Elective Module (4)</u>																				
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5th Year of studies																					
Sem 1:	Technical Elective Module 2 (4) Technical Elective Module 3 (4) General Education Module 5 – Singapore Studies (4)																				
53.	9 Jan 2017	FoS	Other Multidisciplinary/Special Programmes 6.5.1 Overview of Programme http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/double-degree-programmes/double-degree-in-computer-science-and-mathematics-applied-mathematics/overview-of-programme/ Update 1: Add the following elective: CS4234 to the table: MODULES IN “ALGORITHMS AND COMPUTATION”																		

			<table><tr><th>MODULE CODE</th><th>MODULE TITLE</th><th>MCS</th></tr><tr><td>CS4234</td><td>Optimisation Algorithms</td><td>4</td></tr></table>	MODULE CODE	MODULE TITLE	MCS	CS4234	Optimisation Algorithms	4						
MODULE CODE	MODULE TITLE	MCS													
CS4234	Optimisation Algorithms	4													
Update 2:															
Delete the module: MA3215, CS3246 and CS4344 from the table: MODULES IN “MULTIMEDIA MODELLING”															
			<table><tr><th>MODULE CODE</th><th>MODULE TITLE</th><th>MCS</th></tr><tr><td>MA3215</td><td>Three-dimensional Differential Geometry</td><td>4</td></tr><tr><td>CS3246</td><td>Multimedia Content Analysis and Search</td><td>4</td></tr><tr><td>CS4344</td><td>Networked and Mobile Gaming</td><td>4</td></tr></table>	MODULE CODE	MODULE TITLE	MCS	MA3215	Three-dimensional Differential Geometry	4	CS3246	Multimedia Content Analysis and Search	4	CS4344	Networked and Mobile Gaming	4
MODULE CODE	MODULE TITLE	MCS													
MA3215	Three-dimensional Differential Geometry	4													
CS3246	Multimedia Content Analysis and Search	4													
CS4344	Networked and Mobile Gaming	4													
Update 3: Add the following elective: MA4271 in the table: MODULES IN “MULTIMEDIA MODELLING”															
			<table><tr><th>MODULE CODE</th><th>MODULE TITLE</th><th>MCS</th></tr><tr><td>MA4271</td><td>Differential Geometry of Curves and Surfaces</td><td>4</td></tr></table>	MODULE CODE	MODULE TITLE	MCS	MA4271	Differential Geometry of Curves and Surfaces	4						
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MA4271	Differential Geometry of Curves and Surfaces	4													

			<p>Update 4:</p> <p>6.5.3.3 Integrated Honours Project</p> <p>http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/double-degree-programmes/double-degree-in-computer-science-and-mathematics-applied-mathematics/programme-requirements/integrated-honours-project/</p> <p>Update 4: To amend the following paragraphs as highlighted:</p> <p>A student pursuing a double honours degree programme without specialisation can choose to undertake:</p> <ol style="list-style-type: none">1. One integrated honours year project or2. One Computing honours year project and one Mathematics honours year project, or3. One Mathematics honours year project and 12 MCs of Level 4000 'CS' prefixed modules. <p>To fulfil the graduation requirements of the double degree programme. In the case that integrated honours year project is not chosen, a student can choose to take 12 MCs of common modules from Common Modules Table 2 for double counting purpose.</p> <p>6.5.4 Grading and Degree Requirements</p> <p>http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/double-degree-programmes/double-degree-in-computer-science-and-mathematics-applied-mathematics/grading-and-degree-requirements/</p> <p>Update 5: To add CS4234 and remove CS4235 from the COMMON MODULES TABLE 2</p> <table><tr><th>MODULE CODE</th><th>MODULE TITLE</th><th>MCS</th></tr><tr><td>CS4234</td><td>Optimisation Algorithms</td><td>4</td></tr><tr><td>CS4235</td><td>Computational Geometry</td><td>4</td></tr></table>	MODULE CODE	MODULE TITLE	MCS	CS4234	Optimisation Algorithms	4	CS4235	Computational Geometry	4
MODULE CODE	MODULE TITLE	MCS										
CS4234	Optimisation Algorithms	4										
CS4235	Computational Geometry	4										
53.	10 Jan 2017	SCALE										

			<p>http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-industrial-management-engineering/</p> <p>3.3.3 Bachelor of Technology (Industrial & Management Engineering)</p> <p>Home / NUS Bulletin AY2016/17 / School of Continuing and Lifelong Education / Undergraduate Education / Degree Requirements / Bachelor of Technology (Industrial & Management Engineering)</p> <p>The BTech (Industrial & Management Engineering) is offered in partnership with the Department of Industrial and Systems Engineering. The programme aims to graduate professional industrial and management engineers who have a strong foundation in the relevant modelling and methodological expertise together with a systems mindset, who can contribute to society through innovation, enterprise and leadership. The programme provides students with an education that enhances and complements their knowledge and experiences.</p> <p>In order to prepare graduates for the rapidly evolving landscape of Industrial and Management Engineering (IME) and to upgrade polytechnic graduates into learning engineers, the programme is specially designed to comprise essential modules, elective modules (both technical and non technical), enrichment modules, and projects. The essential modules seek to equip students with a strong foundation in mathematics, probability and statistics in engineering fundamentals. The technical electives provide the breadth and depth in different areas of IME.</p> <p>Design, which is the heart of engineering, is integrated through various project activities. Non-technical modules introduce students to methodologies of business and management. By providing graduates with a combination of broad-based fundamentals and specialised knowledge, the programme strives to graduate versatile engineers who would be best positioned to lead in a rapidly changing and increasingly knowledge-based economy.</p> <p>The programme is accredited by the Engineering Accreditation Board (EAB) of the Institution of Engineers Singapore (IES). Via this accreditation, all signatories in the Washington Accord recognize the substantial equivalence of this programme in satisfying the academic requirements for the practice of engineering at the professional level in many countries including Canada, United States of America, United Kingdom, Hong Kong, New Zealand, Australia and others.</p> <p>The educational objectives of the programme are as follows:</p> <ul style="list-style-type: none"> • To impart fundamental knowledge and skill sets required in the Industrial and Management Engineering profession, which include the ability to apply basic knowledge of mathematics, probability and statistics, and the domain knowledge of Industrial and Management Engineering. • To produce graduates with the ability to adopt a system approach to design, develop, implement and innovate integrated systems that include people, materials, information, equipment and energy. • To enable students to understand the interactions between engineering, business, technological and environmental spheres in the modern society. • To cultivate the practices of independent learning on the part of the students that will prepare them to function effectively for diverse careers and life-long learning.
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			<ul style="list-style-type: none"> To enable students to understand their role as engineers and their impact to society at the national and global context. <p>The learning outcomes of the programme are:</p> <ul style="list-style-type: none"> Core: Apply knowledge of mathematics, science and engineering to the solution of complex engineering problems. Experimental Design: Design and conduct experiments, analyse, interpret data and synthesise valid conclusions. System Design: Design a system, component, or process, and synthesise solutions to achieve desired needs. Breadth and Depth: Identify, formulate, research through relevant literature review, and solve engineering problems reaching substantiated conclusions. Knowledge Application and Transfer: Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for public health and safety, cultural, societal, and environmental constraints. Communications: Communicate effectively. Attitude: Recognize the need for, and have the ability to engage in life-long learning. Awareness: Understand the impact of engineering solutions in a societal context and to be able to respond effectively to the needs for sustainable development. Professional Relations: Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management. Professional Ethics: Understand professional, ethical and moral responsibility. <p>Degree Requirements</p> <p>Candidates must satisfy the following requirements to be conferred the degree of BTech (Industrial & Management Engineering):</p> <ol style="list-style-type: none"> Complete a minimum of 121 MCs with a minimum CAP of 2.0 by taking modules as listed below; Comply with the requirement that the limit on the number of Level-1000 modules to be counted towards fulfillment of graduation requirements being 60 MCs (including exemption of 20 MCs for polytechnic diploma holders); and Satisfy any other additional requirements that may be prescribed by SCALE, the Faculty of Engineering, or the University. <p>List of modules – BTech (Industrial & Management Engineering), comprise:</p> <ol style="list-style-type: none"> All modules are 4MCs, except when otherwise stated. A module with module code <u>TIExxxxE</u> is equivalent to the module IExxxx offered to the full-time students. Subject to the approval from the Dean of SCALE and the ISE Department, a student may select a full-time equivalent module in place of any <u>TIExxxxE</u> module. <p>A. University Level Requirements (20MCs)</p>
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			<ul style="list-style-type: none"> • Quantitative Reasoning (module with prefix GER) • Thinking and Expression (module with prefix GET) • Human Cultures (module with prefix GEH) • Asking Questions (module with prefix GEQ) • Singapore Studies (module with prefix GES)
			<p>B. <u>Programme Requirements (89MCs), comprising</u></p> <p>1. <u>Faculty Requirements (4MCs)</u></p> <ul style="list-style-type: none"> • TTG2415 Ethics in Engineering <p>2. <u>Major Requirements – Essential Modules (69MCs)</u></p> <ul style="list-style-type: none"> • TTG1401 Engineering Mathematics I • TEE2101 Programming Methodology • TIE2010E Introduction to Industrial Systems • TIE2120E Probability and Statistics • TIE2100E Probability Models with Applications • TIE2110E Operations Research I • TIE2130E Quality Engineering I • TIE2140E Engineering Economy • TIE2150E Human Factors Engineering • TIE3100E Systems Design Project (8MCs) • TIE3101E Statistics for Engineering Applications • TIE3110E Simulation (5MCs) • TIE4240E Project Management • TIE4101E BTech Dissertation (8MCs) • TIE3010E Systems Thinking and Design <p>3. <u>Major Requirements – Elective Modules (16MCs, selected from the list below)</u></p> <p>Not all electives modules may be offered in any semester/year. An elective module may not be offered if there is insufficient number of students opting for that module at any particular time. Subject to the approval of the Dean of SCALE, a student may select one Level-3000 or higher module from other programmes within the Faculty of Engineering.</p> <ul style="list-style-type: none"> • TIE4220E Supply Chain Modelling • TIE4230E Quality Engineering II • TIE4242E Cost Analysis and Management • IE5108 Facility Layout and Location

- IE5121 Quality Planning and Management
- IE5203 Decision Analysis
- IE5301 Human Factors in Engineering and Design
- ~~IE~~4229 Selected Topics in Logistics
- ~~IE~~4239 Selected Topics in Quality Engineering
- ~~IE~~4249 Selected Topics in Engineering Management
- ~~IE~~4259 Selected Topics in Systems Engineering
- ~~IE~~4299 Selected Topics in Industrial Engineering
- ~~TM~~4209 Management of New Product Development

Unrestricted Elective Modules (12MCs)

Study Schedules

There are two intakes per academic year, in Semester 1 (i.e. August) and in Semester 2 (i.e. January). The respective sample study schedules for a four-year candidature are presented below. These assume the students' work and other commitments allow them sufficient time to properly cope with their studies. Students are strongly advised to slow down if necessary so that they progress at their own comfortable pace.

A. Sample Study Schedule (4-year candidature beginning in Semester 1 of an AY):

1. The number of Modular Credits (MC) of a module is denoted by the number in the bracket.
2. Modules marked with an asterisk (*) are modules stretching over more than one semester and the total number of MCs will only be given upon completion of the module.

1st Year of studies	
Sem 1:	IT G1401 Engineering Mathematics I (4) TE E2101 Programming Methodology (4) IE 2010 Introduction to Industrial Systems (4)
Sem 2:	IE 2150 Human Factors Engineering (4) IE 2140 Engineering Economy (4) IE 2130 Quality Engineering I (4)

			<table><tr><td>SpTerm:</td><td>General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)</td></tr><tr><td colspan="2">2nd Year of studies</td></tr><tr><td>Sem 1:</td><td>TIE2120E Probability and Statistics (4) TIE2110E Operations Research I (4) TIE3110E Simulation (5)</td></tr><tr><td>Sem 2:</td><td>TIE2100E Probability Models with Applications (4) TIE3010E Systems Thinking and Design (4) TTG2415 Ethnicity in Engineering (4)</td></tr><tr><td>SpTerm:</td><td>General Education Module 3 (4) General Education Module 4 (4)</td></tr><tr><td colspan="2">3rd Year of studies</td></tr><tr><td>Sem 1:</td><td>TIE3101E Statistics for Engineering Applications (4) TIE3100E* Systems Design Project TTG3001* Industrial Practice</td></tr><tr><td>Sem 2:</td><td>Elective 1 (4) TIE3100E* Systems Design Project (8) TTG3001* Industrial Practice</td></tr></table>	SpTerm:	General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)	2 nd Year of studies		Sem 1:	T IE2120 E Probability and Statistics (4) T IE2110 E Operations Research I (4) T IE3110 E Simulation (5)	Sem 2:	T IE2100 E Probability Models with Applications (4) T IE3010 E Systems Thinking and Design (4) T TG2415 Ethnicity in Engineering (4)	SpTerm:	General Education Module 3 (4) General Education Module 4 (4)	3 rd Year of studies		Sem 1:	T IE3101 E Statistics for Engineering Applications (4) T IE3100 E * Systems Design Project T TG3001* Industrial Practice	Sem 2:	Elective 1 (4) T IE3100 E * Systems Design Project (8) T TG3001* Industrial Practice
SpTerm:	General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)																		
2 nd Year of studies																			
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			<table><tr><td>SpTerm:</td><td>General Education Module 5 (4) Elective 2 (4) <u>ITG3001*</u> Industrial Practice (12)</td></tr><tr><td colspan="2">4th Year of studies</td></tr><tr><td>Sem 1:</td><td><u>ITIE4240E</u> Project Management (4) Elective 3 (4) <u>ITIE4101E*</u> BTech Dissertation</td></tr><tr><td>Sem 2:</td><td>Elective 4 (4) <u>ITIE4101E*</u> BTech Dissertation (8)</td></tr></table>	SpTerm:	General Education Module 5 (4) Elective 2 (4) <u>ITG3001*</u> Industrial Practice (12)	4th Year of studies		Sem 1:	<u>ITIE4240E</u> Project Management (4) Elective 3 (4) <u>ITIE4101E*</u> BTech Dissertation	Sem 2:	Elective 4 (4) <u>ITIE4101E*</u> BTech Dissertation (8)
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4th Year of studies											
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<p>B. Sample Study Schedule (4-year candidature beginning in Semester 2 of an AY):</p> <p>1. The number of Modular Credits (MC) of a module is denoted by the number in the bracket.</p> <p>2. Modules marked with an asterisk (*) are modules stretching over more than one semester and the total number of MCs will only be given upon completion of the module.</p>											
			<table><tr><td colspan="2">1st Year of studies</td></tr><tr><td>Sem 2:</td><td><u>ITG1401</u> Engineering Mathematics I (4) <u>ITIE2140E</u> Engineering Economy (4) <u>ITIE2130E</u> Quality Engineering I (4)</td></tr><tr><td>SpTerm:</td><td>General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)</td></tr></table>	1st Year of studies		Sem 2:	<u>ITG1401</u> Engineering Mathematics I (4) <u>ITIE2140E</u> Engineering Economy (4) <u>ITIE2130E</u> Quality Engineering I (4)	SpTerm:	General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)		
1st Year of studies											
Sem 2:	<u>ITG1401</u> Engineering Mathematics I (4) <u>ITIE2140E</u> Engineering Economy (4) <u>ITIE2130E</u> Quality Engineering I (4)										
SpTerm:	General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)										

			<p><u>Sem 1:</u></p> <p><u>TEE2101 Programming Methodology (4)</u> <u>TIE2010 Introduction to Industrial Systems (4)</u> <u>TIE2120 Probability and Statistics (4)</u></p>	
			<p><u>2nd Year of studies</u></p>	
			<p><u>Sem 1:</u></p> <p>TE2101 Programming Methodology (4) IE2010E Introduction to Industrial Systems (4) IE2120E Probability and Statistics (4)</p>	
			<p><u>Sem 2:</u></p> <p>TIE2100E Probability Models with Applications (4) TIE2150E Human Factors Engineering (4) TIE3010E Systems Thinking and Design (4)</p>	
			<p><u>SpTerm:</u></p> <p>General Education Module 3 (4) General Education Module 4 (4)</p>	
			<p><u>Sem 1:</u></p> <p><u>TIE2110 Operations Research 1 (4)</u> <u>TIE3110 Simulation (5)</u> <u>TIE3101 Statistics for Engineering Applications (4)</u></p>	
			<p><u>3rd Year of studies</u></p>	
			<p><u>Sem 1:</u></p> <p>IE2110E Operations Research 1 (4) IE3110E Simulation (5) IE3101E Statistics for Engineering Applications (4)</p>	

				Sem 2: <div> TIE3100E* Systems Design Project Elective 1 (4) TTG2415 Ethics in Engineering (4) TTG3001* Industrial Practice </div>
				SpTerm: <div> TIE3100E* Systems Design Project General Education Module 5 (4) TTG3001* Industrial Practice </div>
				<u>Sem 1:</u> <div> TIE4240 Project Management (4) TTG3001* Industrial Practice (12) TIE3100* Systems Design Project (8) </div>
				<u>4th Year of studies</u>
				Sem 1: <div> IE4240E Project Management (4) TG3001* Industrial Practice (12) IE3100E* Systems Design Project (8) </div>
				Sem 2: <div> TIE4101E* BTech Dissertation Elective 2 (4) </div>
				SpTerm: <div> TIE4101E* BTech Dissertation Elective 3 (4) </div>
				<u>5th Year of studies</u>

			Sem 1:	TIE4101E* BTech Dissertation (8) Elective 4 (4)	
54.	10 Jan 2017	SCALE	http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-industrial-management-engineering/ 3.3.3 Bachelor of Technology (Industrial & Management Engineering) Home / NUS Bulletin AY2016/17 / School of Continuing and Lifelong Education / Undergraduate Education / Degree Requirements / Bachelor of Technology (Industrial & Management Engineering) The BTech (Industrial & Management Engineering) is offered in partnership with the Department of Industrial and Systems Engineering. The programme aims to graduate professional industrial and management engineers who have a strong foundation in the relevant modelling and methodological expertise together with a systems mindset, who can contribute to society through innovation, enterprise and leadership. The programme provides students with an education that enhances and complements their knowledge and experiences. In order to prepare graduates for the rapidly evolving landscape of Industrial and Management Engineering (IME) and to upgrade polytechnic graduates into learning engineers, the programme is specially designed to comprise essential modules, elective modules (both technical and non technical), enrichment modules, and projects. The essential modules seek to equip students with a strong foundation in mathematics, probability and statistics in engineering fundamentals. The technical electives provide the breadth and depth in different areas of IME. Design, which is the heart of engineering, is integrated through various project activities. Non-technical modules introduce students to methodologies of business and management. By providing graduates with a combination of broad-based fundamentals and specialised knowledge, the programme strives to graduate versatile engineers who would be best positioned to lead in a rapidly changing and increasingly knowledge-based economy. The programme is accredited by the Engineering Accreditation Board (EAB) of the Institution of Engineers Singapore (IES). Via this accreditation, all signatories in the Washington Accord recognize the substantial equivalence of this programme in satisfying the academic requirements for the practice of engineering at the professional level in many countries including Canada, United States of America, United Kingdom, Hong Kong, New Zealand, Australia and others. The educational objectives of the programme are as follows: <ul style="list-style-type: none"> To impart fundamental knowledge and skill sets required in the Industrial and Management Engineering profession, which include the ability to apply basic knowledge of mathematics, probability and statistics, and the domain knowledge of Industrial and Management Engineering. 		

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SpTerm:	General Education Module 3 (4) General Education Module 4 (4)																		
3rd Year of studies																			

			<table><tr><td>Sem 1:</td><td>TIE3101E Statistics for Engineering Applications (4) TIE3100E* Systems Design Project TTG3001* Industrial Practice</td></tr><tr><td>Sem 2:</td><td>Elective 1 (4) TIE3100E* Systems Design Project (8) TTG3001* Industrial Practice</td></tr><tr><td>SpTerm:</td><td>General Education Module 5 (4) Elective 2 (4) TTG3001* Industrial Practice (12)</td></tr><tr><td colspan="2">4th Year of studies</td></tr><tr><td>Sem 1:</td><td>TIE4240E Project Management (4) Elective 3 (4) TIE4101E* BTech Dissertation</td></tr><tr><td>Sem 2:</td><td>Elective 4 (4) TIE4101E* BTech Dissertation (8)</td></tr></table>	Sem 1:	T IE3101 E Statistics for Engineering Applications (4) T IE3100 E * Systems Design Project T TG3001* Industrial Practice	Sem 2:	Elective 1 (4) T IE3100 E * Systems Design Project (8) T TG3001* Industrial Practice	SpTerm:	General Education Module 5 (4) Elective 2 (4) T TG3001* Industrial Practice (12)	4th Year of studies		Sem 1:	T IE4240 E Project Management (4) Elective 3 (4) T IE4101 E * BTech Dissertation	Sem 2:	Elective 4 (4) T IE4101 E * BTech Dissertation (8)
Sem 1:	T IE3101 E Statistics for Engineering Applications (4) T IE3100 E * Systems Design Project T TG3001* Industrial Practice														
Sem 2:	Elective 1 (4) T IE3100 E * Systems Design Project (8) T TG3001* Industrial Practice														
SpTerm:	General Education Module 5 (4) Elective 2 (4) T TG3001* Industrial Practice (12)														
4th Year of studies															
Sem 1:	T IE4240 E Project Management (4) Elective 3 (4) T IE4101 E * BTech Dissertation														
Sem 2:	Elective 4 (4) T IE4101 E * BTech Dissertation (8)														

B. Sample Study Schedule (4-year candidature beginning in Semester 2 of an AY):

1. The number of Modular Credits (MC) of a module is denoted by the number in the bracket.

2. Modules marked with an asterisk (*) are modules stretching over more than one semester and the total number of MCs will only be given upon completion of the module.

1st Year of studies

			<p>Sem 2:</p> <p>ITG1401 Engineering Mathematics I (4) TIE2140E Engineering Economy (4) TIE2130E Quality Engineering I (4)</p>	
			<p>SpTerm:</p> <p>General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)</p>	
			<p><u>Sem 1:</u></p> <p>TEE2101 Programming Methodology (4) TIE2010 Introduction to Industrial Systems (4) TIE2120 Probability and Statistics (4)</p>	
			<p><u>2nd Year of studies</u></p>	
			<p><u>Sem 1:</u></p> <p>TE2101 Programming Methodology (4) IE2010E Introduction to Industrial Systems (4) IE2120E Probability and Statistics (4)</p>	
			<p>Sem 2:</p> <p>TIE2100E Probability Models with Applications (4) TIE2150E Human Factors Engineering (4) TIE3010E Systems Thinking and Design (4)</p>	
			<p>SpTerm:</p> <p>General Education Module 3 (4) General Education Module 4 (4)</p>	
			<p><u>Sem 1:</u></p> <p>TIE2110 Operations Research 1 (4) TIE3110 Simulation (5) TIE3101 Statistics for Engineering Applications (4)</p>	

<u>3rd Year of studies</u>	
Sem 1:	IE2110E Operations Research 1 (4) IE3110E Simulation (5) IE3101E Statistics for Engineering Applications (4)
Sem 2:	T IE3100E* Systems Design Project Elective 1 (4) T TG2415 Ethics in Engineering (4) T TG3001* Industrial Practice
SpTerm:	T IE3100E* Systems Design Project General Education Module 5 (4) T TG3001* Industrial Practice
<u>Sem 1:</u>	<u>TIE4240 Project Management (4)</u> <u>TG3001* Industrial Practice (12)</u> <u>TIE3100* Systems Design Project (8)</u>
<u>4th Year of studies</u>	
Sem 1:	IE4240E Project Management (4) TG3001* Industrial Practice (12) IE3100E* Systems Design Project (8)
Sem 2:	T IE4101E* BTech Dissertation Elective 2 (4)

			<table><tr><td>SpTerm:</td><td>TIE4101E* BTech Dissertation Elective 3 (4)</td></tr><tr><td colspan="2">5th Year of studies</td></tr><tr><td>Sem 1:</td><td>TIE4101E* BTech Dissertation (8) Elective 4 (4)</td></tr></table>	SpTerm:	T IE4101 E * BTech Dissertation Elective 3 (4)	5th Year of studies		Sem 1:	T IE4101 E * BTech Dissertation (8) Elective 4 (4)
SpTerm:	T IE4101 E * BTech Dissertation Elective 3 (4)								
5th Year of studies									
Sem 1:	T IE4101 E * BTech Dissertation (8) Elective 4 (4)								
55.	10 Jan 2017	SCALE	<p>http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-electronics-engineering/</p> <p>3.3.2 Bachelor of Technology (Electronics Engineering)</p> <p>Home / NUS Bulletin AY2016/17 / School of Continuing and Lifelong Education / Undergraduate Education / Degree Requirements / Bachelor of Technology (Electronics Engineering)</p> <p>The BTech (Electronics Engineering) is offered in partnership with the Electrical & Computer Engineering (ECE) Department. The programme aims to graduate professional electronic engineers who have a strong foundation in the relevant sciences and technology and who are able to contribute to society through innovation, enterprise and leadership. The programme provides students with an education that enhances and complements their knowledge and experiences, offers the requisite balance of breadth and depth for a professional electrical engineering education, and seeks to establish a solid foundation for lifelong learning throughout an electronic engineer's career.</p> <p>The programme comprises of three components – a strong core in mathematics, computing and engineering; technical competence through a minimum of breadth and depth modules; and general education. The core – which includes group projects, a product design and innovations project, and individual research and design projects – provides knowledge and skills considered essential for electronics engineers. A minimum number of breadth modules ensures that each student is exposed to many aspects of the state-of-the-art areas; in addition, students can achieve depth in one or two areas of their choice. General education modules complement the technical education through a wide array of modules in humanities, social sciences and professionalism to make our graduates educated members of the global community.</p> <p>The programme is accredited by the Engineering Accreditation Board (EAB) of the Institution of Engineers Singapore (IES). Via this accreditation, all signatories in the Washington Accord recognize the substantial equivalence of this</p>						

		<p>programme in satisfying the academic requirements for the practice of engineering at the professional level in many countries including Canada, United States of America, United Kingdom, Hong Kong, New Zealand, Australia and others. The structure of the BTech (Electronics Engineering) programme is designed to achieve the following educational objectives to prepare engineers who will be:</p> <ul style="list-style-type: none"> • technically competent to solve complex problems in electronics engineering and can adapt effectively in a fast changing environment; • able to critically think, analyse and make decisions that give due consideration to global issues in business, ethics, society and the environment; • able to communicate effectively, act with integrity, and have the inter-personal skills needed to engage in, lead, and nurture diverse teams; and • committed to lifelong learning, resourceful and embrace global challenges and opportunities to make a positive impact in society. <p>The success of the programme is assessed through the attainment of learning outcomes as follows:</p> <ul style="list-style-type: none"> • apply knowledge of mathematics, science and engineering to the solution of complex engineering problems; • design and conduct experiments such as to analyse, interpret data and synthesise valid conclusions; • design a system, component, or process, and synthesise solutions to achieve desired needs; • identify, formulate, research through relevant literature review, and solve engineering problems reaching substantiated conclusions; • use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for public health and safety, cultural, societal, and environmental constraints; • communicate effectively; • recognize the need for, and have the ability to engage in lifelong learning; • understand the impact of engineering solutions in a societal context and to be able to respond effectively to the needs for sustainable development; • function effectively within multidisciplinary teams and understand the fundamental precepts of effective project management; • understand professional, ethical and moral responsibility; and • have a good understanding of the principles and applications of advanced mathematics, including probability and statistics, differential and integral calculus, linear algebra and complex variables. <p>Degree Requirements Candidates must satisfy the following requirements to be conferred the degree of BTech (Electronics Engineering):</p> <ul style="list-style-type: none"> • Complete a minimum of 120 MCs with a minimum CAP of 2.0 by taking modules as listed below; • Comply with the requirement that the limit on the number of Level-1000 modules to be counted towards fulfillment of graduation requirements being 60 MCs (including exemption of 20 MCs for polytechnic diploma holders); and
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			<ul style="list-style-type: none"> Satisfy any other additional requirements that may be prescribed by SCALE, the Faculty of Engineering, or the University. <p>List of modules – BTech (Electronics Engineering), comprise:</p> <p>1. All modules are 4MCs, except when otherwise stated. 2. A module with module code TEExxxx is equivalent to the module EExxxx offered to the full-time students. Subject to the approval from the Dean of SCALE and the ECE Department, a student may select a full-time equivalent module in place of any TEExxxx module.</p> <p>A. <u>University Level Requirements (20MCs)</u></p> <ul style="list-style-type: none"> Quantitative Reasoning (module with prefix GER) Thinking and Expression (module with prefix GET) Human Cultures (module with prefix GEH) Asking Questions (module with prefix GEQ) Singapore Studies (module with prefix GES) <p>B. <u>Programme Requirements (92MCs), comprising</u></p> <p>1. <u>Faculty Requirements (4MCs)</u></p> <ul style="list-style-type: none"> TTG2415 Ethics in Engineering <p>2. <u>Major Requirements – Essential Modules (64MCs)</u></p> <ul style="list-style-type: none"> TTG1401 Engineering Mathematics I TEE2002 Engineering Mathematics II TEE2003 Advanced Mathematics for Engineers TEE2101 Programming Methodology TEE1001 Emerging Technologies in Electrical Engineering TEE2011 Engineering Electromagnetics TEE2020 Digital Fundamentals (5MCs) TEE2021 Devices & Circuits TEE2023 Signals & Systems TEE2024 Programming for Computer Interfaces (5MCs) TEE2031 Circuit and Systems Design Lab (3MCs) TEE2032 Signals and Communications Design Lab (3MCs) TEE3031 Innovation & Enterprise I TEE4001 BTech Dissertation (12MCs) <p>17. <u>Major Requirements – Elective Modules (24MCs, selected from the list below)</u></p>
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			<p>Not all electives modules may be offered in any semester/year. An elective module may not be offered if there is insufficient number of students opting for that module at any particular time. Unless approval for exemption is obtained from the Dean of SCALE, a student must read at least three Level-4000 electives, two outer core electives (from: TEE3013, TEE3104, TEE3131, TEE3331, TEE3431, TEE3408, TEE3501, TEE3731 and TEE3201) and one design module (from: TEE3013, TEE3207, TEE3208, TEE3407, TEE3408, TEE3501, TEE4415 and TEE3801).</p> <p><i>Communications</i></p> <ul style="list-style-type: none"> • TEE3104 Introduction to RF and Microwave Systems & Circuits • TEE3131 Communication Systems • TEE3731 Signal Processing Methods • TEE4101 RF Communications • TEE4112 HF Techniques • TEE4113 Digital Communications and Coding <p><i>Computer Engineering</i></p> <ul style="list-style-type: none"> • TEE3201 Software Engineering • TEE3204 Computer Communication Networks I • TEE3206 Introduction to Computer Vision and Image Processing • TEE3207 Computer Architecture • TEE3208 Embedded Computer Systems Design • TEE3731 Signal Processing Methods • TEE4210 Computer Communication Networks II • TEE4214 Real time Embedded Systems <p><i>Microelectronics</i></p> <ul style="list-style-type: none"> • TEE3408 Integrated Analog Design • TEE3431 Microelectronics Materials and Devices • TEE4408 Silicon Device Reliability • TEE4411 Silicon Processing Technology • TEE4412 Technology and Modelling of Silicon Transistors • TEE4415 Integrated Digital Design <p><i>General</i></p> <ul style="list-style-type: none"> • TIE2130 Quality Engineering I • TEE3013 Labview for Electrical Engineers • TEE3302 Industrial Control Systems • TEE3331 Feedback Control Systems • TEE3407 Analog Electronics • TEE3501 Power Electronics
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- TEE4305 Introduction to Fuzzy/Neural Systems
- TEE3801 Robust Design of Electronic Circuits
- TME4245 Robot Kinematics, Dynamics and Control

Restricted Elective Modules (8MCs)

Study Schedules

There are two intakes per academic year, in Semester 1 (i.e. August) and in Semester 2 (i.e. January). The respective sample study schedules for a four-year candidature are presented below. These assume the students' work and other commitments allow them sufficient time to properly cope with their studies. Students are strongly advised to slow down if necessary so that they progress at their own comfortable pace.

A. Sample Study Schedule (4-year candidature beginning in Semester 1 of an AY):

1. The number of Modular Credits (MC) of a module is denoted by the number in the bracket.
2. Modules marked with an asterisk (*) are modules stretching over more than one semester and the total number of MCs will only be given upon completion of the module.

1st Year of studies

Sem 1:	General Education Module 1 – Quantitative Reasoning (4) TTG1401 Engineering Mathematics I (4) TEE1001 Emerging Technologies in EE (4)
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Sem 2:	TEE2002 Engineering Mathematics II (4) TEE2020 Digital Fundamentals (5) TEE2101 Programming Methodology (4)
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SpTerm:	General Education Module 2 – Asking Questions (4) General Education Module 3 (4)
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2nd Year of studies

			<table><tr><td>Sem 1:</td><td>TEE2003 Advanced Mathematics for Engineers (4) TEE2024 Programming for Computer Interfaces (5) TEE2021 Devices & Circuits (4)</td></tr><tr><td>Sem 2:</td><td>TEE2011 Engineering Electromagnetics (4) TEE2031 Circuits and Systems Design Lab (3) TEE2023 Signals & Systems (4)</td></tr><tr><td>SpTerm:</td><td>TTG2415 Ethics in Engineering (4) / General Education Module 4 (4)</td></tr><tr><td colspan="2">3rd Year of studies</td></tr><tr><td>Sem 1:</td><td>Elective 1 (4) Elective 2 (4) / General Education Module 4/5 (4) TTG3002* Industrial Practice EE2032E Signals and Communications Design Lab (3)</td></tr><tr><td>Sem 2:</td><td>TEE3031 Innovation & Enterprise I (4) Elective 2 (4) / General Education Module 4/5 (4) Elective 3 (4) TTG3002* Industrial Practice</td></tr><tr><td>SpTerm:</td><td>TTG2415 Ethics in Engineering (4)/ General Education Module 5 (4) TTG3002* Industrial Practice (8)</td></tr><tr><td colspan="2">4th Year of studies</td></tr></table>	Sem 1:	TEE2003 Advanced Mathematics for Engineers (4) TEE2024 Programming for Computer Interfaces (5) TEE2021 Devices & Circuits (4)	Sem 2:	TEE2011 Engineering Electromagnetics (4) TEE2031 Circuits and Systems Design Lab (3) TEE2023 Signals & Systems (4)	SpTerm:	TTG2415 Ethics in Engineering (4) / General Education Module 4 (4)	3rd Year of studies		Sem 1:	Elective 1 (4) Elective 2 (4) / General Education Module 4/5 (4) TTG3002* Industrial Practice EE2032E Signals and Communications Design Lab (3)	Sem 2:	TEE3031 Innovation & Enterprise I (4) Elective 2 (4) / General Education Module 4/5 (4) Elective 3 (4) TTG3002* Industrial Practice	SpTerm:	TTG2415 Ethics in Engineering (4)/ General Education Module 5 (4) TTG3002* Industrial Practice (8)	4th Year of studies	
Sem 1:	TEE2003 Advanced Mathematics for Engineers (4) TEE2024 Programming for Computer Interfaces (5) TEE2021 Devices & Circuits (4)																		
Sem 2:	TEE2011 Engineering Electromagnetics (4) TEE2031 Circuits and Systems Design Lab (3) TEE2023 Signals & Systems (4)																		
SpTerm:	TTG2415 Ethics in Engineering (4) / General Education Module 4 (4)																		
3rd Year of studies																			
Sem 1:	Elective 1 (4) Elective 2 (4) / General Education Module 4/5 (4) TTG3002* Industrial Practice EE2032E Signals and Communications Design Lab (3)																		
Sem 2:	TEE3031 Innovation & Enterprise I (4) Elective 2 (4) / General Education Module 4/5 (4) Elective 3 (4) TTG3002* Industrial Practice																		
SpTerm:	TTG2415 Ethics in Engineering (4)/ General Education Module 5 (4) TTG3002* Industrial Practice (8)																		
4th Year of studies																			

			<table><tr><td>Sem 1:</td><td>Elective 4 (4) Elective 5 (4) TEE4001* BTech Dissertation</td></tr><tr><td>Sem 2:</td><td>Elective 6 (4) TEE4001* BTech Dissertation (12)</td></tr></table>	Sem 1:	Elective 4 (4) Elective 5 (4) TEE4001* BTech Dissertation	Sem 2:	Elective 6 (4) TEE4001* BTech Dissertation (12)						
Sem 1:	Elective 4 (4) Elective 5 (4) TEE4001* BTech Dissertation												
Sem 2:	Elective 6 (4) TEE4001* BTech Dissertation (12)												
			<p>B. Sample Study Schedule (4-year candidature beginning in Semester 2 of an AY):</p> <p>1. The number of Modular Credits (MC) of a module is denoted by the number in the bracket.</p> <p>2. Modules marked with an asterisk (*) are modules stretching over more than one semester and the total number of MCs will only be given upon completion of the module.</p> <table><tr><td colspan="2">1st Year of studies</td></tr><tr><td>Sem 2:</td><td>TTG1401 Engineering Mathematics I (4) TEE2020 Digital Fundamentals (5) TEE2101 Programming Methodology (4)</td></tr><tr><td>SpTerm:</td><td>General Education Module 1 – Asking Questions (4) General Education Module 2 (4)</td></tr><tr><td>Sem 1:</td><td>TEE2002 Engineering Mathematics II (4) General Education Module 3 – Quantitative Reasoning (4) EE1001E Emerging Technologies in EE (4)</td></tr><tr><td colspan="2">2nd Year of studies</td></tr></table>	1st Year of studies		Sem 2:	TTG1401 Engineering Mathematics I (4) TEE2020 Digital Fundamentals (5) TEE2101 Programming Methodology (4)	SpTerm:	General Education Module 1 – Asking Questions (4) General Education Module 2 (4)	Sem 1:	TEE2002 Engineering Mathematics II (4) General Education Module 3 – Quantitative Reasoning (4) EE1001E Emerging Technologies in EE (4)	2nd Year of studies	
1st Year of studies													
Sem 2:	TTG1401 Engineering Mathematics I (4) TEE2020 Digital Fundamentals (5) TEE2101 Programming Methodology (4)												
SpTerm:	General Education Module 1 – Asking Questions (4) General Education Module 2 (4)												
Sem 1:	TEE2002 Engineering Mathematics II (4) General Education Module 3 – Quantitative Reasoning (4) EE1001E Emerging Technologies in EE (4)												
2nd Year of studies													

			<table><tr><td>Sem 2:</td><td>TEE2003 Advanced Mathematics for Engineers (4) TEE2011 Engineering Electromagnetics (4) TEE2023 Signals and Systems (4)</td></tr><tr><td>SpTerm:</td><td>General Education Module 4 (4)</td></tr><tr><td>Sem 1:</td><td>TEE2021 Devices & Circuits (4) TEE2032 Signals and Communications Design Lab (3) TEE2024 Programming for Computer Interfaces (5)</td></tr><tr><td colspan="2">3rd Year of studies</td></tr><tr><td>Sem 2:</td><td>TEE3031 Innovation & Enterprise I (4) TEE2031 Circuits and Systems Design Lab (3) Elective 1 (4) TTG3002* Industrial Practice</td></tr><tr><td>SpTerm:</td><td>TTG2415 Ethics in Engineering (4) / General Education Module 5 (4) TTG3002* Industrial Practice</td></tr><tr><td>Sem 1:</td><td>Elective 2 (4) Elective 3 (4) General Education Module 5 (4) TTG3002* Industrial Practice (8)</td></tr><tr><td colspan="2">4th Year of studies</td></tr></table>	Sem 2:	TEE2003 Advanced Mathematics for Engineers (4) TEE2011 Engineering Electromagnetics (4) TEE2023 Signals and Systems (4)	SpTerm:	General Education Module 4 (4)	Sem 1:	TEE2021 Devices & Circuits (4) TEE2032 Signals and Communications Design Lab (3) TEE2024 Programming for Computer Interfaces (5)	3rd Year of studies		Sem 2:	TEE3031 Innovation & Enterprise I (4) TEE2031 Circuits and Systems Design Lab (3) Elective 1 (4) TTG3002* Industrial Practice	SpTerm:	TTG2415 Ethics in Engineering (4) / General Education Module 5 (4) TTG3002* Industrial Practice	Sem 1:	Elective 2 (4) Elective 3 (4) General Education Module 5 (4) TTG3002* Industrial Practice (8)	4th Year of studies	
Sem 2:	TEE2003 Advanced Mathematics for Engineers (4) TEE2011 Engineering Electromagnetics (4) TEE2023 Signals and Systems (4)																		
SpTerm:	General Education Module 4 (4)																		
Sem 1:	TEE2021 Devices & Circuits (4) TEE2032 Signals and Communications Design Lab (3) TEE2024 Programming for Computer Interfaces (5)																		
3rd Year of studies																			
Sem 2:	TEE3031 Innovation & Enterprise I (4) TEE2031 Circuits and Systems Design Lab (3) Elective 1 (4) TTG3002* Industrial Practice																		
SpTerm:	TTG2415 Ethics in Engineering (4) / General Education Module 5 (4) TTG3002* Industrial Practice																		
Sem 1:	Elective 2 (4) Elective 3 (4) General Education Module 5 (4) TTG3002* Industrial Practice (8)																		
4th Year of studies																			

			<table><tr><td>Sem 2:</td><td>Elective 4 (4) Elective 5 (4) TEE4001* BTech Dissertation</td></tr><tr><td>SpTerm:</td><td>TG2415 Ethics in Engineering (4) TEE4001* BTech Dissertation</td></tr><tr><td>Sem 1:</td><td>TEE4001* BTech Dissertation (12) Elective 6 (4)</td></tr></table>	Sem 2:	Elective 4 (4) Elective 5 (4) TEE4001* BTech Dissertation	SpTerm:	TG2415 Ethics in Engineering (4) TEE4001* BTech Dissertation	Sem 1:	TEE4001* BTech Dissertation (12) Elective 6 (4)
Sem 2:	Elective 4 (4) Elective 5 (4) TEE4001* BTech Dissertation								
SpTerm:	TG2415 Ethics in Engineering (4) TEE4001* BTech Dissertation								
Sem 1:	TEE4001* BTech Dissertation (12) Elective 6 (4)								
56.	10 Jan 2017	SCALE	<p>http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-mechanical-engineering/</p> <p>3.3.4 Bachelor of Technology (Mechanical Engineering) Home / NUS Bulletin AY2016/17 / School of Continuing and Lifelong Education / Undergraduate Education / Degree Requirements / Bachelor of Technology (Mechanical Engineering)</p> <p>The BTech (Mechanical Engineering) programme is offered in partnership with the Department of Mechanical Engineering. The academic curriculum follows closely that of the equivalent BEng programme.</p> <p>The programme is accredited by the Engineering Accreditation Board (EAB) of the Institution of Engineers Singapore (IES). Via this accreditation, all signatories in the Washington Accord recognize the substantial equivalence of this programme in satisfying the academic requirements for the practice of engineering at the professional level in many countries including Canada, United States of America, United Kingdom, Hong Kong, New Zealand, Australia and others.</p> <p>The educational objectives of the programme are as follows:</p> <ul style="list-style-type: none">• To prepare graduates with the knowledge and competency for careers in and related to Mechanical Engineering• To prepare graduates to become leaders in fields related to Mechanical Engineering• To enable graduates to understand their role as engineers and their impact on society in both national and global contexts.						

			<p>The learning outcomes for the programme are the abilities to:</p> <ul style="list-style-type: none"> • Apply knowledge of mathematics, science and engineering to the solution of complex engineering problems. • Design and conduct experiments, analyse, interpret data and synthesise valid conclusions. • Design a system, component, or process, and synthesise solutions to achieve desired needs. • Identify, formulate, research through relevant literature review, and solve engineering problems reaching substantiated conclusions. • Use the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for public health and safety, cultural, societal, and environmental constraints. • Communicate effectively. • Recognize the need for, and have the ability to engage in life-long learning. • Understand the impact of engineering solutions in a societal context and to be able to respond effectively to the needs for sustainable development • Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management. • Understand professional, ethical and moral responsibility. <p>Degree Requirements</p> <p>Candidates must satisfy the following requirements to be conferred the degree of BTech (Mechanical Engineering):</p> <ul style="list-style-type: none"> • Complete a minimum of 121 MCs with a minimum CAP of 2.0 by taking modules as listed below; • Comply with the requirement that the limit on the number of Level-1000 modules to be counted towards fulfillment of graduation requirements being 60 MCs (including exemption of 20 MCs for polytechnic diploma holders); and • Satisfy any other additional requirements that may be prescribed by SCALE, the Faculty of Engineering, or the University. <p>List of modules – BTech (Mechanical Engineering), comprise:</p> <p>1. All modules are 4MCs, except when otherwise stated.</p> <p>2. A module with module code TMExxxx is equivalent to the module MExxxx offered to the full-time students. Subject to the approval from the Dean of SCALE and the ME Department, a student may select a full-time equivalent module in place of any TMExxxx module.</p> <p>A. <u>University Level Requirements (20MCs)</u></p> <ul style="list-style-type: none"> • Quantitative Reasoning (module with prefix GER) • Thinking and Expression (module with prefix GET) • Human Cultures (module with prefix GEH) • Asking Questions (module with prefix GEQ)
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			<ul style="list-style-type: none"> • Singapore Studies (module with prefix GES)
			<p>B. <u>Programme Requirements (93MCs), comprising</u></p> <p>1. <u>Faculty Requirements (4MCs)</u></p> <ul style="list-style-type: none"> • TTG2415 Ethics in Engineering <p>2. <u>Major Requirements – Essential Modules (65MCs)</u></p> <ul style="list-style-type: none"> • TTG1401 Engineering Mathematics I • TME2401 Engineering Mathematics II • TME2114 Mechanics of Materials II (3MCs) • TME2121 Engineering Thermodynamics • TME2134 Fluid Mechanics I • TME2135 Fluid Mechanics II • TME2142 Feedback Control Systems • TME2143 Sensors and Actuators • TME2151 Principles of Mechanical Engineering Materials • TME3112 Mechanics of Machines • TME3122 Heat Transfer • TME3162 Manufacturing Processes • TME2101 Fundamentals of Mechanical Design • TME3101 Mechanical Systems Design (6MCs) • TME4102 BTech Dissertation (8MCs) <p>3. <u>Major Requirements – Elective Modules (24MCs, selected from the list below)</u></p> <p><i>Not all electives modules may be offered in any semester/year. An elective module may not be offered if there is insufficient number of students opting for that module at any particular time. Subject to the approval of the Dean of SCALE, a student may select one Level-3000 or higher module from other programmes within the Faculty of Engineering.</i></p> <ul style="list-style-type: none"> • TME3211 Mechanics of Solids • TME3233 Unsteady Flow in Fluid Systems • TME3251 Materials for Engineers • TME3241 Microprocessor Applications • TME3242 Automation • TME3261 Computer Aided Design and Manufacturing • TME3263 Design for Manufacturing and Assembly • TME3291 Numerical Methods in Engineering

- TME4213 Vibration Theory and Applications
- TME4223 Thermal Environmental Engineering
- TME4225 Applied Heat Transfer
- TME4234 Experimental Methods in Fluid Mechanics
- TME4245 Robot Mechanics and Control
- TME4254 Materials in Engineering Design
- TME4261 Tool Engineering
- TME4262 Automation in Manufacturing
- TME4283 Micro fabrication Processes
- TIE2010 Introduction to Industrial Systems
- TIE2130 Quality Engineering I
- TME4209 Management of New Product Development
- TME4263 Manufacturing Simulation & Data Communication
- TME4264 Fundamentals of Automotive Engineering

Restricted Elective Modules (8MCs)

Study Schedules

There are two intakes per academic year, in Semester 1 (i.e. August) and in Semester 2 (i.e. January). The respective sample study schedules for a four-year candidature are presented below. These assume the students' work and other commitments allow them sufficient time to properly cope with their studies. Students are strongly advised to slow down if necessary so that they progress at their own comfortable pace.

A. Sample Study Schedule (4-year candidature beginning in Semester 1 of an AY):

- 1. The number of Modular Credits (MC) of a module is denoted by the number in the bracket.*
- 2. Modules marked with an asterisk (*) are modules stretching over more than one semester and the total number of MCs will only be given upon completion of the module.*

1st Year of studies

Sem 1:

TTG1401 Engineering Mathematics I (4)
TME2121 Engineering Thermodynamics (4)
TME2151 Principles of Mechanical Engineering Materials (4)

			<table><tr><td>Sem 2:</td><td>TME2401 Engineering Mathematics II (4) TME2114 Mechanics of Materials II (3) TME2101 Fundamentals of Mechanical Design (4)</td></tr><tr><td>SpTerm:</td><td>General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)</td></tr><tr><td colspan="2">2nd Year of studies</td></tr><tr><td>Sem 1:</td><td>TME2134 Fluid Mechanics I (4) TME3112 Mechanics of Machines (4) TME3162 Manufacturing Processes (4)</td></tr><tr><td>Sem 2:</td><td>TME2143 Sensors and Actuators (4) TME2135 Fluid Mechanics II (4) TTG2415 Ethics in Engineering (4) TTG3002* Industrial Practice</td></tr><tr><td>SpTerm:</td><td>General Education Module 3 (4) TTG3002* Industrial Practice</td></tr><tr><td colspan="2">3rd Year of studies</td></tr><tr><td>Sem 1:</td><td>TME2142 Feedback Control Systems (4) Elective 1 (4) Elective 2 (4) TTG3002* Industrial Practice (8)</td></tr></table>	Sem 2:	TME2401 Engineering Mathematics II (4) TME2114 Mechanics of Materials II (3) TME2101 Fundamentals of Mechanical Design (4)	SpTerm:	General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)	2 nd Year of studies		Sem 1:	TME2134 Fluid Mechanics I (4) TME3112 Mechanics of Machines (4) TME3162 Manufacturing Processes (4)	Sem 2:	TME2143 Sensors and Actuators (4) TME2135 Fluid Mechanics II (4) TTG2415 Ethics in Engineering (4) TTG3002* Industrial Practice	SpTerm:	General Education Module 3 (4) TTG3002* Industrial Practice	3 rd Year of studies		Sem 1:	TME2142 Feedback Control Systems (4) Elective 1 (4) Elective 2 (4) TTG3002* Industrial Practice (8)
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			<table><tr><td>Sem 2:</td><td>TME3101 Mechanical Systems Design (6) TME3122 Heat Transfer (4) Elective 3 (4)</td></tr><tr><td>SpTerm:</td><td>General Education Module 4 (4) General Education Module 5 (4)</td></tr><tr><td colspan="2">4th Year of studies</td></tr><tr><td>Sem 1:</td><td>Elective 4 (4) Elective 5 (4) TME4102* BTech Dissertation</td></tr><tr><td>Sem 2:</td><td>Elective 6 (4) TME4102* BTech Dissertation (8)</td></tr></table>	Sem 2:	TME3101 Mechanical Systems Design (6) TME3122 Heat Transfer (4) Elective 3 (4)	SpTerm:	General Education Module 4 (4) General Education Module 5 (4)	4th Year of studies		Sem 1:	Elective 4 (4) Elective 5 (4) TME4102* BTech Dissertation	Sem 2:	Elective 6 (4) TME4102* BTech Dissertation (8)
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Sem 2:	Elective 6 (4) TME4102* BTech Dissertation (8)												
<p>B. Sample Study Schedule (4-year candidature beginning in Semester 2 of an AY): 1. The number of Modular Credits (MC) of a module is denoted by the number in the bracket. 2. Modules marked with an asterisk (*) are modules stretching over more than one semester and the total number of MCs will only be given upon completion of the module.</p>													
			<table><tr><td colspan="2">1st Year of studies</td></tr><tr><td>Sem 2:</td><td>TTG1401 Engineering Mathematics I (4) TME2114 Mechanics of Materials II (3) TME2101 Fundamentals of Mechanical Design (4)</td></tr></table>	1st Year of studies		Sem 2:	TTG1401 Engineering Mathematics I (4) TME2114 Mechanics of Materials II (3) TME2101 Fundamentals of Mechanical Design (4)						
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			SpTerm:	General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)	
			Sem 1:	TME2401 Engineering Mathematics II (4) TME2121 Engineering Thermodynamics (4) TME2134 Fluid Mechanics I (4)	
			2nd Year of studies		
			Sem 2:	TME2143 Sensors and Actuators (4) TME2135 Fluid Mechanics II (4) TME3101 Mechanical Systems Design (6)	
			SpTerm:	General Education Module 3 (4)	
			Sem 1:	TME2151 Principles of Mechanical Engineering Materials (4) TME3112 Mechanics of Machines (4) TME3162 Manufacturing Processes (4) TTG3002* Industrial Practice	
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			<table><tr><td>SpTerm:</td><td>General Education Module 4 (4) TTG3002* Industrial Practice (8)</td></tr><tr><td>Sem 1:</td><td>TME2142 Feedback Control Systems (4) Elective 2 (4) Elective 3 (4)</td></tr><tr><td colspan="2">4th Year of studies</td></tr><tr><td>Sem 2:</td><td>TME4102* BTech Dissertation Elective 4 (4) Elective 5 (4)</td></tr><tr><td>SpTerm:</td><td>TME4102* BTech Dissertation General Education Module 5 (4)</td></tr><tr><td>Sem 1:</td><td>TME4102* BTech Dissertation (8) Elective 6 (4)</td></tr></table>	SpTerm:	General Education Module 4 (4) TTG3002* Industrial Practice (8)	Sem 1:	TME2142 Feedback Control Systems (4) Elective 2 (4) Elective 3 (4)	4th Year of studies		Sem 2:	TME4102* BTech Dissertation Elective 4 (4) Elective 5 (4)	SpTerm:	TME4102* BTech Dissertation General Education Module 5 (4)	Sem 1:	TME4102* BTech Dissertation (8) Elective 6 (4)
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57.	18 Jan 2017	RO	<p>Other Multidisciplinary/Special Programmes</p> <p>6.5.1 Overview of Programme http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/double-degree-programmes/double-degree-in-computer-science-and-mathematics-applied-mathematics/overview-of-programme/</p> <p>Update 1:</p> <p>Add the following elective: CS4234 to the table: MODULES IN “ALGORITHMS AND COMPUTATION”</p>												

			<table><tr><th>MODULE CODE</th><th>MODULE TITLE</th><th>MCS</th></tr><tr><td>CS4234</td><td>Optimisation Algorithms</td><td>4</td></tr></table> <p>Update 2:</p> <p>Delete the module: MA3215, CS3246 and CS4344 from the table: MODULES IN “MULTIMEDIA MODELLING”</p> <table><tr><th>MODULE CODE</th><th>MODULE TITLE</th><th>MCS</th></tr><tr><td>MA3215</td><td>Three-dimensional Differential Geometry</td><td>4</td></tr><tr><td>CS3246</td><td>Multimedia Content Analysis and Search</td><td>4</td></tr><tr><td>CS4344</td><td>Networked and Mobile Gaming</td><td>4</td></tr></table> <p>Update 3: Add the following elective: MA4271 in the table: MODULES IN “MULTIMEDIA MODELLING”</p> <table><tr><th>MODULE CODE</th><th>MODULE TITLE</th><th>MCS</th></tr><tr><td>MA4271</td><td>Differential Geometry of Curves and Surfaces</td><td>4</td></tr></table>	MODULE CODE	MODULE TITLE	MCS	CS4234	Optimisation Algorithms	4	MODULE CODE	MODULE TITLE	MCS	MA3215	Three-dimensional Differential Geometry	4	CS3246	Multimedia Content Analysis and Search	4	CS4344	Networked and Mobile Gaming	4	MODULE CODE	MODULE TITLE	MCS	MA4271	Differential Geometry of Curves and Surfaces	4
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			<p>Update 4:</p> <p>6.5.3.3 Integrated Honours Project</p> <p>http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/double-degree-programmes/double-degree-in-computer-science-and-mathematics-applied-mathematics/programme-requirements/integrated-honours-project/</p> <p>Update 4: To amend the following paragraphs as highlighted:</p> <p>A student pursuing a double honours degree programme without specialisation can choose to undertake:</p> <p>3. One integrated honours year project or</p> <p>4. One Computing honours year project and one Mathematics honours year project, or</p> <p>3. One Mathematics honours year project and 12 MCs of Level 4000 'CS' prefixed modules.</p> <p>To fulfil the graduation requirements of the double degree programme. In the case that integrated honours year project is not chosen, a student can choose to take 12 MCs of common modules from Common Modules Table 2 for double counting purpose.</p> <p>6.5.4 Grading and Degree Requirements</p> <p>http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/double-degree-programmes/double-degree-in-computer-science-and-mathematics-applied-mathematics/grading-and-degree-requirements/</p> <p>Update 5: To add CS4234 and remove CS4235 from the COMMON MODULES TABLE 2</p> <table><tr><th>MODULE CODE</th><th>MODULE TITLE</th><th>MCS</th></tr><tr><td>CS4234</td><td>Optimisation Algorithms</td><td>4</td></tr><tr><td>CS4235</td><td>Computational Geometry</td><td>4</td></tr></table>	MODULE CODE	MODULE TITLE	MCS	CS4234	Optimisation Algorithms	4	CS4235	Computational Geometry	4
MODULE CODE	MODULE TITLE	MCS										
CS4234	Optimisation Algorithms	4										
CS4235	Computational Geometry	4										
59.	17 Jan 2017	SoC	NUS Bulletin 2016-17 Updates submitted by SoC (17 Jan 2017)									

			<p>Update 1:</p> <p>SoC Content page: http://www.nus.edu.sg/nusbulletin/school-of-computing/</p> <p>Please create a new item for Double Major in Business Analytics and rename the items: 3.3.5.4.1, 3.3.5.4.2 and 3.3.5.4.3 as highlighted below:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>3.3.5 Double Major Programmes</p> <p>3.3.5.1 Double Major in either Management or Management (Technology)</p> <p>3.3.5.2 Double Majors in the Faculty of Arts and Social Sciences</p> <p>3.3.5.3 Double Majors in the Faculty of Science</p> <p>3.3.5.4 Double Majors in the School of Computing</p> <p style="background-color: yellow;">3.3.5.4.1 Double major in Business Analytics (to link to newly created page/subsection – see Update 3 (iii) below)</p> <p style="background-color: yellow;">3.3.5.4.2 Double major in Computer Science (to link to the newly created page/subsection – see Update 3 (i) below)</p> <p style="background-color: yellow;">3.3.5.4.3 Double major in Information Security (to link to the newly created page/subsection – see Update32 (iii) below)</p> </div> <p>Update 2:</p> <p>url: http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/multidisciplinary-programmes/double-major-programmes/double-majors-in-the-school-of-computing/</p> <p>Include the following new content for section 3.3.5.4 Double Majors in the School of Computing:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>3.3.5.4 Double Majors in the School of Computing</p> <p>The School of Computing offers the following double (or second) majors to non-SoC students:</p> </div>
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			<p>3.3.5.4.1 Double major in Business Analytics ((to link to newly created page/subsection – see Pt (iii) under update 3) below</p> <p>3.3.5.4.2 Double major in Computer Science (to link to the newly created page/subsection- see Pt(i) under update 3) below</p> <p>3.3.5.4.3 Double major in Information Security (to link to the newly created page/subsection- see Pt(ii) above)</p> <p>Students should follow the University's double counting framework for double major programmes that is applicable to their cohort.</p>	
			<p>Update 3:</p> <p>(v) Shift the current content in this section 3.3.5.4.1 to a new page (see an extract of the current content in the attached file) and name it as sub-section 3.3.5.4.2 Double Major in Computer Science</p> <p>See attached file: 3.3.5.4.2 Double Major in Computer Science</p> <div style="text-align: center;">  <p>3.3.5.4.2 Double major in Computer Science.docx</p> </div>	

			<p>(vi) Shift the current contents in this section 3.3.5.4.2 to a new page (see an extract of the current content in the attached file) and name it as sub-section 3.3.5.4.3 Double Major in Information Security</p> <p>See attached file: 3.3.5.4.3 Double Major in Information Security</p> <div data-bbox="919 646 976 711" data-label="Image"> </div> <p>3.3.5.4.3 Double major in Information Security.docx</p> <p>(vii) Create a new page to hold the new contents for sub-section 3.3.5.4.1 Double major in Business Analytics which are as follows:</p> <p>3.3.5.4.1 Double major in Business Analytics The School of Computing offers a second major in Business Analytics (BZA) for non-SoC students.</p> <p>Objectives</p> <p>The objectives for the Second Major in BZA are as follows:</p> <ul style="list-style-type: none"> • To provide a business analytics programme within NUS for non-computing students who are not studying business analytics and equivalent as the first major;
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		<ul style="list-style-type: none"> • To contribute to the national focus on growing the pool of knowledge workers who have foundational skill set in business analytics; • To produce graduates who are able to understand business analytics principles and practices and apply it in a multi-disciplinary context. <p>Student Learning Outcomes</p> <p>The Second Major in BZA enables students to attain, by the time of graduation:</p> <ol style="list-style-type: none"> 1. Strong knowledge of business analytics foundations and fundamentals, including (a) familiarity with common business analytics themes and principles, (b) high-level understanding of systems as a whole, (c) understanding of the theoretical underpinnings of business analytics and their influences in practice. 2. Individual competence in applying sound principles and rigorous thinking to (a) analyse a business problem, (b) formulate the problem in terms of analytics requirements, (c) conceive novel solution ideas, (d) design appropriate solutions that meet the requirements, (e) implement the solution, (f) evaluate the effectiveness of the solution. 3. An ability to function effectively in teams to accomplish a common goal. 4. Recognition of the need for and an ability to engage in continuing professional development. <p>Admission Requirements</p> <p>For direct admission, students applying for the Second Major in BZA must meet the entry requirement:</p> <ul style="list-style-type: none"> • For diploma holders: Diploma with at least an A2 in GCE 'O' level Elementary Mathematics or at least a B4 grade in GCE 'O' level Additional Mathematics. • For A-Level Holders: At least a H2 pass in Mathematics. <p>Existing students from cohort 2016/17 or later who have taken CS1010S (or its equivalent) and BT1101 (or its equivalent) as either part of their degree requirements or Minor in Business Analytics can apply for entry into Second Major in Business Analytics if they obtain B+ or above in both modules.</p> <p>The second major in BZA programme is <u>not available</u> to students in the following degree programmes:</p> <ul style="list-style-type: none"> • B. Comp. (Information Security) • B. Comp. (Computer Science) • B. Comp. (Computational Biology) • B. Eng. (Computer Engineering) • B. Comp. (Information Systems) • B. Sc. (Business Analytics) • B.Sc. (Data Science and Analytics)
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Structure

The Second Major in BZA to be structured as follows:

- Business Analytics Foundation = 40 MCs
- Business Analytics Verticals = 8 MCs

In total, the 48 MCs requirement for graduation are broken down as follows:

- Core modules = 40 MCs
- Elective modules = 8 MCs

The table below shows the programme structure in details:

Modules	MCs
Business Analytics Foundation	40
BT1101 Introduction to Business Analytics ¹	4
BT2101 IT and Decision Making	4
BT2102 Data Management and Visualisation	4
BT3102 Computational Methods for Business Analytics	4
BT3103 Application Systems Development for Business Analytics	4
CS1010S Programming Methodology ²	4
CS1020 Data Structures and Algorithms I ³	4
CS2010 Data Structures and Algorithms II	4
ST2334 Probability and Statistics ⁴	4
ST3131 Regression Analysis	4
Business Analytics Verticals	8
Complete 8 MCs of modules in the list below:	4
BT4211 Data-Driven Marketing	4
BT4212 Search Engine Optimization and Analytics	4
BT4221 Big Data Techniques and Technologies	4
IS4241 Social Media Network Analysis	
Grand Total	48

¹ BT1101 can be replaced by DSC1007.

		<p>² CS1010S can be replaced by CS1010/E/S/X/FC/J. But students need to apply for the module substitution as advanced modules may need the taught programming language in CS1010S and it is imperative that students who take CS1010S equivalent are aware of it.</p> <p>³ CS1020 can be replaced by CS1020E.</p> <p>⁴ ST2334 can be replaced by ST2131 (Probability) or ST2132 (Mathematical Statistics).</p> <p>Some of these modules require prerequisites from outside this list. Students must have the prerequisites to take them.</p> <p>Continuation and Graduation Requirements</p> <p>The Second Major in BZA is a non-Honours major programme.</p> <p>The Second Major in BZA will be awarded to students who completed the 48 MCs second major requirement. Students will need to complete the primary major requirements to graduate.</p> <p>For students following the grade-free first semester policy for S/U option: The S/U option is available for modules that are part of a student's second Major requirements if they fall under the criteria stated for their cohort, and as long as the student has at least a minimum 32 MCs of the Second Major requirement earned from modules read in NUS (i.e., graded modules with assigned grade points or modules with an 'S' or 'CS' grade) out of the 48 MCs to fulfill the Second Major requirements towards graduation.</p> <p>As a continuation requirement, students taking the Second Major in BZA need to obtain at least a B+ grade in both CS1010S (or its equivalent) and BT1101 (or its equivalent). Should S/U option be chosen by students for either (or both) module(s), the raw performance in the module(s), i.e., based on the B+ equivalent marks, will be reviewed.</p> <p>Double Counting Framework for Double Major Programme</p> <p>For 2014 cohort and beyond, 16 MCs of the 48 MC second major can be double counted with the primary major/programme requirements.</p> <p>Update 4: http://www.nus.edu.sg/nusbulletin/school-of-computing/</p> <p>3.3.6 Minor programmes</p>
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			<p>3.3.6.1 Minor in Business Analytics (to link to newly created page/subsection – see Update 6 (iv) below)</p> <p>3.3.6.2 Minor in Computer Science (to link to newly created page/subsection – see Update 6 (i) below)</p> <p>3.3.6.3 Minor in Information Security ((to link to newly created page/subsection – see Update 6 (ii) below)</p> <p>3.3.6.4 Minor in Information Systems (to link to newly created page/subsection – see Update 6 (iii) below)</p> <p>Update 5: http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/multidisciplinary-programmes/minor-pogrammes/</p> <p>3.3.6 Minor Programmes (Note that there is typographical error in Programmes)</p> <p>Amend this paragraph as follows:</p> <p>The following four minors are offered to students outside the School of Computing:</p> <ul style="list-style-type: none"> • Business Analytics • Computer Science • Information Security (for BSc in Business Analytics students only) • Information Systems <p>3.3.6.1 Minor in Business Analytics</p> <p>3.3.6.2 Minor in Computer Science</p> <p>3.3.6.3 Minor in Information Security</p> <p>3.3.6.4 Minor in Information Systems</p> <p>Update 6:</p> <p>(i) Shift the current content in this section 3.3.6.1 to a new page and name it as sub-section 3.3.6.2 Minor in Computer Science</p>
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			<p>The current contents are in: http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/multidisciplinary-programmes/minor-pogammes/minor-in-computer-science/</p> <p>Please also update sub-section as: 3.3.6.2 Minor in Computer Science in the current contents.</p> <p>(ii) Shift the current contents in this section 3.3.6.2 to a new page and name it as sub-section 3.3.6.3 Minor in Information Security</p> <p>The current contents are at: http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/multidisciplinary-programmes/minor-pogammes/minor-in-information-security/</p> <p>Please update sub-section as: 3.3.6.3 Minor in Information Security in the current contents.</p> <p>(iii) Shift the current contents in this section 3.3.6.3 to a new page and name it as sub-section 3.3.6.4 Minor in Information Systems</p> <p>The current contents which are currently at: http://www.nus.edu.sg/nusbulletin/school-of-computing/undergraduate-education/multidisciplinary-programmes/minor-pogammes/minor-in-information-systems/ should be replaced by contents in Update 7 below.</p>
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			<p>Please update sub-section as 3.3.6.4 Minor in Information Systems in the current contents.</p> <p>(iv) Create a new page to hold the new contents for sub-section 3.3.6.1 Minor in Business Analytics which are as follows:</p> <p>3.3.6.1 Minor in Business Analytics</p> <p>Objectives</p> <p>The objectives of the Minor in Business Analytics are:</p> <ul style="list-style-type: none"> • To provide a business analytics minor programme within NUS for non-computing students; • To produce graduates who are able to understand business analytics principles and practices and apply it in a multi-disciplinary context. <p>Student Learning Outcomes</p> <p>The Minor in Business Analytics enables students to attain, by the time of graduation:</p> <ul style="list-style-type: none"> • Strong foundational knowledge of business analytics principles, including (a) familiarity with common business analytics methodologies and principles, (b) high-level understanding of data-driven analytics as a whole, (c) understanding of the theoretical underpinnings of business analytics and their influences in practice. • An ability to function effectively in teams to accomplish a common goal. • Recognition of the need for and an ability to engage in continuing professional development. <p>Eligibility</p> <p>The Minor in Business Analytics programme offers direct admission. Students applying for the Minor in Business Analytics must meet the entry requirement:</p> <ul style="list-style-type: none"> • For diploma holders: Diploma with at least an A2 in GCE 'O' level Elementary Mathematics or at least a B4 grade in GCE 'O' level Additional Mathematics. • For A-Level Holders: At least a H2 pass in Mathematics. <p>Students from cohort 2016/17 or later who have taken CS1010S (or its equivalent) and BT1101 (or its equivalent) as part of their degree requirements can apply for entry into Minor in Business Analytics starting Semester 1, AY2017-18.</p>
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The Minor in Business Analytics programme is not available to students in the following degree programmes offered (or jointly) by the School of Computing:

- B.Comp. (Information Security)
- B.Comp. (Computer Science)
- B.Comp. (Computational Biology)
- B.Eng. (Computer Engineering)
- B.Comp. (Information Systems)
- B.Sc. (Business Analytics)
- B.Sc. (Data Science and Analytics)

Continuation and graduation requirements

The Minor in Business Analytics will be awarded to students who satisfied the 24 MCs minor requirement.

For students following the enhanced grade-free scheme for S/U option: The S/U option is available for modules that are part of a student's Minor requirements if they fall under the criteria stated for their cohort, and as long as the student has at least a minimum 16 MCs of the Minor requirement earned from modules read in NUS (i.e., graded modules with assigned grade points or modules with an 'S' or 'CS' grade) out of the 24 MCs to fulfill the Minor requirements towards graduation.

Students will need to complete the primary major requirements to graduate.

Structure

The Minor in Business Analytics to be structured as follows:

- Core modules = 16 MCs
- Elective modules = 8 MCs

The table below shows the programme structure in details.

Modules	MCs
Core Modules	16
BT1101 Introduction to Business Analytics ¹	4
BT2101 IT and Decision Making	4
BT2102 Data Management and Visualisation	4
CS1010S Programming Methodology ²	4
Elective Modules	8

Complete 8 MCs of modules in the list below: BT4211 Data-Driven Marketing BT4212 Search Engine Optimization and Analytics BT4221 Big Data Techniques and Technologies IS4241 Social Media Network Analysis	4 4 4
Grand Total	24

¹ BT1101 can be replaced by DSC1007.

² CS1010S can be replaced by CS1010/E/S/X/FC/J. But students need to apply for the module substitution as advanced modules may need the taught programming language in CS1010S and it is imperative that students who take CS1010S equivalent are aware of it.

Some of these modules require prerequisites from outside this list. Students must have the prerequisites to take them.

A minimum 16 MCs of the Minor requirements must be earned from modules read in NUS. The other 8 MCs may be earned through credit transfers, advanced placement and exemptions, provided these MCs are earned from modules deemed relevant to the particular Minor programme.

Update 7:

3.3.6.4 Minor in Information Systems

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Objective

Information Technology (IT) has become a key component of organisations today. Its impact is felt from the way organisations are structured all the way to the design, development, manufacture and marketing of products. It enables organisational and operational processes. It is also embedded in products and services. It is vital that this key resource is efficiently managed.

		<p>The aim of this minor is to introduce students to the key concepts involved in the management of IT. The target audience for this minor consists of both users of technology as well as providers of technology. The course should benefit would-be managers, engineers and entrepreneurs.</p> <p>Structure</p> <p>To be awarded a minor in Information Systems, a student must pass a total of six (6) modules, with a minimum of twenty-four (24) modular credits. The student must pass all 3 modules in the following sets:</p> <p>Either</p> <table><tr><th>Set A</th><th></th><th>Set B</th></tr><tr><th>Code and Title</th><th></th><th>Code and Title</th></tr><tr><td>IT1001 Introduction to Computing</td><td></td><td>CS1010 /E/FC/S Programming Methodology</td></tr><tr><td>IS1103/FC/X Computing and Society[#]</td><td>o r</td><td>CS1020/E Data Structures and Algorithms I</td></tr><tr><td>IS1105 Strategic IT Applications[@]</td><td></td><td>IS1105 Strategic IT Applications[@] or IS1103/X IS Innovations in Organisations and Society</td></tr></table> <p>and any three modules from the following list. Some of these modules require prerequisites from outside this list.</p> <p>Students must have the prerequisites to take them. 6 modules (i.e. IT2001, IS3241, IS3243, IS3101 and IS3222) will be discontinued from AY2017-18 onwards. Students may use the newly introduced electives to meet the minor requirements:</p> <table><tr><th>Code</th><th>Title</th></tr><tr><td>CS2107</td><td>Introduction to Information Security ^[new]</td></tr><tr><td>IT2001</td><td>Network Technology and Management * ^[discontinued from AY2017-18]</td></tr><tr><td>IS3150</td><td>Digital Media Marketing ^[new]</td></tr><tr><td>IS3241</td><td>Enterprise Social Systems ^[discontinued from AY2017-18]</td></tr><tr><td>IS3243</td><td>Technology Strategy and Management ^[discontinued from AY2017-18]</td></tr><tr><td>IS3101</td><td>Management of Information Systems ^[discontinued from AY2017-18]</td></tr></table>	Set A		Set B	Code and Title		Code and Title	IT1001 Introduction to Computing		CS1010 /E/FC/S Programming Methodology	IS1103/FC/X Computing and Society [#]	o r	CS1020/E Data Structures and Algorithms I	IS1105 Strategic IT Applications [@]		IS1105 Strategic IT Applications [@] or IS1103/X IS Innovations in Organisations and Society	Code	Title	CS2107	Introduction to Information Security ^[new]	IT2001	Network Technology and Management * ^[discontinued from AY2017-18]	IS3150	Digital Media Marketing ^[new]	IS3241	Enterprise Social Systems ^[discontinued from AY2017-18]	IS3243	Technology Strategy and Management ^[discontinued from AY2017-18]	IS3101	Management of Information Systems ^[discontinued from AY2017-18]
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			<table><tr><td>IS3103</td><td>Information Systems Leadership [new]</td></tr><tr><td>IS3230</td><td>Principles of Information Security</td></tr><tr><td>IS3221</td><td>Enterprise Resource Planning Systems</td></tr><tr><td>IS3222</td><td>IT and Customer Relationship Management [discontinued from AY2017-18]</td></tr><tr><td>IS3240</td><td>Economics of E-Business</td></tr><tr><td>IS3251</td><td>Principles of Technopreneurship [new]</td></tr><tr><td>IS4204</td><td>IT Governance [new]</td></tr><tr><td>IS4261</td><td>Designing Tech Business Innovation [new]</td></tr></table> <p># : With effect from AY2017-18, IS1103 Computing and Society will be revised to IS1103 IS Innovations in Organisations and Society.</p> <p>@ : With effect from AY2017-18, minor in IS students reading set B and have not taken IS1105 can take IS1103 IS Innovations in Organisations and Society as the substitute. Minor in IS students reading set A should clear their IS1105 within AY2017-18.</p> <p>* : Engineering students (Course codes: EEE%, CPE% and ENG1) are precluded from reading IT2001.</p> <p>Important Note:</p> <p>For students following the grade-free first semester policy for S/U option or enhanced grade-free scheme for S/U option: The S/U option is available for modules that are part of a student's Minor requirements if they fall under the criteria stated for their cohort, and as long as the student has at least a minimum 16 MCs of the Minor requirement earned from modules read in NUS (i.e., graded modules with assigned grade points or modules with an 'S' or 'CS' grade) out of the 24 MCs to fulfill the Minor requirements towards graduation.</p>	IS3103	Information Systems Leadership [new]	IS3230	Principles of Information Security	IS3221	Enterprise Resource Planning Systems	IS3222	IT and Customer Relationship Management [discontinued from AY2017-18]	IS3240	Economics of E-Business	IS3251	Principles of Technopreneurship [new]	IS4204	IT Governance [new]	IS4261	Designing Tech Business Innovation [new]
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IS4261	Designing Tech Business Innovation [new]																		
60.	18 Jan 2017	LKYSPP	<p>NUS Bulletin 2016-17 – Updates submitted by LKYSPP</p> <p>MPP Revised Curriculum</p> <p>http://www.nus.edu.sg/nusbuletin/lee-kuan-yew-school-of-public-policy/graduate-education/degree-requirements/master-in-public-policy/</p> <p>To amend the section on 'Requirements' with the following amendments highlighted in red:</p>																

			<p>The minimum candidature period for the MPP is 18 months and the maximum is three years. Within that time, a student must earn at least 64 graduate-level Modular Credits (MCs) by completing at least 15 modules, comprising 8 common curriculum (28 MCs), five modules in a chosen specialisation (20 MCs), and free electives (16 MCs). Most MPP students read four modules per semester and complete the requirements in four semesters spanning two years. Students may apply to read electives (up to 12 MCs) taught in other programmes within NUS.</p> <p>The MPP programme is full time and fully taught in English. The curriculum will consist of:</p> <ol style="list-style-type: none"> 1. Common Curriculum (28 MCs) that all MPP students must take in their first year (in the 2-year MPP programme) 2. Modules in a chosen Specialization (20 MCs) 3. Free Electives (16 MCs) <ol style="list-style-type: none"> 1. The Common Curriculum focuses on imparting practical skills, disciplinary knowledge, and interdisciplinary competencies that the School believes to be necessary for the kind of work done by public policy practitioners, researchers, and public managers and leaders. The modules in the Common Curriculum are: <ol style="list-style-type: none"> a. PP5401 Policy Challenges (4MCs, year-long): This year-long module is designed to get students to think in a practical, problem-oriented, and multidisciplinary way through critical lenses and analytical tools available in the disciplines of Public Management and Leadership, Political Science and International Relations, and Economics, all pillars of a traditional Public Policy education. b. PP5402 Policy Process and Institutions (2 MCs, half a semester): The module is about approaches, institutions and processes in public policy. Specifically, it examines: definition and approaches to the analysis and practice of public policy; the political economic context of public policy; and the process of framing, making, and evaluating public policy. The objective is to build students' capability to conceptualise policy problems, devise strategies for addressing them, and comprehend policy documents. c. PP5404 Policy Analysis (6 MCs, one and a half semesters): Public policy crafters need to use reliable evidence when creating policy. In this module, students will learn the methodology and tools to be good consumers, users, and producers of research and be equipped with foundational analytic skills through a comprehensive introduction to the field of policy analysis, underlying theory, and major analytical toolkits. The emphasis will be on application, particularly through case studies and group projects addressing
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~~research questions that will flow through the year. Every attempt will be made to relate what is learnt in this module with the topics and issues addressed in the Policy Challenges module that will run in parallel. Policy Analysis will also serve as preparation for the Policy Analysis Exercise~~

(As point (c), please re-number points (d) to points (i) accordingly.)

- d. PP5110A Policy Analysis Exercise (4MCs, year-long): To obtain direct practical experience, MPP students work in diverse teams to undertake a public policy or management study for a client in the public, private, or not-for-profit sectors.
- e. PP5403 Economic Foundations for Public Policy (4MCs, semester-long): As Economics is an essential component of a Public Policy education, all students will be expected to graduate with at least a basic understanding of the key concepts and theories associated with microeconomics and macroeconomics. The main objective of this module is to understand foundational economics concepts and principles and their application to public policy.
- f. ~~PP5405 Public Administration and Politics, a half-semester module worth 2 MCs, covers the key foundational topics of public administration and politics, such as the role of government; public and private sector relations and dynamics; political-administrative relations; collaboration and networks; performance management; stakeholder management; and values, ethics, and anti-corruption strategies. It will provide students with knowledge, tools, and best practices of thinking about these administrative, political and managerial problems necessary to effectively continue their studies.~~
- g. ~~PP5406 Quantitative Research Methods for Public Policy 1 (4 MCs, semester-long) trains students to be competent users and producers of quantitative evidence for policy analysis, this module will equip students with foundational quantitative analytic skills. The focus is on basic concepts of multiple regression analysis and its applications to real-world policy problems. Exercises through textbook examples, case studies, and group projects will enable students to identify the strengths and weaknesses of the method. PP5407, provided in sequence in the second semester, will provide students with more in-depth knowledge and skills required to understand and conduct policy evaluation.~~

			<p>h. PP5407 Quantitative Research Methods for Public Policy 2 (4 MCs, semester-long) teaches Policy evaluation which is critical in helping to decide whether to expand, modify, or terminate a program or policy. The objective of this module is to provide students with the knowledge and skills required to understand and conduct policy evaluation. The module will build on the foundational analytical skills taught in PP5406. The focus is on rigorous quantitative evaluation tools. These will be taught using case studies and datasets that will allow students to identify the strengths and weaknesses of these methods and learn how to apply them to a policy problem of their choice.</p> <p>i. PP5408 Qualitative Research Methods for Public Policy (4 MCs, semester-long) explore the question of how qualitative research methods can be used to answer questions about public policy development and outcomes and how concerns about objectivity and representativeness can be overcome. This course introduces students to the conceptual foundations of qualitative research in the social sciences. It covers a wide range of techniques for conducting research with policy makers and the public, and on country cases. The course will prepare students to consume and conduct qualitative research by combining both theoretical and procedural understanding.</p> <p>2. Specializations (20MCs, including Gateway to Specialization module): The Specialization component of the curriculum is where students will acquire depth and sophistication in their selected areas of policy expertise. To graduate with a Specialization, students will have to pass at least 5 modules listed in that Specialization. Students may opt not to graduate with a Specialization. The following Specializations will be offered:</p> <ul style="list-style-type: none"> a. Economic Policy Analysis b. Politics and International Affairs c. Urban Policy <p>Gateway to Specialization (4MCs, semester-long): Students wishing to graduate with a Specialization are required to declare their chosen Specialization in their second semester, when they will need to read a prerequisite Gateway module designed as a 'primer' to give them a broad overview of the literature, debates, theories, concepts,</p>
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			<p>instruments, and assumptions associated with the particular Specialization. Students must pass the Gateway module in order to graduate with a Specialization.</p> <p>3. Free Electives: In addition to the Common and Specialization modules, students can choose to read any 4 electives as their Free Elective modules, either in their chosen Specialization or from other Specialization lists. Students will be allowed (but not encouraged) to retrospectively count Free Electives taken in Semester 1 towards a Specialization of their choice, if these modules are listed in the Specialization.</p>
61.	26 Jan 2017	BIZ	<p><u>Amendments required for NUS Bulletin AY 2016-2017</u></p> <p>NUS Bulletin AY 2016/17 – Financial Assistance and Awards: http://www.nus.edu.sg/nusbulletin/school-of-business/graduate-education/research-programmes/financial-assistance-and-awards/</p> <p>Note:</p> <ul style="list-style-type: none"> - Please assist to use the below information for the “application procedure”. <p>Lee Kong Chian Graduate Scholarship</p> <p><u>Application Procedure</u></p> <p>Upon receiving the call for nominations, department shall evaluate and nominate suitable candidates for this scholarship.</p> <ul style="list-style-type: none"> - Please assist to use the below information for the “application procedure”. <p>President’s Graduate Fellowship</p> <p>The award is tenable for an initial one year and, subject to the awardee’s satisfactory progress, be renewed each semester up to a maximum of 4 years. For candidates who were transferred from a NUS Research Scholarship to a President Graduate Fellowship, the total period of their tenure on both schemes must not exceed four years.</p>

			<p>Upon receiving the call for nominations, department shall evaluate and nominate suitable candidates for this scholarship.</p> <p>Applicants will be informed of the outcome of their applications sometime in May (for August intake) or October (January intake).</p> <p>- Please assist to include the information on “Commonwealth Scholarship” after “President’s Graduate Fellowship”</p> <p>Commonwealth Scholarship</p> <p>The Commonwealth Scholarship ("Scholarship") is awarded to outstanding graduate students from <u>Commonwealth countries</u> for research leading to a higher degree at the University. This Scholarship is for new, incoming students who are not Singapore citizens or permanent residents. The Scholarship consists of a monthly stipend plus a tuition fee subsidy.</p> <p><u>Eligibility</u></p> <p>The Scholarship is open to candidates who meet the following criteria:</p> <ol style="list-style-type: none"> 1. nationals from any <u>Commonwealth countries</u> except for Singapore Citizens and Singapore Permanent Residents; 2. have graduated with an undergraduate degree with at least Second Class Honours (Upper Division)/Honours (Distinction) or equivalent; 3. at the time of award of the Scholarship, must have been offered admission to a full-time graduate research programme at NUS; and 4. must be eligible for MOE Subsidy¹ <p>¹Please click here for Eligibility Guidelines for MOE Subsidy</p> <p><u>Award Details</u></p> <ol style="list-style-type: none"> i. A monthly stipend as follows:
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			<div><div>For PhD candidates:</div><div>For Master's candidates:</div></div> <table><tr><td>International Student</td><td>S\$2,000</td><td>S\$1,500</td></tr></table>	International Student	S\$2,000	S\$1,500
International Student	S\$2,000	S\$1,500				

ii.

Tuition fees at the University.

iii.

Scholars in a PhD programme may be eligible for an additional stipend of up to \$500 per month upon passing the PhD Qualifying Examination (QE), which is normally held 12 to 18 months after registration of candidature. The additional stipend is renewable each semester subject to good performance and duration of the additional stipend varies among the different faculties and schools.

Award Period

The Scholarship is tenable for an initial 1 year and, subject to the Research Scholar's satisfactory progress, renewable per semester up to a maximum of 1-2 years for Master's candidates and 3-4 years for PhD candidates, as determined by the University.

Application Procedure

Upon receiving the call for nominations, department shall evaluate and nominate suitable candidates for this scholarship.

Notification of Award

Successful applicants will be informed of the outcome of their applications sometime in May (for admission in August) or October (for admission in January).

Terms and Conditions

Successful applicants are required to sign a letter of undertaking agreeing to observe the terms and conditions for the award of the Scholarship. A copy of the current terms and conditions can be assessed [here](#).

Disclaimer

The above information is subject to change at any time. For more details, please refer to <http://www.nus.edu.sg/admissions/graduate-studies/scholarships-financial-aid-and-fees/scholarships-awards/commonwealth-scholarship.html>.

			Chinese Language	Department of Chinese Studies	Open
			Chinese Studies	Department of Chinese Studies	Open
			Chinese Translation	Department of Chinese Studies (with effect from AY2014/15)	Open
			Communications and New Media	Department of Communications and New Media	Open
			Economics	Department of Economics	Open
			English Language	Department of English Language & Literature	Open
			English Literature	Department of English Language & Literature	Open
			European Studies	Office of Programmes	Open
			History	Department of History	Open
			Human Services	Department of Social Work	Open
			India Studies (formerly Minor in South Asian Studies; offered to Cohort 2006-2007 only)	South Asian Studies Programme (Offered to Cohort 2008 onwards)	Open
			Japanese Studies	Department of Japanese Studies	Open
			Joint Minor with University of Toronto (UoT)	Department of Geography	Restricted
			Malay Studies	Department of Malay Studies	Open
			Philosophy	Department of Philosophy	Open

(as a 4 Jun 2020

			Political Science	Department of Political Science	Open
			Psychology	Department of Psychology	Open
			Sociology	Department of Sociology	Open
			Southeast Asian Studies	Department of Southeast Asian Studies	Open
			Theatre Studies	Department of English Language & Literature	Open
			<i>Multidisciplinary Minors</i>		
			Aquatic Ecology	Department of Geography and Department of Biological Sciences	Restricted
			Art History	Department of History	Open
			China Studies	Office of Programmes	Open
			Cultural Studies	Department of Sociology	Open
			English Studies	Department of English Language & Literature	Open
			Film Studies	Department of English Language & Literature	Open
			Film Production*	Department of English Language & Literature	Open
			Gender Studies	Office of Programmes	Open
			Geographical Information Systems	Department of Geography	Open

(as a 4 Jun 2020

			Geosciences	Department of Geography	Open
			Global Studies	Department of Political Science	Open
			Health and Social Sciences	Office of Programmes	Open
			Interactive Media Development	Department of Communications and New Media & Department of Computer Science	Open
			Religious Studies	Office of Programmes	Open
			Science, Technology and Society	Office of Programmes	Open
			Urban Studies	Department of Geography and Department of Real Estate	Open
			School of Business		
			Management (formerly Minor in Business; prior to AY2007/08)	School of Business	Restricted
			Management of Technology	School of Business and Faculty of Engineering	Restricted
			Technopreneurship	Department of Business Policy	Open
			School of Computing		
			<i>Disciplinary Minors</i>		
			Business Analytics	School of Computing	Restricted
			Computer Science	School of Computing	Restricted

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			Information Security	School of Computing	Restricted
			Information Systems (formerly Management of Information Technology)	School of Computing	Restricted
			Information Security	School of Computing	Restricted
			Multidisciplinary Minor		
			Interactive Media Development	Department of Computer Science & Department of Communications and New Media	Open
			School of Design & Environment		
			Project Management	Department of Building	Restricted
			Real Estate	Department of Real Estate	Restricted
			Urban Studies	Department of Real Estate and Department of Geography	Open
			Faculty of Engineering		
			Disciplinary Minors		
			Biomedical Engineering (formerly Minor in Bioengineering prior to AY2010/11)	Department of Biomedical Engineering	Restricted
			Civil Infrastructure	Department of Civil and Environmental Engineering	Restricted
			Systems Engineering	Faculty of Engineering	Restricted

			Urban Environmental Engineering	Department of Civil and Environmental Engineering	Open
			<i>Multidisciplinary Minor</i>		
			Engineering Materials (formerly Minor in Materials Science and Engineering; prior to AY2005/06)	Faculty of Engineering and Faculty of Science	Restricted
			Management of Technology	Faculty of Engineering and School of Business	Restricted
			Systems Engineering	Faculty of Engineering	Restricted
			Medical Physics	Department of Biomedical Engineering and Department of Physics	Restricted
			Saw Swee Hock School of Public Health		
			Public Health	Department of Public Health - Undergraduate Programme	Open
			Faculty of Science		
			<i>Disciplinary Minors</i>		
			Analytical Chemistry	Department of Chemistry	Open
			Aquatic Ecology	Department of Biological Sciences and Department of Geography	Restricted
			Biophysics	Department of Physics and Life Sciences Programme	Open

			Engineering Materials (formerly Minor in Materials Science and Engineering; prior to AY2005/06)	Faculty of Science and Faculty of Engineering	Restricted
			Financial Mathematics	Department of Mathematics	Open
			Joint Minor in Environmental Biology with University of Toronto	Faculty of Science, NUS and Faculty of Arts and Science, University of Toronto	Restricted
			Joint Minor in Environmental Chemistry with University of Toronto	Faculty of Science, NUS and Faculty of Arts and Science, University of Toronto	Restricted
			Life Sciences	Department of Biological Sciences	Restricted
			Forensic Science	Department of Biological Sciences and Department of Chemistry	Restricted
			Mathematics	Department of Mathematics	Open
			Medical Physics	Department of Biomedical Engineering and Department of Physics	Restricted
			Nanoscience	Department of Physics and Department of Chemistry	Open
			Optical & Semiconductor Technology	Department of Physics	Open
			Pharmaceutical Sciences	Department of Pharmacy	Restricted
			Physics	Department of Physics	Open
			Statistics	Department of Statistics & Probability	Open
			Multidisciplinary Minor		

			<p>Aquatic Ecology</p> <p>Engineering Materials (formerly Minor in Materials Science and Engineering; prior to AY2005/06)</p> <p>Medical Physics</p> <p>University Scholars Programme (USP)</p> <p>Minor (delete this row)</p> <p>China Studies*</p> <p>Note: 'Open' Minor - students can declare their intention to do an open minor via the Centralised Online Registration System (CORS) <u>without</u> any prior approval from the Host Faculty/Department. 'Restricted' Minor - students are required to apply to the Host Faculty/Department and obtain approval to read a restricted minor. * These programmes allow for up to 16 MCs of ungraded substitutable modules to be accepted from the partner university.</p>	<p>Department of Biological Sciences and Department of Geography</p> <p>Faculty of Science and Faculty of Engineering</p> <p>Department of Biomedical Engineering and Department of Physics</p> <p>USP – Faculty of Arts and Social Sciences (FASS)</p>	<p>Restricted</p> <p>Restricted</p> <p>Restricted</p> <p>-</p> <p>For USP-FASS students in USP-Yuanpei Exchange Programme</p>
63.	26 Jan 2017	RO	<p>http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-major-programmes.html</p> <p>Please insert 'Food Science' as indicated in red below:</p> <p>The second majors that are currently on offer are:</p> <p>Business Analytics Chemistry Chinese Language Chinese Studies</p>		

			<p>Communications and New Media Computer Science Data Analytics Economics English Language English Literature European Studies Food Science <i>(the hyperlink will be provided when FoS is able to set up their faculty webpage on this programme)</i> Geography History Information Security Japanese Studies</p>
64.	9 Feb 2017	RO	<p>Amendmentts are highlighted in red below:</p> <p>(B) (i) Double Major Programmes Page</p> <p>http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-major-programmes.html)</p> <p>A Double Major is a <u>single degree programme</u>, in which a student satisfies the requirements of two Majors. It is conceived as an opportunity for students to broaden their knowledge and capacities by pursuing a second Major alongside their primary Major. The Second Major affords a significant degree of depth, although its MC requirement is set below that of the Major. The Second Major is a non-Honours major. It may be taken in the same faculty that offers the Major or from a different Faculty. A Second Major consist of at least 48 MCs.</p> <p>For students admitted prior to AY2014/15:</p> <p style="padding-left: 40px;">up to 8 MCs can be counted also towards the Faculty/Major/Minor requirements; and at least 16 MCs must be at Level 3000.</p> <p>For students admitted from AY2014/15 onwards:</p> <p style="padding-left: 40px;">up to 16 MCs can be counted also towards the Faculty/Major/Minor requirements; and at least 16 MCs must be at Level 3000.</p>

			<p>Students can be admitted to Double Major Programmes at the point of admission to NUS, or by applying to the relevant Faculties/Schools no later than the 5th semester of study. For a list of Double Major Programmes available at the point of admission, please refer to the website of the Office of Admissions.</p> <p>The Second Major will be mentioned in the student's transcript upon successful completion. For more information, please click on the FAQ.</p> <p>The second majors that are currently on offer are:</p> <ul style="list-style-type: none"> Business Analytics Chemistry Chinese Language Chinese Studies Communications and New Media Computer Science Data Analytics Economics English Language English Literature European Studies Food Science Geography History Information Security Japanese Studies Life Sciences Malay Studies Management Management (Technology) Mathematics Philosophy Physics Political Science Psychology Recording Arts and Sciences Social Work Sociology Southeast Asian Studies South Asian Studies Statistics Systems Engineering
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			<p>Theatre Studies</p> <p>The Second Major will be mentioned in the student's transcript upon successful completion. For more information, please click on the FAQ.</p> <p>B.(ii) FAQ Part</p> <p>http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/faqs-for-ddp-cdp-and-dm.html)</p> <p>3. When can I be admitted to a DMP?</p> <p>Students You can be admitted at the point of admission to NUS, or by applying to the relevant Faculties/Schools no later than the 5th semester of study (Faculties/Schools may stipulate earlier application). For a list of Double Major Programmes available at the point of admission, please refer to the website of the Office of Admissions.</p> <p>4. How does one apply for a DMP at the point of admission to NUS?</p> <p>In the application form, students you will be given 8 course choices to rank their preference for a home course – these will all be single degree courses. After that, students will be asked to indicate whether they are interested in DMPs. If students you are, then you they will need to rank their preference for the DMPs. Please note that the DMPs will be listed together with the DDPs and CDPs as the second set of courses. Students You will be given 8 choices to rank their preference from among the DMPs, DDPs and CDPs.</p> <p><u>(C) Minor Programmes</u></p> <p>http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/minor-programmes.html</p> <p>A Minor programme is a coherent course of study which provides depth in an additional area outside of the Major. By doing this, it contributes to the breadth of learning envisaged for undergraduate education.</p> <p>The modular credit (MC) requirement for a Minor programme is at least 24MCs, of which:</p> <ul style="list-style-type: none"> At least 24 MCs, of which Up to 8 MCs may be used to meet the requirements for both the Minor and Faculty Requirements, a Major/Second Major, or another Minor, subject to the agreement of the particular department(s)/programme(s) or Faculty/School hosting the Minor. At least 12MCs (out of 24MCs) for any Minor programme must be taken from outside the entire set of modules that are listed for the major(s)/another minor that the student is taking/has taken.
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- A minimum 16 MCs of the Minor requirements must be earned from modules read in NUS, unless indicated otherwise by Faculties/Departments for specific minors. Modules read at NUS include all modules taught, co-taught, supervised or co-supervised by one or more NUS faculty members. These would consist of graded modules with assigned grade points, or modules with an 'S' or 'CS' grade. The other 8 MCs may be earned through credit transfers, advanced placement and exemptions, provided these MCs are earned from modules deemed relevant to the particular Minor programme.

The Minor programme(s) will be reflected in the student's transcript upon successful completion.

For Students admitted prior to AY2015/16: Relevant General Education Modules (GEMs) may be included in the list of modules approved for a Minor. Students who read such a GEM may count it towards both the General Education and Minor requirements. The MCs under the Breadth and Unrestricted Elective module requirements can also be used to satisfy the Minor programme requirements.

For Students admitted from AY2015/16 onwards: Students who read modules coded as GEH/GEQ/GER/GES/GET to fulfil requirements for Minor programmes are not allowed to count these modules towards fulfilling both the General Education and the Major/Minor requirements. For example, if a student had taken a GEH module for his/her Minor programme, he/she would have to take another GEH module to fulfil the Human Cultures pillar of the GE requirement. The MCs under the Unrestricted Elective module requirements may be used to satisfy Minor programme requirements.

Students can be admitted to Minor programmes at the point of admission to NUS, or by applying/declaring to the relevant Faculties/Schools no later than the 5th semester of study. For the combinations of Minor programmes with specific single degree courses available at the point of admission, please refer to the website of the [Office of Admissions](#).

The Minor Programmes ~~that are currently on offer at available in~~ NUS are listed below. For details on the requirements of each Minor, please refer to the relevant sections under each Faculty/School at the [NUS Bulletin Online](#).

Minor	Host Faculty/Department	Type (see 'Note' below)
Faculty of Arts & Social Sciences		
<i>Disciplinary Minors</i>		
Chinese Language	Department of Chinese Studies	Open

			Chinese Studies	Department of Chinese Studies	Open
			Chinese Translation	Department of Chinese Studies (with effect from AY2014/15)	Open
			Communications and New Media	Department of Communications and New Media	Open
			Economics	Department of Economics	Open
			English Language	Department of English Language & Literature	Open
			English Literature	Department of English Language & Literature	Open
			European Studies	Office of Programmes	Open
			History	Department of History	Open
			Human Services	Department of Social Work	Open
			India Studies (formerly Minor in South Asian Studies; offered to Cohort 2006-2007 only)	South Asian Studies Programme (Offered to Cohort 2008 onwards)	Open
			Japanese Studies	Department of Japanese Studies	Open
			Joint Minor with University of Toronto (UoT)	Department of Geography	Restricted
			Malay Studies	Department of Malay Studies	Open
			Philosophy	Department of Philosophy	Open
			Political Science	Department of Political Science	Open
			Psychology	Department of Psychology	Open

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			Sociology	Department of Sociology	Open
			Southeast Asian Studies	Department of Southeast Asian Studies	Open
			Theatre Studies	Department of English Language & Literature	Open
			Multidisciplinary Minors		
			Aquatic Ecology	Department of Geography and Department of Biological Sciences	Restricted
			Art History	Department of History	Open
			China Studies	Office of Programmes	Open
			Cultural Studies	Department of Sociology	Open
			English Studies	Department of English Language & Literature	Open
			Film Studies	Department of English Language & Literature	Open
			Film Production*	Department of English Language & Literature	Open
			Gender Studies	Office of Programmes	Open
			Geographical Information Systems	Department of Geography	Open
			Geosciences	Department of Geography	Open
			Global Studies	Department of Political Science	Open
			Health and Social Sciences	Office of Programmes	Open

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			Interactive Media Development	Department of Communications and New Media & Department of Computer Science	Open
			Religious Studies	Office of Programmes	Open
			Science, Technology and Society	Office of Programmes	Open
			Urban Studies	Department of Geography and Department of Real Estate	Open
			School of Business		
			Management (formerly Minor in Business; prior to AY2007/08)	School of Business	Restricted
			Management of Technology	School of Business and Faculty of Engineering	Restricted
			Technopreneurship	Department of Business Policy	Open
			School of Computing		
			<i>Disciplinary Minors</i>		
			Business Analytics	School of Computing	Restricted
			Computer Science	School of Computing	Restricted
			Information Security	School of Computing	Restricted
			Information Systems (formerly Management of Information Technology)	School of Computing	Restricted

			Multidisciplinary Minors		
			Interactive Media Development	Department of Computer Science & Department of Communications and New Media	Open
			School of Design & Environment		
			Project Management	Department of Building	Restricted
			Real Estate	Department of Real Estate	Restricted
			Urban Studies	Department of Real Estate and Department of Geography	Open
			Faculty of Engineering		
			Disciplinary Minors		
			Biomedical Engineering (formerly Minor in Bioengineering prior to AY2010/11)	Department of Biomedical Engineering	Restricted
			Civil Infrastructure	Department of Civil and Environmental Engineering	Restricted
			Systems Engineering	Faculty of Engineering	Restricted
			Urban Environmental Engineering	Department of Civil and Environmental Engineering	Open
			Multidisciplinary Minors		

			Engineering Materials (formerly Minor in Materials Science and Engineering; prior to AY2005/06)	Faculty of Engineering and Faculty of Science	Restricted
			Management of Technology	Faculty of Engineering and School of Business	Restricted
			Medical Physics	Department of Biomedical Engineering and Department of Physics	Restricted
			Saw Swee Hock School of Public Health		
			Public Health	Department of Public Health - Undergraduate Programme	Open
			Faculty of Science		
			<i>Disciplinary Minors</i>		
			Analytical Chemistry	Department of Chemistry	Open
			Biophysics	Department of Physics and Life Sciences Programme	Open
			Financial Mathematics	Department of Mathematics	Open
			Joint Minor in Environmental Biology with University of Toronto	Faculty of Science, NUS and Faculty of Arts and Science, University of Toronto	Restricted
			Joint Minor in Environmental Chemistry with University of Toronto	Faculty of Science, NUS and Faculty of Arts and Science, University of Toronto	Restricted
			Life Sciences	Department of Biological Sciences	Restricted

			Forensic Science	Department of Biological Sciences and Department of Chemistry	Restricted
			Mathematics	Department of Mathematics	Open
			Nanoscience	Department of Physics and Department of Chemistry	Open
			Optical & Semiconductor Technology	Department of Physics	Open
			Pharmaceutical Sciences	Department of Pharmacy	Restricted
			Physics	Department of Physics	Open
			Statistics	Department of Statistics & Probability	Open
			Multidisciplinary Minors		
			Aquatic Ecology	Department of Biological Sciences and Department of Geography	Restricted
			Engineering Materials (formerly Minor in Materials Science and Engineering; prior to AY2005/06)	Faculty of Science and Faculty of Engineering	Restricted
			Medical Physics	Department of Biomedical Engineering and Department of Physics	Restricted
			University Scholars Programme (USP)		
			China Studies*	USP – Faculty of Arts and Social Sciences (FASS)	For USP-FASS students in USP-Yuanpei Exchange Programme
			Note for students who are interested to do a Minor programme during the course of their candidature:		

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			<p>'Open' Minor - students can declare their intention to do an open minor via the Centralised Online Registration System (CORS) <u>without</u> any prior approval from the Host Faculty/Department.</p> <p>'Restricted' Minor - students are required to apply to the Host Faculty/Department and obtain approval to read a restricted minor.</p> <p>* These programmes allow for up to 16 MCs of ungraded substitutable modules to be accepted from the partner university.</p>
65.	13 Feb 2017	RO	<p>Amendments are indicated in red below:</p> <p>Double/Concurrent/Joint Degree Programmes with Overseas Universities</p> <p>http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-concurrent-joint-degree-programmes-with-overseas-universities.html</p> <p>These special degree programmes with premier overseas universities provide our able students with further academic challenges and the opportunities to learn alongside other brilliant students in cross-cultural settings.</p> <p>Besides double degree and concurrent degree programmes, Joint Degree Programmes (JDPs) are also available. A JDP combines the strengths of both NUS and our partner university's curricula and integrate international experience fully into a student's course of study. Students will be jointly taught and assessed and jointly awarded a degree. The degree scroll bearing the crests and official signatories of both universities will be a doubly validated qualification. Students will be able to complete a JDP with Honours within four years if they follow the study plan.</p> <p>The various double/concurrent/joint degree programmes with overseas universities are as follows:</p> <p>DDPs with premier French Grandes Ecoles</p> <p>Bachelor/Master of Engineering or Bachelor/Master of Science or Bachelor of Applied Science/Master of Science or Bachelor/Master of Computing from NUS and Diplôme d'Ingénieur from French Grande École (the equivalent of Masters in France)</p> <p>DDP with New York University</p> <p>Bachelor of Laws from NUS and J.D. from NYU Law School</p> <p>DDP with Sciences Po</p>

			<p>Bachelor with Honours Degree from NUS and Bachelor of Arts from Sciences Po (for students in the University Scholars Programme)</p> <p>DDP with Waseda University</p> <p>Bachelor with Honours Degree from NUS and Bachelor of Arts in International Liberal Studies from Waseda University (for students in the University Scholars Programme)</p> <p>Double Masters Degree Programme with the Global Alliance in Management Education (CEMS)</p> <p>Bachelor's and Master of Science (Management) Concurrent Degrees (NUS) and the Master in International Management (MIM) (Global Alliance in Management Education (CEMS))</p> <p>CDP with Brown University</p> <p>Bachelor of Science (Computational Biology) Honours from NUS and Scientiae Magister in Computer Science (Computational Biology) from Brown University — Bachelor of Computing (Computational Biology) Honours from NUS and Scientiae Magister in Computer Science (Computational Biology) from Brown University Bachelor of Computing (Computer Science) Honours from NUS and Scientiae Magister in Computer Science from Brown University</p> <p>CDP with Carnegie Mellon University</p> <p>Bachelor of Computing (Computer Science) from NUS and Master of Entertainment Technology from Carnegie Mellon University</p> <p>CDP with King's College London</p> <p>Bachelor of Science (Honours) in Life Sciences from NUS and Master of Research (M.Res.) in Molecular Biophysics from Faculty of Life Sciences & Medicine, King's College London (KCL) Bachelor of Science (Honours) in Chemistry from NUS and Master of Science in Forensic Science/Analytical Toxicology, from Faculty of Life Sciences and Medicine, King's College London (KCL) Bachelor of Science (Honours) in Life Sciences from NUS and Master of Science in Forensic Science/Analytical Toxicology, from Faculty of Life Sciences and Medicine, King's College London (KCL)</p> <p>CDP with New York University</p>
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			<p>Bachelor of Laws from NUS and Master of Laws from NYU Law School</p> <p>JDPs with Australian National University</p> <p>Joint Bachelor of Social Sciences (Honours) in Actuarial Studies and Economics Joint Bachelor of Arts (Honours) NUS and Bachelor of Philosophy (Honours) ANU (for students in the University Scholars Programme) Joint Bachelor of Science (Honours) NUS and Bachelor of Philosophy (Honours) ANU (for students in the University Scholars Programme)</p> <p>JDP with University of North Carolina-Chapel Hill</p> <p>Joint Bachelor of Arts (Honours) Joint Bachelor of Science (Honours)</p> <p>Joint Degree Programme with the Peabody Institute of The Johns Hopkins University</p> <p>Joint Bachelor of Music</p> <p>For more information on DDPs and CDPs, including admission process and criteria, please click on the FAQ.</p> <p>For an overview of the various undergraduate courses offered in NUS, please visit Office of Admissions – Course Information. Interested students may wish to consider applying to the Public Service Commission for its Local-Overseas Merit Scholarship.</p>
66	13 Feb 2017	RO	<p>Amendments are indicated in red below (see FAQs 1, 8, 11 and 12i):</p> <p>http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/faqs-for-ddp-cdp-and-dm.html#CDP</p> <p>B. Concurrent Degree Programmes (CDPs)</p> <p>1. What is a Concurrent Degree programme (CDP)?</p> <p>CDPs involve a combination of a Bachelor's and a Master's degree from the same Faculty/School or from two different Faculties/Schools and allow a student to pursue a Bachelor's and a Master's degree concurrently. The programme structure allows some of the requirements for the Bachelor's degree to be double counted towards the Master's degree or recognising</p>

			<p>Masters modules towards Bachelor requirements so that a student could graduate in four and a half to five years with both degrees, something which would normally take between five and a half and six years if pursued separately.</p> <p>Students on CDPs would acquire additional sets of skills and are well-placed for multiple career options upon graduation.</p> <p>The following CDPs are currently being offered –</p> <p> Bachelor of Engineering {any discipline except Engineering Science} and Master of Science (Management) Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master of Science (Management) Bachelor of Computing (Hons) and Master of Science (Management) Bachelor of Computing (Communications and Media) from NUS and Master of Entertainment Technology from Carnegie Mellon University Bachelor of Laws and Master in Public Policy Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master in Public Policy Bachelor of Social Sciences (Honours) and Masters in Social Sciences in Psychology Bachelor of Social Sciences (Honours) and Master in Public Policy Bachelor of Laws / Graduate Bachelor of Laws (Honours) from NUS and Master of Laws from New York University Bachelor of Science (Computational Biology) Honours Bachelor of Computing (Computational Biology) Honours from NUS and Scientiae Magister in Computer Science (Computational Biology) from Brown University Bachelor of Science (Honours) in Life Sciences from NUS and Master of Research (M.Res.) in Molecular Biophysics from Department of Biomedical Sciences, King's College London (KCL) </p> <p>2. When can I be admitted to a CDP and what are the criteria for admission?</p> <p>For the following CDPs, students will be admitted after a period of study:</p> <p> Bachelor of Engineering {any discipline except Engineering Science} and Master of Science (Management) Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master of Science (Management) – (direct admission is also available for Bachelor of Business Administration (Hons) and Master of Science (Management)) Bachelor of Computing (Hons) and Master of Science (Management) </p> <p>A student must have:</p> <ol style="list-style-type: none"> informed his/her original Faculty/School by writing to the Vice-Dean (Undergraduate Matters) before applying to the programme completed at least 80 modular credits (MCs) for his/her undergraduate programme with his/her original Faculty/School; at least 40 of those completed MCs must be from modules in his/her undergraduate major(s)
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		<p>c. an overall CAP of at least 4.00</p> <p>d. Graduate Management Admission Test (GMAT) is recommended but not mandatory</p> <p>e. performed well in an interview</p> <p>If a student is enrolled in the University Scholars programme (USP), he/she must have completed at least 4 modules that can count towards the existing 6-module Minor in Business (to be renamed Minor in Management) programme with an average grade point for those completed modules of at least 4.00</p> <p>Bachelor of Laws / Graduate Bachelor of Laws (Honours) from NUS and Master of Laws from New York University NUS Law students may apply for admission to the NYU LLM in their second or exceptionally in their third year of studies. The admission decision will be made entirely by NYU.</p> <p>Preliminary Acceptance: At end of Year 2 of study, students interested in applying for this programme must achieve the following:</p> <p>Pursuing an honours degree in BEng, BSc, BBA or BComp Minimum CAP of 4.00 Completed at least three of the five prescribed Mathematics modules and have obtained at least an average of A- in these modules</p> <p>Final Acceptance: At end of Year 4 of study, students must have obtained the following:</p> <p>Complete BEng, BSc, BBA or BComp with 2nd Upper Honours Completed 5 prescribed Mathematics modules with average of B+ Obtained a high GRE score (Verbal: 450, Quantitative: 750 and Analytical Writing: 4.0)</p> <p>Bachelor of Science (Honours) in Life Sciences from NUS and Master of Research (M.Res.) in Molecular Biophysics from Department of Biomedical Sciences, King's College London (KCL)</p> <p>Initial Round of Admission: The first round of admission targets Life Sciences students from the matriculation cohort of AY2010/11 at the end of their Year 1. For subsequent rounds of admission, LS students at the end of their Year 1 will be considered for the programme.</p> <p>The selection criteria are as follows:</p> <p>Academic achievements; Interest profile in biophysical sciences; An interview to assess student's potential and suitability for the programme; and</p>
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		<p>Other criteria to be determined by the Joint Programme Committee</p> <p>Interim arrangements will be made to admit suitable and interested current NUS students from matriculation cohorts of AY2009/2010 and earlier. These students may require longer than the typical 4 years to complete the programme. These students can proceed to KCL to read the M.Res. upon completion of the BSc (Hons) degree component.</p> <p>3. How does one apply for direct admission to CDP in the first year?</p> <p>In the application form for admission to NUS, you will be given 8 choices to rank your preference for a home course – these will all be single degree courses. This will be the first set of courses that you will have to choose from.</p> <p>After that, you will be asked to indicate whether you are interested in the CDPs. If you are, then you will need to rank your preference for the CDPs.</p> <p>Please note that the CDPs, will be listed together with the DDPs as the second set of courses. You will be given 8 choices to rank your preference from among the DDPs and CDPs.</p> <p>4. What are the criteria for direct admission to a CDP in the first year?</p> <p>Selection for admission to a CDP is based on academic merit and competition among applicants for a limited number of places. To be eligible for admission into a CDP, students must meet the admission criteria of the relevant Faculties/Schools, that is:</p> <ul style="list-style-type: none"> a. excellent grades in all the subjects and the General Paper at the A level; b. meet the mother tongue (MT) requirement for admission to the university; and c. meet the subject pre-requisites, if any, of the relevant Faculties/Schools. <p>Applicants may also need to meet additional criteria such as attending interviews that are required by the Faculty/School. Shortlisted applicants to these Faculties/Schools will receive a notification around mid-April to attend the interview.</p> <p>5. Can I change my mind about accepting a CDP after being made an offer?</p> <p>Yes. When you are made an offer for a CDP, you will also be offered admission into a home course. At this juncture, you can still indicate whether you wish to accept a place in the CDP or in the single degree course.</p> <p>6. Which Faculty/School do I belong to once I enter a CDP?</p> <p>You will belong to the Faculty/School in which you are reading for the undergraduate degree.</p> <p>Should you decide to drop out of the CDP or if you fail to fulfill the continuation requirement (see Question 12 of FAQs), then you will have to return to your home course.</p> <p>7. What happens if I am not selected for direct admission to CDP in the first year?</p>
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		<p>If you are not selected for direct admission to a CDP, you will be considered for single degree programmes based on the choices you have indicated in your application. This is provided you meet the cut-offs and subject pre-requisites of your choices.</p> <p>Further, you can still apply for a CDP at a later stage (see Questions 2 & 3 of FAQs) if you have done well. All the CDPs will consider applications from students who have done well at the appropriate stage of study in NUS.</p> <p>8. What are the qualifications I will receive at the end of the programme?</p> <p>Students who complete the course successfully will be awarded two degrees concurrently at the end of the entire programme, namely:</p> <p style="padding-left: 40px;"> Bachelor of Engineering {any discipline except Engineering Science} and Master of Science (Management) Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master of Science (Management) Bachelor of Computing (Hons) and Master of Science (Management) Bachelor of Computing (Communications and Media) from NUS and Master of Entertainment Technology from Carnegie Mellon University Bachelor of Laws and Master in Public Policy Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master in Public Policy Bachelor of Social Sciences (Honours) and Masters in Social Sciences in Psychology Bachelor of Social Sciences (Honours) and Master in Public Policy Bachelor of Laws from NUS and Master of Laws from New York University Bachelor of Science (Computational Biology) Honours or Bachelor of Computing (Computational Biology) Honours from NUS and Scientiae Magister in Computer Science (Computational Biology) from Brown University Bachelor of Science (Honours) in Life Sciences from NUS and Master of Research (M.Res.) in Molecular Biophysics from Department of Biomedical Sciences, King's College London (KCL) </p> <p>9. How many degree scrolls will I receive on completion of the CDP?</p> <p>On completion of the CDP you will receive two degree scrolls, one for each degree.</p> <p>10. How long will it take to complete the course?</p> <p>Since the CDP structure allows some requirements for the bachelor's degree to be double counted towards the master's degree, a student could obtain in a minimum of four and a half to five years a bachelor's as well as a master's degree that normally take between five and a half and six years to complete if pursued separately.</p> <p>11. What tuition fees will be charged to students doing CDPs? Is there any difference in the tuition fee structure compared with the single degree programmes?</p>
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		<p>a. For Concurrent Degree Programmes within NUS, students will pay the prevailing undergraduate tuition fees for the Bachelor's degree programme and pay the prevailing graduate tuition fees when they embark on the Master's degree programme.</p> <p>b. NUS-CMU Bachelor of Computing (Communications and Media) and Master of Entertainment Technology Programme Students in the NUS-CMU Concurrent Bachelor of Computing (Communications and Media) and Master of Entertainment Technology (MET) will pay the prevailing fees for the Bachelor's degree programme and pay the CMU tuition fees during the time that they are undertaking the modules in partial fulfillment of the MET in CMU. A limited number of full scholarships (from IDA Singapore) will support students through the entire five years of study. The scholarship covers tuition fees and miscellaneous expenses at the School of Computing (SoC), NUS and the Entertainment Technology Centre (ETC), CMU. The application period for the scholarships starts from February and ends in April each year. Please click here for details.</p> <p>c. NUS-NYU Bachelor of Laws / Graduate Bachelor of Laws (Honours) (LLB) and Master of Laws (LLM) Programme Students in the NUS-NYU LLB and LLM programme are responsible for the payment of tuition fees charged by NUS for the LL.B. programme and the tuition and fees charged by NYU School of Law for the LL.M. programme. Admitted students are eligible for consideration for NYU's merit-based scholarships for the LL.M. portion of the programme.</p> <p>d. Bachelor of Science (Computational Biology) Honours or Bachelor of Computing (Computational Biology) Honours from NUS and Scientiae Magister in Computer Science (Computational Biology) from Brown University Students will pay Brown tuition fees during the time they undertake instruction at Brown in partial fulfillment of the requirements of the concurrent degree. They will also provide their medical insurance coverage.</p> <p>e. Bachelor of Science (Honours) in Life Sciences from NUS and Master of Research (M.Res.) in Molecular Biophysics from Department of Biomedical Sciences, King's College London (KCL). NUS students enrolled for the M.Res. as part of this concurrent degree will pay UK home student fees.</p> <p>12. What if I do badly or don't like the course?</p> <p>Students can choose to leave the programme, or can be asked to leave the programme if they fail to meet continuation requirements.</p> <p>a. For the Concurrent BEng or BComp (Hons) and MSc (Mgt): If your CAP falls below 4.00 for the home course for two consecutive semesters, you will be required to leave the CDP. For students leaving the programme, your academic advisor will advise you on the modules you need to complete the degree requirements of your home course.</p> <p>b. For the Concurrent BBA (Hons)/BBA (Accountancy) (Hons) and MSc (Mgt): Students must maintain a CAP of at least 3.50 for modules counting towards the MSc(Mgt) degree and an overall CAP of at least 3.50. Students who fail to do so will be required to leave the CDP. For students leaving the programme, your academic advisor will advise you on the modules you need to complete the degree requirements of your home course.</p> <p>c. For the NUS-CMU Bachelor of Computing (Communications and Media) and Master of Entertainment Technology: Students must maintain a CAP of 4.00 or above out of 5.00 and/or demonstrate strong creative talents, that is, strong performance in projects undertaken as part of the academic curriculum. These will be projects in specified courses as</p>
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		<p>set out by SoC. Students who fail to meet the criteria will not be allowed to remain in the CDP, but may continue with their BComp studies at NUS.</p> <p>d. For Bachelor of Laws and Master in Public Policy:</p> <p>The following students will be asked to leave the CDP, even if all other requirements are met, if:</p> <ul style="list-style-type: none"> ○ the student falls below the top 50% of students in modules counting toward the LLB for completed Law modules for 2 consecutive semesters; or ○ CAP falls below 3.00 for completed MPP modules for 2 consecutive semesters; or ○ CAP falls below 3.50 for completed MPP modules for 3 consecutive semesters; or ○ fail any particular MPP module twice; or ○ fail 3 or more MPP modules <p>In addition, a student who, at the point of entry into the MPP component of the programme, does not stand within the top 55% of his cohort will be asked to leave the programme.</p> <p>Students who leave the CDP are permitted to work toward the LLB, while adhering to prevailing regulations. Modular credits completed in the CDP will be counted towards the fulfillment of the degree requirements for LLB, subject to the normal limits of the curriculum.</p> <p>e. For Bachelor of Business Administration (Hons) or Bachelor of Business Administration (Accountancy) (Hons) and Master in Public Policy:</p> <p>Students whose academic performance falls under any of the following categories shall be asked to leave the CDP, even if all other requirements are met:</p> <ul style="list-style-type: none"> ○ CAP falls below 4.00 for completed BBA modules for 2 consecutive semesters; or ○ CAP falls below 3.00 for completed MPP modules for 2 consecutive semesters; or ○ CAP falls below 3.50 for completed MPP modules for 3 consecutive semesters; or ○ fail any particular MPP module twice; or ○ fail 3 or more MPP modules <p>f. Bachelor of Social Sciences (Honours) and Masters in Social Sciences in Psychology</p> <ul style="list-style-type: none"> ○ SJAP (based on both undergraduate and graduate PL modules) fall below 4.00 over two consecutive semesters. <p>g. Bachelor of Social Sciences (Honours) and Master in Public Policy</p> <ul style="list-style-type: none"> ○ CAP falls below 4.00 for completed FASS modules for 2 consecutive semesters; or ○ CAP falls below 3.00 for completed MPP modules for 2 consecutive semesters; or ○ CAP falls below 3.50 for completed MPP modules for 3 consecutive semesters; or ○ fail any particular MPP module twice; or ○ fail 3 or more MPP modules
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67.	13 Feb 2017	RO	<p>Links for the second major programmes are updated as indicated in red in the table below:</p> <p>Double Major Programmes</p> <p>http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-major-programmes.html</p>

A Double Major is a single degree programme, in which a student satisfies the requirements of two Majors. It is conceived as an opportunity for students to broaden their knowledge and capacities by pursuing a second Major alongside their primary Major. The Second Major affords a significant degree of depth, although its MC requirement is set below that of the Major. The Second Major is a non-Honours major. It may be taken in the same faculty that offers the Major or from a different Faculty. A Second Major consist of at least 48 MCs.

For students admitted prior to AY2014/15:

up to 8 MCs can be counted also towards the Faculty/Major/Minor requirements; and
at least 16 MCs must be at Level 3000.

For students admitted from AY2014/15 onwards:

up to 16 MCs can be counted also towards the Faculty/Major/Minor requirements; and
at least 16 MCs must be at Level 3000.

The second majors that are currently on offer are:

Business Analytics	No change in hyperlink
Chemistry	http://www.science.nus.edu.sg/undergraduate-studies/ugprog/second-majors
Chinese Language	No change in hyperlink
Chinese Studies	No change in hyperlink
Communications and New Media	http://www.fas.nus.edu.sg/cnm/current-students/undergraduate/graduation-requirements
Computer Science -	No change
Data Analytics	http://www.science.nus.edu.sg/undergraduate-studies/ugprog/second-majors
Economics	http://www.fas.nus.edu.sg/ecs/undergraduate/second_major.html
English Language	No change
English Literature	No change
European Studies	No change
Food Science	http://www.science.nus.edu.sg/undergraduate-studies/ugprog/second-majors
Geography	No change
History	No change
Information Security	No change

Japanese Studies	http://www.fas.nus.edu.sg/jps/undergrad/undergrad_req.htm#second2016
Life Sciences	http://www.science.nus.edu.sg/undergraduate-studies/ugprog/second-majors
Malay Studies	http://www.fas.nus.edu.sg/malay/undergrad_major.html
Management	http://bba.nus.edu/
Management (Technology)	http://bba.nus.edu/academic-programmes/bba-majors-minors/for-current-bba-students/minors-for-bba
Mathematics	http://www.science.nus.edu.sg/undergraduate-studies/ugprog/second-majors
Philosophy	http://www.fas.nus.edu.sg/philo/academic_requirements.html
Physics	http://www.science.nus.edu.sg/undergraduate-studies/ugprog/second-majors
Political Science	No change
Psychology	http://www.fas.nus.edu.sg/psy/current/undergrad/gradreq.html
Recording Arts and Sciences	Nil
Social Work	http://www.fas.nus.edu.sg/swk/undergrad/ay1617_onwards.html
Sociology	http://www.fas.nus.edu.sg/soc/undergraduate/programme-requirements.html
Southeast Asian Studies	No change
South Asian Studies	No change
Statistics	http://www.science.nus.edu.sg/undergraduate-studies/ugprog/second-majors
Systems Engineering	http://www.eng.nus.edu.sg/ugrad/SP_dm.html
Theatre Studies	No change

The Second Major will be mentioned in the student's transcript upon successful completion. For more information, please click on the [FAQ](#).

67.	16 Feb 2017	FoS	<p><u>Background:</u></p> <p>BUS has approved the changes to the Physics, Specialisation in Nanophysics, for Cohort 2015 and onwards, via BUS Cir 15 of AY16/17. Updates to make are as follows:</p> <p><u>2016 Online Bulletin</u></p> <p>Under 3.3.3.7 i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Physics, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/physics/), include PC4259 Surface Physics in the module basket for the Specialisation in Nanophysics, for the B.Sc (Hons.) in Physics.</p> <p>To be awarded a specialisation in Nanophysics, candidates must read and pass the following modules as part of the major requirements for B.Sc. (Hons.) with a primary major in Physics.</p> <table><tr><th>MODULE LEVEL</th><th>SPECIALISATION REQUIREMENTS</th><th>CUMULATIVE MAJOR MCS</th></tr><tr><td>Level-3000 and Level-4000</td><td>Pass any 24 MCs from the following: PC3235 Solid State Physics I PC3241 Solid State Devices PC3242 Physics of Semiconductor Processing PC3243 Photonics PC4246 Quantum Optics PC4253 Thin Film Technology PC4259 Surface Physics PC4199 Honours Project in Physics (Nanophysics)**</td><td>24</td></tr></table>	MODULE LEVEL	SPECIALISATION REQUIREMENTS	CUMULATIVE MAJOR MCS	Level-3000 and Level-4000	Pass any 24 MCs from the following: PC3235 Solid State Physics I PC3241 Solid State Devices PC3242 Physics of Semiconductor Processing PC3243 Photonics PC4246 Quantum Optics PC4253 Thin Film Technology PC4259 Surface Physics PC4199 Honours Project in Physics (Nanophysics)**	24
MODULE LEVEL	SPECIALISATION REQUIREMENTS	CUMULATIVE MAJOR MCS							
Level-3000 and Level-4000	Pass any 24 MCs from the following: PC3235 Solid State Physics I PC3241 Solid State Devices PC3242 Physics of Semiconductor Processing PC3243 Photonics PC4246 Quantum Optics PC4253 Thin Film Technology PC4259 Surface Physics PC4199 Honours Project in Physics (Nanophysics)**	24							
68.	16 Feb 2017	FoS	<p><u>Background:</u></p> <p>BUS has approved the following changes to the Level 3000 requirements for the Major, Second Major and Minor in Life Sciences, for Cohort 2013 and onwards (via BUS Circular 15 of AY2016/17), and hence updates are needed for the 2013, 2014, 2015 and 2016 Bulletin:</p> <p>Updates made are indicated in yellow highlight below:</p> <p><u>Update 1:</u></p>						

		<p>Under 3.3.3.5 i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Life Sciences, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/life-sciences/), the change to the Level 3000 requirements of the B.Sc. and B.Sc. (Hons) in Life Sciences is as follows:</p> <p>Under the 'B.Sc. with a primary major in Life Sciences or Life Sciences (with specialisation in Biomedical Science, Molecular and Cell Biology or Environmental Biology)', <u>Level 3000 requirements</u>: Pass 4 LSM32XX elective modules (except LSM3289), one of which may be a LSM-recognised elective module (up to 4 MCs). Pass four LSM32xx elective modules (except LSM3289). Alternatively, one of the following combinations can be allowed: 1. Three LSM32xx (except LSM3289) and one LSM42xx (except LSM4299). 2. Two LSM32xx (except LSM3289) and two LSM42xx (except LSM4299) 3. Two LSM32xx (except LSM3289), one LSM42xx (except LSM4299), and one LSM-recognised elective module.</p> <p>Under the 'B.Sc. (Hons.) with a primary major in Life Sciences or Life Sciences (with specialisation in Biomedical Science, Molecular and Cell Biology or Environmental Biology)', <u>Level 3000 requirements</u>: Pass 4 LSM32XX elective modules (except LSM3289), one of which may be a LSM-recognised elective module (up to 4 MCs). Pass four LSM32xx elective modules (except LSM3289). Alternatively, one of the following combinations can be allowed: 1. Three LSM32xx (except LSM3289) and one LSM42xx (except LSM4299). 2. Two LSM32xx (except LSM3289) and two LSM42xx (except LSM4299) 3. Two LSM32xx (except LSM3289), one LSM42xx (except LSM4299), and one LSM-recognised elective module.</p> <p><u>Update 2:</u></p> <p>Under 3.4.2.3 i.e. Second Major in Life Sciences, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/second-major-programmes/life-sciences/), the change to the Level 3000 requirements of the Second Major in Life Sciences is as follows:</p> <table border="1"> <tr> <td>Level 3000 (16 MCs)</td><td> Pass four LSM32XX elective modules (except LSM3289), one of which may be a LSM-recognised elective module (up to 4MCs). Pass four LSM32xx elective modules (except LSM3289). Alternatively, one of the following combinations can be allowed: 1. Three LSM32xx (except LSM3289) and one LSM42xx (except LSM4299). 2. Two LSM32xx (except LSM3289) and two LSM42xx (except LSM4299) </td><td>48</td></tr> </table>	Level 3000 (16 MCs)	Pass four LSM32XX elective modules (except LSM3289), one of which may be a LSM-recognised elective module (up to 4MCs). Pass four LSM32xx elective modules (except LSM3289). Alternatively, one of the following combinations can be allowed: 1. Three LSM32xx (except LSM3289) and one LSM42xx (except LSM4299). 2. Two LSM32xx (except LSM3289) and two LSM42xx (except LSM4299)	48
Level 3000 (16 MCs)	Pass four LSM32XX elective modules (except LSM3289), one of which may be a LSM-recognised elective module (up to 4MCs). Pass four LSM32xx elective modules (except LSM3289). Alternatively, one of the following combinations can be allowed: 1. Three LSM32xx (except LSM3289) and one LSM42xx (except LSM4299). 2. Two LSM32xx (except LSM3289) and two LSM42xx (except LSM4299)	48			

			<table><tr><td></td><td>3. Two LSM32xx (except LSM3289), one LSM42xx (except LSM4299), and one LSM-recognised elective module.</td><td></td></tr></table> <p>Update 3:</p> <p>Under 3.4.3.8 i.e. Minor in Life Sciences, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/minor-programmes/minor-in-life-sciences/), the change to the Level 3000 requirements of the Minor in Life Sciences is as follows:</p> <p>To be awarded a minor in Life Sciences, a student must pass six of the following modules:</p> <p>To be awarded a minor in Life Sciences, a student must pass six of the following modules:</p> <ol style="list-style-type: none">Two modules from the following<ol style="list-style-type: none">LSM1102 Molecular GeneticsLSM1105 Evolutionary BiologyLSM1106 Molecular Cell BiologyTwo LSM21xx/22xx modules except LSM2288 and LSM2289.Two LSM32XX modules except LSM3288 and LSM3289. Pass two LSM32xx modules (except LSM3288, LSM3289 and LSM4299). Alternatively, up to one module may be LSM42xx (except LSM4299).		3. Two LSM32xx (except LSM3289), one LSM42xx (except LSM4299), and one LSM-recognised elective module.				
	3. Two LSM32xx (except LSM3289), one LSM42xx (except LSM4299), and one LSM-recognised elective module.								
69.	20 Feb 2017	Duke-NUS	<p>Section on ‘2 Key Contact Information’ http://www.nus.edu.sg/nusbulletin/duke-nus-medical-school/key-contact-information/</p> <p>The changes made are highlighted in red below:</p> <p>Senior Management</p> <table><tr><th>Title & Name</th><th>Designation/Responsibility</th><th>Email (XXXX@nus.edu.sg)</th></tr><tr><td>Prof. Thomas M. COFFMAN</td><td>Dean</td><td>gmsthoma</td></tr></table>	Title & Name	Designation/Responsibility	Email (XXXX@nus.edu.sg)	Prof. Thomas M. COFFMAN	Dean	gmsthoma
Title & Name	Designation/Responsibility	Email (XXXX@nus.edu.sg)							
Prof. Thomas M. COFFMAN	Dean	gmsthoma							

			<table><tr><td>Prof. Patrick J. CASEY</td><td>Senior Vice Dean (Research)</td><td>gmscp</td></tr><tr><td>Prof. SOO Khee Chee</td><td>Senior Vice Dean (Clinical, Academic & Faculty Affairs)</td><td>gmsskc</td></tr><tr><td>Prof. Sandy COOK</td><td>Interim Vice Dean (Education) & Interim Co-Director of AM.EI</td><td>gmscs</td></tr><tr><td>Prof. Robert K. KAMEI</td><td>Professor (Education)</td><td>gmsrkk</td></tr><tr><td>Prof. WONG Tien Yin</td><td>Professor and Vice Dean (Clinical Sciences)</td><td>gmswty</td></tr><tr><td>Ms. Karen CHANG</td><td>Group Director and Senior Vice Dean (Corporate Services)</td><td>gmsclck</td></tr><tr><td>Ms. Norrita Bte Abdul GHANI</td><td>Senior Associate Director (Education)</td><td>gmscmlnb</td></tr></table>	Prof. Patrick J. CASEY	Senior Vice Dean (Research)	gmscp	Prof. SOO Khee Chee	Senior Vice Dean (Clinical, Academic & Faculty Affairs)	gmsskc	Prof. Sandy COOK	Interim Vice Dean (Education) & Interim Co-Director of AM.EI	gmscs	Prof. Robert K. KAMEI	Professor (Education)	gmsrkk	Prof. WONG Tien Yin	Professor and Vice Dean (Clinical Sciences)	gmswty	Ms. Karen CHANG	Group Director and Senior Vice Dean (Corporate Services)	gmsclck	Ms. Norrita Bte Abdul GHANI	Senior Associate Director (Education)	gmscmlnb	
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Ms. Norrita Bte Abdul GHANI	Senior Associate Director (Education)	gmscmlnb																							
			Student Recruitment and Admissions																						
			<table><tr><th>Title & Name</th><th>Designation/Responsibility</th><th>Telephone</th><th>Email (XXXX@nus.edu.sg)</th></tr><tr><td>General Information</td><td>Admissions Office</td><td>6516 5550</td><td>For MD & MD-PhD: info@duke-nus.edu.sg For PhD: infophd@duke-nus.edu.sg</td></tr><tr><td>Dr Shiva SARRAF-YAZDI</td><td>Assistant Dean (Educational Strategies and Programme Development)</td><td>6516 2285</td><td>gmsssy</td></tr></table>	Title & Name	Designation/Responsibility	Telephone	Email (XXXX@nus.edu.sg)	General Information	Admissions Office	6516 5550	For MD & MD-PhD: info@duke-nus.edu.sg For PhD: infophd@duke-nus.edu.sg	Dr Shiva SARRAF-YAZDI	Assistant Dean (Educational Strategies and Programme Development)	6516 2285	gmsssy										
Title & Name	Designation/Responsibility	Telephone	Email (XXXX@nus.edu.sg)																						
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Dr Shiva SARRAF-YAZDI	Assistant Dean (Educational Strategies and Programme Development)	6516 2285	gmsssy																						

(as a 4 Jun 2020

			Mr. LEE Chee How Chris	Manager (Recruitment)	6516 8810	gmslech																
			Ms. Tammie ZHU	Manager (Admissions)	6516 8512	gmszmt																
			Student Affairs																			
			<table><thead><tr><th>Title & Name</th><th>Designation/Responsibility</th><th>Telephone</th><th>Email (XXXX@nus.edu.sg)</th></tr></thead><tbody><tr><td>General Information</td><td>Student Affairs</td><td></td><td>studentaffairs@duke-nus.edu.sg</td></tr><tr><td>Dr. Mara Catherine MCADAMS</td><td>Assistant Dean (Student Affairs)</td><td>6516 7739</td><td>gmsmcm</td></tr><tr><td>Ms. Maria TAN</td><td>Senior Manager (Student Affairs)</td><td>6601 1300</td><td>gmstscm</td></tr></tbody></table>				Title & Name	Designation/Responsibility	Telephone	Email (XXXX@nus.edu.sg)	General Information	Student Affairs		studentaffairs@duke-nus.edu.sg	Dr. Mara Catherine MCADAMS	Assistant Dean (Student Affairs)	6516 7739	gmsmcm	Ms. Maria TAN	Senior Manager (Student Affairs)	6601 1300	gmstscm
			Title & Name	Designation/Responsibility	Telephone	Email (XXXX@nus.edu.sg)																
			General Information	Student Affairs		studentaffairs@duke-nus.edu.sg																
			Dr. Mara Catherine MCADAMS	Assistant Dean (Student Affairs)	6516 7739	gmsmcm																
			Ms. Maria TAN	Senior Manager (Student Affairs)	6601 1300	gmstscm																
			Medical Education, Research and Evaluation (MD programmes)																			
			<table><thead><tr><th>Title & Name</th><th>Designation/Responsibility</th><th>Telephone</th><th>Email (XXXX@nus.edu.sg)</th></tr></thead><tbody><tr><td>Ms. GOH Sok Hong</td><td>Associate Director (Research & Evaluation)</td><td>6516 7016</td><td>gmsgsh</td></tr><tr><td>Mr. Calvin TAN</td><td>Senior Education Specialist</td><td>6516 7955</td><td>gmstph</td></tr></tbody></table>				Title & Name	Designation/Responsibility	Telephone	Email (XXXX@nus.edu.sg)	Ms. GOH Sok Hong	Associate Director (Research & Evaluation)	6516 7016	gmsgsh	Mr. Calvin TAN	Senior Education Specialist	6516 7955	gmstph				
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			<table> <tr> <td>Ms. Belinda YEO</td><td>Assistant Manager (Administrative)</td><td>6516 8511</td><td>gmsyesb</td></tr> </table> <p>Graduate Studies (PhD Programme & MD-PHD Track)</p> <table> <tr> <th>Title & Name</th><th>Designation/Responsibility</th><th>Telephone</th><th>Email (XXXX@nus.edu.sg)</th></tr> <tr> <td>Dr. Silke VOGEL</td><td>Associate Dean (Graduate Studies)</td><td>6601 2496</td><td>gmssv</td></tr> <tr> <td>Ms Megahwani Catherine</td><td>Assistant Manager</td><td>6601 3019</td><td>gmsmsc</td></tr> </table> <p>Section '4.1 Admissions' at the main content page for Duke-NUS Medical School should be inked to http://bulletin.nus.edu.sg/nusbulletin-staging/duke-nus-medical-school/admissions-and-financial-aid/admissions/ and the following edited details be included therein:</p> <p>At Duke-NUS, we utilize a holistic admissions review process that is individualized to each applicant. Broadly speaking, the admissions process takes into account a combination of personal attributes, experiences, and academic accomplishments. In keeping with our School's mission, as well as our Academic Medicine partnership with SingHealth, our ambition is to make significant contributions to improving the practice of medicine in Singapore and beyond. As such, we enthusiastically look forward to having promising applicants from diverse academic backgrounds join our community and help realise our vision.</p> <p>For details on the admission requirements for our MD, MD-PhD, or PhD programmes, please visit https://www.duke-nus.edu.sg/admissions/admission-requirements</p>	Ms. Belinda YEO	Assistant Manager (Administrative)	6516 8511	gmsyesb	Title & Name	Designation/Responsibility	Telephone	Email (XXXX@nus.edu.sg)	Dr. Silke VOGEL	Associate Dean (Graduate Studies)	6601 2496	gmssv	Ms Megahwani Catherine	Assistant Manager	6601 3019	gmsmsc
Ms. Belinda YEO	Assistant Manager (Administrative)	6516 8511	gmsyesb																
Title & Name	Designation/Responsibility	Telephone	Email (XXXX@nus.edu.sg)																
Dr. Silke VOGEL	Associate Dean (Graduate Studies)	6601 2496	gmssv																
Ms Megahwani Catherine	Assistant Manager	6601 3019	gmsmsc																
70	20 Feb 2017	SCALE	<p>Amendment at http://www.nus.edu.sg/nusbulletin/school-of-continuing-and-lifelong-education/undergraduate-education/degree-requirements/bachelor-of-technology-industrial-management-engineering/</p> <p>To change “Ethnics in Engineering” to “Ethics in Engineering” as highlighted in the screenshot below.</p>																

			<table><tr><td colspan="2">1st Year of studies</td></tr><tr><td>Sem 1:</td><td>TTG1401 Engineering Mathematics I (4) TEE2101 Programming Methodology (4) TIE2010 Introduction to Industrial Systems (4)</td></tr><tr><td>Sem 2:</td><td>TIE2150 Human Factors Engineering (4) TIE2140 Engineering Economy (4) TIE2130 Quality Engineering I (4)</td></tr><tr><td>SpTerm:</td><td>General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)</td></tr><tr><td colspan="2">2nd Year of studies</td></tr><tr><td>Sem 1:</td><td>TIE2120 Probability and Statistics (4) TIE2110 Operations Research I (4) TIE3110 Simulation (5)</td></tr><tr><td>Sem 2:</td><td>TIE2100 Probability Models with Applications (4) TIE3010 Systems Thinking and Design (4) TTG2415 Ethnics in Engineering (4)</td></tr><tr><td>SpTerm:</td><td>General Education Module 3 (4) General Education Module 4 (4)</td></tr></table>	1 st Year of studies		Sem 1:	TTG1401 Engineering Mathematics I (4) TEE2101 Programming Methodology (4) TIE2010 Introduction to Industrial Systems (4)	Sem 2:	TIE2150 Human Factors Engineering (4) TIE2140 Engineering Economy (4) TIE2130 Quality Engineering I (4)	SpTerm:	General Education Module 1 – Quantitative Reasoning (4) General Education Module 2 – Asking Questions (4)	2 nd Year of studies		Sem 1:	TIE2120 Probability and Statistics (4) TIE2110 Operations Research I (4) TIE3110 Simulation (5)	Sem 2:	TIE2100 Probability Models with Applications (4) TIE3010 Systems Thinking and Design (4) TTG2415 Ethnics in Engineering (4)	SpTerm:	General Education Module 3 (4) General Education Module 4 (4)
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71	22 Feb 2017	RO	<p>The hyperlinks are changed as indicated in red below:</p> <p>http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-major-programmes.html</p> <p>Double Major Programmes</p>																

			<p>.....</p> <p>.....</p> <p>The second majors that are currently on offer are:</p> <ul style="list-style-type: none"> Business Analytics Chemistry Chinese Language Chinese Studies Communications and New Media Computer Science Data Analytics Economics English Language English Literature European Studies Food Science Geography History Information Security – change link to http://www.comp.nus.edu.sg/programmes/ug/major/isc/ Japanese Studies Life Sciences Malay Studies Management Management (Technology) – change link to http://bba.nus.edu/academic-programmes/bba-majors-minors/for-non-business-students/major-in-mgmt-tech Mathematics Philosophy Physics Political Science Psychology Recording Arts and Sciences Social Work Sociology Southeast Asian Studies South Asian Studies Statistics Systems Engineering
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			Theatre Studies
72.	6 Mar 2017	FoS	<p>Background: BUS has approved the following new LSM modules and hence updates are needed for the 2015 and 2016 Bulletins: LSM3226 Medical Mycology and Drug Discovery; via BUS circular 17 of AY16/17 (offered from Sem 1 AY17/18) LSM3235 Epigenetics in Human Health and Diseases; via BUS circular 17 of AY16/17 (offered from Sem 1 AY17/18)</p> <p>Updates to make are indicated in yellow highlight below: 2016 Online Bulletin Under 3.3.3.5 i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Life Sciences, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/life-sciences/), include LSM3226 Medical Mycology and Drug Discovery and LSM3235 Epigenetics in Human Health and Diseases in the list of Level 3000 LSM elective modules for the B.Sc and B.Sc. (Hons.) in Life Sciences.</p> <p>. . . LSM3223 Immunology LSM3224 Molecular Basis of Human Diseases LSM3225 Molecular Microbiology in Human Diseases LSM3226 Medical Mycology and Drug Discovery LSM3231 Protein Structure and Function LSM3232 Microbiology LSM3233 Developmental Biology LSM3234 Biological Imaging of Growth and Form LSM3235 Epigenetics in Human Health and Diseases LSM3241 Bioinformatics and Biocomputing LSM3242 Translational Microbiology </p>
73.	6 Mar 2017	FoS	<p>Background: BUS has approved the following new LSM modules and hence updates are needed for the 2015 and 2016 Bulletins: LSM3226 Medical Mycology and Drug Discovery; via BUS circular 17 of AY16/17 (offered from Sem 1 AY17/18) LSM3235 Epigenetics in Human Health and Diseases; via BUS circular 17 of AY16/17 (offered from Sem 1 AY17/18)</p>

			<p>Updates made are indicated in yellow highlight below:</p> <p><u>2016 Online Bulletin</u></p> <p>Under 3.3.3.5 i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Life Sciences, (http://www.nus.edu.sg/nusbulletin/faculty-of-science/undergraduate-education/degree-requirements/bachelor-of-sciencebachelor-of-science-hons-programme-requirements-b-sc-b-sc-hons/life-sciences/), include LSM3226 Medical Mycology and Drug Discovery and LSM3235 Epigenetics in Human Health and Diseases in the list of Level 3000 LSM elective modules for the B.Sc and B.Sc. (Hons.) in Life Sciences.</p> <p>.</p> <p>.</p> <p>.</p> <p>LSM3223 Immunology</p> <p>LSM3224 Molecular Basis of Human Diseases</p> <p>LSM3225 Molecular Microbiology in Human Diseases</p> <p>LSM3226 Medical Mycology and Drug Discovery</p> <p>LSM3231 Protein Structure and Function</p> <p>LSM3232 Microbiology</p> <p>LSM3233 Developmental Biology</p> <p>LSM3234 Biological Imaging of Growth and Form</p> <p>LSM3235 Epigenetics in Human Health and Diseases</p> <p>LSM3241 Bioinformatics and Biocomputing</p> <p>LSM3242 Translational Microbiology</p> <p>.</p> <p>.</p> <p>.</p> <p>.</p>
74.	7 Mar 2017	Yale-NUS	<p>With reference to Duke-NUS' notification to Yale-NUS of their School's name change, Yale-NUS Bulletin AY2016/17 pages are amended to reflect their updated School name:</p> <p>http://www.nus.edu.sg/nusbulletin/yale-nus-college/</p> <p>3.3.5 MD, PhD, MD/PhD Programmes at Duke-NUS-Graduate Medical School</p> <p>http://www.nus.edu.sg/nusbulletin/yale-nus-college/the-learning-experience/degrees-offered/md-phd-mdphdprogrammes-at-duke-nus-graduate-medical-school/</p>

			<p>3.3.5 MD, PhD, MD/PhD Programmes at Duke-NUS Graduate Medical School Home / NUS Bulletin AY2016/17 / Yale-NUS College / The Learning Experience / Degrees Offered / MD, PhD,</p> <p>MD/PhD Programmes at Duke-NUS Graduate Medical School</p> <p>Duke-NUS Graduate Medical School, Singapore's first US-style graduate-entry medical school, offers innovative Doctor of Medicine (MD), PhD, and MD/PhD programmes with a focus on medical research. The programmes prepare doctors who are not only skilled in patient care, but who are also well equipped to practise in the rapidly changing world of medicine – essentially, physician leaders who are problem solvers committed to improving the health of individuals and communities through research. The Duke-NUS MD degree is jointly awarded by Duke University and NUS, while the PhD degree is awarded by NUS.</p> <p>Recognising the excellent preparation that the Yale-NUS College's integrated liberal arts curriculum can provide towards a career dedicated to medical research and patient care, Duke-NUS is keen to admit top graduates from Yale-NUS to its programmes. These students would include those who have demonstrated an aptitude and interest in becoming clinician scientists and academic leaders in medicine.</p> <p>More information on Duke-NUS programmes can be found at www.duke-nus.edu.sg/admissions/programs.</p>
75.	5 Apr 2017	RO	<p><u>DMP website</u></p> <p>Amendments are highlighted in red below:</p> <p>At http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-major-programmes.html:</p> <p><i>A Double Major is a <u>single degree programme</u>, in which a student satisfies the requirements of two Majors. It is conceived as an opportunity for students to broaden their knowledge and capacities by pursuing a second Major alongside their primary Major. The Second Major affords a significant degree of depth, although its MC requirement is set below that of the Major. The Second Major is a non-Honours major. It may be taken in the same faculty that offers the Major or from a different Faculty. A Second Major consist of at least 48 MCs.</i></p> <p><i>For students admitted prior to AY2014/15:</i></p> <ul style="list-style-type: none"> • <i>up to 8 MCs can be counted also towards the Faculty/Major/Minor requirements; and</i> • <i>at least 16 MCs must be at Level 3000.</i>

			<p><i>For students admitted from AY2014/15 onwards:</i></p> <ul style="list-style-type: none"> • up to 16 MCs can be counted also towards the Faculty/Major/Minor requirements (<i>Note: for counting towards a Minor, only a maximum of 8 MCs are allowed</i>); and • at least 16 MCs must be at Level 3000.
76.	17 Apr 2017	BIZ	<p>The links are replaced as indicated in red below:</p> <p>Update (1) http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/double-degree-programmes/double-degree-in-economics-and-business-administration-business-administration-accountancy/relevant-website/</p> <p>Further information on the programme is available at: http://nus.edu/prog/bizecon/index.html http://www.nus.edu.sg/prog/bizecon/index.html</p> <p>Update (2) http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/double-degree-programmes/double-degree-in-economics-and-business-administration-business-administration-accountancy/exiting-the-programme/</p> <p>Students can choose to withdraw, or may be asked to withdraw from the programme if they fail to meet requirements. Students who withdraw from the programme are permitted to work instead towards the single degree in their original home Faculty/School. Modular Credits completed in the programme will be counted towards the fulfilment of the degree requirements of the home Faculty/School, subject to the normal limits of the Faculty/School curriculum.</p> <p>A student who does not maintain a CAP of 3.75 in modules contributing to the original degree, <u>and/or</u> a CAP of 3.25 for the second degree for any two consecutive semesters will be required to withdraw from the DDP by withdrawing from the second degree programme. For details, please refer to http://nus.edu/prog/bizecon/exit.htmlhttp://www.nus.edu.sg/prog/bizecon/index.html</p> <p>This DDP continuation rule is not applicable once students' total cumulative modular credits exceeds 160 MCs.</p> <p>Update (3) http://www.nus.edu.sg/nusbulletin/other-multidisciplinaryspecial-programmes/double-degree-programmes/double-degree-in-communication-and-new-media-and-business/relevant-website/</p>

			Further information on the programme is available at: http://nus.edu/prog/bizenm/ http://nus.edu.sg/prog/bizenm/
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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
1.	11 Aug 2017	FoS	<p>Amendments are highlighted in red (affected pages are indicated in bold purple):</p> <p>URL: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FASS.pdf</p> <p>O Psychology The objective of the Psychology major is to provide students with a basic academic grounding in Psychology. Topics include human development, social and cognitive processes, mental health and adjustment of individuals, and the applications of psychology.</p> <p>The objective of the Honours degree in Psychology is to provide the additional academic breadth and depth of coverage needed as the foundation for further research, applied or professional degrees, or for supervised employment or training in psychology. It also aims to provide training in thinking and analytical skills, and content useful to honours graduates in general, whether or not they intend to pursue psychology-related careers.</p> <p>Entry Requirements The Psychology major and minor programmes are open to all matriculated students of the Faculty of Arts and Social Sciences who have obtained a minimum grade of 'C6' in GCE 'O' Level Mathematics or equivalent. IB applicants are eligible if they have taken at least SL Mathematical Studies. Prospective students who would like to major in Psychology at NUS must meet the prerequisites for Psychology and obtain a grade of B- or better for the PL1101E Introduction to Psychology and a grade of B- or better for the PL2131 Research and Statistical Methods I modules. Students who achieved the minimum B- grades for PL1101E and PL2131 but have chosen to exercise the Satisfactory/Unsatisfactory (S/U) option for these two modules will still eligible to declare Psychology as their major.</p> <p>Subject Requirements Single Major [B.Soc.Sci. (Hons.)] 1. Pass PL1101E Introduction to Psychology. This will be counted towards the Faculty Core or UE requirements. 2. Pass at least 84 MCs of PL or PL-recognised modules which include the following: PL2131 Research and Statistical Methods I PL2132 Research and Statistical Methods II PL3232 Biological Psychology PL3233 Cognitive Psychology PL3234 Developmental Psychology</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>PL3235 Social Psychology PL3236 Abnormal Psychology PL3231 Independent Research Project OR one of the PL328x lab modules*. a minimum of 52 MCs at Level-2000 or higher (excluding the modules above), with a minimum of 40 MCs at Level-4000 or higher a maximum of one other PL328X lab module not taken in (8) above* a maximum of 2 PL modules at Level-5000 a maximum of 2 PL-recognised modules</p> <p>Note 1: *As PL3231 and the PL328x lab modules serve the same purpose of strengthening the empirical research skills of students, students are only allowed to read a maximum of 2 such modules, in any of the following combinations: (1) PL3231 (2) PL328x (3) PL3231 + PL328x (4) PL328x + PL328x</p> <p>Note 2: The following are PL-recognised modules: PH2201 Introduction to the Philosophy of Science PH2241 Philosophy of Mind PH3201 Philosophy of Social Science LSM3215 Neuronal Signaling and Memory Mechanisms LSM3216 Neuronal Development and Diseases (Pg 95-96)</p> <p>SW3208 Negotiation & Conflict Resolution (applicable for Cohort 2016 onwards) SW3209 Counselling Theories & Practice (applicable for Cohort 2016 onwards)</p> <p>Note 3: Students intending to do a double major in PL and SW are advised to read PL2131 in their first year because the module serves as a gate for determining whether one could pursue a major in Psychology and also because it could be read in place of SW3101.</p> <p>Note 4: Students are allowed to map a maximum of 2 PL level-4000 modules taken during exchange.</p> <p>Note 5:</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>To declare an Honours track, students must have completed the following: Cohort 2012 – 2015: Completed at least 110 MCs, including 60 MCs in the Major, with a CAP of 3.20 and above. Cohort 2016 onwards: Completed at least 110 MCs, including 44 MCs in the Major, with a CAP of 3.20 and above.</p> <p>Note 6: The Honours Thesis/Project (15 MCs) is optional. To qualify for the Honours Thesis/Project, students must be on the Honours Track. In order to obtain First Class Honours/Honours (Highest Distinction), students must achieve the following: Cohort 2012 onwards: A CAP of 4.50 or higher AND read and passed PL4401 Honours Thesis.</p> <p>Note 7: Students who do not attempt the Honours Thesis/Project will read Level-4000 or higher PL modules to fulfil the Honours Requirements.</p> <p>Note 8: Students may also read a Level-4000 Independent Study Module (5 MCs). This Level-4000 ISM carries the following prerequisites: Cohort 2012 – 2015: Completed 100 MCs, including 60 MCs in PL, with a minimum CAP of 3.20. Cohort 2016 onwards: Completed 100 MCs, including 44 MCs in PL, with a minimum CAP of 3.20. This ISM and the Honours Thesis/Project preclude one another.</p> <p>Note 9: All level-4000 modules carry the following general prerequisites: Cohort 2012 onwards: Completed 80 MCs, including 28 MCs in the Major, with a minimum CAP of 3.20 OR being on the Honours Track (some Level-4000 modules may have different prerequisites).</p> <p>Single Major (B.A.) 1. PL1101E Introduction to Psychology. This will be counted towards the Faculty Core or UE requirements. 2. At least 44 MCs of PL or PL-recognised modules which include the following:</p> <p>PL2131 Research and Statistical Methods I PL2132 Research and Statistical Methods II PL3232 Biological Psychology PL3233 Cognitive Psychology PL3234 Developmental Psychology PL3235 Social Psychology PL3236 Abnormal Psychology PL3231 Independent Research Project OR one of the PL328x lab modules*</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>a minimum of 12 MCs at Level-2000 or higher (excluding the modules above), with a maximum of one other PL328X lab module* a maximum of 2 PL-recognised modules</p> <p>Note 1: Students are not allowed to read Level-5000 PL modules.</p> <p>Note 2: *As PL3231 and the PL328x lab modules serve the same purpose of strengthening the empirical research skills of students, students are only allowed to read a maximum of 2 such modules, in any of the following combinations: (1) PL3231 (2) PL328x (3) PL3231 + PL328x (4) PL328x + PL328x</p> <p>Note 3: The following are PL-recognised modules: PH2201 Introduction to the Philosophy of Science PH2241 Philosophy of Mind PH3201 Philosophy of Social Science LSM3215 Neuronal Signaling and Memory Mechanisms LSM3216 Neuronal Development and Diseases</p> <p><i>(Pg 97)</i></p> <p>SW3208 Negotiation & Conflict Resolution (applicable for Cohort 2016 onwards) SW3209 Counselling Theories & Practice (applicable for Cohort 2016 onwards)</p> <p>Note 4: Students intending to do a double major in PL and SW are advised to read PL2131 in their first year because the module serves as a gate for determining whether one could pursue a major in Psychology and also because it could be read in place of SW3101.</p> <p>Second Major 1. Pass PL1101E Introduction to Psychology. This will be counted towards the Faculty Core or UE requirements 2. Pass at least 44 MCs of PL or PL-recognised modules which include the following: PL2131 Research and Statistical Methods I</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>PL2132 Research and Statistical Methods II PL3232 Biological Psychology PL3233 Cognitive Psychology PL3234 Developmental Psychology PL3235 Social Psychology PL3236 Abnormal Psychology PL3231 Independent Research Project OR one of the PL328x lab modules* a minimum of 12 MCs at Level-2000 and Level-3000 (excluding modules above), with a maximum of one other PL328X lab module* a maximum of 2 PL-recognised modules</p> <p>Note 1: Students are not allowed to read Level-4000 modules.</p> <p>Note 2: *As PL3231 and the PL328x lab modules serve the same purpose of strengthening the empirical research skills of students, students are only allowed to read a maximum of 2 such modules, in any of the following combinations: (1) PL3231 (2) PL328x (3) PL3231 + PL328x (4) PL328x + PL328x</p> <p>Note 3: The following are PL-recognised modules: PH2201 Introduction to the Philosophy of Science PH2241 Philosophy of Mind PH3201 Philosophy of Social Science LSM3215 Neuronal Signaling and Memory Mechanisms LSM3216 Neuronal Development and Diseases</p> <p>(Pg 98)</p> <p>SW3208 Negotiation & Conflict Resolution (applicable for Cohort 2016 onwards) SW3209 Counselling Theories & Practice (applicable for Cohort 2016 onwards)</p> <p>Note 4:</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>Students intending to do a double major in PL and SW are advised to read PL2131 in their first year because the module serves as a gate for determining whether one could pursue a major in Psychology and also because it could be read in place of SW3101.</p> <p>Minor Pass at least 24 MCs of PL modules, which include the following: 1. PL1101E Introduction to Psychology 2. PL2131 Research and Statistical Methods I 3. A minimum of 16 MCs from the following: PL3232 Biological Psychology PL3233 Cognitive Psychology PL3234 Developmental Psychology PL3235 Social Psychology PL3236 Abnormal Psychology</p> <p>Note 1: A maximum of 8 MCs from the minor can be used to satisfy the requirements of a major or another minor. However, the credits for these modules will be counted ONCE. FASS students will still need to fulfil the MCs required for the UE outside major requirements.</p> <p>Note 2: GEMs that are within the basket of modules offered by the Minor can now be used to fulfil both the minor and GEM requirements.</p> <p>Note 3: Students could not use modules in their Major requirements to double-count for any of the PL modules in the Minor basket.</p> <p>For the latest updates, please visit the department website at: http://www.fas.nus.edu.sg/psy</p>
2.	21 Aug 2017	FoS	<p>The adjustment to the LSM-recognised elective slot for the Life Sciences major, 2nd major and minor was approved via BUS Circular 27 of AY2016/17. Updates are needed in NUS Bulletin 2014/15, 2015/16, 2016/17 and 2017/18.</p> <p><u>AY2016/17 Bulletin:</u></p> <p>a) For Level 3000 Requirements of Primary Major in Life Sciences for BSc and BSc(Hons)</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)															
			<p>(http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf, pg 87 and 89)</p> <table><tr><td></td><td>Current</td><td>New</td></tr><tr><td>Matriculation Cohorts AY2016/2017 onwards</td><td>Pass four LSM32xx elective modules (except LSM3289). Alternatively, one of the following combinations can be allowed: 1. Three LSM32xx (except LSM3289) and one LSM42xx (except LSM4299). 2. Two LSM32xx (except LSM3289) and two LSM42xx (except LSM4299) 3. Two LSM32xx (except LSM3289), one LSM42xx (except LSM4299), and one LSM-recognised elective module.</td><td>Pass four LSM32xx elective modules (except LSM3289), of which up to two (up to 8MC) may be LSM42xx (except LSM4299) and/or LSM-recognised elective modules.</td></tr></table> <p>b) For Level 3000 Requirements of Second Major in Life Sciences (http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf, pg 133)</p> <table><tr><td></td><td>Current</td><td>New</td></tr><tr><td>Matriculation Cohorts AY2014/2015 onwards</td><td>Pass four LSM32xx elective modules (except LSM3289). Alternatively, one of the following combinations can be allowed: 1. Three LSM32xx (except LSM3289) and one LSM42xx (except LSM4299). 2. Two LSM32xx (except LSM3289) and two LSM42xx (except LSM4299) 3. Two LSM32xx (except LSM3289), one LSM42xx (except LSM4299), and one LSM-recognised elective module.</td><td>Pass four LSM32xx elective modules (except LSM3289), of which up to two (up to 8MC) may be LSM42xx (except LSM4299) and/or LSM-recognised elective modules.</td></tr></table> <p>c) For Level 3000 Requirements of Minor in Life Sciences (http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf, pg 152)</p> <table><tr><td></td><td>Current</td><td>New</td></tr></table>		Current	New	Matriculation Cohorts AY2016/2017 onwards	Pass four LSM32xx elective modules (except LSM3289). Alternatively, one of the following combinations can be allowed: 1. Three LSM32xx (except LSM3289) and one LSM42xx (except LSM4299). 2. Two LSM32xx (except LSM3289) and two LSM42xx (except LSM4299) 3. Two LSM32xx (except LSM3289), one LSM42xx (except LSM4299), and one LSM-recognised elective module.	Pass four LSM32xx elective modules (except LSM3289), of which up to two (up to 8MC) may be LSM42xx (except LSM4299) and/or LSM-recognised elective modules.		Current	New	Matriculation Cohorts AY2014/2015 onwards	Pass four LSM32xx elective modules (except LSM3289). Alternatively, one of the following combinations can be allowed: 1. Three LSM32xx (except LSM3289) and one LSM42xx (except LSM4299). 2. Two LSM32xx (except LSM3289) and two LSM42xx (except LSM4299) 3. Two LSM32xx (except LSM3289), one LSM42xx (except LSM4299), and one LSM-recognised elective module.	Pass four LSM32xx elective modules (except LSM3289), of which up to two (up to 8MC) may be LSM42xx (except LSM4299) and/or LSM-recognised elective modules.		Current	New
	Current	New																
Matriculation Cohorts AY2016/2017 onwards	Pass four LSM32xx elective modules (except LSM3289). Alternatively, one of the following combinations can be allowed: 1. Three LSM32xx (except LSM3289) and one LSM42xx (except LSM4299). 2. Two LSM32xx (except LSM3289) and two LSM42xx (except LSM4299) 3. Two LSM32xx (except LSM3289), one LSM42xx (except LSM4299), and one LSM-recognised elective module.	Pass four LSM32xx elective modules (except LSM3289), of which up to two (up to 8MC) may be LSM42xx (except LSM4299) and/or LSM-recognised elective modules.																
	Current	New																
Matriculation Cohorts AY2014/2015 onwards	Pass four LSM32xx elective modules (except LSM3289). Alternatively, one of the following combinations can be allowed: 1. Three LSM32xx (except LSM3289) and one LSM42xx (except LSM4299). 2. Two LSM32xx (except LSM3289) and two LSM42xx (except LSM4299) 3. Two LSM32xx (except LSM3289), one LSM42xx (except LSM4299), and one LSM-recognised elective module.	Pass four LSM32xx elective modules (except LSM3289), of which up to two (up to 8MC) may be LSM42xx (except LSM4299) and/or LSM-recognised elective modules.																
	Current	New																

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)											
			Matriculation Cohorts AY2014/2015 onwards	Pass two LSM32xx elective modules (except LSM3288 and LSM3289). Alternatively, up to one module may be LSM42xx (except LSM4299).	Pass two LSM32xx elective modules (except LSM3288 and LSM3289), of which one (up to 4MC) may be LSM42xx (except LSM4299) or LSM-recognised elective module.									
3.	23 Aug 2017	FoS	<p>Changes to Requirements of Data Science and Analytics Major for Cohort AY2016/17, approved via Senate Meeting of 11 May 2017</p> <p>AY2016/17 Bulletin: http://www.nus.edu.sg/registrar/info/nusbuletin/AY201617_FoS.pdf , pg 82 to 84</p> <p>Graduation Requirements</p> <p>To be awarded a B.Sc. or B.Sc. (Hons.) with a primary major in Data Science and Analytics, candidates must satisfy the following:</p> <table><tr><th>Module Level</th><th>Major Requirements</th><th>Cumulative Major MCs</th></tr><tr><td>Level 1000 (20 MCs)</td><td>Pass – CS1010/CS1010S/CS1010X Programming Methodology – CS1020 Data Structures and Algorithms I – DSA1101 Introduction to Data Science – MA1101R Linear Algebra I – MA1102R Calculus</td><td>20</td></tr><tr><td>Level 2000 (24 MCs)</td><td>Pass – CS2010 Data Structures and Algorithms II</td><td>44</td></tr></table>			Module Level	Major Requirements	Cumulative Major MCs	Level 1000 (20 MCs)	Pass – CS1010/CS1010S/CS1010X Programming Methodology – CS1020 Data Structures and Algorithms I – DSA1101 Introduction to Data Science – MA1101R Linear Algebra I – MA1102R Calculus	20	Level 2000 (24 MCs)	Pass – CS2010 Data Structures and Algorithms II	44
Module Level	Major Requirements	Cumulative Major MCs												
Level 1000 (20 MCs)	Pass – CS1010/CS1010S/CS1010X Programming Methodology – CS1020 Data Structures and Algorithms I – DSA1101 Introduction to Data Science – MA1101R Linear Algebra I – MA1102R Calculus	20												
Level 2000 (24 MCs)	Pass – CS2010 Data Structures and Algorithms II	44												

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
				<ul style="list-style-type: none"> – DSA2101 Essential Data Analytics Tools: Data Visualisation – DSA2102 Essential Data Analytics Tools: Numerical Computation – MA2311 Techniques in Advanced Calculus or MA2104 Multivariable Calculus – ST2131/MA2216 Probability – ST2132 Mathematical Statistics 	
			Levels 3000 and 4000 (56 MCs)	Pass <ul style="list-style-type: none"> – CS3244 Machine Learning – DSA3101 Data Science in Practice – DSA3102 Essential Data Analytics Tools: Convex Optimisation – ST3131 Regression Analysis – DSA4199 Honours Project in Data Science <u>or</u> DSA4299 Applied Project in Data Science – Six additional modules from List A and List B subject to the following restrictions: + There must be at least two modules each from List A and from List B1/ List B2 	100

(as a 4 Jun 2020

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<div> <div></div> <div>+ There must be at least four modules at level 4000</div> <div></div> </div> <p>List A — DSA modules DSA4211 High-Dimensional Statistical Analysis DSA4212 Optimisation for Large-Scale Data-Driven Inference</p> <p>List B1 — DSA-recognised modules (no hidden pre-requisites) MA3236 Nonlinear Programming MA3252 Linear and Network Optimisation ST3232 Design and Analysis of Experiments ST3233 Applied Time Series Analysis ST3239 Survey Methodology ST3240 Multivariate Statistical Analysis ST3247 Simulation ST3248 Statistical Learning I ST4231 Computer Intensive Statistical Methods ST4234 Bayesian Statistics ST4240 Data Mining ST4248 Statistical Learning II</p> <p>List B2 — DSA-recognised modules (with hidden pre-requisites) ^ CS3210 Parallel Computing CS3223 Database Systems Implementation CS3230 Design and Analysis of Algorithms CS4224 Distributed Databases CS4225 Massive Data Processing Techniques in Data Science CS4231 Parallel and Distributed Algorithms CS4234 Optimisation Algorithms MA4230 Matrix Computation MA4270 Data Modelling and Computation</p>
4.	23 Aug 2017	FoS	<p>The changes to the Maths and Applied Maths majors and 2nd major in Maths were approved via BUS Circular 19 of AY2016/17.</p> <p>a) AY2016/17 Bulletin:</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)															
			<p>http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf, pg 94 - 102</p> <p>Graduation Requirements (Mathematics)</p> <p>To be awarded a BSc or BSc (Hons) with a primary major in Mathematics, a candidate must satisfy the following:</p> <table><tr><th>Module Level</th><th>Major Requirements</th><th>Cumulative Major MCs</th></tr><tr><td>Level-1000 (20 MCs)</td><td>1. Pass the four modules in List I 2. Pass CS1010/CS1010E/CS1010S/CS1010X Programming Methodology</td><td>20</td></tr><tr><td>Level-2000 (20-24 MCs)</td><td>3. Pass all the following modules:<ul style="list-style-type: none">MA2101/MA2101S Linear Algebra IIMA2108/MA2108S Mathematical Analysis IMA2202/MA2202S Algebra IMA2216/ST2131 Probability4. Pass one additional module from List II, III, IV</td><td>40-44</td></tr><tr><td>Level-3000 (20-23 MCs)</td><td>5. Pass all the following modules:<ul style="list-style-type: none">MA3110/MA3110S Mathematical Analysis IIMA3111/MA3111S Complex Analysis I6. Pass two modules from List MA3 7. Pass one additional module from List III, IV</td><td>60-66</td></tr><tr><td>Level-4000 (32-33 MCs)</td><td>8. Pass MA4199 Honours Project in Mathematics 9. Pass four modules from List MA4 10. Pass one additional module from List IV</td><td>92-98</td></tr></table>	Module Level	Major Requirements	Cumulative Major MCs	Level-1000 (20 MCs)	1. Pass the four modules in List I 2. Pass CS1010/CS1010E/CS1010S/CS1010X Programming Methodology	20	Level-2000 (20-24 MCs)	3. Pass all the following modules: <ul style="list-style-type: none">MA2101/MA2101S Linear Algebra IIMA2108/MA2108S Mathematical Analysis IMA2202/MA2202S Algebra IMA2216/ST2131 Probability 4. Pass one additional module from List II, III, IV	40-44	Level-3000 (20-23 MCs)	5. Pass all the following modules: <ul style="list-style-type: none">MA3110/MA3110S Mathematical Analysis IIMA3111/MA3111S Complex Analysis I 6. Pass two modules from List MA3 7. Pass one additional module from List III, IV	60-66	Level-4000 (32-33 MCs)	8. Pass MA4199 Honours Project in Mathematics 9. Pass four modules from List MA4 10. Pass one additional module from List IV	92-98
Module Level	Major Requirements	Cumulative Major MCs																
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Level-2000 (20-24 MCs)	3. Pass all the following modules: <ul style="list-style-type: none">MA2101/MA2101S Linear Algebra IIMA2108/MA2108S Mathematical Analysis IMA2202/MA2202S Algebra IMA2216/ST2131 Probability 4. Pass one additional module from List II, III, IV	40-44																
Level-3000 (20-23 MCs)	5. Pass all the following modules: <ul style="list-style-type: none">MA3110/MA3110S Mathematical Analysis IIMA3111/MA3111S Complex Analysis I 6. Pass two modules from List MA3 7. Pass one additional module from List III, IV	60-66																
Level-4000 (32-33 MCs)	8. Pass MA4199 Honours Project in Mathematics 9. Pass four modules from List MA4 10. Pass one additional module from List IV	92-98																

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			UOPS	At most one Mathematics UOPS module may be used to fulfil the requirements of Major in Mathematics	
			<p>List I:</p> <ul style="list-style-type: none"> MA1100 Fundamental Concepts of Mathematics <p>or</p> <ul style="list-style-type: none"> CS1231 Discrete Structures MA1101R Linear Algebra I MA1102R Calculus MA1104/MA2104 Multivariable Calculus <p>List II:</p> <ul style="list-style-type: none"> All MA modules at Level-2000, except those coded MA23XX PC2130 Quantum Mechanics I PC2132 Classical Mechanics ST2132 Mathematical Statistics EC2101 Microeconomic Analysis I <p>List III:</p> <ul style="list-style-type: none"> All MA modules at Level-3000, except MA3311 and MA3312 BSE3703 Econometrics for Business I CS3230 Design & Analysis of Algorithms CS4232 Theory of Computation CS3234 Logic and Formal Systems DSA3102 Essential Data Analytics Tools: Convex Optimisation EC3101 Microeconomic Analysis II EC3303 Econometrics I PC3130 Quantum Mechanics II PC3236 Computational Methods in Physics PC3238 Fluid Dynamics 		

(as a 4 Jun 2020

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<ul style="list-style-type: none"> ST3131 Regression Analysis ST3236 Stochastic Processes I <p>List IV:</p> <ul style="list-style-type: none"> All MA modules at Level-4000 or higher CS4232 Theory of Computation CS4234 Optimisation Algorithms CS4236 Cryptography Theory and Practice CS5230 Computational Complexity CS5237 Computational Geometry and Applications DSA4211 High-Dimensional Statistical Analysis DSA4212 Optimisation for Large-Scale Data-Drive Inference EC4301 Microeconomics Analysis III EC5104 Mathematical Economics PC4248 Relativity PC4274 Mathematical Methods in Physics III ST4238 Stochastic Processes II <p>List MA3:</p> <ul style="list-style-type: none"> MA3201 Algebra II MA3205 Set Theory MA3209 Mathematical Analysis III MA3220 Ordinary Differential Equations MA3265 Introduction to Number Theory MA3266 Introduction to Fourier Analysis <p>List MA4:</p> <ul style="list-style-type: none"> MA4203 Galois Theory MA4207 Mathematical Logic MA4211 Functional Analysis

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)																														
			<ul style="list-style-type: none">MA4221 Partial Differential EquationsMA4247 Complex Analysis IIMA4262 Measure and IntegrationMA4266 TopologyMA4271 Differential Geometry of Curves and Surfaces <table border="1"><thead><tr><th>Summary of Requirements</th><th>BSc</th><th>BSc (Hons)</th></tr></thead><tbody><tr><td>University Requirements</td><td>20 MCs</td><td>20 MCs</td></tr><tr><td>Faculty Requirements</td><td>4 – 8 MCs*</td><td>4 – 12 MCs*</td></tr><tr><td>Major Requirements</td><td>60 – 66 MCs</td><td>92 – 98 MCs</td></tr><tr><td>Unrestricted Elective Modules</td><td>26 – 36 MCs</td><td>30 – 44 MCs</td></tr><tr><td>Total</td><td>120 MCs</td><td>160 MCs</td></tr></tbody></table> <p>* Faculty Requirements of 12 MCs and 16 MCs (required for the BSc and BSc (Hons) programmes respectively) are partially fulfilled through the reading of CS/PC/ST modules within the major.</p> <p>Graduation Requirements (Applied Mathematics)</p> <p>To be awarded a BSc or BSc (Hons) with a primary major in Applied Mathematics, a candidate must satisfy the following:</p> <p>I. BSc or BSc (Hons) with major in Applied Mathematics</p> <table border="1"><thead><tr><th>Module Level</th><th>Major Requirements</th><th>Level MCs</th><th>Cumulative Major MCs</th></tr></thead><tbody><tr><td>Level-1000</td><td>1. Pass the four modules in List I 2. Pass CS1010/CS1010E/CS1010S/CS1010X Programming Methodology</td><td>20</td><td>20</td></tr><tr><td>Level-2000</td><td>3. Pass all the following modules:<ul style="list-style-type: none">MA2101/MA2101S Linear Algebra II</td><td>20-23</td><td>40-43</td></tr></tbody></table>	Summary of Requirements	BSc	BSc (Hons)	University Requirements	20 MCs	20 MCs	Faculty Requirements	4 – 8 MCs*	4 – 12 MCs*	Major Requirements	60 – 66 MCs	92 – 98 MCs	Unrestricted Elective Modules	26 – 36 MCs	30 – 44 MCs	Total	120 MCs	160 MCs	Module Level	Major Requirements	Level MCs	Cumulative Major MCs	Level-1000	1. Pass the four modules in List I 2. Pass CS1010/CS1010E/CS1010S/CS1010X Programming Methodology	20	20	Level-2000	3. Pass all the following modules: <ul style="list-style-type: none">MA2101/MA2101S Linear Algebra II	20-23	40-43
Summary of Requirements	BSc	BSc (Hons)																															
University Requirements	20 MCs	20 MCs																															
Faculty Requirements	4 – 8 MCs*	4 – 12 MCs*																															
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Total	120 MCs	160 MCs																															
Module Level	Major Requirements	Level MCs	Cumulative Major MCs																														
Level-1000	1. Pass the four modules in List I 2. Pass CS1010/CS1010E/CS1010S/CS1010X Programming Methodology	20	20																														
Level-2000	3. Pass all the following modules: <ul style="list-style-type: none">MA2101/MA2101S Linear Algebra II	20-23	40-43																														

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
				<ul style="list-style-type: none"> MA2108/MA2108S Mathematical Analysis I MA2213 Numerical Analysis I MA2216/ST2131 Probability 		
			4.	Pass one additional module from List II, III, IV		
			Level-3000	5. Pass all the following modules: <ul style="list-style-type: none"> MA3110/MA3110S Mathematical Analysis II MA3111/MA3111S Complex Analysis I 6. Pass two modules from List AM3 7. Pass one additional module from List III, IV	20-23	60-66
			Level-4000	8. Pass MA4199 Honours Project in Mathematics 9. Pass four modules from List AM4 10. Pass one additional module from List IV	32-33	92-98
			UROPS	At most one Mathematics UROPS module may be used to fulfil the requirements of Major in Applied Mathematics		
			II. BSc (Hons) with major in Applied Mathematics with specialisation in Mathematical Modelling and Data Analytics, MMDA			
			Module Level	Major Requirements	Level MCs	Cumulative Major MCs
			Level 1000	1. Pass the 4 modules in List I 2. Pass CS1010/CS1010E/CS1010S/CS1010X Programming Methodology	20	20
			Level 2000	3. Pass all the following modules: <ul style="list-style-type: none"> MA2101/MA2101S Linear Algebra II 	20-23	40-43

(as a 4 Jun 2020

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
				<ul style="list-style-type: none">MA2108/MA2108S Mathematical Analysis IMA2213 Numerical Analysis IMA2216/ST2131 Probability		
			4. Pass one additional module from List II, III, IV			
			Level 3000	5. Pass all the following modules: <ul style="list-style-type: none">MA3110/MA3110S Mathematical Analysis IIMA3111/MA3111S Complex Analysis I 6. Pass two modules from List AM3-MMDA 7. Pass one additional module from List III, IV	20-23	60-66
			Level 4000	8. Pass MA4199 Honours Project in Mathematics 9. Pass four modules from AM4-MMDA 10. Pass one additional module from List IV	32-33	92-98
			UROPS	At most one Mathematics UROPS module may be used to fulfil the requirements of Major in Applied Mathematics		
III. BSc (Hons) with major in Applied Mathematics with specialisation in Operations Research and Financial Mathematics, ORFM						
			Module Level	Major Requirements	Level MCs	Cumulative Major MCs
			Level 1000	1. Pass the 4 modules in List I 2. Pass CS1010/CS1010E/CS1010S/CS1010X Programming Methodology	20	20
			Level 2000	3. Pass all the following modules: <ul style="list-style-type: none">MA2101/MA2101S Linear Algebra II	40-43	40-43

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
				<ul style="list-style-type: none">MA2108/MA2108S Mathematical Analysis IMA2213 Numerical Analysis IMA2216/ST2131 Probability		
				4. Pass one additional module from List II, III, IV		
			Level 3000	5. Pass all the following modules: <ul style="list-style-type: none">MA3110/MA3110S Mathematical Analysis IIMA3111/MA3111S Complex Analysis I 6. Pass two modules from List AM3-ORFM 7. Pass one additional module from List III, IV	20-23	60-66
			Level 4000	8. Pass MA4199 Honours Project in Mathematics 9. Pass four modules from AM4-ORFM 10. Pass one additional module from List IV	32-33	92- 98
			UROPS	At most one Mathematics UROPS module may be used to fulfil the requirements of Major in Applied Mathematics		
<p>List I:</p> <ul style="list-style-type: none">MA1100 Fundamental Concepts of Mathematics or CS1231 Discrete StructuresMA1101R Linear Algebra IMA1102R CalculusMA1104/MA2104 Multivariable Calculus <p>List II:</p> <ul style="list-style-type: none">All MA modules at level 2000, except those coded MA23XX						

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<ul style="list-style-type: none"> • PC2130 Quantum Mechanics I • PC2132 Classical Mechanics • ST2132 Mathematical Statistics • EC2101 Microeconomic Analysis I <p>List III:</p> <ul style="list-style-type: none"> • All MA modules at level 3000, except MA3311 and MA3312 • BSE3703 Econometrics for Business I • CS3230 Design & Analysis of Algorithms • CS4232 Theory of Computation • CS3234 Logic and Formal Systems • DSA3102 Essential Data Analytics Tools: Convex Optimisation • EC3101 Microeconomic Analysis II • EC3303 Econometrics I • PC3130 Quantum Mechanics II • PC3236 Computational Methods in Physics • PC3238 Fluid Dynamics • ST3131 Regression Analysis • ST3236 Stochastic Processes I <p>List IV:</p> <ul style="list-style-type: none"> • All MA modules at level 4000 or higher • CS4232 Theory of Computation • CS4234 Optimisation Algorithms • CS4236 Cryptography Theory and Practice • CS5230 Computational Complexity • CS5237 Computational Geometry and Applications • DSA4211 High-Dimensional Statistical Analysis • DSA4212 Optimisation for Large-Scale Data-Drive Inference • EC4301 Microeconomics Analysis III • EC5104 Mathematical Economics • PC4248 Relativity • PC4274 Mathematical Methods in Physics III

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<ul style="list-style-type: none"> • ST4238 Stochastic Processes II • ST4245 Statistical Methods for Finance <p>List AM3: List AM3 consists of the following 3 baskets AM3-General, AM3-MMDA, AM3-ORFM.</p> <p><u>AM3-General</u></p> <ul style="list-style-type: none"> • MA3209 Mathematical Analysis III • MA3218 Applied Algebra • MA3220 Ordinary Differential Equations <p><u>AM3-MMDA</u></p> <ul style="list-style-type: none"> • MA3227 Numerical Analysis II • MA3233 Combinatorics and Graph II • MA3264 Mathematical Modelling • ST3131 Regression Analysis <p><u>AM3-ORFM</u></p> <ul style="list-style-type: none"> • MA3236 Nonlinear Programming • MA3252 Linear and Network Optimization • MA3269 Mathematical Finance I • ST3131 Regression Analysis <p>List AM4: List AM4 consists of the following 3 baskets AM4-General, AM4-MMDA, AM4-ORFM.</p> <p><u>AM4-General</u></p> <ul style="list-style-type: none"> • MA4211 Functional Analysis • MA4221 Partial Differential Equations • MA4235 Topics in Graph Theory

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)																		
			<ul style="list-style-type: none">MA4261 Coding and Cryptography <p><u>AM4-MMDA</u></p> <ul style="list-style-type: none">MA4229 Approximation TheoryMA4230 Matrix ComputationMA4255 Numerical Methods in Differential EquationsMA4268 Mathematics for Visual Data ProcessingMA4270 Data Modelling and ComputationMA4272 Mathematical Tools for Data scienceDSA4211 High-Dimensional Statistical Analysis <p><u>AM4-ORFM</u></p> <ul style="list-style-type: none">MA4254 Discrete OptimizationMA4260 Stochastic Operations ResearchMA4264 Game TheoryMA4269 Mathematical Finance IIST4245 Statistical Methods for Finance <table><tr><th>Summary of Requirements</th><th>BSc</th><th>BSc (Hons)</th></tr><tr><td>University Requirements</td><td>20 MCs</td><td>20 MCs</td></tr><tr><td>Faculty Requirements</td><td>4 – 8 MCs*</td><td>4 – 12 MCs*</td></tr><tr><td>Major Requirements</td><td>60 – 66 MCs</td><td>92 – 98 MCs</td></tr><tr><td>Unrestricted Elective Modules</td><td>26 – 36 MCs</td><td>30 – 44 MCs</td></tr><tr><td>Total</td><td>120 MCs</td><td>160 MCs</td></tr></table> <p>*Faculty Requirements of 12 MCs and 16 MCs (required for the BSc and BSc (Hons) programmes respectively) are partially fulfilled through the reading of CS/PC/ST modules within the major.</p> <p>b) Changes to 2nd Major in Mathematics</p>	Summary of Requirements	BSc	BSc (Hons)	University Requirements	20 MCs	20 MCs	Faculty Requirements	4 – 8 MCs*	4 – 12 MCs*	Major Requirements	60 – 66 MCs	92 – 98 MCs	Unrestricted Elective Modules	26 – 36 MCs	30 – 44 MCs	Total	120 MCs	160 MCs
Summary of Requirements	BSc	BSc (Hons)																			
University Requirements	20 MCs	20 MCs																			
Faculty Requirements	4 – 8 MCs*	4 – 12 MCs*																			
Major Requirements	60 – 66 MCs	92 – 98 MCs																			
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Total	120 MCs	160 MCs																			

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)						
			<ul style="list-style-type: none">For AY2013/14, AY2014/15, AY2015/16, AY2016/17 Bulletins – include MA2104 Multivariable Calculus as alternative to MA1104 in Level 1000 requirements <p>For AY2016/17 Bulletin: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf , pg 134</p> <table><tr><th>Module Level</th><th>2nd Major Requirements</th><th>Cumulative Major MCs</th></tr><tr><td>1000 (16 MCs)</td><td>Pass<ul style="list-style-type: none"><input type="checkbox"/> MA1100 Fundamental Concepts of Mathematics or CS1231 Discrete Structures<input type="checkbox"/> MA1101R Linear Algebra I or MA1506 Mathematics II or MA1508 Linear Algebra with Applications<input type="checkbox"/> MA1102R Calculus or MA1505 Mathematics I or MA1507 Advanced Calculus or MA1521 Calculus for Computing<input type="checkbox"/> MA1104 / MA2104 Multivariable Calculus or MA2501 Differential Equations and Systems</td><td>16</td></tr></table> <ul style="list-style-type: none">Other changes for Maths 2nd major – for cohort AY2016/17 and after <p>AY2016/17 Bulletin: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf , pg 135 and 136</p> <p>List II</p> <ul style="list-style-type: none">All MA modules at level 2000, except those coded MA23XXPC2130 Quantum Mechanics IPC2132 Classical MechanicsST2132 Mathematical StatisticsEC2101 Microeconomic Analysis I <p>List III</p> <ul style="list-style-type: none">All MA modules at level 3000, except MA3311 and MA3312BSE3703 Econometrics for Business ICS3230 Design & Analysis of Algorithms	Module Level	2nd Major Requirements	Cumulative Major MCs	1000 (16 MCs)	Pass <ul style="list-style-type: none"><input type="checkbox"/> MA1100 Fundamental Concepts of Mathematics or CS1231 Discrete Structures<input type="checkbox"/> MA1101R Linear Algebra I or MA1506 Mathematics II or MA1508 Linear Algebra with Applications<input type="checkbox"/> MA1102R Calculus or MA1505 Mathematics I or MA1507 Advanced Calculus or MA1521 Calculus for Computing<input type="checkbox"/> MA1104 / MA2104 Multivariable Calculus or MA2501 Differential Equations and Systems	16
Module Level	2nd Major Requirements	Cumulative Major MCs							
1000 (16 MCs)	Pass <ul style="list-style-type: none"><input type="checkbox"/> MA1100 Fundamental Concepts of Mathematics or CS1231 Discrete Structures<input type="checkbox"/> MA1101R Linear Algebra I or MA1506 Mathematics II or MA1508 Linear Algebra with Applications<input type="checkbox"/> MA1102R Calculus or MA1505 Mathematics I or MA1507 Advanced Calculus or MA1521 Calculus for Computing<input type="checkbox"/> MA1104 / MA2104 Multivariable Calculus or MA2501 Differential Equations and Systems	16							

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<ul style="list-style-type: none"> • CS4232 Theory of Computation • CS3234 Logic and Formal Systems • DSA3102 Essential Data Analytics Tools: Convex Optimisation • EC3101 Microeconomic Analysis II • EC3303 Econometrics I • PC3130 Quantum Mechanics II • PC3236 Computational Methods in Physics • PC3238 Fluid Dynamics • ST3131 Regression Analysis • ST3236 Stochastic Processes I <p>List IV</p> <ul style="list-style-type: none"> • All MA modules at level 4000 or higher • CS4232 Theory of Computation • CS4234 Optimisation Algorithms • CS4236 Cryptography Theory and Practice • CS5230 Computational Complexity • CS5237 Computational Geometry and Applications • DSA4211 High-Dimensional Statistical Analysis • DSA4212 Optimisation for Large-Scale Data-Driven Inference • EC4101 / EC4301 Microeconomic Analysis III • EC5104 Mathematical Economics • PC4248 Relativity • PC4274 Mathematical Methods in Physics III • ST4238 Stochastic Processes II • ST4245 Statistical Methods for Finance
5.	28 Aug 2017	FoS	<p>The Department of Statistics and Applied Probability's proposal to revise the Statistics 1st major curriculum for the AY2014/15 cohort and after, to incorporate:</p> <ul style="list-style-type: none"> • The recoding of MA1104 to MA2104, which overlaps substantially with MA2311, an essential module for Statistics major • Two new modules ST3248 and ST4248 which replace ST4240 <p>has been approved via BUS Circular 28 of AY2016/17.</p>

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Under 3.3.3.9 Statistics i.e. Bachelor of Science/Bachelor of Science (Hons) Programme requirements for Statistics (pg 115 - 119, http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf), to take note of the following changes to:

a) Level 1000 Requirements

- Remove CS10101FC
- “CS1010FX Programming Methodology” should be “CS1010X Programming Methodology”

b) Level 2000 Requirements - Add MA2104 Multivariable Calculus as an additional alternative module to MA2311 Techniques in Advanced Calculus or MA2108 Mathematical Analysis I or MA2108S Mathematical Analysis I (S).

Module Level	Major Requirements	Cumulative Major MCs
Level-1000 (16 MCs)	Pass ST1131 Introduction to Statistics or ST1232 Statistics for Life Sciences MA1101R Linear Algebra I MA1102R Calculus CS1010 Programming Methodology or CS1010E Programming Methodology or CS1010S Programming Methodology or CS1010FC Programming Methodology or CS1010FX Programming Methodology	16
Level-2000 (16-17 MCs)	Pass ST2131/ MA2216 Probability ST2132 Mathematical Statistics ST2137 Computer Aided Data Analysis MA2311 Techniques in Advanced Calculus or MA2104 Multivariable Calculus or	32-33

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
			<table border="1"><tr><td></td><td>MA2108 Mathematical Analysis I or MA2108S Mathematical Analysis I (S)</td><td></td></tr></table> <p>c) List DS 1 - Remove ST4240 Data Mining and add ST3248 Statistical Learning I and ST4248 Statistical Learning II.</p> <p>d) <u>List A modules</u></p> <p>CS3223 – title should be “Database Systems Implementation” CS3244 – title should be “Machine Learning”</p> <p>e) <u>List B modules</u></p> <p>CS4231 – title should be “Parallel and Distributed Algorithms” Extra MA4269 to be deleted.</p> <p>f) <u>For Statement on Faculty Requirements that come after the Summary of Requirements</u></p> <p>*Faculty requirements of 12 MCs and 16 MCs [required for the B.Sc. and B.Sc. (Hons.) programmes respectively] are partially fulfilled through the reading of CS/IT/CZ/MA modules within the major.</p>		MA2108 Mathematical Analysis I or MA2108S Mathematical Analysis I (S)	
	MA2108 Mathematical Analysis I or MA2108S Mathematical Analysis I (S)					
6.	28 Aug 2017	FoS	<p>The change to remove CM2142 from the Chemistry 2nd major requirements, for cohort AY2016 and after, was approved via BUS Circular 28 of AY2016/17.</p> <p><u>AY2016/17 Bulletin</u> Under 3.4.2.1 Second Major in Chemistry http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf (pg 127), the updates are as follows:</p> <p>To be awarded a BSc with a second major in Chemistry, candidates must satisfy the following:</p>			

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)														
			<table><tr><th>Module Level</th><th>Second Major Requirements</th><th>Cumulative Major MCs</th></tr><tr><td>Level-1000 (16 MCs)</td><td>Pass CM1111 Inorganic Chemistry 1 CM1121 Organic Chemistry 1 CM1131 Physical Chemistry 1 CM1191 Experiments in Chemistry 1 Processes</td><td>16</td></tr><tr><td>Level-2000 (16 MCs)</td><td>Pass any three (3) modules from the following:<ul style="list-style-type: none">• CM2101 Physical Chemistry 2• CM2111 Inorganic Chemistry 2• CM2121 Organic Chemistry 2• CM2142 Analytical Chemistry 1Pass any <u>one</u> module from the following:<ul style="list-style-type: none">• CM2191 Experiments in Chemistry 2• CM2192 Experiments in Chemistry 3</td><td>32</td></tr><tr><td>Level-3000 (16 MCs)</td><td>Pass CM3291 Advanced Experiments in Inorganic and Organic Chemistry or CM3292 Advanced Experiments in Analytical and Physical Chemistry and <u>three</u> (3) other CM32XX modules (excluding CM3289)*</td><td>48</td></tr></table>	Module Level	Second Major Requirements	Cumulative Major MCs	Level-1000 (16 MCs)	Pass CM1111 Inorganic Chemistry 1 CM1121 Organic Chemistry 1 CM1131 Physical Chemistry 1 CM1191 Experiments in Chemistry 1 Processes	16	Level-2000 (16 MCs)	Pass any three (3) modules from the following: <ul style="list-style-type: none">• CM2101 Physical Chemistry 2• CM2111 Inorganic Chemistry 2• CM2121 Organic Chemistry 2• CM2142 Analytical Chemistry 1 Pass any <u>one</u> module from the following: <ul style="list-style-type: none">• CM2191 Experiments in Chemistry 2• CM2192 Experiments in Chemistry 3	32	Level-3000 (16 MCs)	Pass CM3291 Advanced Experiments in Inorganic and Organic Chemistry or CM3292 Advanced Experiments in Analytical and Physical Chemistry and <u>three</u> (3) other CM32XX modules (excluding CM3289)*	48		
Module Level	Second Major Requirements	Cumulative Major MCs															
Level-1000 (16 MCs)	Pass CM1111 Inorganic Chemistry 1 CM1121 Organic Chemistry 1 CM1131 Physical Chemistry 1 CM1191 Experiments in Chemistry 1 Processes	16															
Level-2000 (16 MCs)	Pass any three (3) modules from the following: <ul style="list-style-type: none">• CM2101 Physical Chemistry 2• CM2111 Inorganic Chemistry 2• CM2121 Organic Chemistry 2• CM2142 Analytical Chemistry 1 Pass any <u>one</u> module from the following: <ul style="list-style-type: none">• CM2191 Experiments in Chemistry 2• CM2192 Experiments in Chemistry 3	32															
Level-3000 (16 MCs)	Pass CM3291 Advanced Experiments in Inorganic and Organic Chemistry or CM3292 Advanced Experiments in Analytical and Physical Chemistry and <u>three</u> (3) other CM32XX modules (excluding CM3289)*	48															
			<p>* UROPS CM3288 can be counted as 4 MCs. However, if two semesters work of UROPS is completed, CM3289 will not be counted. This second major is <u>not</u> awarded with a primary major in Chemistry or a minor in Analytical Chemistry.</p> <p>Note: Level-4000 CM prefixed modules may be taken to replace up to 4 MCs of the Level-3000 CM elective modules above.</p>														
7.	28 Aug 2017	FoS	<p>The changes to the Minor in Analytical Chemistry requirement to replace CM2142, which will be defunct from AY2017/18 onwards, with CM2192, for all existing cohorts, has been approved via BUS Circular 28 of AY2016/17.</p> <p>AY2016/17 Bulletin</p>														

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>Under 3.4.3.1 Minor in Analytical Chemistry (pg 143, http://www.nus.edu.sg/registrar/info/nusbuletin/AY201617_FoS.pdf)</p> <p>Please note the following changes:</p> <p>To be awarded a minor in Analytical Chemistry, a student must pass all the following six modules:</p> <ol style="list-style-type: none"> 1. CM1401 and CM1111 Chemistry for Life Sciences and Inorganic Chemistry 1 OR 2. CM1402 and CM1191 General Chemistry and Experiments in Chemistry 1 3. CM2101 Physical Chemistry 2 4. CM2142 Analytical Chemistry 1 OR CM2192 Experiments in Chemistry 2 5. CM3242 Instrumental Analysis II 6. CM3295 Selected Experiments in Analytical Chemistry
8.	28 Aug 2017	FoS	<p>The changes to replace CM2142 with CM3242 within the Minor in Forensic Science Requirement for all existing cohorts, was approved via BUS Circular 28 of AY201617.</p> <p><u>AY2016/17 Bulletin</u></p> <p>Under 3.4.3.6 Minor in Forensic Science (pg 150, http://www.nus.edu.sg/registrar/info/nusbuletin/AY201617_FoS.pdf), the following changes are made:</p> <p>To be awarded a minor in Forensic Science, a student must pass the six modules as set out below:</p> <ol style="list-style-type: none"> 1. GEK1542 (or LSM1306) Forensic Science 2. CM3301 Advanced Forensic Science 3. SP3202 Evidence in Forensic Science 4. Choose 3 from the following elective modules: <ul style="list-style-type: none"> o CM2101 Physical Chemistry 2 o CM2142 Analytical Chemistry1 OR CM3242 Instrumental Analysis II o LSM1102 Molecular Genetics o LSM3211 Fundamental Pharmacology
9.	30 Aug 2017	FoS	<p>The changes to the Minor in Financial Mathematics, arising from the following:</p> <ul style="list-style-type: none"> • SoC students reading BComp (Computer Science) and BComp (Information Systems) are required to read ST2334 (Probability and Statistics) as part of their major requirements. As a component module of FM minor, ST2131 (Probability) precludes ST2334, and this results in SoC students not being able to satisfy the FM minor requirement.

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<ul style="list-style-type: none"> Another component module of the FM minor requirement, MA1104, has recently been recoded to MA2104 Multivariable Calculus. A new module MA1508E Linear Algebra for Engineering, a slight variation of MA1508, will be offered to replace MA1508 in AY2017/18. NUS Business School has decided to change the module code of FIN3102 to FIN3702 from AY2017/18. <p>Was approved via BUS Circular 26 of AY2016/17.</p> <p><u>AY2016/17 Bulletin</u></p> <p>Under 3.4.3.5 Minor in Financial Mathematics (pg 149, http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf), kindly note the following changes: <u>To be awarded a minor in Financial Mathematics, a student must pass the following six modules:</u></p> <ol style="list-style-type: none"> (MA1102R or MA1505 or MA1507 or MA1521) and (MA1104 or MA2104 or MA1506 or MA1508 or MA1508E); and MA2216/ST2131 or ST2334; and MA3269 and (QF3101 or FIN3102 [for BIZ students] or FIN3702 [for BIZ students]) ; and ST3131 <p>Titles of the above modules are as listed below:</p> <p>MA1102R Calculus MA1104 Multivariable Calculus MA2104 (wef Sem 2 AY2017/18) Multivariable Calculus MA1505 Mathematics I MA1506 Mathematics II MA1507 Advanced Calculus MA1508 Linear Algebra with Applications MA1508E Linear Algebra for Engineering MA1521 Calculus for Computing MA2216/ST2131 Probability MA3269 Mathematical Finance I QF3101 Investment Instruments: Theory and Computation FIN3102 Investment Analysis and Portfolio Management FIN3702* Investment Analysis and Portfolio Management ST2334 Probability and Statistics ST3131 Regression Analysis</p> <p>*School of Business has amended the module code of FIN3102 to FIN3702 for cohort AY2017 and after.</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)																															
			This minor is <u>not</u> awarded with the primary major in Applied Mathematics, Quantitative Finance, Mathematics, Data Science and Analytics, and second major in Mathematics, Data Analytics .																															
10.	7 Sep 2017	FoS	<p>The revision to the FoS Comp Bio Requirements were approved via BUS Circular 3 of AY2017/18. The amendments are as follows:</p> <p><u>AY2016/17 Bulletin</u> Under 3.3.3.2 Computational Biology (http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf , pg 72 to 76), to note the following changes:</p> <ul style="list-style-type: none">a) To replace ST4240 by ST3248 in the Level 3000 electives list and ST4248 in the Level 4000 electives list.b) To remove LSM3244 Molecular Biotechnology which is defunct, from the Level 3000 electives.c) To include LSM3225 Molecular Microbiology in Human Diseases in Option B of Level 3000 electives basket and to include LSM4226 Infection and Immunity in Option B of Level 4000 electives basket.d) To update the module title for LSM3241 in the major requirements. <table><tr><th colspan="2">PROGRAMME REQUIREMENTS</th><th>MCs</th></tr><tr><td colspan="2">University Requirements</td><td></td></tr><tr><td>5 x General Education Modules</td><td>20</td><td>20</td></tr><tr><td colspan="2">Faculty Requirements</td><td rowspan="4">16</td></tr><tr><td colspan="2">CM1401 Chemistry for Life Sciences ^[1] LSM1102 Molecular Genetics^[1] MA1101R Linear Algebra I SP1541 Exploring Science Communication through Popular Science ^[2]</td></tr><tr><td colspan="2">Major Requirements</td><td></td></tr><tr><td colspan="2">Level-1000 / 2000 Essential ^[1]</td><td></td></tr><tr><td>CS1010S or CS1010X Programming Methodology</td><td>4</td><td rowspan="5">32-36</td></tr><tr><td>CS1020E or CS1020 Data Structures And Algorithms I</td><td>4</td></tr><tr><td>CS1231 Discrete Structures or MA1100 Fundamental Concepts of Mathematics</td><td>4</td></tr><tr><td>LSM1106 Molecular Cell Biology</td><td>4</td></tr><tr><td>MA1102R Calculus</td><td>4</td></tr></table>	PROGRAMME REQUIREMENTS		MCs	University Requirements			5 x General Education Modules	20	20	Faculty Requirements		16	CM1401 Chemistry for Life Sciences ^[1] LSM1102 Molecular Genetics ^[1] MA1101R Linear Algebra I SP1541 Exploring Science Communication through Popular Science ^[2]		Major Requirements			Level-1000 / 2000 Essential ^[1]			CS1010S or CS1010X Programming Methodology	4	32-36	CS1020E or CS1020 Data Structures And Algorithms I	4	CS1231 Discrete Structures or MA1100 Fundamental Concepts of Mathematics	4	LSM1106 Molecular Cell Biology	4	MA1102R Calculus	4
PROGRAMME REQUIREMENTS		MCs																																
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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
			CS2220 Introduction to Computational Biology <u>OR</u> LSM2241 Introductory Bioinformatics	4		24
			LSM2211 Metabolism and Regulation <u>OR</u> LSM2232 Genes and Genomes <u>OR</u> LSM2233 Cell Biology	4		
			Either ST2334 Probability and Statistics <u>OR</u> a combined ST2131 Probability and ST2132 Mathematical Statistics*	4 - 8		
			<u>Level-3000 Essential</u>			
			MA3259 Mathematical Methods In Genomics	4		
			LSM3241 Bioinformatics & Biocomputing Genomic Data Analysis	4		
			Level-3000 Electives ^[3] (Choose Four Modules) – [Any two modules from option A <u>and</u> any two modules from option B]			
			<u>Option A</u> CS2102 Database Systems CS3103 Computer Networks Practice CS3225 Combinatorial Methods in Bioinformatics CS3230 Design and Analysis of Algorithms CS3240 Interaction Design CS3241 Computer Graphics CS3243 Introduction to Artificial Intelligence CS3244 Machine Learning			
			<u>Option B</u> LSM3211 Fundamental Pharmacology LSM3223 Immunology LSM3225 Molecular Microbiology in Human Diseases LSM3231 Protein Structure and Function LSM3232 Microbiology LSM3233 Developmental Biology LSM3243 Molecular Biophysics LSM3244 Molecular Biotechnology PC3267 Biophysics II MA3233 Combinatorics and Graphs II			

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			ST3131 Regression Analysis ST3240 Multivariate Statistical Analysis ST3232 Design and analysis of experiments ST3233 Applied time series analysis ST3236/MA3238 Stochastic Process 1 ST3247 Simulation ST3248 Statistical Learning I		
			Level-4000 Essential		
			ZB4199 Honours Project in Computational Biology	12	
			ZB4171 Advanced Topics in Bioinformatics	4	
			LSM4241 Functional Genomics	4	
			Level-4000 Electives (Choose <u>THREE</u> Modules) – [Any two modules from either option A or option B or option C, and the remaining third module to be selected from the Option not chosen]		
			<u>Option A</u>		
			CS4220 Knowledge Discovery Methods in Bioinformatics CS4221 Database Applications Design and Tuning CS4231 Parallel and Distributed Algorithms CS4237 Systems Modelling and Simulation CS4243 Computer Vision and Pattern Recognition CS4244 Knowledge-Based Systems CS4248 Natural Language Processing CS4234 Optimisation Algorithms		
			<u>Option B</u>		
			LSM4211 Toxicology LSM4212 Pharmacogenetics and Drug Response LSM4213 System Neurobiology LSM4221 Drug discovery and Clinical Trials LSM4222 Advanced Immunology LSM4224 Free Radicals and Antioxidant Biology LSM4226 Infection and Immunity LSM4231 Structural Biology		
				32	

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			LSM4232 Advanced Cell Biology LSM4242 Protein Engineering <u>Option C</u> MA4251/ST4238 Stochastic Processes II PC4267 Biophysics III ST4231 Computer intensive statistical methods ST4234 Bayesian Statistics ST4240 Data Mining ST4242 Analysis of Longitudinal Data ST4248 Statistical Learning II		
			Unrestricted Elective Modules ^[4]	32-36	
			TOTAL	160	
			<p>^[1] Modules are part of the lower division requirements for the Computational Biology Programme.</p> <p>^[2] The following groups of students who are precluded from reading SP1541/ES1541:</p> <ul style="list-style-type: none"> • Students who are UTown residents and have read and passed the IEM, UTW and UWC modules • Students who are RVRC residents and have read and passed ES1601 module • Students who are in SPS and have read and passed the SP2171 • Students who are in USP and have read and passed the UWC2101% modules <p>will have to read another module instead of SP1541 to fulfil 4 MCs of Faculty requirements, except for students in SPS who have read and passed SP2171 as SP2171 can be used to fulfil 4 MCs of Faculty requirements.</p> <p>^[3] ZB3288 UROPS in Computational Biology can be taken in fulfilment of 4MCs from any of the options in the level-3000 elective list.</p> <p>^[4] Students may wish to read PC2267 Biophysics I as an unrestricted elective module to meet the prerequisites required for PC3267 Biophysics II (Level-3000 major elective module).</p> <p>* Students should choose the combined ST2131 and ST2132 in place of ST2334 if they plan to pursue higher ST modules. ST2131 is a pre-requisite to ST2132.</p>		

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
11.	12 Sep 2017	SoC	<p>NUS Bulletin AY16-17 Updates 3.2.7 Bachelor of Computing in Computer Science</p> <p>http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_SoC.pdf Page 30</p> <p><u>Update 1:</u> Replace bullet 4 in the section on University Scholars Programme below with amended texts in red: Original texts: 4. They will read UROP modules (CP3208 and CP3209) in place of CS3201 and CS3202 or CS3281 and CS3282. CP3208 and CP3209 are independent study modules (ISMs) which will also be counted as 2 USP Inquiry modules in Sciences and Technologies basket.</p> <p>University Scholars Programme (Computer Science)</p> <p>Students in the University Scholars Programme who choose the Bachelor of Computing (Computer Science) major will follow the Computer Science programme, but with the following variations:</p> <ol style="list-style-type: none"> 1. They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar). 2. They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking 3. They will not be required to read two Science Modules (8 MCs). These are replaced by 2 USP Inquiry modules in Sciences and Technologies basket. 4. They will read CS3201 and CS3202 or other modules approved by the Department of Computer Science as independent study modules (ISMs) which will also be counted as 2 USP Inquiry modules in Sciences and Technologies basket. <p>3.2.10 Bachelor of Computing in Information Security http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_SoC.pdf Page 43 and onwards <u>Update 1:</u> Amend Programme Requirements as follows with changes in red texts.</p> <p>PROGRAMME REQUIREMENTS (Total of 126 MCs)</p> <p><u>Computing Foundation</u> (40 MCs) CS1010 Programming Methodology</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p> CS1020 Data Structures and Algorithms CS1231 Discrete Structures CS2010 Data Structures and Algorithms I CS2100 Computer Organisation CS2102 Database Systems CS2103T Software Engineering³ CS2105 Introduction to Computer Networks CS2106 Introduction to Operating Systems Either IS1105 Strategic IT Applications <small>{discontinued in AY2017-18}</small> or IS3103 Information Systems Leadership and Communication </p> <p> <u>Information Security Requirements (36 MCs)</u> CS2107 Introduction to Information Security CS3235 Introduction to Computer Security CS3205/IFS4205 Information Security Capstone Project IS4231 Information Security Management </p> <p> Complete 16 MCs from the following list of modules: CS3236 Introduction to Information Theory Either CS4236 Cryptography Theory and Practice or MA4261 Coding and Cryptography </p> <p> CS4238 Computer Security Practices CS4239 Software Security CS5231 Systems Security CS5321 Network Security CS5322 Database Security CS5331 Web Security CS5332 Biometric Authentication IFS4101 Legal Aspects of Information Security IFS4102 Digital Forensics IS4204 IT Governance IS4232 Topics in Information Security Management <small>(discontinued in AY2017-18)</small> IS4233 Legal Aspects of Information Technology IS4234 Control and Audit of Information Systems </p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>IS4302 Blockchain and Distributed Ledger Technologies ^{new} Other modules approved by the SoC UG Office</p> <p><u>Computing Breadth</u> (8 MCs) Complete 8 MCs of CP-coded, CS-coded or IS-coded modules at level-3000 or above. Industrial Experience Requirement</p> <p><u>IT Professionalism</u> (12 MCs) IS1103/FC/X Computing and Society/IS Innovations in Organisations and Society ^{revised} CS2101 Effective Communication for Computing Professionals ES2660 Communicating in the Information Age</p> <p><u>Mathematics</u> (12 MCs) MA1101R Linear Algebra I MA1521 Calculus for Computing ST2334 Probability and Statistics</p> <p>2. UNIVERSITY LEVEL REQUIREMENTS (20 MCs) As specified in Section 3.2.1.</p> <p>3. UNRESTRICTED ELECTIVES (20 MCs) As specified in Section 3.2.1.</p> <p><u>Update 2:</u> To amend as indicated in red:</p> <p>NUS Overseas Colleges (NOC) – Information Security</p> <p>Students who attended NOC programme may:</p> <ol style="list-style-type: none"> 1. count TR3201 Entrepreneurship Practicum (8 MCs) towards Computing Breadth. 2. count TR3202 Start-up Internship Programme (12 MCs) towards Industrial Experience Requirement. 3. count TR3203 Start-up Case Study and Analysis towards Unrestricted Electives. Students working on information security-related projects for TR3203 may seek approval to instead take TR3203P, which counts towards CS3205/IFS4205 Information Security Capstone Project requirement.

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)																								
			<p><u>Update 3:</u> To amend as indicated in red:</p> <p>University Scholars Programme (Information Security)</p> <p>Students in the University Scholars Programme who choose the Bachelor of Computing (Information Security) major will take the Information Security programme, but with the following variations:</p> <ul style="list-style-type: none">• They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar).• They will not be required to read CS2101 Effective Communication for Computing Professionals. It is replaced by USP Foundation module: Writing and Critical Thinking.• They will read CS3205/IFS4205 Information Security Capstone Project, which is an 8-MCs independent study modules (ISMs) which will be counted as 2 USP Inquiry modules in Sciences and Technologies Basket.• They will further complete 3 more USP Inquiry modules (for a total of 8, including CS3205/IFS4205) and the USP Reflection module (the Senior Seminar). They will have 4 MCs under the Unrestricted Electives. <p><u>Update 4:</u> To amend Table 4 as follows:</p> <p>Table 4: Summary of degree requirements for Bachelor of Computing (Information Security)</p> <table><tr><th>Modules</th><th>MCs</th><th>Subtotals</th></tr><tr><td>UNIVERSITY LEVEL REQUIREMENTS</td><td></td><td>20</td></tr><tr><td>PROGRAMME REQUIREMENTS</td><td></td><td>120</td></tr><tr><td><i>Computing Foundation</i></td><td>40</td><td></td></tr><tr><td>CS1010 Programming Methodology⁴</td><td>4</td><td></td></tr><tr><td>CS1020 Data Structures and Algorithms I⁵</td><td>4</td><td></td></tr><tr><td>CS1231 Discrete Structures</td><td>4</td><td></td></tr><tr><td>CS2010 Data Structures and Algorithms II⁵</td><td>4</td><td></td></tr></table>	Modules	MCs	Subtotals	UNIVERSITY LEVEL REQUIREMENTS		20	PROGRAMME REQUIREMENTS		120	<i>Computing Foundation</i>	40		CS1010 Programming Methodology ⁴	4		CS1020 Data Structures and Algorithms I ⁵	4		CS1231 Discrete Structures	4		CS2010 Data Structures and Algorithms II ⁵	4	
Modules	MCs	Subtotals																									
UNIVERSITY LEVEL REQUIREMENTS		20																									
PROGRAMME REQUIREMENTS		120																									
<i>Computing Foundation</i>	40																										
CS1010 Programming Methodology ⁴	4																										
CS1020 Data Structures and Algorithms I ⁵	4																										
CS1231 Discrete Structures	4																										
CS2010 Data Structures and Algorithms II ⁵	4																										

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
			CS2100 Computer Organisation	4		
			CS2102 Database Systems	4		
			CS2103T Software Engineering ³	4		
			CS2105 Introduction to Computer Networks	4		
			CS2106 Introduction to Operating Systems	4		
			Either IS1105 Strategic IT Applications {discontinued in AY2017-18} or IS3103 Information Systems Leadership and Communication	4		
			Information Security Requirements	36		
			CS2107 Introduction to Information Security	4		
			CS3205/IFS4205 Information Security Capstone Project	8		
			CS3235 Computer Security	4		
			IS4231 Information Security Management	4		
			<u>Programme Electives</u> Complete 16 MCs from the following list of modules:			
			CS3236 Introduction to Information Theory			
			Either CS4236 Cryptography Theory and Practice or MA4261 Coding and Cryptography			
			CS4238 Computer Security Practices CS4239 Software Security CS5231 Systems Security CS5321 Network Security CS5322 Database Security CS5331 Web Security			
				16		

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			<p>CS5332 Biometric Authentication</p> <p>IFS4101 Legal Aspects of Information Security</p> <p>IFS4102 Digital Forensics</p> <p>IS4204 IT Governance</p> <p>IS4232 Topics in Information Security Management (discontinued in AY2017-18)</p> <p>IS4233 Legal Aspects of Information Technology</p> <p>IS4234 Control and Audit of Information Systems</p> <p>IS4302 Blockchain and Distributed Ledger Technologies ^{new}</p> <p>Other modules approved by the SoC UG Office</p>		
			Computing Breadth	20	
			Complete 8 MCs of CP-coded, CS-coded or IS-coded modules at level-3000 or above.	8	
			Industrial Experience Requirement	12	
			IT Professionalism	12	
			IS1103/FC/X Computing and Society/IS Innovations in Organisations and Society ^{revised}	4	
			CS2101 Effective Communication for Computing Professionals	4	
			ES2660 Communicating in the Information Age	4	
			Mathematics	12	
			MA1101R Linear Algebra I	4	
			MA1521 Calculus for Computing	4	
			ST2334 Probability and Statistics ^{5a}	4	
			UNRESTRICTED ELECTIVES⁶		20
			Grand Total		160
			<p><u>Update 3:</u> Amend footnote 5 and insert footnote 5a.</p>		

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>1: Students should consult the CS Deputy Head (CS Programmes) in advance if they are interested in this option as industry courses may not be offered every year.</p> <p>2: For students who opt for iLead or NOC, the additional MCs beyond the 12-MCs allocated to Industry Experience Requirement should be taken from Unrestricted Electives and/or exempted modules.</p> <p>3: Students taking CS2103T Software Engineering must take CS2101 Effective Communication for Computing Professionals in the same semester.</p> <p>4: CS1010 can be replaced by CS1101S Programming Methodology.</p> <p>5: CS1020 and CS2010 can be replaced by CS2020 Data Structures and Algorithms Accelerated. The remaining 2 MCs will be added to the Unrestricted Electives Requirements. Students who have not passed CS1020 by AY2017/18 may need to read CS2030 if CS1020 is no longer offered. Students who have not passed CS2010 by AY2017/18 may need to read CS2040/C if CS2010 is no longer offered.</p> <p>5a: Students who are pursuing either a double degree with Mathematics/Applied Mathematics, Second Major in Mathematics or Statistics can replace ST2334 with ST2131 and ST2132. The additional 4 MCs will be taken from the Unrestricted electives space.</p> <p>6: Students without A-level mathematics are required to complete MA1301 or MA1301X Introductory Mathematics as part of the UE.</p> <p>3.2.11 Bachelor of Computing in Information Systems http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_SoC.pdf Page 49 and onwards <u>Update 1:</u> To introduce the two new specialisations below and update existing one in Electronic Commerce with new replacement modules and remove modules that will be discontinued from AY2017-18 onwards. Changes are in red texts.</p> <p>Specialisations</p> <p>Students can also package their own specialisations by reading modules that satisfy the specialisation requirements. Specialisations provide students the opportunity to gain focused, in-depth knowledge in specialised areas where information systems are deployed. Students can only choose to pursue one of the three specialisations: Digital Innovation, Electronic Commerce and Financial Technology.</p> <p>To be awarded with specialisations, students have to complete 6 modules (24 MCs) in the list of modules included for a specialisation.</p> <p><u>Digital Innovation Specialisation</u></p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>For the Digital Innovation Specialisation, students must satisfy the followings:</p> <p>Compulsory modules: IS3240 Economics of e-Business IS3251 Principles of Technology Entrepreneurship IS4261 Designing IT-Enabled Business Innovations</p> <p>Elective modules (choose three): IS3150 Digital Media Marketing IS3261 Mobile Apps Development for Enterprise IS4204 IT Governance IS4233 Legal Aspects of Information Technology IS4243 Information Systems Consulting</p> <p><u>Financial Technology Specialisation</u> For the Financial Technology specialisation, students must satisfy the followings:</p> <p>Compulsory modules: IS4228 Information Technologies in Financial Services IS4302 Blockchain and Distributed Ledger Technologies IS4303 IT-Mediated Financial Solutions and Platforms</p> <p>Elective modules (choose three): IS3221 Enterprise Resource Planning Systems IS4231 Information Security Management IS4233 Legal Aspects of Information Technology IS4234 Quality Control and Audit of IS IS4301 Agile IT with DevOps</p> <p><u>Electronic Commerce Specialisation</u> For the Electronic Commerce Specialisation, students have to complete three compulsory modules:</p> <ul style="list-style-type: none"> • IS3150 Digital and New Media Marketing • IS4150 Mobile and Ubiquitous Commerce IS4151 Pervasive Technology Solutions and Development • IS4260 E-Commerce Business Models IS4261 Designing IT-enabled Business Innovations <p>and choose three modules from the following elective modules:</p> <ul style="list-style-type: none"> • IS3240 Economics of E-Business • IS3241 Enterprise Social Systems • IS3243 Technology Strategy and Management

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
			<div><div><div><div><div></div><div>IS3222 IT and Customer Relationship Management</div></div><div><div></div><div>IS3261 Mobile Apps Development for Enterprise</div></div><div><div></div><div>IS4225 Strategic IS Planning</div></div><div><div></div><div>IS4228 Information Technologies in Financial Services</div></div><div><div></div><div>IS4231 Information Security Management</div></div><div><div></div><div>IS4240 Business Intelligence Systems</div></div><div><div></div><div>IS4243 Information Systems Consulting</div></div></div></div><div><p>Update 2: To replace IS4103 with IS3102 in the section on University Scholars Programme.</p><p>University Scholars Programme (Information Systems)</p><p>Students in the University Scholars Programme who choose the Bachelor of Computing (Information Systems) major will take the IS programme, but with the following variations:</p><div><div>1.</div><div>They will read GER1000 Quantitative Reasoning (4 MCs) as compulsory module for the University Level Requirements (ULR). The remaining 16 MCs in ULR are replaced by the 3 USP Inquiry Modules and 1 USP Foundation module (i.e. University Scholars Seminar).</div></div><div><div>2.</div><div>They will not be required to read IS2101 Business and Technical Communication. It is replaced by USP Foundation module: Writing and Critical Thinking.</div></div><div><div>3.</div><div>They will have 8 (instead of 20) MCs under Unrestricted Electives</div></div><div><div>4.</div><div>They will read UROP modules (CP3208 and CP3209) in place of the IS team project module (IS3102/IS4103). CP3208 and CP3209 are independent study modules (ISMs) which will be counted as 2 USP Inquiry modules in Sciences and Technologies Basket.</div></div><div><div>5.</div><div>They will be required to take 24 MCs (6 modules) from the Programme Electives. Among these modular credits, at least 12 MCs (3 modules) must be at level-4000.</div></div></div><div><p>Update 3: To amend Table 6 as follows with the introduction of 2 new specialisations: Digital Innovation and Financial Technology. Changes are in red texts.</p><p>Table 6: Summary of degree requirements for Bachelor of Computing (Information Systems)</p><table><tr><th>Modules</th><th>MCs</th><th>Subtotals</th></tr></table></div></div>	Modules	MCs	Subtotals
Modules	MCs	Subtotals				

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			UNIVERSITY LEVEL REQUIREMENTS		20
			Please refer to Section 3.2.1.		
			PROGRAMME REQUIREMENTS		120
			Core Modules	80	
			CS1010J Programming Methodology	4	
			CS1020 Data Structures and Algorithms I	4	
			CS1231 Discrete Structures	4	
			IS1103/FC/X Computing and Society or IS1103/X IS Innovations in Organisations and Society	4	
			IS1105 Strategic IT Applications	4	
			CS2100 Computer Organisation	4	
			CS2102 Database Systems	4	
			CS2105 Introduction to Computer Networks	4	
			ES2660 Communicating in the Information Age	4	
			IS2101 Business and Technical Communication*	4	
			IS2102 Requirements Analysis and Design or IS2102 Enterprise Systems Architecture and Design	4	
			IS2103 Enterprise Systems Development Concepts or IS2103 Enterprise Systems Server-side Design and Development	4	

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			IS2104 Software Team Dynamics or IS3106 Enterprise Systems Interface Design or IS4301 Agile IT with DevOps	4	
			IS3101 Management of Information Systems or IS3103 Information Systems Leadership and Communication	4	
			IS3102 Enterprise Systems Development Project or IS4103 Information Systems Capstone Project	8	
			IS4100 IT Project Management	4	
			ACC1002X Financial Accounting or ACC1701X Accounting for Decision Makers	4	
			MA1301 Introductory Mathematics ⁺	4	
			MA1312 Calculus with Applications or MA1521 Calculus for Computing #	4	
			ST2334 Probability and Statistics &	4	
			Programme Electives	24	
			Option 1: Choose 6 modules to make up 24 MCs from the list of Programme Electives below. 3 of the 6 modules must be at level-4000. Option 2: Choose CP4101 and 3 modules to make up 24 MCs from the list of Programme Electives below. CP4101 B.Comp. Dissertation CS2106 Introduction to Operating Systems CS2107 Introduction to Information Security CS3235 Introduction to Computer Security CS3240 Interaction Design IFS4101 Legal Aspects of Information Security IS3220 Service Science [discontinued in AY2017-18] IS3221 Enterprise Resource Planning Systems IS3222 IT and Customer Relationship Management [discontinued in AY2017-18]	All modules are 4 MCs each except CP4101 (12 MCs)	

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
			<p>IS3230 Principles of Information Security [discontinued in AY2017-18]</p> <p>IS3240 Economics of E-Business</p> <p>IS3241 Enterprise Social Systems [discontinued in AY2017-18]</p> <p>IS3242 Software Quality Management [discontinued in AY2017-18]</p> <p>IS3243 Technology Strategy and Management [discontinued in AY2017-18]</p> <p>IS3250 Health Informatics [discontinued in AY2017-18]</p> <p>IS3251 Principles of Technology Entrepreneurship</p> <p>IS3260 Gamification for Organisations and Individuals [discontinued in AY2017-18]</p> <p>IS3261 Mobile Apps Development for Enterprise</p> <p>IS4151 Pervasive Technology Solutions and Development</p> <p>IS4204 IT Governance</p> <p>IS4228 Information Technologies in Financial Services</p> <p>IS4231 Information Security Management</p> <p>IS4233 Legal Aspects of Information Technology</p> <p>IS4234 Quality Control and Audit of IS</p> <p>IS4240 Business Intelligence Systems</p> <p>IS4241 Social Media Network Analysis</p> <p>IS4243 Information Systems Consulting</p> <p>IS4250 Healthcare IT and Analytics</p> <p>IS4261 Designing IT-enabled Business Innovations</p> <p>IS4301 Agile IT with DevOps</p> <p>IS4302 Blockchain and Distributed Ledger Technologies</p> <p>IS4303 IT-Mediated Financial Solutions and Platforms</p> <p>Specialisations</p> <p>Students can only choose to pursue one of the three specialisations: Digital Innovation, Electronic Commerce and Financial Technology.</p> <p>To be awarded the Digital Innovation Specialisation, students must satisfy the followings:</p> <p>Compulsory modules:</p> <p>IS3240 Economics of e-Business</p> <p>IS3251 Principles of Technology Entrepreneurship</p> <p>IS4261 Designing IT-Enabled Business Innovations</p> <p>Elective modules (choose three):</p> <p>IS3150 Digital Media Marketing</p>			

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			<p>IS3261 Mobile Apps Development for Enterprise IS4204 IT Governance IS4233 Legal Aspects of Information Technology IS4243 Information Systems Consulting</p> <p>To be awarded the Electronic Commerce Specialisation, students must satisfy the followings:</p> <p>Compulsory modules: IS3150 Digital Media Marketing IS4151 Pervasive Technology Solutions and Development IS4261 Designing IT-enabled Business Innovations</p> <p>Choose three modules from the following list of modules: IS3261 Mobile Apps Development for Enterprise IS4228 Information Technologies in Financial Services IS4231 Information Security Management IS4240 Business Intelligence Systems IS4243 Information Systems Consulting</p> <p>To be awarded the Financial Technology Specialisation, students must satisfy the followings:</p> <p>Compulsory modules: IS4228 Information Technologies in Financial Services IS4302 Blockchain and Distributed Ledger Technologies IS4303 IT-Mediated Financial Solutions and Platforms</p> <p>Elective modules (choose three): IS3221 Enterprise Resource Planning Systems IS4231 Information Security Management IS4233 Legal Aspects of Information Technology IS4234 Quality Control and Audit of IS IS4301 Agile IT with DevOps</p>		
			IS4010 Industry Internship Programme^	12	
			UNRESTRICTED ELECTIVES%		20

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			Grand Total		160						
			<p>* : Taught by the Centre for English Language Communication.</p> <p>+ : MA1301 is waived for students with A-level Mathematics. The 4 MCs gained from the waiver are added to the MCs for Unrestricted Electives.</p> <p># : MA1521 to be chosen if student wants to keep the option of switching to Computer Science stream.</p> <p>&: Students who are pursuing either Second Major in Mathematics or Second Major in Statistics can replace ST2334 with ST2131 and ST2132. The additional 4 MCs will be taken from the Unrestricted Elective space.</p> <p>^ : Students can choose to take on any current 12 MCs or more internship-related programmes within the School of Computing (e.g., CP3880 Advanced Technology Attachment Programme (ATAP)) and/or within NUS (e.g., Innovative Local Enterprise Achiever Development (iLEAD) and NUS Overseas College (NOC)) in place of IS4010 Industry Internship Programme to satisfy the industry experience requirement.</p> <p>%: Students are encouraged to use their unrestricted electives to take modules that will build up their business domain knowledge. Having a strong knowledge of a business domain will provide IS graduates a favorable advantage in employment opportunity in the industry.</p> <p>3.2.12 Bachelor of Science in Business Analytics http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_SoC.pdf Page 54 and onwards <u>Update 1</u>: Set the limit of level-1000 modules at 64 MCs for Business Analytics cohort 2016.</p> <p><u>Update 2</u>: Update equivalent modules to Business modules in this programme due to a recent revision of Bachelor of Business Administration programme curriculum for cohort 2017.</p> <p><u>Update 3</u>: Insert a new list C in the Programme Elective (PE) section in Table 7: Summary of degree requirements for Bachelor of Science (Business Analytics). Options 1 and 2 are also revised to include electives in List C.</p> <p>Table 7: Summary of degree requirements for BSc (Business Analytics)</p> <p>For cohort 2016, the limit on level-1000 modules will be capped at 64 MCs.</p> <table><tr><th>Modules</th><th>MCs</th><th>Sub totals</th></tr><tr><td><u>UNIVERSITY LEVEL REQUIREMENTS</u> ¹</td><td></td><td>20</td></tr></table>			Modules	MCs	Sub totals	<u>UNIVERSITY LEVEL REQUIREMENTS</u> ¹		20
Modules	MCs	Sub totals									
<u>UNIVERSITY LEVEL REQUIREMENTS</u> ¹		20									

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			PROGRAMME REQUIREMENTS		120
			Core Modules	84	
			ACC1002X Financial Accounting or ACC1701X Accounting for Decision Makers	4	
			BT1101 Introduction to Business Analytics	4	
			CS1010S Programming Methodology	4	
			CS1020 Data Structures and Algorithms I	4	
			EC1301 Principles of Economics	4	
			IS1103/X IS Innovations in Organisations and Society [revised]	4	
			IS1105 Strategic IT Applications or IS3103 Information Systems Leadership and Communication	4	
			MA1311 Matrix Algebra and Applications, or MA1101R Linear Algebra I ²	4	
			MA1521 Calculus for Computing, or MA1102R Calculus ²	4	
			MKT1003X Marketing or MKT1705X Principles of Marketing	4	
			BT2101 Decision Making Methods and Tools	4	
			BT2102 Data Management and Visualisation	4	
			CS2010 Data Structures and Algorithms II	4	
			ES2660 Communicating in the Information Age	4	

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			IE2110 Operations Research I ³ , or DSC3214/ DSN3701 Introduction To Optimisation	4	
			IS2101 Business and Technical Communication ⁴	4	
			ST2334 Probability and Statistics ⁵	4	
			BT3101 Business Analytics Capstone Project	4	
			BT3102 Computational Methods for Business Analytics	4	
			BT3103 Application Systems Development for Business Analytics	4	
			ST3131 Regression Analysis	4	
			Programme Electives (PE)	24	
			<u>Option 1:</u> Choose 6 modules to make up 24 MCs from Lists A, B and C, with at least 2 modules each from Lists A and B. 5 of 6 modules must be at level-4000.		
			<u>Option 2:</u> Choose BT4101 and 3 modules to make up 24 MCs from Lists A, B and C, with at least 1 module each from Lists A and B. 2 of 3 modules must be at level-4000.		
			BT4101 B.Sc. Dissertation		
			<u>List A (Business Applications):</u> DSC3224/ DSN3712 Dynamic Pricing and Revenue Management IE3120 Manufacturing Logistics IS3240 Economics of E-Business BT4211 Data-Driven Marketing BT4212 Search Engine Optimization and Analytics DSC4213/ DSN3701 Analytical Tools for Consulting		
				All modules are 4MCs modules, except BT4101 (12 MCs)	

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			IS4250 Healthcare Analytics either MKT4415C Seminars in Marketing: Applied Market Research or MKT4420 Marketing Analytics List B (Analytics Methods): CS3244 Machine Learning either DSC3216 Forecasting for Managerial Decisions or DSN3803 Predictive Analytics in Business either BSP4513 Econometrics: Theory & Practical Business Application or BSE4711 Econometrics for Business II BT4221 Big Data Techniques and Technologies BT4222 Mining Web Data for Business Insights IS4241 Social Media Network Analysis IE4210 Operations Research II ST4240 Data Mining ST4245 Statistical Methods for Finance List C (Technology Implementation): IS3221 Enterprise Resource Planning Systems IS3261 Mobile Solutions Design and Development IS4228 Information Technologies in Financial Services IS4302 Blockchain and Distributed Ledger Technologies		
			IS4010 Industry Internship Programme ⁶	12	
			UNRESTRICTED ELECTIVES		20
			Grand Total		160
			Notes: 1: Students can refer to: http://www.nus.edu.sg/registrar/gem/home for the requirements for University Level Requirements..		

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>²: Students are encouraged to take these MA module options should they wish to pursue a more rigorous treatment of the subject topics covered.</p> <p>³: Students are encouraged to take IE2110 should they wish to choose IE4210 as an elective module.</p> <p>⁴: Taught by the Centre for English Language Communication.</p> <p>⁵: Students who are pursuing either Second Major in Mathematics or Second Major in Statistics can replace ST2334 with ST2131 and ST2132. The additional 4 MCs will be taken from the Unrestricted Elective space.</p> <p>⁶: Students can choose to take on any current 12 MCs or more internship-related programmes within the School of Computing (e.g., CP3880 Advanced Technology Attachment Programme (ATAP)) and/or within NUS (e.g., Innovative Local Enterprise Achiever Development (iLEAD) and NUS Overseas College (NOC)) in place of IS4010 Industry Internship Programme to satisfy the industry experience requirement.</p> <p>3.3.5.4.1 Double Major in Business Analytics http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_SoC.pdf Pages 72 and 73 <u>Update 1</u>: Remove B.Eng.(Computer Engineering) from the section below: The second major in BZA programme is not available to students in the following degree programmes:</p> <ul style="list-style-type: none"> • B. Comp. (Information Security) • B. Comp. (Computer Science) • B. Comp. (Computational Biology) • B. Comp. (Information Systems) • B.Eng. (Computer Engineering) • B. Sc. (Business Analytics) • B.Sc. (Data Science and Analytics) <p>3.3.5.4.2 Double Major in Computer Science http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_SoC.pdf Page 76 and onwards <u>Update 1</u>: Please insert the texts in red to cater to students who have not done the CS1020/E but have read CS2040 or its equivalent.</p> <p>Admission Requirements Students who has taken CS1010/S/E and CS1020/E as either part of their degree requirements or Minor in Computer Science can apply for entry into Second Major in Computer Science if they obtain B+ or above in both modules. Existing students who have yet to embark on CS1020/E can apply for entry into Second Major in Computer Science if they have obtained B+ or above in CS1010 (or its equivalent) and CS2040 (or its equivalent).</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)																				
			<p>Structure</p> <p>The Second Major in CS is structured as follows:</p> <ul style="list-style-type: none">• Computer Science Foundation = 32 MCs• Computer Systems Team Project = 8 MCs• Computer Science Electives = 8 MCs <p>In total, the 48 MCs requirement for graduation are broken down as follows:</p> <ul style="list-style-type: none">• Core modules = 40 MCs• Elective modules = 8 MCs <p>The table below shows the programme structure in details.</p> <table><tr><th>Modules</th><th>MCs</th></tr><tr><td>Computer Science Foundation</td><td>32</td></tr><tr><td>CS1010/S/E Programming Methodology¹</td><td>4</td></tr><tr><td>Either: CS1020/E Data Structures and Algorithms I and CS2010 Data Structures and Algorithms II² Or CS2030 Programming Methodology II and CS2040 Data Structures and Algorithms²</td><td>8</td></tr><tr><td>CS1231 Discrete Structure³</td><td>4</td></tr><tr><td>CS2100 Computer Organisation⁴</td><td>4</td></tr><tr><td>CS2103 Software Engineering</td><td>4</td></tr><tr><td>CS2106 Introduction to Operating Systems⁵</td><td>4</td></tr><tr><td>CS3230 Design and Analysis of Algorithms</td><td>4</td></tr><tr><td>Computer Systems Team Project</td><td>8</td></tr></table>	Modules	MCs	Computer Science Foundation	32	CS1010/S/E Programming Methodology ¹	4	Either: CS1020/E Data Structures and Algorithms I and CS2010 Data Structures and Algorithms II ² Or CS2030 Programming Methodology II and CS2040 Data Structures and Algorithms ²	8	CS1231 Discrete Structure ³	4	CS2100 Computer Organisation ⁴	4	CS2103 Software Engineering	4	CS2106 Introduction to Operating Systems ⁵	4	CS3230 Design and Analysis of Algorithms	4	Computer Systems Team Project	8
Modules	MCs																						
Computer Science Foundation	32																						
CS1010/S/E Programming Methodology ¹	4																						
Either: CS1020/E Data Structures and Algorithms I and CS2010 Data Structures and Algorithms II ² Or CS2030 Programming Methodology II and CS2040 Data Structures and Algorithms ²	8																						
CS1231 Discrete Structure ³	4																						
CS2100 Computer Organisation ⁴	4																						
CS2103 Software Engineering	4																						
CS2106 Introduction to Operating Systems ⁵	4																						
CS3230 Design and Analysis of Algorithms	4																						
Computer Systems Team Project	8																						

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			<p>Complete 8 MCs of the following pairs, or modules approved by the Department of Computer Science: CS3201/2 Software Engineering Project I/II ⁶ CS3281/2 Thematic Systems Project I/II CS3283/4 Media Technology Project I/II CS3216 Software Product Engineering for Digital Markets and CS3217 Software Engineering on Modern Application Platform</p>	8	
			Computer Science Focus Areas	8	
			Complete 8 MCs of CS coded modules with at least one module at level-3000 or above.		
			Grand Total	48	
			<ol style="list-style-type: none"> CS1010/S/E Programming Methodology can be replaced by CS1101S, CS1010J, or CS1010X. (CS1020 and CS2010) or (CS2030 and CS2040) can be replaced by CS2020 Data Structures and Algorithms Accelerated (6 MCs). The remaining 2 MCs will be added to either the Computer Systems Team Project requirement or the Computer Science Focus Areas requirement. CS2040 can be replaced by CS2040C. CS1231 can be replaced by MA1100. Students without A-level or H2 Mathematics are required to complete MA1301 Introductory Mathematics before completing CS1231. CS2100 Computer Organisation can be replaced by EE2024 Programming for Computer Interfaces. CS2106 Introduction to Operating Systems can be replaced by CG2271 Real-Time Operating Systems. <p>3.3.5.4.3 Double Major in Information Security http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_SoC.pdf Page 79. <u>Update 1</u>: To revise the admission requirements for existing students to accommodate CS2040/C for those who do not read CS1020/E: Admission Requirements</p> <p>For direct admission, students applying for the Second Major in InfoSec must meet the entry requirement:</p> <ul style="list-style-type: none"> For diploma holders: Diploma with at least an A2 grade in GCE O-level Elementary Mathematics or at least a B4 grade in GCE O level Additional Mathematics. 		

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)																						
			<ul style="list-style-type: none">For A-Level Holders: H2 pass in Computing or Mathematics or Physics; OR a good pass in H1 Mathematics. <p>Existing students from cohort 2015/16 or later may apply into the Second Major in InfoSec after completing CS1020 (or its equivalent), and CS2107 with B+ or above in each of the modules. Those who have not completed CS1020/E yet can apply using CS2040/C with a grade B+ or above in place of CS1020/E.</p> <p><u>Update 2:</u> To update the programme structure for the major below: The table below shows the programme structure in details.</p> <table><tr><th>Modules</th><th>MCs</th></tr><tr><td>Computing Foundation</td><td>20</td></tr><tr><td>CS1010 Programming Methodology or its equivalent</td><td>4</td></tr><tr><td>CS1020/E Data Structures and Algorithms I or CS2040/C Data Structures and Algorithms ¹</td><td>4</td></tr><tr><td>CS2100 Computer Organisation²</td><td>4</td></tr><tr><td>CS2105 Introduction to Computer Networks³</td><td>4</td></tr><tr><td>CS2106 Introduction to Operating Systems⁴</td><td>4</td></tr><tr><td>Information Security Requirements</td><td>16</td></tr><tr><td>CS2107 Introduction to Information Security</td><td>4</td></tr><tr><td>CS3235 Computer Security</td><td>4</td></tr><tr><td>CS3205/IFS4205 Information Security Capstone Project</td><td>8</td></tr></table>	Modules	MCs	Computing Foundation	20	CS1010 Programming Methodology or its equivalent	4	CS1020/E Data Structures and Algorithms I or CS2040/C Data Structures and Algorithms ¹	4	CS2100 Computer Organisation ²	4	CS2105 Introduction to Computer Networks ³	4	CS2106 Introduction to Operating Systems ⁴	4	Information Security Requirements	16	CS2107 Introduction to Information Security	4	CS3235 Computer Security	4	CS3205/ IFS4205 Information Security Capstone Project	8
Modules	MCs																								
Computing Foundation	20																								
CS1010 Programming Methodology or its equivalent	4																								
CS1020/E Data Structures and Algorithms I or CS2040/C Data Structures and Algorithms ¹	4																								
CS2100 Computer Organisation ²	4																								
CS2105 Introduction to Computer Networks ³	4																								
CS2106 Introduction to Operating Systems ⁴	4																								
Information Security Requirements	16																								
CS2107 Introduction to Information Security	4																								
CS3235 Computer Security	4																								
CS3205/ IFS4205 Information Security Capstone Project	8																								

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)	
			Information Security Electives	12
			Complete 12 MCs of modules from one of the following group, with at least 4 MCs at level-3000 or above. Group I: Data and Software Security CS2010 Data Structures and Algorithms II ¹ CS2102 Database Systems CS2103 Software Engineering or CS2113T Software Engineering& Object-oriented Programming ¹ CS4239 Software Security Group II: Foundation of Information Security CS1231 Discrete Structures ⁵ CS2010 Data Structures and Algorithms II CS3236 Introduction to Information Theory CS4236 Cryptography Theory and Practice ⁶ Group III: Information Systems and Security Management IS1103/FC/X Computing and Society/IS Innovations in Organisations and Society IS1105 Strategic IT Applications or IS3103 Information Systems Leadership and Communication IS4231 Information Security Management	
			Grand Total	48
			1. CS2020 Data Structures and Algorithms Accelerated can be used in place of CS1020/E. Students from cohort 2016 or earlier should take CS2103 in place of CS2113 if they have already taken CS1020/E. They can also take CS2020 Data Structures and Algorithms Accelerated in place of CS1020/E. They may take CS2010 as subsequent module in Group I or Group II elective after completing CS1020/E. Cohort 2017 and beyond should take CS2040/C Data Structures and Algorithms instead of CS1020/E for the minor. CS2010 is not applicable to cohort 2017 and beyond. 2. EE2024 Programming for Computer Interfaces can be used in place of CS2100 Computer Organisation. 3. EE3204/E Computer Communication Networks I can be used in place of CS2105. 4. CG2271 Real-Time Operating Systems can be used in place of CS2106.	

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)									
			<div>5. MA1100 can be used in place of CS1231. Students without A-level mathematics are required to complete MA1301 <i>Introductory Mathematics</i> before completing CS1231.</div> <div>6. MA4261 Coding and Cryptography can be used in place of CS4236</div> <div>3.3.6.3 Minor in Information Security http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_SoC.pdf Page 90 and onwards <u>Update 1:</u> To update the continuation and graduation requirements Continuation and graduation requirements Students need to obtain B+ or above in CS2107 or its equivalent to continue in the programme. The Minor in InfoSec will be awarded to students who completed the 24 MCs minor requirement. Students will need to complete the major requirement to graduate. Structure Students need to complete CS1010 or its equivalents (CS1010E, CS1010J, CS1010S, CS1010X, CS1010FC, CS1101S) before enrolling into this minor .To complete the minor, students must complete 24 MCs with the following modules:<table><tr><th>CODE</th><th>TITLE</th><th>MCS</th></tr><tr><td>CS1020/E</td><td>Data Structures and Algorithms I¹</td><td>4</td></tr><tr><td>CS2107</td><td>Introduction to Information Security</td><td>4</td></tr></table> Complete 16 MCs from the following list, with at least 4 MCs at level-3000 or above:</div>	CODE	TITLE	MCS	CS1020/E	Data Structures and Algorithms I ¹	4	CS2107	Introduction to Information Security	4
CODE	TITLE	MCS										
CS1020/E	Data Structures and Algorithms I ¹	4										
CS2107	Introduction to Information Security	4										

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			CODE	TITLE	MCS
			IS1103/FC/X	Computing and Society/ IS Innovations in Organisations and Society	4
			IS1105	Introduction to Information Security	4
			CS2100	Computer Organisation ²	4
			CS2105	Introduction to Computer Networks ³	4
			CS2106	Introduction to Operating Systems ⁴	4
			CS3235	Computer Security	4
			IS4231	Information Security Management	4
			<p>A minimum 16 MCs of the Minor requirements must be earned from modules read in NUS. The other 8 MCs may be earned through credit transfers, advanced placement and exemptions, provided these MCs are earned from modules deemed relevant to the particular Minor programme.</p> <p>Footnotes: ¹ Students who have completed CS2020 Data Structures and Algorithms Accelerated may replace CS1020/E with CS2020. Students who ² Students who are precluded from taking CS2100 may take EE2024 Programming for Computer Interfaces in lieu of CS2100. ³ Students who are precluded from taking CS2105 may take EE3204/E Computer Communication Networks I in lieu of CS2105. ⁴ Students who are precluded from taking CS2106 may take CG2271 Real-Time Operating Systems in lieu of CS2106.</p>		
			<p>3.3.6.4 Minor in Information Systems</p> <p>http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_SoC.pdf Page 93 and onwards</p> <p><u>Update 1</u>: Please change the title for IS3150 to Digital Media Marketing and IS1103 to IS Innovations in Organisations and Society in table below</p>		

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)																									
			<p><u>Update 2:</u> Please include IS3230 to be discontinued from AY2017-18 and rearrange the module code in ascending order in table below. Changes are given below</p> <p>To be awarded a minor in Information Systems, a student must pass a total of six (6) modules, with a minimum of twenty-four (24) modular credits. The student must pass all 3 modules in the following sets:</p> <p>Either</p> <table><tr><th>Set A</th><th></th><th>Set B</th></tr><tr><th>CODE AND TITLE</th><th></th><th>CODE AND TITLE</th></tr><tr><td>IT1001 Introduction to Computing</td><td></td><td>CS1010 /E/FC/S/X Programming Methodology</td></tr><tr><td>IT1002 Introduction to Programming * or IS1103/FC/X IS Innovations in Organisations and Society (old title: Computing and Society[#])</td><td>or</td><td>CS1020/E Data Structures and Algorithms I</td></tr><tr><td>IS1105 Strategic IT Applications@</td><td></td><td>IS1105 Strategic IT Applications@ or IS1103/X IS Innovations in Organisations and Society</td></tr></table> <p>and any three modules from the following list. Some of these modules require prerequisites from outside this list. Students must have the prerequisites to take them. 6 modules (i.e. IT2001, IS3230, IS3241, IS3243, IS3101 and IS3222) will be discontinued from AY2017-18 onwards. Students may use the newly introduced electives to meet the minor requirements:</p> <table><tr><th>CODE</th><th>TITLE</th></tr><tr><td>CS2107</td><td>Introduction to Information Security ^[new]</td></tr><tr><td>IT2001</td><td>Network Technology and Management* ^[discontinued from AY2017-18]</td></tr><tr><td>IS3101</td><td>Management of Information Systems ^[discontinued from AY2017-18]</td></tr></table>			Set A		Set B	CODE AND TITLE		CODE AND TITLE	IT1001 Introduction to Computing		CS1010 /E/FC/S/X Programming Methodology	IT1002 Introduction to Programming * or IS1103/FC/X IS Innovations in Organisations and Society (old title: Computing and Society [#])	or	CS1020/E Data Structures and Algorithms I	IS1105 Strategic IT Applications@		IS1105 Strategic IT Applications@ or IS1103/X IS Innovations in Organisations and Society	CODE	TITLE	CS2107	Introduction to Information Security ^[new]	IT2001	Network Technology and Management* ^[discontinued from AY2017-18]	IS3101	Management of Information Systems ^[discontinued from AY2017-18]
Set A		Set B																										
CODE AND TITLE		CODE AND TITLE																										
IT1001 Introduction to Computing		CS1010 /E/FC/S/X Programming Methodology																										
IT1002 Introduction to Programming * or IS1103/FC/X IS Innovations in Organisations and Society (old title: Computing and Society [#])	or	CS1020/E Data Structures and Algorithms I																										
IS1105 Strategic IT Applications@		IS1105 Strategic IT Applications@ or IS1103/X IS Innovations in Organisations and Society																										
CODE	TITLE																											
CS2107	Introduction to Information Security ^[new]																											
IT2001	Network Technology and Management* ^[discontinued from AY2017-18]																											
IS3101	Management of Information Systems ^[discontinued from AY2017-18]																											

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>IS3103 Information Systems Leadership and Communication ^[new]</p> <p>IS3150 Digital and New Media Marketing ^[new]</p> <p>IS3221 Enterprise Resource Planning Systems</p> <p>IS3222 IT and Customer Relationship Management ^[discontinued from AY2017-18]</p> <p>IS3230 Principles of Information Security ^[discontinued from AY2017-18]</p> <p>IS3240 Economics of E-Business</p> <p>IS3241 Enterprise Social Systems ^[discontinued from AY2017-18]</p> <p>IS3243 Technology Strategy and Management ^[discontinued from AY2017-18]</p> <p>IS3251 Principles of Technopreneurship ^[new]</p> <p>IS4204 IT Governance ^[new]</p> <p>IS4261 Designing IT-enabled Business Innovations ^[new]</p> <p>#: With effect from AY2017-18, IS1103 Computing and Society will be revised to IS1103 IS Innovations in Organisations and Society.</p> <p>@: With effect from AY2017-18, minor in IS students reading set B and have not taken IS1105 can take IS1103 IS Innovations in Organisations and Society as the substitute. Minor in IS students reading set A should clear their IS1105 within AY2017-18.</p> <p>*: Engineering students (Course codes: EEE%, CPE% and ENG1) are precluded from reading IT2001.</p>
12.	13 Sep 2017	FASS	<p>FASS Psychology 2015 and 2016</p> <p>2016 (pg 99): http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FASS.pdf</p> <p>Minor</p>

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>Pass at least 24 MCs of PL modules, which include the following:</p> <ol style="list-style-type: none"> 1. PL1101E Introduction to Psychology 2. PL2131 Research and Statistical Methods I 3. A minimum of 16 MCs from the following: <ul style="list-style-type: none"> PL3232 Biological Psychology PL3233 Cognitive Psychology PL3234 Developmental Psychology PL3235 Social Psychology PL3236 Abnormal Psychology <p>Note 1: A maximum of 8 MCs from the minor can be used to satisfy the requirements of a major or another minor. However, the credits for these modules will be counted ONCE. FASS students will still need to fulfil the MCs required for the UE outside major requirements.</p> <p>Note 2: GEMs that are within the basket of modules offered by the Minor can now be used to fulfil both the minor and GEM requirements.</p> <p>Note 2: Students could not use modules in their Major requirements to double-count for any of the PL modules in the Minor basket.</p>
13.	20 Oct 2017	SoC	<p>3.2.11 Bachelor of Computing in Information Systems http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_SoC.pdf Page 51</p> <p><u>Update 1:</u> Please insert footnote 2a to ST2334 in Table 6: 2a For students taking Second Major in Statistics, they can replace ST2334 with ST2131 to meet first major requirement. For students taking the Second Major in Mathematics, they can replace ST2334 with both ST2131 and ST2132 to meet first major requirement. The MCs for ST2132 come from UE. For students taking the minor in Mathematics, they can replace ST2334 with ST2131 and take ST2132 as an unrestrictive elective to meet first major requirement.</p> <p>3.2.12 Bachelor of Science in Business Analytics http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_SoC.pdf Page 56</p> <p><u>Update 1:</u> Please amend the Table 7 as follows with changes in red texts:</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			Table 7: Summary of degree requirements for Bachelor of Science (Business Analytics) For cohort 2016, the limit on level-1000 modules will be capped at 64 MCs.		
			Modules	MCs	Sub totals
			UNIVERSITY LEVEL REQUIREMENTS Please refer to Section 3.2.1		20
			PROGRAMME REQUIREMENTS		120
			Core Modules	84	
			ACC1002X Financial Accounting or ACC1701X Accounting for Decision Makers	4	
			BT1101 Introduction to Business Analytics	4	
			CS1010S Programming Methodology	4	
			CS1020 Data Structures and Algorithms I	4	
			EC1301 Principles of Economics ¹	4	
			IS1103/X IS Innovations in Organisations and Society ^[revised]	4	
			IS1105 Strategic IT Applications or IS3103 Information Systems Leadership and Communication	4	
			MA1311 Matrix Algebra and Applications, or MA1101R Linear Algebra I ²	4	

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			MA1521 Calculus for Computing, or MA1102R Calculus ²	4	
			MKT1003X Marketing or MKT1705X Principles of Marketing	4	
			BT2101 Decision Making Methods and Tools	4	
			BT2102 Data Management and Visualisation	4	
			CS2010 Data Structures and Algorithms II	4	
			ES2660 Communicating in the Information Age	4	
			IE2110 Operations Research I ³ , or DSC3214/ DSN DBA3701 Introduction To Optimisation	4	
			IS2101 Business and Technical Communication ⁴	4	
			ST2334 Probability and Statistics ⁵	4	
			BT3101 Business Analytics Capstone Project	4	
			BT3102 Computational Methods for Business Analytics	4	
			BT3103 Application Systems Development for Business Analytics	4	
			ST3131 Regression Analysis or BT4240 Machine Learning for Predictive Data Analytics ^{5a}	4	
			Programme Electives (PE)	24	
			<u>Option 1:</u>	All modules are 4MCs modules,	

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			<p>Choose 6 modules to make up 24 MCs from Lists A, B and C, with at least 2 modules each from Lists A and B. 5 of 6 modules must be at level-4000.</p> <p><u>Option 2:</u></p> <p>Choose BT4101 and 3 modules to make up 24 MCs from Lists A, B and C, with at least 1 module each from Lists A and B. 2 of 3 modules must be at level-4000.</p> <p>BT4101 B.Sc. Dissertation</p> <p><u>List A (Business Applications):</u> DSC3224/DSNDBA3712 Dynamic Pricing and Revenue Management IE3120 Manufacturing Logistics IS3240 Economics of E-Business BT4211 Data-Driven Marketing BT4212 Search Engine Optimization and Analytics DSC4213/DSNDBA3701 Analytical Tools for Consulting IS4250 Healthcare Analytics either MKT4415C Seminars in Marketing: Applied Market Research or MKT4420 Marketing Analytics</p> <p><u>List B (Analytics Methods):</u> ^{5a} CS3244 Machine Learning either DSC3216 Forecasting for Managerial Decisions or DSNDBA3803 Predictive Analytics in Business either BSP4513 Econometrics: Theory & Practical Business Application or BSE4711 Econometrics for Business II</p> <p>BT4221 Big Data Techniques and Technologies BT4222 Mining Web Data for Business Insights IS4241 Social Media Network Analysis IE4210 Operations Research II</p>	except BT4101 (12 MCs)	

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			<p>ST4240 Data Mining (discontinued in AY2018-19)</p> <p>ST4245 Statistical Methods for Finance</p> <p>List C (Technology Implementation):</p> <p>IS3221 Enterprise Resource Planning Systems</p> <p>IS3261 Mobile Solutions Design and Development</p> <p>IS4228 Information Technologies in Financial Services</p> <p>IS4302 Blockchain and Distributed Ledger Technologies</p>		
			IS4010 Industry Internship Programme ⁶	12	
			UNRESTRICTED ELECTIVES		20
			Grand Total		160
			<p>Notes:</p> <p>¹: Students have done EC1101E Introduction to Economic Analysis can use it to replace EC1301.</p> <p>²: Students are encouraged to take these MA module options should they wish to pursue a more rigorous treatment of the subject topics covered.</p> <p>³: Students are encouraged to take IE2110 should they wish to choose IE4210 as an elective module.</p> <p>⁴: Taught by the Centre for English Language Communication.</p> <p>⁵: Students who are pursuing either Second Major in Mathematics or Second Major in Statistics can replace ST2334 with ST2131 and ST2132. The additional 4 MCs will be taken from the Unrestricted Elective space. For students taking Second Major in Statistics, they can replace ST2334 with ST2131 to meet first major requirement. For students taking the Second Major in Mathematics, they can replace ST2334 with both ST2131 and ST2132 to meet first major requirement. The MCs for ST2132 come from Unrestricted Electives. For students taking the minor in Mathematics, they can replace ST2334 with ST2131 and take ST2132 as an unrestricted elective to meet first major requirement.</p>		

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>^{5a:} (i) Business analytics students who are doing or contemplating to do minor/second major requiring ST3131 such as Statistics need to do BT4240 rather than ST3131 as part of the core module requirement of the first major degree. (ii) Business analytics students who are not doing minor/second major requiring ST3131 such as Statistics can choose to do either BT4240 or ST3131. If these students do both modules, then BT4240 can be treated as a core module while ST3131 can be an elective module under List B. (iii) Business analytics students who have taken ST3131 and not taking minor/second major requiring ST3131 such as Statistics, they can take BT4240 as an elective module under List B.</p> <p>^{6:} Students can choose to take on any current 12 MCs or more internship-related programmes within the School of Computing (e.g., CP3880 Advanced Technology Attachment Programme (ATAP)) and/or within NUS (e.g., Innovative Local Enterprise Achiever Development (iLEAD) and NUS Overseas College (NOC)) in place of IS4010 Industry Internship Programme to satisfy the industry experience requirement.</p>
14.	29 Nov 2017	FoS	<p>Changes to the Requirements for the Minor in Physics Programme have been approved via BUS Circular 8 of AY2017/18 (for Bulletins AY2017/18, AY2016/17, AY2015/16, AY2014/15, AY2013/14):</p> <p><u>AY2016/17 Bulletin - Under 3.4.3.14 Minor in Physics</u> http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf , pg 161 to 162), the changes are as follows:</p> <p>To be awarded a minor in Physics, a student must pass the following six modules:</p> <ol style="list-style-type: none"> Any <u>one</u> from the following: <ul style="list-style-type: none"> PC1141 Introduction to Classical Mechanics PC1142 Introduction to Thermodynamics and Optics PC1143 Introduction to Electricity & Magnetism PC1431 Physics IE or PC1431X Physics IE Any <u>one</u> from the following: <ul style="list-style-type: none"> PC1144 Introduction to Modern Physics PC1432/PC1432X Physics IIE PC2232 Physics for Electrical Engineers Any <u>four</u> modules from the following of which at least two modules must be Level-3000 & above: <ul style="list-style-type: none"> PC2130 Quantum Mechanics I PC2131 Electricity and Magnetism I PC2132 Classical Mechanics

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<ul style="list-style-type: none"> ○ PC2134 Mathematical Methods in Physics I ○ PC2230 Thermodynamics and Statistical Mechanics ○ PC2193 Experimental Physics I ○ PC3130 Quantum Mechanics II ○ PC3193 Experimental Physics II ○ ALL PC32XX and PC42XX modules ○ PC3231 Electricity and Magnetism II ○ PC3232 Nuclear and Particle Physics ○ PC3233 Atomic and Molecular Physics I ○ PC3235 Solid State Physics I ○ PC3236 Computational Methods in Physics ○ PC3238 Fluid Dynamics ○ PC3243 Photonics ○ PC3246 Astrophysics I ○ PC3247 Modern Optics ○ PC3251 Nanophysics ○ PC3274 Mathematical Methods in Physics II ○ PC4130 Quantum Mechanics III ○ PC4236 Computational Condensed Matter Physics ○ PC4240 Solid State Physics II ○ PC4241 Statistical Mechanics ○ PC4242 Electrodynamics ○ PC4243 Atomic and Molecular Physics II ○ PC4245 Particle Physics ○ PC4246 Quantum Optics ○ PC4248 General Relativity ○ PC4249 Astrophysics II ○ PC4274 Mathematical Methods in Physics III ○ PC4259 Surface Physics ○ PC4262 Remote Sensing <p>This minor is <u>not</u> awarded with a primary major in Physics or Physics (with specialisation in Astrophysics or Nanophysics) and second major in Physics.</p>
15.	29 Nov 2017	FoS	Changes to the Data Analytics Second Major Requirements were approved via BUS Circular 8 of AY2017/18 (For Bulletins AY2017/18 and AY2016/17):

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)														
			<p><u>AY2016/17 Bulletin</u></p> <p>Under 3.4.2.2 Second Major in Data Analytics (http://www.nus.edu.sg/registrar/info/nusbuletin/AY201617_FoS.pdf , pg 129 to 131), kindly note the following changes:</p> <p>Host Department: Statistics</p> <p>To be awarded a B.Sc. with a second major in Data Analytics, candidates must satisfy the following:</p> <table><tr><th>Levels</th><th>Second Major Requirements</th><th>Cumulative Major MCs</th></tr><tr><td>Level 1000 (16 MCs)</td><td>Pass - CS1010/CS1010E/CS1010J/CS1010S/CS1010X Programming Methodology - CS1020/CS1020E Data Structures and Algorithms I - One of the following modules: + MA1101R Linear Algebra I + MA1311 Matrix Algebra + MA1506 Mathematics II + MA1508 Linear Algebra with Applications - One of the following modules: + MA1102R Calculus + MA1312 Calculus with Applications + MA1505 Mathematics I + MA1507 Advanced Calculus + MA1521 Calculus for Computing</td><td>16</td></tr><tr><td>Level 2000 (16 MCs)</td><td>Pass - CS2010 Data Structures and Algorithms II - ST2131/MA2216 Probability - ST2132 Mathematical Statistics - One of the following modules: + DSA2101 Essential Data Analytics Tools: Data Visualisation + DSA2102 Essential Data Analytics Tools: Numerical Computation</td><td>32</td></tr><tr><td>Levels 3000 and 4000</td><td>Pass - ST3131 Regression Analysis</td><td>48</td></tr></table>			Levels	Second Major Requirements	Cumulative Major MCs	Level 1000 (16 MCs)	Pass - CS1010/CS1010E/ CS1010J /CS1010S/CS1010X Programming Methodology - CS1020/CS1020E Data Structures and Algorithms I - One of the following modules: + MA1101R Linear Algebra I + MA1311 Matrix Algebra + MA1506 Mathematics II + MA1508 Linear Algebra with Applications - One of the following modules: + MA1102R Calculus + MA1312 Calculus with Applications + MA1505 Mathematics I + MA1507 Advanced Calculus + MA1521 Calculus for Computing	16	Level 2000 (16 MCs)	Pass - CS2010 Data Structures and Algorithms II - ST2131/MA2216 Probability - ST2132 Mathematical Statistics - One of the following modules: + DSA2101 Essential Data Analytics Tools: Data Visualisation + DSA2102 Essential Data Analytics Tools: Numerical Computation	32	Levels 3000 and 4000	Pass - ST3131 Regression Analysis	48
Levels	Second Major Requirements	Cumulative Major MCs															
Level 1000 (16 MCs)	Pass - CS1010/CS1010E/ CS1010J /CS1010S/CS1010X Programming Methodology - CS1020/CS1020E Data Structures and Algorithms I - One of the following modules: + MA1101R Linear Algebra I + MA1311 Matrix Algebra + MA1506 Mathematics II + MA1508 Linear Algebra with Applications - One of the following modules: + MA1102R Calculus + MA1312 Calculus with Applications + MA1505 Mathematics I + MA1507 Advanced Calculus + MA1521 Calculus for Computing	16															
Level 2000 (16 MCs)	Pass - CS2010 Data Structures and Algorithms II - ST2131/MA2216 Probability - ST2132 Mathematical Statistics - One of the following modules: + DSA2101 Essential Data Analytics Tools: Data Visualisation + DSA2102 Essential Data Analytics Tools: Numerical Computation	32															
Levels 3000 and 4000	Pass - ST3131 Regression Analysis	48															

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)	
			<div> <div>(16 MCs)</div> <div> <ul style="list-style-type: none"> - One of the following modules: <ul style="list-style-type: none"> + DSA3102 Essential Data Analytics Tools: Convex Optimisation* + DSC3214 Introduction to Optimisation + MA3236 Nonlinear Programming* + MA3252 Linear and Network Optimisation - One module from List I - One other module from List I or List II </div> </div>	
			<p>List I[^] DSA4211 High-Dimensional Statistical Analysis DSA4212 Optimisation for Large-Scale Data-Driven Inference*</p> <p>List II CS3244 Machine Learning ST3240 Multivariate Statistical Analysis ST3247 Simulation ST3248 Statistical Learning I ST4240 Data Mining ST4248 Statistical Learning II</p> <p>* Students may need to read additional modules outside the second major requirements to satisfy the pre-requisites of these modules.</p> <p>[^] (1) As part of the Data Science and Analytics programme, FoS is planning to co-develop modules on data analytics for functional areas such as business, healthcare and public policy making with other Faculties/Schools. These modules will be coded as DSA modules and added to List I. (2) Students who participate in credit-bearing full-time internships/industrial attachments/professional placements as part of their degree requirements may be approved to double-count up to 8 MCs into List I if their internships/industrial attachments/professional placements have substantial data-analytics content, provided the limit of 16 MCs of double-counting in primary and second major requirements is not exceeded.</p> <p>This second major is <u>not</u> offered with the following primary majors and minors: Primary Majors: Applied Mathematics, Computational Biology, Data Science and Analytics, Mathematics, Quantitative Finance, Statistics. Minors: Financial Mathematics, Mathematics, Statistics.</p>	

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)														
16.	29 Nov 2017	FoS	<p>Changes to the Statistics Second Major and Minor requirements were approved via BUS Circular 8 of AY2017/18 (for Bulletins AY2017/18, AY2016/17, AY2015/16 and AY2014/15):</p> <p><u>AY2016/17 Bulletin</u></p> <p>Under 3.4.2.6 Second Major in Statistics (http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf, pg 139 to 140), changes are as follows:</p> <p>To be awarded a second major in Statistics, candidates must satisfy the following:</p> <table><tr><th>Levels</th><th>Major Requirements</th><th>Cumulative Major MCs</th></tr><tr><td>Level 1000 (16 17 MCs)</td><td>Pass - ST1131 Introduction to Statistics <i>or</i> ST1232 Statistics for Life Sciences - MA1101R Linear Algebra I <i>or</i> MA1506 Mathematics II <i>or</i> MA1508 Linear Algebra with Applications - MA1102R Calculus <i>or</i> MA1505 Mathematics I <i>or</i> MA1507 Advanced Calculus <i>or</i> MA1521 Calculus for Computing - CS1010/CS1010E/CS1010J/CS1010S/CS1010X Programming Methodology</td><td>16</td></tr><tr><td>Level 2000 (16 17 MCs)</td><td>Pass - ST2131/MA2216 Probability - ST2132 Mathematical Statistics - ST2137 Computer Aided Data Analysis - MA2311 Techniques in Advanced Calculus <i>or</i> MA2104 Multivariable Calculus <i>or</i> MA2108 Mathematical Analysis I <i>or</i> MA2108S Mathematical Analysis I (S)</td><td>32–33</td></tr><tr><td>Levels 3000 and 4000 (16 MCs)</td><td>Pass - ST3131 Regression Analysis - Three other modules from ST32xx (except ST328x) or ST4xxx modules</td><td>48–49</td></tr></table>			Levels	Major Requirements	Cumulative Major MCs	Level 1000 (16 17 MCs)	Pass - ST1131 Introduction to Statistics <i>or</i> ST1232 Statistics for Life Sciences - MA1101R Linear Algebra I <i>or</i> MA1506 Mathematics II <i>or</i> MA1508 Linear Algebra with Applications - MA1102R Calculus <i>or</i> MA1505 Mathematics I <i>or</i> MA1507 Advanced Calculus <i>or</i> MA1521 Calculus for Computing - CS1010/CS1010E/ CS1010J /CS1010S/CS1010X Programming Methodology	16	Level 2000 (16 17 MCs)	Pass - ST2131/MA2216 Probability - ST2132 Mathematical Statistics - ST2137 Computer Aided Data Analysis - MA2311 Techniques in Advanced Calculus <i>or</i> MA2104 Multivariable Calculus <i>or</i> MA2108 Mathematical Analysis I <i>or</i> MA2108S Mathematical Analysis I (S)	32–33	Levels 3000 and 4000 (16 MCs)	Pass - ST3131 Regression Analysis - Three other modules from ST32xx (except ST328x) or ST4xxx modules	48–49
Levels	Major Requirements	Cumulative Major MCs															
Level 1000 (16 17 MCs)	Pass - ST1131 Introduction to Statistics <i>or</i> ST1232 Statistics for Life Sciences - MA1101R Linear Algebra I <i>or</i> MA1506 Mathematics II <i>or</i> MA1508 Linear Algebra with Applications - MA1102R Calculus <i>or</i> MA1505 Mathematics I <i>or</i> MA1507 Advanced Calculus <i>or</i> MA1521 Calculus for Computing - CS1010/CS1010E/ CS1010J /CS1010S/CS1010X Programming Methodology	16															
Level 2000 (16 17 MCs)	Pass - ST2131/MA2216 Probability - ST2132 Mathematical Statistics - ST2137 Computer Aided Data Analysis - MA2311 Techniques in Advanced Calculus <i>or</i> MA2104 Multivariable Calculus <i>or</i> MA2108 Mathematical Analysis I <i>or</i> MA2108S Mathematical Analysis I (S)	32–33															
Levels 3000 and 4000 (16 MCs)	Pass - ST3131 Regression Analysis - Three other modules from ST32xx (except ST328x) or ST4xxx modules	48–49															

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>This second major is <u>not</u> offered with a primary major in Statistics or Data Science and Analytics, and a minor in Statistics.</p> <p>Students reading a primary major in Applied Mathematics/Mathematics/Quantitative Finance with a second major in Statistics should refer to the FAQ at https://www.stat.nus.edu.sg/index.php/current-students/undergraduate-programme/faq http://www.stat.nus.edu.sg/opencms/currentstudents/cs_ugradfaq.html#course.</p> <p>(For Bulletin AY2017/18 and AY2016/17)</p> <p><u>AY2016/17 Bulletin</u></p> <p>Under 3.4.3.15 Minor in Statistics (http://www.nus.edu.sg/registrar/info/nusbuletin/AY201617_FoS.pdf , pg 163), the changes are as follows:</p> <p>This minor is not awarded with a primary major in Statistics, Statistics with specialisation in Biostatistics Data Science, Statistics with specialisation in Finance and Business Statistics, or Data Science and Analytics, and second major in Data Analytics or Statistics.</p>
17.	18 Dec 2017	FoS	<p>Revision to the Requirements for the Minor Programme in Aquatic Ecology was approved via BUS Circular 9 of AY2017/18.</p> <p>AY2016/17 Bulletin – Under 3.4.3.2 Minor in Aquatic Ecology (http://www.nus.edu.sg/registrar/info/nusbuletin/AY201617_FoS.pdf , pg 144), please note the following changes:</p> <p>To be awarded a minor in Aquatic Ecology, a student must pass the six modules as set out below:</p> <ol style="list-style-type: none"> 1. LSM1103 Biodiversity 1. LSM2251 Ecology and Environment 2. LSM3254 Ecology of Aquatic Environments 3. GE2229 Water and Environment 4. SP3203 Aquatic Ecology Research 5. Choose 2 from the following elective modules: [For students reading Life Sciences Major, please select at least one non-LSM prefixed module.]

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<ul style="list-style-type: none"> ○ GE2215 Introduction to GIS and Remote Sensing ○ GE2220 Terrestrial and Coastal Environments ○ GE2228 Weather and Climate ○ GE3216 Applications of GIS & Remote Sensing ○ GE3221 Ecological Systems ○ GE3223 Environmental Change in the Tropics ○ GEK1548 How the Ocean Works ○ LSM2253 Applied Data Analysis in Ecology and Evolution ○ LSM2252 Biodiversity ○ LSM4257 Aquatic Vertebrate Diversity ○ LSM3254 Ecology of Aquatic Environments ○ LSM3264 Environmental Biochemistry ○ LSM4261 Marine Biology ○ LSM4264 Freshwater Biology ○ LSM4266 Topics in Aquatic Biodiversity <p><u>This Minor is not awarded with a Bachelor of Environmental Studies (BES) degree from Cohort AY2016/17 and onwards.</u></p>
18.	18 Dec 2017	FoS	<p>Arising from the recent revamp of engineering mathematics curriculum, the Department of Mathematics has introduced four new modules MA1511 (2 MCs), MA1512 (2 MCs), MA1513 (2 MCs) and MA1508E (4 MCs) to be offered from AY2017/18, for which students in different engineering departments will take prescribed combinations to suit their need. To allow flexibility for students from the Faculty of Engineering and other schools and faculties to take a Minor in Financial Mathematics, it is necessary to rephrase relevant parts of the requirements of this minor programme, which have been approved via BUS Circular 9 of AY2017/18 (<i>Changes for AY2017/18 to AY2013/14</i>).</p> <p><u>AY2016/17 Bulletin – Under 3.4.3.5 Minor in Financial Mathematics (Bulletin Updates http://www.nus.edu.sg/registrar/info/nusbulletin/Bulletin-Updates-AY1617.pdf , 9. Changes to Minor in Financial Mathematics, dated 30 Aug 2017))</u>, kindly note the following changes:</p> <p>To be awarded a minor in Financial Mathematics, a student must pass the following six modules at least 24 MC's from non-overlapping modules of the following type:</p> <ol style="list-style-type: none"> 1. (MA1102R or MA1505 or MA1507 or MA1521) and (MA1104 or MA2104 or MA1506 or MA1508 or MA1508E); and Pass at least 8 MCs from MA1xxx, except MA1301/MA1301X; and

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>2. Pass MA2216/ST2131 or ST2334; and</p> <p>3. Pass MA3269 and (QF3101 or FIN3102 [for BIZ students] or FIN3702 [for BIZ students]) ; and ST3131</p> <p>Titles of the above modules are as listed below:</p> <p>MA1102R—Calculus MA1104—Multivariable Calculus MA2104 (wef Sem 2 AY2017/18)—Multivariable Calculus MA1505—Mathematics I MA1506—Mathematics II MA1507—Advanced Calculus MA1508—Linear Algebra with Applications MA1508E—Linear Algebra for Engineering MA1521—Calculus for Computing MA2216/ST2131 Probability MA3269 Mathematical Finance I QF3101 Investment Instruments: Theory and Computation FIN3102 Investment Analysis and Portfolio Management FIN3702* Investment Analysis and Portfolio Management ST2334 Probability and Statistics ST3131 Regression Analysis</p> <p>*School of Business has amended the module code of FIN3102 to FIN3702 for cohort AY2017 and after.</p> <p>This minor is <u>not</u> awarded with the primary major in Applied Mathematics, Quantitative Finance, Mathematics, Data Science and Analytics, and second major in Mathematics, Data Analytics.</p>
19.	18 Dec 2017	FoS	<p>Arising from the recent revamp of engineering mathematics curriculum, Department of Mathematics has introduced four new modules MA1511 (2 MCs), MA1512 (2 MCs), MA1513 (2 MCs) and MA1508E (4 MCs) to be offered from AY2017/18, for which students in different engineering departments will take prescribed combinations to suit their need. To allow flexibility students from the Faculty of Engineering and other schools and faculties to take a Minor in Mathematics, it is necessary to rephrase relevant parts of the requirements of this minor programme, which have been approved via BUS Circular 9 of AY2017/18.</p> <p><u>AY2016/17 Bulletin</u></p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>Under 3.4.3.9 Minor in Mathematics (http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf , pg 153), kindly note the following amendments:</p> <p>To qualify for a minor in Mathematics, a student should pass six at least 24 MC's from non-overlapping modules of the following type:</p> <ol style="list-style-type: none"> 1. Any two of Pass at least 8 MC's from the following modules: <ol style="list-style-type: none"> a. MA1xxx modules except MA1301/MA1301X, or b. CS1231 2. Any two MA2xxx modules 3. Any two MA3xxx or higher modules, excluding MA3311 and MA3312 <p>Note that these ST and MA modules are crosslisted: ST2131 with MA2216, ST3236 with MA3238, and ST4238 with MA4251.</p> <p>This minor is <u>not</u> awarded with the primary major in Mathematics, Applied Mathematics, Quantitative Finance, Mathematics, Data Science and Analytics, and second major in Mathematics or Financial Mathematics or Data Analytics.</p>
20.	20 Dec 2017	FoS	<p>LSM2254 Fundamentals of Plant Biology, meant for cohort AY2015/16 and onwards, to fulfil the role of a LSM22xx elective for the completion of Life Sciences Major requirements, has been approved via BUS Circular 9 of AY2017/18 (from AY2015/16 to AY2017/18). The amendments are as follows:</p> <p><u>Under AY2016/17 Bulletin</u> – Under 3.3.3.5 Life Sciences (http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf , pg 85 – 91)</p> <p>Add LSM2254 Fundamentals of Plant Biology as a LSM22xx elective under the Level 2000 requirements in the table of requirements under:</p> <ol style="list-style-type: none"> a) To be awarded a B.Sc. with a primary major in Life Sciences. b) To be awarded a B.Sc. (Hons.) with a primary major in Life Sciences or Life Sciences (with specialisation in Biomedical Science, Molecular and Cell Biology or Environmental Biology).
21.	20 Dec 2017	FoS	<p>Arising from the recent revamp of the Engineering Mathematics curriculum, the Department of Mathematics has introduced four new modules MA1511 Engineering Calculus (2 MCs), MA1512 Differential Equations for Engineering (2 MCs), MA1513 Linear Algebra with Differential Equations (2 MCs) and MA1508E Linear Algebra</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)														
			<p>for Engineering (4 MCs) to be offered from AY2017/18, for which students in different engineering departments will take prescribed combinations to suit their need. To allow flexibility for students from the Faculty of Engineering and other schools and faculties to take a Second Major in Mathematics, it is necessary to revise the relevant parts of the requirements of the programme.</p> <p><u>AY2016/17 Bulletin</u> Under 3.4.2.4 Second Major in Mathematics (http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf , pg 134 – 136; and Bulletin Updates http://www.nus.edu.sg/registrar/info/nusbulletin/Bulletin-Updates-AY1617.pdf , No. 4, Update dated 23 Aug 2017), kindly note the following changes:</p> <p>To be awarded a second major in Mathematics, candidates must satisfy at least 48 MCs from non-overlapping modules of the following:</p>														
			<table><tr><th>Module Level</th><th>2nd Major Requirements</th><th>Cumulative Major MCs</th></tr><tr><td>1000 (16 -18 MCs)</td><td>Pass<ul style="list-style-type: none">MA1100 Fundamental Concepts of Mathematics or CS1231 Discrete StructuresMA1101R Linear Algebra I or MA1506 Mathematics II or MA1508 Linear Algebra with Applications or MA1508E Linear Algebra for Engineering or (MA1513 Linear Algebra with Differential Equations and one additional module from List II)MA1102R Calculus or MA1505 Mathematics I or MA1507 Advanced Calculus or MA1521 Calculus for Computing or (MA1511 Engineering Calculus and MA1512 Differential Equations for Engineering)MA1104 / MA2104 Multivariable Calculus or MA2501 Differential Equations and Systems</td><td>16 -18</td></tr><tr><td>2000 (16-19 MCs)</td><td>Pass<ul style="list-style-type: none">MA2101/MA2101S Linear Algebra IIMA2108/MA2108S Mathematical Analysis IMA2216/ST2131 ProbabilityOne additional module from List II, III, IV</td><td>32-37</td></tr><tr><td>3000</td><td>Pass</td><td>48-56</td></tr></table>	Module Level	2nd Major Requirements	Cumulative Major MCs	1000 (16 -18 MCs)	Pass <ul style="list-style-type: none">MA1100 Fundamental Concepts of Mathematics or CS1231 Discrete StructuresMA1101R Linear Algebra I or MA1506 Mathematics II or MA1508 Linear Algebra with Applications or MA1508E Linear Algebra for Engineering or (MA1513 Linear Algebra with Differential Equations and one additional module from List II)MA1102R Calculus or MA1505 Mathematics I or MA1507 Advanced Calculus or MA1521 Calculus for Computing or (MA1511 Engineering Calculus and MA1512 Differential Equations for Engineering)MA1104 / MA2104 Multivariable Calculus or MA2501 Differential Equations and Systems	16 -18	2000 (16-19 MCs)	Pass <ul style="list-style-type: none">MA2101/MA2101S Linear Algebra IIMA2108/MA2108S Mathematical Analysis IMA2216/ST2131 ProbabilityOne additional module from List II, III, IV	32-37	3000	Pass	48-56		
Module Level	2nd Major Requirements	Cumulative Major MCs															
1000 (16 -18 MCs)	Pass <ul style="list-style-type: none">MA1100 Fundamental Concepts of Mathematics or CS1231 Discrete StructuresMA1101R Linear Algebra I or MA1506 Mathematics II or MA1508 Linear Algebra with Applications or MA1508E Linear Algebra for Engineering or (MA1513 Linear Algebra with Differential Equations and one additional module from List II)MA1102R Calculus or MA1505 Mathematics I or MA1507 Advanced Calculus or MA1521 Calculus for Computing or (MA1511 Engineering Calculus and MA1512 Differential Equations for Engineering)MA1104 / MA2104 Multivariable Calculus or MA2501 Differential Equations and Systems	16 -18															
2000 (16-19 MCs)	Pass <ul style="list-style-type: none">MA2101/MA2101S Linear Algebra IIMA2108/MA2108S Mathematical Analysis IMA2216/ST2131 ProbabilityOne additional module from List II, III, IV	32-37															
3000	Pass	48-56															

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			(16-19 MCs)	<ul style="list-style-type: none"> MA3110/MA3110S Mathematical Analysis II MA3111/MA3111S Complex Analysis I Two additional modules from List III, IV 	
			List II <ul style="list-style-type: none"> All MA modules at level 2000, except those coded MA23XX PC2130 Quantum Mechanics I PC2132 Classical Mechanics ST2132 Mathematical Statistics EC2101 Microeconomic Analysis I 		
			List III <ul style="list-style-type: none"> All MA modules at level 3000, except MA3311 and MA3312 BSE3703 Econometrics for Business I CS3230 Design & Analysis of Algorithms CS3234 Logic and Formal Systems DSA3102 Essential Data Analytics Tools: Convex Optimisation EC3101 Microeconomic Analysis II EC3303 Econometrics I PC3130 Quantum Mechanics II PC3236 Computational Methods in Physics PC3238 Fluid Dynamics ST3131 Regression Analysis ST3236 Stochastic Processes I 		
			List IV <ul style="list-style-type: none"> All MA modules at level 4000 or higher CS4232 Theory of Computation CS4234 Optimisation Algorithms CS4236 Cryptography Theory and Practice CS5230 Computational Complexity CS5237 Computational Geometry and Applications 		

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)						
			<div><ul style="list-style-type: none">• DSA4211 High-Dimensional Statistical Analysis• DSA4212 Optimisation for Large-Scale Data-Driven Inference• EC4101 / EC4301 Microeconomic Analysis III• EC5104 /EC5104R Mathematical Economics• PC4248 Relativity• PC4274 Mathematical Methods in Physics III• ST4238 Stochastic Processes II• ST4245 Statistical Methods for Finance</div>						
22.	14 Feb 2018	FoS	<p>The FST proposal to increase the MCs of FST3181 from 8 to 12MCs, of which 4MC would fulfil Faculty requirements, and 8MC would go towards UE, for cohorts AY2015/16 and after, has been approved via BUS Circular 10 of AY2017/18.</p> <p>The FoS Faculty Requirements with respect to FST majors from AY2015/16 cohort and after, and the information from the “Summary of Requirements” for the B.Sc./B.Sc. (Hons.) Programme Requirements for FST majors, need to be amended.</p> <p>The amendments are as follows:</p> <p>AY2016/17 Bulletin</p> <p>a) Under 3.3.1.6 Faculty Requirements (http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf , pg 44), kindly note the following amendments:</p> <p>Table 1: Table of Faculty Requirements for various Programmes</p> <table><tr><th>Programme</th><th>Faculty Requirements</th></tr><tr><td>B.Sc. (for Food Science and Technology major, there is a separate set of requirements – refer below to B.Sc. (For FST major)</td><td>12 MCs from three distinct subject groups outside the group(s) under which the major falls.</td></tr><tr><td>B.Sc.(Hons.)</td><td>16 MCs from at least three distinct subject groups outside the group(s) under which the major falls (where 4 MCs may come from</td></tr></table>	Programme	Faculty Requirements	B.Sc. (for Food Science and Technology major, there is a separate set of requirements – refer below to B.Sc. (For FST major)	12 MCs from three distinct subject groups outside the group(s) under which the major falls.	B.Sc.(Hons.)	16 MCs from at least three distinct subject groups outside the group(s) under which the major falls (where 4 MCs may come from
Programme	Faculty Requirements								
B.Sc. (for Food Science and Technology major, there is a separate set of requirements – refer below to B.Sc. (For FST major)	12 MCs from three distinct subject groups outside the group(s) under which the major falls.								
B.Sc.(Hons.)	16 MCs from at least three distinct subject groups outside the group(s) under which the major falls (where 4 MCs may come from								

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)																			
			(for Food Science and Technology major, there is a separate set of requirements – refer below to B.Sc.(Hons.) (For FST major)	the subject group under which the major falls, but not bearing the prefix of the major).																		
			B.Sc. (For FST major)	4 MCs from Professional Placement Programme, and 8 MCs from two distinct subject groups outside the subject group(s) under which the major falls. 8 MCs from Professional Placement Programme, and 8 MCs from two distinct subject groups outside the subject group(s) under which the major falls.																		
			B.Sc.(Hons.) (For FST major)	4 MCs from Professional Placement Programme, and 12 MCs from at least two distinct subject groups outside the group(s) under which the major falls (where 4 MCs may come from the subject group under which the major falls, but not bearing the prefix of the major.) 8 MCs from Professional Placement Programme, and 12 MCs from at least two distinct subject groups outside the group(s) under which the major falls (where 4 MCs may come from the subject group under which the major falls, but not bearing the prefix of the major).																		
			B.Sc. (Pharm.)/ B.Sc. (Pharm.) (Hons.)	Please refer to section 3.3.4																		
<p>b) Under 3.3.3.3 Food Science and Technology (http://www.nus.edu.sg/registrar/info/nusbuletin/AY201617_FoS.pdf, pg 80), kindly note the following amendments:</p>																						
<table><tr><th>Summary of Requirements</th><th>B.Sc. (FST)</th><th>B.Sc. Hons. (FST)</th></tr><tr><td>University Requirements</td><td>20 MCs</td><td>20 MCs</td></tr><tr><td>Faculty Requirements</td><td>8 12 MCs†</td><td>8 12 MCs ††</td></tr><tr><td>Major Requirements</td><td>68 MCs</td><td>100 MCs</td></tr><tr><td>Unrestricted Elective Modules</td><td>24 20 MCs†††</td><td>32 28 MCs†††</td></tr><tr><td>TOTAL</td><td>120 MCs</td><td>160 MCs</td></tr></table>					Summary of Requirements	B.Sc. (FST)	B.Sc. Hons. (FST)	University Requirements	20 MCs	20 MCs	Faculty Requirements	8 12 MCs†	8 12 MCs ††	Major Requirements	68 MCs	100 MCs	Unrestricted Elective Modules	24 20 MCs†††	32 28 MCs†††	TOTAL	120 MCs	160 MCs
Summary of Requirements	B.Sc. (FST)	B.Sc. Hons. (FST)																				
University Requirements	20 MCs	20 MCs																				
Faculty Requirements	8 12 MCs†	8 12 MCs ††																				
Major Requirements	68 MCs	100 MCs																				
Unrestricted Elective Modules	24 20 MCs†††	32 28 MCs†††																				
TOTAL	120 MCs	160 MCs																				

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)				
			<p>† 46 12 MCs of Faculty requirements are partially fulfilled through 4 MCs from ST1232 within the major. The remaining 42 8 MCs are fulfilled through (i) 8 4 MCs from FST3181 Professional Placement; and (ii) 4 MCs from any one of the following subject groups: Computing Sciences, Physical Sciences, Multidisciplinary & Interdisciplinary Sciences.</p> <p>†† 20 16 MCs of Faculty requirements are partially fulfilled through 8 MCs from ST1232 and CM/LSM modules within the major. The remaining 42 8 MCs are fulfilled through (i) 8 4 MCs from FST3181 Professional Placement; and (ii) 4 MCs from any one of the following subject groups: Computing Sciences, Physical Sciences, Multidisciplinary & Interdisciplinary Sciences.</p> <p>††† The remaining 8MCs from FST3181 (after fulfilling 4MCs of Faculty Requirements) would fulfil the Unrestricted Electives requirements.</p>				
23.	23 Feb 2018 16 Mar 2018	FoS	<p>The proposed changes to the requirements for the Minor in Physics Programme to take into account new module PC2020 Electromagnetism for Electrical Engineers, was approved via BUS Circular 12 of AY2017/18 (affects Bulletins 2015/16 to AY2017/18).</p> <p><u>AY2016/17 Bulletin</u> Under Bulletin Updates (http://www.nus.edu.sg/registrar/info/nusbulletin/Bulletin-Updates-AY1617.pdf , pg 414-416), the amendments are as follows:</p> <p>To replace the minor requirement: PC2232 Physics for Electrical Engineers with PC2232 Physics for Electrical Engineers for or PC2020 Electromagnetism for Electrical Engineers</p>				
24.	19 Apr 2018	FoE (MSE)	<p>URL: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoE.pdf In Section 3.2.9.2 Degree Requirements</p> <p>1. Change Table 3.2.9a and the remarks below it in Section 3.2.9.2 (pages 1–3) to</p> <p>Table 3.2.9a: Summary of MSE Module Requirements and Credits Research-focused Pathway</p> <table><tr><th>Modular Requirements</th><th>MCs</th></tr><tr><td>UNIVERSITY LEVEL REQUIREMENTS</td><td>20</td></tr></table>	Modular Requirements	MCs	UNIVERSITY LEVEL REQUIREMENTS	20
Modular Requirements	MCs						
UNIVERSITY LEVEL REQUIREMENTS	20						

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			General Education Modules (GE) (5 Modules, each of 4 MCs) Human Cultures (H&C) Quantitative Reasoning (QR) Thinking and Expression (T&E) Singapore Studies (SS) Asking Questinos (Q)	20	
			UNRESTRICTED ELECTIVES	20	
			Faculty Requirements:	11	
			EG2401 Engineering Professionalism	3	
			ES1531 Critical Thinking & Writing [1]	4	
			ES2331 Communicating Engineering [2]	4	
			ES1xxx English [3]	-	
			1st Year Requirements:	24	
			MA1506 Mathematics II	4	
			PC1432 Physics IIE [4]	4	
			CS1010E Programming Methodology	4	
			CM1501 Organic Chemistry for Engineers [5]	4	
			MLE1111 Foundations of Materials Science & Engineering I	4	
			MLE1112 Foundations of Materials Science & Engineering II	4	
			MSE Discipline Requirements:		
			MSE Core Modules [4]	27	
			MLE2101 Introduction to Structure of Materials	4	

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			MLE2102 Thermodynamics and Phase Diagrams	3	<p>[1] BEng students are required to read a Critical Thinking & Writing module (ES1531 Critical Thinking & Writing) and a Communications module (ES2331 Communicating Engineering). Alternatively, students can read ES1501X Academic Expository Writing in place of both ES1531 and ES2331. USP/UTRP/RVRC students should refer to their respective programmes for USP/UTRP/RVRC modules to be read in place of ES1531 and/or ES2331.</p> <p>[2] The relevant departments reserve the right to decide the modules to be offered in any given semester.</p>
			MLE2103 Phase Transformation and Kinetics	3	
			MLE2104 Mechanical Properties of Materials	4	
			MLE2105 Electronic Properties of Materials	3	
			MLE2111 Materials Properties Laboratory	3	
			MLE3101 Materials Characterization Laboratory	4	
			MLE3111 Materials Properties and Processing Laboratory	3	
			MSE Design and Final-Year Project Modules	20	
			MLE3103 Materials Design and Selection	4	
			MLE4102 Design Project	4	
			MLE4101 B.Eng. Dissertation [6]	12	
			MSE Technical Elective	20	
			MLE Level 2000/3000 Electives	12	
			MLE Level 4000 Electives	8	
			Pathway Requirements	8	
			MLE Level 5000 Electives	8	
			Internships Requirement	12	
			EG3611 Industrial Attachment [7,8]	12	
			TOTAL	162	

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)																
			<p>[3] Students who have not passed or been exempted from the Qualifying English Test at the time of admissions to the Faculty will have to read ES1000 and/or ES1103. This will be decided by CELC.</p> <p>[4] Bridging Module: Students without A-Level pass in Physics must read PC1221 Fundamentals of Physics I and PC1222 Fundamentals of Physics II as a prerequisite for PC1432.</p> <p>[5] Bridging Module: Students without A-level pass in Chemistry must read CM1417 Fundamentals of Chemistry as a prerequisite for CM1501.</p> <p>[6] Over two semesters.</p> <p>[7] For BEng students in the following special programmes: DDPs, CDPs, GEP & CSP, internship / industrial-attachment is optional and the modular credits for the internship/industrial-attachment will be become 'Free Electives' i.e., Unrestricted Electives (UE).</p> <p>[8] RfP students will have to carry out internship in Research Institutions or R&D Labs.</p> <p>Professional Practice Pathway</p> <table><tr><th>Modular Requirements</th><th>MCs</th></tr><tr><td>UNIVERSITY LEVEL REQUIREMENTS</td><td>20</td></tr><tr><td>General Education Modules (GE) (5 Modules, each of 4 MCs) Human Cultures (H&C) Quantitative Reasoning (QR) Thinking and Expression (T&E) Singapore Studies (SS) Asking Questinos (Q)</td><td>20</td></tr><tr><td>UNRESTRICTED ELECTIVES</td><td>20</td></tr><tr><td>Faculty Requirements:</td><td>11</td></tr><tr><td>EG2401 Engineering Professionalism</td><td>3</td></tr><tr><td>ES1531 Critical Thinking & Writing [1]</td><td>4</td></tr><tr><td>ES2331 Communicating Engineering [2]</td><td>4</td></tr></table>	Modular Requirements	MCs	UNIVERSITY LEVEL REQUIREMENTS	20	General Education Modules (GE) (5 Modules, each of 4 MCs) Human Cultures (H&C) Quantitative Reasoning (QR) Thinking and Expression (T&E) Singapore Studies (SS) Asking Questinos (Q)	20	UNRESTRICTED ELECTIVES	20	Faculty Requirements:	11	EG2401 Engineering Professionalism	3	ES1531 Critical Thinking & Writing [1]	4	ES2331 Communicating Engineering [2]	4
Modular Requirements	MCs																		
UNIVERSITY LEVEL REQUIREMENTS	20																		
General Education Modules (GE) (5 Modules, each of 4 MCs) Human Cultures (H&C) Quantitative Reasoning (QR) Thinking and Expression (T&E) Singapore Studies (SS) Asking Questinos (Q)	20																		
UNRESTRICTED ELECTIVES	20																		
Faculty Requirements:	11																		
EG2401 Engineering Professionalism	3																		
ES1531 Critical Thinking & Writing [1]	4																		
ES2331 Communicating Engineering [2]	4																		

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)	
			ES1xxx English [3]	-
			1st Year Requirements:	24
			MA1506 Mathematics II	4
			PC1432 Physics IIE [4]	4
			CS1010E Programming Methodology	4
			CM1501 Organic Chemistry for Engineers [5]	4
			MLE1111 Foundations of Materials Science & Engineering I	4
			MLE1112 Foundations of Materials Science & Engineering II	4
			MSE Discipline Requirements:	
			MSE Core Modules [4]	27
			MLE2101 Introduction to Structure of Materials	4
			MLE2102 Thermodynamics and Phase Diagrams	3
			MLE2103 Phase Transformation and Kinetics	3
			MLE2104 Mechanical Properties of Materials	4
			MLE2105 Electronic Properties of Materials	3
			MLE2111 Materials Properties Laboratory	3
			MLE3101 Materials Characterization Laboratory	4
			MLE3111 Materials Properties and Processing Laboratory	3
			MSE Design and Final-Year Project Modules	20
			MLE3103 Materials Design and Selection	4
			MLE4102 Design Project	4
			MLE4101 B.Eng. Dissertation [6]	12

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)																	
			<table><tr><td>MSE Technical Elective</td><td>20</td></tr><tr><td>MLE Level 2000/3000 Electives</td><td>12</td></tr><tr><td>MLE Level 4000 Electives</td><td>8</td></tr><tr><td>Pathway Requirement</td><td>8</td></tr><tr><td>Professional Development Electives</td><td>8</td></tr><tr><td>Internships Requirement</td><td>12</td></tr><tr><td>EG3611 Industrial Attachment [7,8]</td><td>12</td></tr><tr><td>TOTAL</td><td>162</td></tr></table>	MSE Technical Elective	20	MLE Level 2000/3000 Electives	12	MLE Level 4000 Electives	8	Pathway Requirement	8	Professional Development Electives	8	Internships Requirement	12	EG3611 Industrial Attachment [7,8]	12	TOTAL	162	
MSE Technical Elective	20																			
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Pathway Requirement	8																			
Professional Development Electives	8																			
Internships Requirement	12																			
EG3611 Industrial Attachment [7,8]	12																			
TOTAL	162																			
			<p>[1] BEng students are required to read a Critical Thinking & Writing module (ES1531 Critical Thinking & Writing) and a Communications module (ES2331 Communicating Engineering). Alternatively, students can read ES1501X Academic Expository Writing in place of both ES1531 and ES2331. USP/UTRP/RVRC students should refer to their respective programmes for USP/UTRP/RVRC modules to be read in place of ES1531 and/or ES2331.</p> <p>[2] The relevant departments reserve the right to decide the modules to be offered in any given semester.</p> <p>[3] Students who have not passed or been exempted from the Qualifying English Test at the time of admissions to the Faculty will have to read ES1000 and/or ES1103. This will be decided by CELC.</p> <p>[4] Bridging Module: Students without A-Level pass in Physics must read PC1221 Fundamentals of Physics I and PC1222 Fundamentals of Physics II as a prerequisite for PC1432.</p> <p>[5] Bridging Module: Students without A-level pass in Chemistry must read CM1417 Fundamentals of Chemistry as a prerequisite for CM1501.</p> <p>[6] Over two semesters.</p> <p>[7] For BEng students in the following special programmes: DDPs, CDPs, GEP & CSP, internship / industrial-attachment is optional and the modular credits for the internship/industrial-attachment will be become 'Free Electives' i.e., Unrestricted Electives (UE).</p> <p>[8] PPP students will have to carry out internship in industrial companies.</p> <p>Design Centric Pathway</p> <table><tr><td>Modular Requirements</td><td>MCs</td></tr></table>		Modular Requirements	MCs														
Modular Requirements	MCs																			

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			UNIVERSITY LEVEL REQUIREMENTS	20	
			General Education Modules (GE) (5 Modules, each of 4 MCs) Human Cultures (H&C) Quantitative Reasoning (QR) Thinking and Expression (T&E) Singapore Studies (SS) Asking Questinos (Q)	20	
			UNRESTRICTED ELECTIVES	8	
			Faculty Requirements:	11	
			EG2401 Engineering Professionalism	3	
			ES1531 Critical Thinking & Writing [1]	4	
			ES2331 Communicating Engineering [2]	4	
			ES1xxx English [3]	-	
			1st Year Requirements:	24	
			MA1506 Mathematics II	4	
			PC1432 Physics IIE [4]	4	
			CS1010E Programming Methodology	4	
			CM1501 Organic Chemistry for Engineers [5]	4	
			MLE1111 Foundations of Materials Science & Engineering I	4	
			MLE1112 Foundations of Materials Science & Engineering II	4	
			MSE Discipline Requirements:		
			MSE Core Modules [4]	27	

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			MLE2101 Introduction to Structure of Materials	4	
			MLE2102 Thermodynamics and Phase Diagrams	3	
			MLE2103 Phase Transformation and Kinetics	3	
			MLE2104 Mechanical Properties of Materials	4	
			MLE2105 Electronic Properties of Materials	3	
			MLE2111 Materials Properties Laboratory	3	
			MLE3101 Materials Characterization Laboratory	4	
			MLE3111 Materials Properties and Processing Laboratory	3	
			Design and Final-Year Project Modules	40	
			EG2201A Introduction to Design Thinking/ EG1310 Exploratory Satellite Design	4	
			EG2301 Case Studies in Engineering/ EG2311 Introduction to Space Systems/ EG2312 Radar Theory and Techniques/ EG2606B Independent Work	4	
			Innovation & Enterprise Elective	4	
			MLE3103 Materials Design and Selection	4	
			EG3301R DCP Project [6]	12	
			EG4301 DCP B.Eng. Dissertation [6]	12	
			MLE Technical Elective	20	
			MLE Level 2000/3000 Electives	12	
			MLE Level 4000 Electives	8	
			Pathway Requirement Electives	8	
			Innovation & Enterprise Electives	8	
			Internships Requirement	6	

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)		
			EG3612 Vacation Internship Programme [7]	6	
			TOTAL	164	
			<p>[1] BEng students are required to read a Critical Thinking & Writing module (ES1531 Critical Thinking & Writing) and a Communications module (ES2331 Communicating Engineering). Alternatively, students can read ES1501X Academic Expository Writing in place of both ES1531 and ES2331. USP/UTRP/RVRC students should refer to their respective programmes for USP/UTRP/RVRC modules to be read in place of ES1531 and/or ES2331.</p> <p>[2] The relevant departments reserve the right to decide the modules to be offered in any given semester.</p> <p>[3] Students who have not passed or been exempted from the Qualifying English Test at the time of admissions to the Faculty will have to read ES1000 and/or ES1103. This will be decided by CELC.</p> <p>[4] Bridging Module: Students without A-Level pass in Physics must read PC1221 Fundamentals of Physics I and PC1222 Fundamentals of Physics II as a prerequisite for PC1432.</p> <p>[5] Bridging Module: Students without A-level pass in Chemistry must read CM1417 Fundamentals of Chemistry as a prerequisite for CM1501.</p> <p>[6] Over two semesters.</p> <p>[7] For BEng students in the following special programmes: DDPs, CDPs, GEP & CSP, internship / industrial-attachment is optional and the modular credits for the internship/industrial-attachment will be become 'Free Electives' i.e., Unrestricted Electives (UE).</p> <p>2. Table 3.2.9b: MSE Elective Modules on pages 3–5 of Section 3.2.9.2</p> <ul style="list-style-type: none"> Add the following module to the list of MLE LEVEL 2000/3000 ELECTIVES on page 3: <p>MLE3203 Engineering Materials</p> Remove the following module from the list of POLYMERIC AND BIOMEDICAL MATERIALS on page 4 <p>BN3301 Introduction to Biomaterials##</p> Add the following module to the list OTHER ELECTIVE MODULES on page 4: <p>MLE4212 Advanced Structural Materials</p> Remove the two notes at the end of the list OTHER ELECTIVE MODULES on page 4 and 5: <p>*** Bridging Module: Students without A-level pass in Chemistry must read CM1417 Fundamentals of Chemistry as a prerequisite for CM1121 or CM1501.</p> 		

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)																																																												
			## Students who wish to do the specialisation in the Polymeric and Biomedical Materials specialisation MSE LEVEL 4000 ELECTIVES Page 5 are recommended to take BN3301 Introduction to Biomaterials.																																																												
25.	3 May 2018	FoE (MSE)	<p>URL: http://www.nus.edu.sg/registrar/info/nusbuletin/AY201617_FoE.pdf Section: 3.2.9.3 Recommended Semester Schedule</p> <p>1. Change the first two paragraphs on page 1 of Section 3.2.9.3 to The recommended semester schedules for Materials Science and Engineering students from direct entry and from poly are presented in Table 3.2.9c and Table 3.2.9d respectively.</p> <p>2. Change Table 3.2.9c, Table 3.2.9d and the remarks below them in Section 3.2.9.3 on pages 1–6 to</p> <p>Table: Recommended Semester Schedule for MSE Students from Direct Entry</p> <p>Research-focused Pathway</p> <table> <tr> <th>Module</th><th>MCs</th><th>Module</th><th>MCs</th></tr> <tr> <td>Semester 1</td><td></td><td>Semester 2</td><td></td></tr> <tr> <td>MLE1111 Foundations of Materials Science & Engineering I</td><td>4</td><td>MLE1112 Foundations of Materials Science & Engineering II</td><td>4</td></tr> <tr> <td>CM1501 Organic Chemistry for Engineers [1]</td><td>4</td><td>CS1010E Programming Methodology</td><td>4</td></tr> <tr> <td>GE on QR</td><td>4</td><td>ES1531 Critical Thinking & Writing [3]</td><td>4</td></tr> <tr> <td>GE on SS</td><td>4</td><td>MA1506 Mathematics II</td><td>4</td></tr> <tr> <td>GE/UE</td><td>4</td><td>PC1432 Physics IIE [4]</td><td>4</td></tr> <tr> <td>ES1103 English for Academic Purposes [2]</td><td>-</td><td></td><td></td></tr> <tr> <td>Sub-total</td><td>20</td><td>Sub-total</td><td>20</td></tr> <tr> <td>Semester 3</td><td></td><td>Semester 4</td><td></td></tr> <tr> <td>MLE2101 Introduction to Structure of Materials</td><td>4</td><td>MLE2103 Phase Transformation and Kinetics</td><td>3</td></tr> <tr> <td>MLE2102 Thermodynamics and Phase Diagrams</td><td>3</td><td>MLE2104 Mechanical Properties of Materials</td><td>4</td></tr> <tr> <td>MLE2111 Materials Properties Laboratory</td><td>3</td><td>MLE2105 Electronic Properties of Materials</td><td>3</td></tr> <tr> <td>ES2331 Communicating Engineering [5]</td><td>4</td><td>MLE3101 Materials Characterization Laboratory</td><td>4</td></tr> <tr> <td>GE on T&E</td><td>4</td><td>GE/UE</td><td>4</td></tr> </table>	Module	MCs	Module	MCs	Semester 1		Semester 2		MLE1111 Foundations of Materials Science & Engineering I	4	MLE1112 Foundations of Materials Science & Engineering II	4	CM1501 Organic Chemistry for Engineers [1]	4	CS1010E Programming Methodology	4	GE on QR	4	ES1531 Critical Thinking & Writing [3]	4	GE on SS	4	MA1506 Mathematics II	4	GE/UE	4	PC1432 Physics IIE [4]	4	ES1103 English for Academic Purposes [2]	-			Sub-total	20	Sub-total	20	Semester 3		Semester 4		MLE2101 Introduction to Structure of Materials	4	MLE2103 Phase Transformation and Kinetics	3	MLE2102 Thermodynamics and Phase Diagrams	3	MLE2104 Mechanical Properties of Materials	4	MLE2111 Materials Properties Laboratory	3	MLE2105 Electronic Properties of Materials	3	ES2331 Communicating Engineering [5]	4	MLE3101 Materials Characterization Laboratory	4	GE on T&E	4	GE/UE	4
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			GE/UE	4	GE/UE	4
			Sub-total	22	Sub-total	22
			Semester 5		Semester 6	
			MLE Level 2000/3000 Elective	4	EG3611 Industrial Attachment [6, 7, 8]	12
			MLE Level 2000/3000 Elective	4	UE	4
			MLE Level 2000/3000 Elective	4		
			MLE3103 Materials Design and Selection	4		
			MLE3111 Materials Properties and Processing Laboratory	3		
			Sub-total	19	Sub-total	16
			Semester 7		Semester 8	
			MLE4101 B.Eng. Dissertation	6	MLE4101 B.Eng. Dissertation	6
			MLE4102 Design Project	4	EG2401 Engineering Professionalism	3
			MLE Level 4000/5000 Electives	4	MLE Level 4000/5000 Electives	4
			MLE Level 4000/5000 Electives	4	MLE Level 4000/5000 Electives	4
			UE	4	UE	4
			Sub-total	22	Sub-total	21
			Total MCs			162
			[1] Bridging Module: Students without A-level pass in Chemistry must read CM1417 Fundamentals of Chemistry as a prerequisite for CM1501.			
			[2] Students who have not passed or been exempted from the Qualifying English Test at the time of admissions to the Faculty will have to read ES1000 and/or ES1103. This will be decided by CELC.			
			[3] BEng students are required to read a Critical Thinking & Writing module (ES1531 Critical Thinking & Writing) and a Communications module (ES2331 Communicating Engineering). Alternatively, students can read ES1501X Academic Expository Writing in place of both ES1531 and ES2331. USP/UTRP/RVRC students should refer to their respective programmes for USP/UTRP/RVRC modules to be read in place of ES1531 and/or ES2331.			
			[4] Bridging Module: Students without A-Level pass in Physics must read PC1221 Fundamentals of Physics I and PC1222 Fundamentals of Physics II as a prerequisite for PC1432.			
			[5] The relevant departments reserve the right to decide the modules to be offered in any given semester.			

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			MLE Level 2000/3000 Elective	4		
			MLE3103 Materials Design and Selection	4		
			MLE3111 Materials Properties and Processing Laboratory	3		
			Sub-total	19	Sub-total	16
			Semester 7		Semester 8	
			MLE4101 B.Eng. Dissertation	6	MLE4101 B.Eng. Dissertation	6
			MLE4102 Design Project	4	MLE Level 4000/Professional Electives	4
			MLE Level 4000/Professional Electives	4	MLE Level 4000/Professional Electives	4
			MLE Level 4000/Professional Electives	4	EG2401 Engineering Professionalism	3
			UE	4	UE	4
			Sub-total	22	Sub-total	21
			Total MCs			162
			[1] Bridging Module: Students without A-level pass in Chemistry must read CM1417 Fundamentals of Chemistry as a prerequisite for CM1501.			
			[2] Students who have not passed or been exempted from the Qualifying English Test at the time of admissions to the Faculty will have to read ES1000 and/or ES1103. This will be decided by CELC.			
			[3] BEng students are required to read a Critical Thinking & Writing module (ES1531 Critical Thinking & Writing) and a Communications module (ES2331 Communicating Engineering). Alternatively, students can read ES1501X Academic Expository Writing in place of both ES1531 and ES2331. USP/UTRP/RVRC students should refer to their respective programmes for USP/UTRP/RVRC modules to be read in place of ES1531 and/or ES2331.			
			[4] Bridging Module: Students without A-Level pass in Physics must read PC1221 Fundamentals of Physics I and PC1222 Fundamentals of Physics II as a prerequisite for PC1432.			
			[5] The relevant departments reserve the right to decide the modules to be offered in any given semester.			
			[6] For BEng students in the following special programmes: DDPs, CDPs, GEP & CSP, internship / industrial-attachment is optional and the modular credits for the internship/industrial-attachment will be become 'Free Electives' i.e., Unrestricted Electives (UE).			
			[7] PPP students will have to carry out internship in industrial companies.			
			[8] EG3611 Industrial Attachment can be taken in either semester such that Semesters 5 and 6 in the above schedule can be transposed.			
			Design Centric Pathway			

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
			Module	MCs	Module	MCs
			Semester 1		Semester 2	
			MLE1111 Foundations of Materials Science & Engineering I	4	MLE1112 Foundations of Materials Science & Engineering II	4
			CM1501 Organic Chemistry for Engineers [1]	4	CS1010E Programming Methodology	4
			GE on QR	4	EG2201A Introduction to Design Thinking [3]	4
			GE on SS	4	ES1531 Critical Thinking & Writing [4]	4
			GE/UE	4	MA1506 Mathematics II	4
			ES1103 English for Academic Purposes [2]	-	PC1432 Physics IIE [5]	4
			Sub-total	20	Sub-total	24
			Semester 3		Semester 4	
			MLE2101 Introduction to Structure of Materials	4	MLE2103 Phase Transformation and Kinetics	3
			MLE2102 Thermodynamics and Phase Diagrams	3	MLE2104 Mechanical Properties of Materials	4
			MLE2111 Materials Properties Laboratory	3	MLE2105 Electronic Properties of Materials	3
			EG2301 Case Studies in Engineering [6]	4	MLE3101 Materials Characterization Laboratory	4
			ES2331 Communicating Engineering [7]	4	EG3301R DCP Project	6
			GE on T&E	4		
			Sub-total	22	Sub-total	20
			Special Term			
			EG3612 Vacation Internship Programme	6		
			Sub-total	6		
			Semester 5		Semester 6	
			MLE3103 Materials Design and Selection	4	MLE Level 2000/3000 Elective	4
			MLE3111 Materials Properties and Processing Laboratory	3	Innovation & Enterprise Elective	4
			MLE Level 2000/3000 Elective	4	GE/UE	4
			MLE Level 2000/3000 Elective	4	GE/UE	4
			EG3301R DCP Project	6		

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
			Sub-total	21	Sub-total	16
			Semester 7		Semester 8	
			EG4301 DCP B.Eng. Dissertation	6	EG4301 DCP B.Eng. Dissertation	6
			MLE Level 4000 Elective	4	MLE Level 4000 Elective	4
			Innovation & Enterprise Elective	4	EG2401 Engineering Professionalism	3
			GE/UE	4	Innovation & Enterprise Elective	4
			Sub-total	18	Sub-total	17
			Total MCs			164
			<p>[1] Bridging Module: Students without A-level pass in Chemistry must read CM1417 Fundamentals of Chemistry as a prerequisite for CM1501.</p> <p>[2] Students who have not passed or been exempted from the Qualifying English Test at the time of admissions to the Faculty will have to read ES1000 and/or ES1103. This will be decided by CELC.</p> <p>[3] EG2201A can be replaced by EG1310.</p> <p>[4] BEng students are required to read a Critical Thinking & Writing module (ES1531 Critical Thinking & Writing) and a Communications module (ES2331 Communicating Engineering). Alternatively, students can read ES1501X Academic Expository Writing in place of both ES1531 and ES2331. USP/UTRP/RVRC students should refer to their respective programmes for USP/UTRP/RVRC modules to be read in place of ES1531 and/or ES2331.</p> <p>[5] Bridging Module: Students without A-Level pass in Physics must read PC1221 Fundamentals of Physics I and PC1222 Fundamentals of Physics II as a prerequisite for PC1432.</p> <p>[6] EG2301 can be replaced by EG2311, EG2312, or EG2606B.</p> <p>[7] The relevant departments reserve the right to decide the modules to be offered in any given semester.</p>			
			<p>Table: Recommended Semester Schedule for MSE Students from Poly</p>			
			Research-focused Pathway			
			Module	MCs	Module	MCs
			Semester 3		Semester 4	
			MLE2101 Introduction to Structure of Materials	4	MLE2103 Phase Transformation and Kinetics	3

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
			MLE2102 Thermodynamics and Phase Diagrams	3	MLE2104 Mechanical Properties of Materials	4
			MLE2111 Materials Properties Laboratory	3	MLE2105 Electronic Properties of Materials	3
			GE on SS	4	MLE3101 Materials Characterization Laboratory	4
			GE on QR or T&E	4	MLE1112 Foundations of Materials Science & Engineering II	4
			ES1531 Critical Thinking & Writing	4	PC1432 Physics IIE	4
			Sub-total	22	Sub-total	22
			Semester 5 #		Semester 6 #	
			MLE3111 Materials Properties and Processing Laboratory	3	MLE Level 2000/3000 Elective	4
			MLE3103 Materials Design and Selection	4	MLE Level 4000/5000 Electives	4
			MLE Level 2000/3000 Elective	4	MA1506 Mathematics II	4
			MLE Level 2000/3000 Elective	4	GE/UE	4
			GE on QR or T&E	4	GE/UE	4
			Sub-total	19	Sub-total	20
			Semester 7		Semester 8	
			MLE4101 B.Eng. Dissertation	6	MLE4101 B.Eng. Dissertation	6
			MLE4102 Design Project	4	EG2401 Engineering Professionalism	3
			MLE Level 4000/5000 Electives	4	MLE Level 4000/5000 Electives	4
			MLE Level 4000/5000 Electives	4	UE	4
					UE	4
			Sub-total	18	Sub-total	21
			Total MCs			122
			[1] Assumes exemptions of 40 MCs given; actual schedule will depend exemptions on case-by-case basis and any requirements to do bridging modules.			
			Professional Practice Pathway			
			Module	MCs	Module	MCs
			Semester 1		Semester 2	

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
			MLE2101 Introduction to Structure of Materials	4	MLE1112 Foundations of Materials Science & Engineering II	4
			MLE2102 Thermodynamics and Phase Diagrams	3	MLE2103 Phase Transformation and Kinetics	3
			MLE2111 Materials Properties Laboratory	3	MLE2104 Mechanical Properties of Materials	4
			ES1531 Critical Thinking & Writing	4	MLE2105 Electronic Properties of Materials	3
			GE on QR or T&E	4	MLE3101 Materials Characterization Laboratory	4
			GE on SS	4	PC1432 Physics IIE	4
			Sub-total	22	Sub-total	22
			Semester 3		Semester 4	
			MLE3103 Materials Design and Selection	4	MLE Level 2000/3000 Elective	4
			MLE3111 Materials Properties and Processing Laboratory	3	MLE Level 4000/Professional Electives	4
			MLE Level 2000/3000 Elective	4	MA1506 Mathematics II	4
			MLE Level 2000/3000 Elective	4	GE/UE	4
			GE on QR or T&E	4	GE/UE	4
			Sub-total	19	Sub-total	20
			Semester 5		Semester 6	
			MLE4101 B.Eng. Dissertation	6	MLE4101 B.Eng. Dissertation	6
			MLE4102 Design Project	4	MLE Level 4000/Professional Electives	4
			MLE Level 4000/Professional Electives	4	MLE Level 4000/Professional Electives	4
			UE	4	EG2401 Engineering Professionalism	3
					UE	4
			Sub-total	18	Sub-total	21
			Total MCs			122
			[1] Assumes exemptions of 40 MCs given; actual schedule will depend exemptions on case-by-case basis and any requirements to do bridging modules.			

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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
26.	28 Jun 2019	FoS	<p>Circular title: Biological Sciences: Revision to the Requirements of the Joint Minor Programme in Environmental Biology with University of Toronto</p> <p>Circular no.: BUS Circular 4 of AY2018/19, RO.422/18</p> <p>To be changed for cohort number(s): AY2016/17 onwards</p> <p>Archived Bulletin AY2016/17</p> <p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf - Page 189/229</p> <p>Current text:</p> <p>To be awarded the joint minor in Environmental Biology, a student is currently required to read and pass the modules as prescribed: LSM1103 Biodiversity LSM2251 Ecology and Environment LSM3252 Evolution and Comparative Genomics</p> <p>and <u>any four</u> of the following UoT courses:</p> <p>EEB403H Tropical Field Biology (May) EEB405H Temperate Field Biology (May) EEB407H Alpine Ecosystems (July or August) EEB410H Lake Ecosystem Dynamics (August) ENV234H Environmental Biology: Structure and Function of Ecosystems EEB318H Principles of Evolution EEB321H Community Ecology EEB322H Behaviour and Behavioural Ecology EEB323H Evolutionary Genetics EEB328H Physiological Ecology EEB331H Introduction to the Fungi EEB362H Introduction to Macroevolution EEB375H Organisms and Their Environment EEB382H Diversity of Fishes EEB388H Biology of Mammals EEB319H Population Ecology EEB324H Evolutionary Ecology EEB330H Systematic Botany</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>EEB356H Insect Biology EEB365H The Biology of Conservation EEB386H Avian Biology</p> <p><u>Revised text:</u></p> <p>To be awarded the joint minor in Environmental Biology, a student is currently required to read and pass the modules as prescribed: LSM2252 Biodiversity LSM2251 Ecology and Environment LSM1105 Evolutionary Biology</p> <p>and <u>any four</u> of the following UofT courses:</p> <p>ENV234H1 Environmental Biology: Structure and Function of Ecosystems EEB319H1 Population Ecology EEB321H1 Community Ecology EEB322H1 Behaviour and Behavioural Ecology EEB323H1 Evolutionary Genetics EEB324H1 Evolutionary Ecology EEB328H1 Physiological Ecology EEB330H1 Systematic Botany EEB331H1 Introduction to the Fungi EEB362H1 Macroevolution EEB365H1 Topics in Applied Conservation Biology EEB375H1 Organisms and Their Environment EEB380H1 Diversity of Insects EEB382H1 Diversity of Fishes EEB386H1 Diversity of Birds EEB388H1 Diversity of Mammals EEB403H0/1 Tropical Field Biology EEB405H0/1 Temperate Field Biology Alpine Ecosystems EEB410H0/1 EEB410H0/1 Lake Ecosystem Dynamics</p> <hr/> <p>Circular title: Physics: Proposed Changes to the Requirements for the Second Major in Physics Programme Circular no.: BUS Circular 4 of AY2018/19, RO.423/18</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>To be changed for cohort number(s): AY2015/16 onwards</p> <p>Archived Bulletin AY2016/17</p> <p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf - Page 137/229</p> <p><u>Current text:</u></p> <p>Pass Any four from the following</p> <ul style="list-style-type: none"> • PC3130 Quantum Mechanics II • PC3193 Experimental Physics II • PC3231 Electricity and Magnetism II • PC3232 Nuclear and Particle Physics • PC3246 Astrophysics I • PC3274 Mathematical Methods in Physics II • PC3233 Atomic and Molecular Physics I • PC3235 Solid State Physics I • PC3236 Computational Methods in Physics • PC3238 Fluid Dynamics • PC3241 Solid State Devices • PC3242 Physics of Semiconductor Processing • PC3243 Photonics • PC3267 Biophysics II • PC3247 Modern Optics • PC3251 Nanophysics • PC3239 Special Problems in Undergraduate Physics <p><u>Revised text:</u></p> <p>Any four modules from the following:</p> <ul style="list-style-type: none"> • PC3130 Quantum Mechanics II • PC3193 Experimental Physics II • ALL PC32XX and PC42XX modules that can be used to fulfil the requirements for the Major Programme in Physics.

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)						
			<p>Circular title: Physics: Proposal for a New Specialisation in Quantum Technologies for the existing Bachelor of Science with a Major in Physics (Follow-up from AY18-19 SFCC 1 Meeting)</p> <p>Circular no.: Senate Circular 3 of 2018/19 (RO.466/18)</p> <p>To be changed for cohort number(s): AY2016/17 onwards</p> <p>Archived Bulletin AY2016/17</p> <p>Link: http://www.nus.edu.sg/registrar/info/nusbuletin/AY201617_FoS.pdf - Page 32/229</p> <p>Current text:</p> <ul style="list-style-type: none">• Physics (with specialisation in Astrophysics)• Physics (with specialisation in Nanophysics)• Quantitative Finance <p>Revised text:</p> <ul style="list-style-type: none">• Physics (with specialisation in Astrophysics)• Physics (with specialisation in Nanophysics)• Physics (with specialisation in Quantum Technologies)• Quantitative Finance <p>Link: http://www.nus.edu.sg/registrar/info/nusbuletin/AY201617_FoS.pdf Page 42/229</p> <p>Current text:</p> <table border="1"><tr><td>20. Physics</td></tr><tr><td>21. Physics (with specialisation in Astrophysics)</td></tr><tr><td>22. Physics (with specialisation in Nanophysics)</td></tr><tr><td>23. Pharmacy@†</td></tr></table> <p>Revised text:</p> <table border="1"><tr><td>20. Physics</td></tr><tr><td>21. Physics (with specialisation in Astrophysics)</td></tr></table>	20. Physics	21. Physics (with specialisation in Astrophysics)	22. Physics (with specialisation in Nanophysics)	23. Pharmacy@†	20. Physics	21. Physics (with specialisation in Astrophysics)
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S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)										
			<table><tr><td>22. Physics (with specialisation in Nanophysics)</td></tr><tr><td>23. Physics (with specialisation in Quantum Technologies)</td></tr><tr><td>24. Pharmacy@†</td></tr></table> <p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf - Page 46/229</p> <p>Current text:</p> <table><tr><td>Physics (PC)</td></tr><tr><td>Physics (with specialisation in Astrophysics) (PC)</td></tr><tr><td>Physics (with specialisation in Nanophysics) (PC)</td></tr></table> <p>Revised text:</p> <table><tr><td>Physics (PC)</td></tr><tr><td>Physics (with specialisation in Astrophysics) (PC)</td></tr><tr><td>Physics (with specialisation in Nanophysics) (PC)</td></tr><tr><td>Physics (with specialisation in Quantum Technologies) (PC)</td></tr></table> <p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf - Page 103/229</p> <p>Current text:</p>	22. Physics (with specialisation in Nanophysics)	23. Physics (with specialisation in Quantum Technologies)	24. Pharmacy@†	Physics (PC)	Physics (with specialisation in Astrophysics) (PC)	Physics (with specialisation in Nanophysics) (PC)	Physics (PC)	Physics (with specialisation in Astrophysics) (PC)	Physics (with specialisation in Nanophysics) (PC)	Physics (with specialisation in Quantum Technologies) (PC)
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Physics (with specialisation in Quantum Technologies) (PC)													

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)						
			<p>Programme Structure and Curriculum Rationale B.Sc. and B.Sc. (Hons.) in Physics are rigorous courses covering the core topics in physics. The broadness of the scope and the training in critical thinking and in analysis will enable graduates to choose from a wide variety of careers. B.Sc. (Hons.) students can choose to specialise in one of the following areas: (i) Astrophysics, and (ii) Nanophysics. These programmes will prepare graduates with in-depth knowledge in each area of specialisation.</p> <p>Revised text:</p> <p>Programme Structure and Curriculum Rationale B.Sc. and B.Sc. (Hons.) in Physics are rigorous courses covering the core topics in physics. The broadness of the scope and the training in critical thinking and in analysis will enable graduates to choose from a wide variety of careers. B.Sc. (Hons.) students can choose to specialise in one of the following areas: (i) Astrophysics, (ii) Nanophysics and (iii) Quantum Technologies. These programmes will prepare graduates with in-depth knowledge in each area of specialisation.</p> <p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf - Page 107/229</p> <p>Current text: B.Sc. (Hons.) students majoring in Physics have the option to qualify for a specialisation in 1. Astrophysics, or 2. Nanophysics.</p> <p>Revised text: B.Sc. (Hons.) students majoring in Physics have the option to qualify for a specialisation in 1. Astrophysics, 2. Nanophysics or 3. Quantum Technologies.</p> <p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf - Page 108/229</p> <p>To add the following text in red and table in red right below the table in black:</p> <table><tr><th>MODULE LEVEL</th><th>SPECIALISATION REQUIREMENTS</th><th>CUMULATIVE MAJOR MCS</th></tr><tr><td>Level-3000 and</td><td>Pass any 24 MCs from the following: PC3235 Solid State Physics I</td><td>24</td></tr></table>	MODULE LEVEL	SPECIALISATION REQUIREMENTS	CUMULATIVE MAJOR MCS	Level-3000 and	Pass any 24 MCs from the following: PC3235 Solid State Physics I	24
MODULE LEVEL	SPECIALISATION REQUIREMENTS	CUMULATIVE MAJOR MCS							
Level-3000 and	Pass any 24 MCs from the following: PC3235 Solid State Physics I	24							

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
			Level-4000	PC3241 Solid State Devices PC3242 Physics of Semiconductor Processing PC3243 Photonics PC4246 Quantum Optics PC4253 Thin Film Technology PC4259 Surface Physics PC4199 Honours Project in Physics (Nanophysics)**		
			<p>To be awarded a specialisation in Quantum Technologies, candidates must read and pass the following modules as part of the major requirements for B.Sc. (Hons.) with a primary major in Physics.</p>			
			MODULE LEVEL	SPECIALISATION REQUIREMENTS	CUMULATIVE MAJOR MCS	

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)			
			Level-3000 and Level-4000	<p>Pass PC4228 Device physics for Quantum Technology (4MC) PC4199 Honours Project in Physics, on a related subject[*] (12MC)</p> <p><u>And</u></p> <p>Pass any two of these modules, with at least one Level 4000 module, among the following, each 4MC: PC3233 Atomic and Molecular Physics I PC3288 Advanced UOPS in Physics I, on a related subject [*] PC4230 Quantum Mechanics III PC4243 Atomic and Molecular Physics II PC4246 Quantum Optics</p>	24	
<p>[*] A coordinator of the specialisation, chosen by the Department of Physics, will be in charge of assessing the suitability of the subject.</p> <p>Further pertinent new modules may be introduced in the future, should such need arise.</p> <p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf (Page 162/229)</p> <p><u>Existing text:</u></p> <p>This minor is not awarded with a primary major in Physics or Physics (with specialisation in Astrophysics or Nanophysics) and second major in Physics.</p> <p><u>Revised text:</u></p> <p>This minor is not awarded with a primary major in Physics or Physics (with specialisation in Astrophysics, Nanophysics or Quantum Technologies) and second major in Physics.</p>						
27.	2 Jul 2019	FoS	<p><u>Updates for Archived Bulletin AY2016/17 (as of 2 Jul 2019)</u></p> <hr/>			

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>Circular title: Physics: Proposed Changes to the Requirements for the Major in Physics Programme Circular no.: BUS Circular No. 4, AY2018/19 (dated 6 Sep 2018) To be changed for cohort number(s): AY2015/16 onwards</p> <p><u>Archived Bulletin AY2016/17</u></p> <p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf - Page 105/229</p> <p><u>Current text:</u></p> <p>3. Pass: - PC3130 Quantum Mechanics II - PC3193 Experimental Physics II</p> <p>And any three modules from the following electives:</p> <ul style="list-style-type: none"> - PC3231 Electricity and Magnetism II - PC3232 Nuclear and Particle Physics - PC3233 Atomic and Molecular Physics I - PC3235 Solid State Physics - PC3236 Computational Methods in Physics - PC3238 Fluid Dynamics - PC3241 Solid State Devices - PC3242 Physics of Semiconductor Processing - PC3243 Photonics - PC3246 Astrophysics I - PC3247 Modern Optics - PC3251 Nanophysics - PC3267 Biophysics II - PC3233 Atomic and Molecular Physics I - PC3235 Solid State Physics I - PC3236 Computational Methods in Physics - PC3238 Fluid Dynamics - PC3241 Solid State Devices - PC3242 Physics of Semiconductor Processing - PC3243 Photonics - PC3246 Astrophysics I - PC3247 Modern Optics

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<ul style="list-style-type: none"> - PC3251 Nanophysics - PC3267 Biophysics II - PC3274 Mathematical Methods in Physics II - PC3239 Special Problems in Undergraduate Physics II - PC3288 Advanced UROPS in Physics I^ - PC3289 Advanced UROPS in Physics II^ - MLE3101 Materials Characterization Laboratory - MLE3105 Dielectric and Magnetic Materials (3 MCs) <p><u>Revised text:</u></p> <p>3. Pass:</p> <ul style="list-style-type: none"> - PC3130 Quantum Mechanics II - PC3193 Experimental Physics II <p>And any three modules from the following electives:</p> <ul style="list-style-type: none"> - PC3231 Electricity and Magnetism II - PC3232 Nuclear and Particle Physics - PC3233 Atomic and Molecular Physics I - PC3235 Solid State Physics I - PC3236 Computational Methods in Physics - PC3238 Fluid Dynamics - PC3241 Solid State Devices - PC3242 Physics of Semiconductor Processing - PC3243 Photonics - PC3246 Astrophysics I - PC3247 Modern Optics - PC3251 Nanophysics - PC3267 Biophysics II - PC3274 Mathematical Methods in Physics II - PC3239 Special Problems in Undergraduate Physics II - PC3288 Advanced UROPS in Physics I^ - PC3289 Advanced UROPS in Physics II^ - PC3294 Radiation Laboratory - MLE3101 Materials Characterization Laboratory

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>- MLE3105 Dielectric and Magnetic Materials (3 MCs)</p> <hr/> <p>Circular title: Pharmacy: Pharmacy Programme - Changes in Major Requirements from Cohort 2016/17 onwards (PR4138, PR4197 & PR4198) Circular no.: BUS Circular No. 17, AY2018/19 (dated 21 Mar 2019) To be changed for cohort number(s): AY2016/17 onwards</p> <p><u>Archived Bulletin AY2016/17</u></p> <p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf - Page 122/229</p> <p><u>Current text:</u></p> <p>Pass PR4197 Pharmacy Internship I PR4198 Pharmacy Internship II PR4196 Pharmacy Research Project and Scientific Communication</p> <p><u>Revised text:</u></p> <p>Pass PR4138 Pharmacy Professional Skills Development IV PR4197A Pharmacy Internship I PR4198A Pharmacy Internship II PR4196 Pharmacy Research Project and Scientific Communication</p> <hr/> <p>Circular title: Pharmacy: Revision to the Minor Programme in Pharmaceutical Science (Add PR3117 as an alternative to PR3301) Circular no.: SFCC Circular No. 12, AY2018/19 (dated 19 Mar 2019) To be changed for cohort number(s): AY2015/16 onwards</p> <p><u>Archived Bulletin AY2016/17</u></p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf - Page 160/229</p> <p><u>Current text:</u></p> <p>Essential modules: PR1101 or PR1110 Physicochemical Principles of Drug Action OR Foundations for Medicinal Chemistry PR1102 or PR2114 Physical Pharmacy OR Formulation and Technology I PR3101 or PR2115 Principles of Medicinal Chemistry OR Medicinal Chemistry for Drug Design PR3301 Pharmaceutical Dosage Forms</p> <p><u>Revised text:</u></p> <p>Essential modules: PR1101 or PR1110 Physicochemical Principles of Drug Action OR Foundations for Medicinal Chemistry PR1102 or PR2114 Physical Pharmacy OR Formulation and Technology I PR3101 or PR2115 Principles of Medicinal Chemistry OR Medicinal Chemistry for Drug Design Either PR3301 Pharmaceutical Dosage Forms or PR3117 Formulations & Technology II</p> <hr/> <p>Circular title: Dean's Office: Proposals for the Undergraduate Professional Internship Programme Modules: a. Proposal for new module: XX3313 Undergraduate Professional Internship Programme Extended b. Proposed change to existing module : XX3312 Enhanced Undergraduate Professional Internship Programme (Revisions to title) Circular no.: SFCC Circular No. 13, AY2018/19 (dated 8 Apr 2019)</p> <p>To be changed for cohort number(s): AY2015/16 onwards</p> <p><u>Archived Bulletin AY2016/17</u></p> <p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf - Page 30/229</p> <p><u>Current text:</u> For more information, visit URL: http://science.nus.edu.sg/students/upip</p> <p><u>Revised text:</u> For more information, visit URL: http://www.science.nus.edu.sg/industry/internships/284-industry/2568-upip-for-students</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>Circular title: Mathematics: b. Proposed changes to requirements of the Minor in Financial Mathematics (FM) Circular no.: BUS Circular No. 24, AY2018/19 (dated 13 Jun 2019) To be changed for cohort number(s): AY2012/13 onwards</p> <p><u>Archived Bulletin AY2016/17</u></p> <p>Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf - Page 149/229</p> <p><u>Current text:</u></p> <p>To be awarded a minor in Financial Mathematics, a student must pass the following six modules: 1. (MA1102R or MA1505 or MA1507 or MA1521) and (MA1104 or MA1506 or MA1508); and 2. MA2216/ST2131; and 3. MA3269 and (QF3101 or FIN3102 [for BIZ students]) ; and ST3131 Titles of the above modules are as listed below: MA1102R Calculus MA1104 Multivariable Calculus MA1505 Mathematics I MA1506 Mathematics II MA1507 Advanced Calculus MA1508 Linear Algebra with Applications MA1521 Calculus for Computing MA2216/ST2131 Probability MA3269 Mathematical Finance I QF3101 Investment Instruments: Theory and Computation FIN3102 Investment Analysis and Portfolio Management ST3131 Regression Analysis</p> <p><u>Revised text:</u></p> <p>To be awarded a minor in Financial Mathematics, a student must pass at least 24 MCs from non-overlapping modules of the following: 1. Pass at least 8 MCs from the following modules: a. MA1xxx, except MA1301/MA1301X; b. CS1231/CS1231S; and 2. Pass MA2216/ST2131 or ST2334; and 3. Pass MA3269 and (QF3101 or FIN3101 [for BIZ students] or FIN3102/FIN3702* [for BIZ</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>students)]; and ST3131.</p> <p>The titles of the above modules are as listed below:</p> <p>CS1231/CS1231S Discrete Structures MA2216/ST2131 Probability MA3269 Mathematical Finance I QF3101 Investment Instruments: Theory and Computation FIN3101 Corporate Finance FIN3102/FIN3702* Investment Analysis and Portfolio Management ST2334 Probability and Statistics ST3131 Regression Analysis</p> <p>*School of Business has amended the module code of FIN3102 to FIN3702 for cohort AY2017 and after.</p> <hr/> <p>Circular title: Mathematics: c. Proposed changes to requirements of the Minor in Mathematics (MA) Circular no.: BUS Circular No. 24, AY2018/19 (dated 13 Jun 2019) To be changed for cohort number(s): AY2013/14 onwards</p> <p><u>Archived Bulletin AY2016/17</u></p> <p>Link: http://www.nus.edu.sg/registrar/info/nusbuletin/AY201617_FoS.pdf - Page 153/229</p> <p><u>Current text:</u></p> <p>To qualify for a minor in Mathematics, a student should pass six non-overlapping modules of the following type:</p> <ol style="list-style-type: none"> Any two of the following modules: <ol style="list-style-type: none"> MA1xxx modules except MA1301/MA1301X CS1231 Any two MA2xxx modules Any two MA3xxx or higher modules, excluding MA3311 and MA3312 <p>Note that these ST and MA modules are crosslisted: ST2131 with MA2216, ST3236 with MA3238, and ST4238 with MA4251.</p> <p><u>Revised text:</u></p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>To qualify for a Minor in Mathematics, a student should pass at least 24 MCs from non-overlapping modules of the following type:</p> <ol style="list-style-type: none"> At least 8 MCs from the following modules: <ul style="list-style-type: none"> MA1xxx modules except MA1301/MA1301X, OR CS1231/CS1231S; and Any two MA2xxx modules; and Any two MA3xxx or higher modules, MA3311 and MA3312 except those coded MA33XX. <p>Note that these ST and MA modules are cross-listed:</p> <ul style="list-style-type: none"> ST2131 with MA2216 ST3236 with MA3238 ST4238 with MA4251
28.	26 Jul 2019	FoS	<p>Meeting title: Minutes of Science Faculty Curriculum Committee Meeting held on Wednesday 24 February 2016, 1pm at S16 Level 9 Conference Room</p> <p>Meeting no.: SFCC Meeting no. 5, AY2015/16 (dated 24 Feb 2016)</p> <p>To be changed for cohort number(s): AY16/17 onwards</p> <p><u>Archived Bulletin AY2016/17</u> Link: http://www.nus.edu.sg/registrar/info/nusbulletin/AY201617_FoS.pdf (Page 32/229)</p> <p><u>Current text:</u></p> <p>Statistics Statistics (with specialisation in Biostatistics) Statistics (with specialisation in Finance and Business Statistics)</p> <p><u>Revised text:</u></p> <p>Statistics Statistics (with specialisation in Biostatistics) (For Cohort 2015 and earlier) Statistics (with specialisation in Data Science) (For Cohort 2016 onwards) Statistics (with specialisation in Finance and Business Statistics)</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
29.	14 May 2020	FoS	<p>Updates for Archived Bulletin AY2016/17 Link: http://www.nus.edu.sg/registrar/docs/info/nusbulletin/AY201617_FoS.pdf http://www.nus.edu.sg/registrar/docs/info/nusbulletin/Bulletin-Updates-AY1617.pdf</p> <hr/> <p>Circular title: Proposed Inclusion of ST4299 (Applied Project) as an Alternative to ST4199 (Honours Project) in the Statistics Major Circular no.: SFCC Circular No. 19, AY2018/19</p> <p>Page 116</p> <p>Current and revised text:</p> <p>Pass</p> <ul style="list-style-type: none"> - ST4199 Honours Project in Statistics <i>or</i> ST4299 Applied Project in Statistics - ST4231 Computer Intensive Statistical Methods - ST4233 Linear Models - Two other modules from ST4xxx modules - One additional module from ST4xxx, ST5xxx or List B modules <hr/> <p>Circular title: Faculty of Science: Department of Chemistry – Revision of Requirements for Minor in Analytical Chemistry Programme Circular no.: BUS Cir05, AY19/20</p> <p>Page 143</p> <p>Current text:</p> <p>To be awarded a minor in Analytical Chemistry, a student must pass all the following six modules:</p>

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p> 1. CM1401 and CM1111 Chemistry for Life Sciences and Inorganic Chemistry 1 OR CM1402 and CM1191 General Chemistry and Experiments in Chemistry 1 2. CM2101 Physical Chemistry 2 3. CM2142 Analytical Chemistry 1 OR CM2192 Experiments in Chemistry 2 4. CM3242 Instrumental Analysis II 5. CM3295 Selected Experiments in Analytical Chemistry </p> <p>Revised text:</p> <p>To be awarded a minor in Analytical Chemistry, a student must pass all the following six modules:</p> <ol style="list-style-type: none"> 1. CM1191 Experiments in Chemistry 1 2. CM1111 Inorganic Chemistry 1 <u>or</u> CM1121 Organic Chemistry 1 <u>or</u> CM1131 Physical Chemistry 1 <u>or</u> CM1401 Chemistry for Life Sciences <u>or</u> CM1402 General Chemistry <u>or</u> CM1501 Organic Chemistry for Engineers <u>or</u> CM1502 General and Physical Chemistry for Engineers 3. CM2192 Experiments in Chemistry 3 or CM2142 Analytical Chemistry 1 4. CM2101 Physical Chemistry 2 <u>or</u> CM3241 Instrumental Analysis I 5. CM3242 Instrumental Analysis II 6. CM3292 Advanced Experiments in Analytical & Physical Chemistry <u>or</u> CM3295 Selected Experiments in Analytical Chemistry <hr/> <p>Circular title: FoS: Department of Biological Sciences – Addition of Elective Options for Minor Programme in Aquatic Ecology Circular no.: BUS Cir09, AY19/20</p> <p>Page 144</p> <p>Current text:</p> <p>To be awarded a minor in Aquatic Ecology, a student must pass the six modules as set out below:</p> <ol style="list-style-type: none"> 1. LSM2251 Ecology and Environment 2. LSM3254 Ecology of Aquatic Environments 3. GE2229 Water and Environment 4. SP3203 Aquatic Ecology Research 5. Choose 2 from the following elective modules:

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>[For students reading Life Sciences Major, please select at least one non-LSM prefixed module.]</p> <ul style="list-style-type: none"> o GE2215 Introduction to GIS and Remote Sensing o GE2220 Terrestrial and Coastal Environments o GE2228 Weather and Climate o GE3216 Applications of GIS & Remote Sensing o GE3221 Ecological Systems o GE3223 Environmental Change in the Tropics o LSM2253 Applied Data Analysis in Ecology and Evolution o LSM2252 Biodiversity o LSM4257 Aquatic Vertebrate Diversity o LSM4261 Marine Biology o LSM4264 Freshwater Biology <p>This Minor is not awarded with a Bachelor of Environmental Studies (BES) degree from Cohort AY2016/17 and onwards.</p> <p>Revised text:</p> <p>To be awarded a minor in Aquatic Ecology, a student must pass the six modules as set out below:</p> <ol style="list-style-type: none"> 1. LSM2251 Ecology and Environment 2. LSM3254 Ecology of Aquatic Environments 3. GE2229 Water and Environment 4. SP3203 Aquatic Ecology Research 5. Choose 2 from the following elective modules: <p>[For students reading Life Sciences Major, please select at least one non-LSM prefixed module.]</p> <ul style="list-style-type: none"> o GE2215 Introduction to GIS and Remote Sensing o GE2220 Terrestrial and Coastal Environments o GE2228 Weather and Climate o GE3216 Applications of GIS & Remote Sensing o GE3221 Ecological Systems o GE3223 Environmental Change in the Tropics o GE3246 Environmental Pollution o LSM2253 Applied Data Analysis in Ecology and Evolution o LSM2252 Biodiversity o LSM4257 Aquatic Vertebrate Diversity o LSM4260 Plankton Ecology o LSM4261 Marine Biology

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>o LSM4264 Freshwater Biology o LSM4266 Aquatic Invertebrate Diversity</p> <hr/> <p>Circular title: FoS: Department of Physics – Proposal to Change the Curriculum for the Minor in Medical Physics Circular no.: BUS Cir15, AY19/20</p> <p>Page 154</p> <p>Current text:</p> <p>The Medical Physics minor programme will consist of the following set of common core modules (12 MCs):</p> <ol style="list-style-type: none"> 1. GEH1032 Modern Technology in Medicine and Health 2. PC3232 Nuclear & Particle Physics (for physics majors) or PC3232B Applied Nuclear Physics 3. PC3294 Radiation Lab <p>Students in the Medical Physics minor programme are also required to read at least 12 MCs of modules from the following set of electives:</p> <p>Module (4 MC each)</p> <ol style="list-style-type: none"> 1. LSM2212 Human Anatomy 2. LSM1106 Molecular Cell Biology 3. LSM1104 or LSM2231 General Physiology 4. LSM1401 Fundamentals of Biochemistry 5. LSM2103 or LSM2233 Cell Biology 6. LSM4243 Tumour Biology 7. LSM3223 Immunology 8. LSM3243 Molecular Biophysics 9. EE4603 Biomedical Imaging Systems <p>Revised text:</p> <p>The Medical Physics minor programme will consist of the following set of common core modules (12 MCs):</p> <ol style="list-style-type: none"> 1. GEH1032 Modern Technology in Medicine and Health

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>2. PC3232 Nuclear & Particle Physics (for physics majors) or PC3232B Applied Nuclear Physics PC3295 Radiation for Imaging and Therapy in Medicine</p> <p>3. PC3294 Radiation Lab</p> <p>Students in the Medical Physics minor programme are also required to read at least 12 MCs of modules from the following set of electives:</p> <p>Module (4 MC each)</p> <ol style="list-style-type: none"> 1. LSM2212 Human Anatomy 2. LSM1106 Molecular Cell Biology 3. LSM1104 or LSM2231 General Physiology 4. LSM1401 Fundamentals of Biochemistry 5. LSM2103 or LSM2233 Cell Biology 6. LSM4243 Tumour Biology 7. LSM3223 Immunology 8. LSM3243 Molecular Biophysics 9. EE4603 Biomedical Imaging Systems <p>Please note that with effect from Semester 1, AY2020/21:</p> <ul style="list-style-type: none"> • Students who have not read PC3232 or PC3232B will now read PC3295 to satisfy the Minor curriculum requirement in lieu of PC3232/PC3232B, before going on to read PC3294. • Students who have already read PC3232 or PC3232B are considered to have fulfilled the requirement of PC3295 under the new Minor requirements and may proceed to read the module PC3294.
30.	4 Jun 2020	FoS	<p>Updates for Archived Bulletin AY16/17 Link: http://www.nus.edu.sg/registrar/docs/info/nusbuletin/AY201617_FoS.pdf http://www.nus.edu.sg/registrar/docs/info/nusbuletin/Bulletin-Updates-AY1617.pdf</p> <hr/> <p>Circular title: FoS: Department of Pharmacy – Major Revision to the Minor Programme in Pharmaceutical Science Circular no.: Senate Circular No. 14 AY2019-20</p> <p>Page 160 of 229</p> <p>Current text:</p>

(as a 4 Jun 2020

S/N	Date	Faculty/ School/	(B) Updates for NUS Bulletin 2016-17 after archival (i.e., from 1 July 2017 onwards)
			<p>Curriculum Structure and Requirements</p> <p>Essential modules: PR1101 or PR1110 Physicochemical Principles of Drug Action OR Foundations for Medicinal Chemistry PR1102 or PR2114 Physical Pharmacy OR Formulation and Technology I PR3101 or PR2115 Principles of Medicinal Chemistry OR Medicinal Chemistry for Drug Design PR3301 Pharmaceutical Dosage Forms</p> <p>Choose TWO from the following elective modules: PR1301 Complementary Medicine and Health PR4205 Bioorganic Principles of Medicinal Chemistry PR4206 Industrial Pharmacy CN4241R Engineering Principles for Drug Delivery</p> <p>Revised text:</p> <p>Essential modules: PR1101 or PR1110 Physicochemical Principles of Drug Action OR Foundations for Medicinal Chemistry <u>or</u> <u>PHS1110 Foundation for Medicinal and Synthetic Chemistry</u> PR1102 or PR2114 Physical Pharmacy OR Formulation and Technology I <u>or</u> <u>PHS1114 Principles of</u> <u>Pharmaceutical Formulations I</u> PR3101 or PR2115 Principles of Medicinal Chemistry OR Medicinal Chemistry for Drug Design <u>or</u> <u>PHS2115</u> <u>Basic Principles of Drug Design and Development</u> PR3301 Pharmaceutical Dosage Forms or PR3117 Formulations & Technology II <u>or</u> <u>PHS2117 Principles of</u> <u>Pharmaceutical Formulations II</u></p> <p>Choose TWO from the following elective modules: PR1301 Complementary Medicine and Health PR2143 Pharmaceutical Analysis for Quality Assurance <u>or</u> <u>PHS2143 Analytical Techniques and Pharmaceutical</u> <u>Applications</u> <u>PR2202 Cosmetics and Perfumes</u> PR3204 Medicinal Natural Products PR4205 Bioorganic Principles of Medicinal Chemistry PR4206 Industrial Pharmacy CN4241R Engineering Principles for Drug Delivery <u>SP4263 Forensic Toxicology and Poisons</u></p>