

3.4.6 Bachelor of Technology (Supply Chain Management)

The BTech (Supply Chain Management) programme is building on the suite of five existing BTech programmes (Electronics Engineering, Mechanical Engineering, Chemical Engineering, Industrial & Management Engineering and Civil Engineering) offered by the School of Continuing and Lifelong Education (SCALE) and the Faculty of Engineering in NUS. The programme will provide an avenue for suitably qualified polytechnic diploma holders who are currently employed to pursue a part-time degree at NUS, while allowing them to stay economically productive during the course. The part-time programme will marry key components from the broad-based full-time Bachelor of Engineering (BEng) (ISE) programme with essential elements of strong industry relevance that will be immediately useful in the workplace. In this way, it will fulfil the strong aspiration of the growing number of capable polytechnic graduates to obtain a degree without the need to go overseas or give up their jobs.

The BTech (Supply Chain Management) programme is aligned with the Faculty's educational philosophy which emphasises the learning of scientific fundamentals of engineering as a foundation for proficient and innovative practice. Interactive classroom lectures are augmented by hands-on laboratory sessions and design and research experience.

The **educational objectives** of the programme are as follows:

- A deep fundamental knowledge of core supply chain management, supply chain engineering and general business disciplines such as international trade law;
- Broad integrative skills to apply the knowledge gained;
- An appreciation of the interactions between modern logistics and supply chains, with engineering, business and technology in modern society;
- A drive for life-long learning and continuous self-development; and
- An understanding of their roles as supply chain analysts/ engineers in the development of Singapore society at the national and global levels.

In addition, the programme ensures that our graduates are equipped with the necessary logistics and supply chain management and engineering core competencies to meet the requirements for the practice of engineering in Singapore as stipulated by the Professional Engineers Board.

The **student learning outcomes** are aligned to those required by the Engineering Accreditation Board on outcomes for engineering graduates and these are as follows:

- Apply knowledge of mathematics, science and engineering to logistics and supply chain management;
- 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 and formulate research through relevant literature review, and solve engineering problems with 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 (including listening, writing and speaking skills);
- Recognise 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 multidisciplinary teams and understand the fundamental precepts of effective logistical and supply chain related project management; and
- Understand professional, ethical and moral responsibilities in the workplace.

Degree Requirements

Candidates must satisfy the following requirements to be conferred the degree of BTech (Supply Chain Management):

- Complete a minimum of **160 MCs** with a minimum CAP of 2.00;
(Note: 20 MCs of programme requirements and 20 MCs of unrestricted elective requirements will normally be given as Advanced Placement Credits (APCs) to holders of relevant diploma or higher qualifications. Students will be required to complete a minimum of **120 MCs** of 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 the 20 MCs of APCs); and
- Satisfy any other additional requirements that may be prescribed by SCALE, the Faculty of Engineering, or the University.

List of modules - BTech (Supply Chain Management), comprise:

1. All modules are 4MCs, except when otherwise stated.
2. A module with module code TIExxxx is equivalent to the module IExxxx offered to full-time students. Subject to the approval from SCALE and the Department of Industrial Systems Engineering and Management, a student may select a full-time equivalent module in place of any TIExxxx module.

A. University Level Requirements (20MCs)

- Human Cultures (module with prefix GEH)
- Asking Questions (module with prefix GEQ)
- Quantitative Reasoning (module with prefix GER)
- Singapore Studies (module with prefix GES)
- Thinking and Expression (module with prefix GET)

B. Programme Requirements (88MCs), comprising

1. Faculty Requirements (4MCs)
 - TTG2415 Ethics in Engineering
2. Major Requirements - Essential Modules (68MCs)
 - TTG1401 Engineering Mathematics I
 - TIE2020 Probability and Statistics

- TIE2030 Programming Methodology with Python
- TIE2100 Probability Models with Applications
- TIE2110 Operations Research I
- TIE2140 Engineering Economy
- TIE3101 Statistics for Engineering Applications
- TIE4220 Supply Chain Modelling
- TSC3100 Systems Chain Design (8MCs)
- TSC3222 Global Sourcing and Supply Management
- TSC3223 Supply Chain Financial Analysis and Management
- TSC3224 Distribution and Warehousing
- TSC3226 Transportation Management
- TSC4101 BTech Dissertation (8MCs)
- TSC4225 Port Logistics

3. Major Requirements - Elective Modules (16MCs or 17MCs, selected from the list below)

a) A student who reads 17 MCs under the Electives may have his/ her UEM requirements reduced to 11 MCs.
 b) 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 from SCALE and the Department of Industrial Systems Engineering and Management, a student may select one Level-3000 or higher module from other programmes within the Faculty of Engineering.

- TIE3010 Systems Thinking and Design
- TIE3110 Simulation (5MCs)
- TIE4242 Cost Analysis and Management
- TIE4240 Project Management
- TIE4203 Decision Analysis in Industrial & Operations Management
- TIE4212 Advanced Modeling in Operations Management
- TIE4252 Introduction to Systems Engineering
- TIE4229 Selected Topics in Logistics
- TIE4249 Selected Topics in Engineering Management
- TIE4259 Selected Topics in Systems Engineering
- TIE4299 Selected Topics in Industrial Engineering

C. Unrestricted Elective Modules (12MCs)

Study Schedule

There are two intakes per academic year, in Semester 1 (i.e. August) and Semester 2 (i.e. January). The sample study schedule 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.

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 (4) TIE2030 Programming Methodology with Python (4) TIE2110 Operations Research I (4)
Sem 2:	TIE2020 Probability & Statistics (4) TIE2100 Probability Models with Applications (4) TIE2140 Engineering Economy (4)
SpTerm:	General Education Module 1 (4) General Education Module 2 (4)
2nd Year of studies	
Sem 1:	TIE3101 Statistics for Engineering Application (4) TSC3223 Supply Chain Financial Analysis & Management (4) Elective Module 1 (4)
Sem 2:	TIE4220 Supply Chain Modelling (4) TSC3222 Global Sourcing & Supply Management (4) Elective Module 2 (4)
SpTerm:	TTG2415 Ethics in Engineering (4) General Education 3 Module (4)
3rd Year of studies	
Sem 1:	TSC3226 Transportation Management (4) *TSC3100 Systems Chain Design *TTG3001 Industrial Practice
Sem 2:	TSC3224 Distribution and Warehousing (4) *TSC3100 Systems Chain Design (8) *TTG3001 Industrial Practice (12)
SpTerm:	General Education Module 4 (4) General Education Module 5 (4)
4th Year of studies	

Sem 1:	TSC4225 Port Logistics (4) *TSC4101 BTech Dissertation Elective Module 3 (4)
Sem 2:	*TSC4101 BTech Dissertation (8) Elective Module 4 (4)

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	
Sem 2:	TTG1401 Engineering Mathematics (4) TIE2020 Probability & Statistics (4) TIE2140 Engineering Economy (4)
SpTerm:	General Education Module 1 (4) General Education Module 2 (4)
Sem 1:	TIE2030 Programming Methodology with Python (4) TIE2110 Operations Research I (4) TIE3101 Statistics for Engineering Application (4)
2nd Year of studies	
Sem 2:	TIE2100 Probability Models with Applications (4) TSC3222 Global Sourcing & Supply Management (4) TIE4220 Supply Chain Modelling (4)
SpTerm:	TTG2415 Ethics in Engineering (4) General Education Module 3 (4)
Sem 1:	TSC3223 Supply Chain Financial Analysis & Management (4) TSC3226 Transportation Management (4) *TTG3001 Industrial Practice

3rd Year of studies	
Sem 2:	*TSC3100 Systems Chain Design TSC3224 Distribution and Warehousing (4) *TTG3001 Industrial Practice (12)
SpTerm:	General Education Module 4 (4) General Education Module 5 (4) *TSC3100 Systems Chain Design
Sem 1:	TSC4225 Port Logistics (4) *TSC3100 Systems Chain Design (8) Elective Module 1 (4)
4th Year of studies	
Sem 2:	*TSC4101 BTech Dissertation Elective Module 2 (4)
SpTerm:	*TSC4101 BTech Dissertation Elective Module 3 (4)
Sem 1:	*TSC4101 BTech Dissertation (8) Elective Module 4 (4)