

3.5.5.1 Second Major in Systems Engineering Programme

The Department of Industrial Systems Engineering & Management (ISEM) offers the Major in Systems Engineering (Sys Eng Major), a Second Major as part of NUS Special Undergraduate Programmes, for students from all other faculties and schools.

The programme is offered from August 2008. Students may be admitted to the programme based on the following criteria:

- Students can apply on admission or after they have completed their first year of study;
- Must apply no later than the 5th semester of their study;
- Must have a CAP score of at least 3.5

Applications should be submitted to the ISEM Department. Selection for admission will be on a competitive basis and subjected to the approval from ISEM Department as well as availability of quota.

To fulfil the requirements of the Second Major in Systems Engineering, students are required to complete 48 MCs.

Students may use up to a maximum of 16 MCs of their Second Major in Systems Engineering modules to double count towards other programmes.

Once admitted to the Second Major in Systems Engineering programme, students do not need to maintain any minimum academic performance threshold in order to remain in the programme. They are strongly encouraged to plan their modules well in order to be able to complete the programme requirements.

Students who complete the 24 MCs of core modules* will be awarded a Minor in Systems Engineering if they do not wish to complete all the requirements for the Second Major in Systems Engineering.

Module Requirements for 2nd Major in Systems Engineering AY2017/2018 Intake Onwards

Modules	MCs
<u>Seven Core Modules</u>	32
ST2334 Probability and Statistics*	4
IE1113 Introduction to Systems Analytics*	4
IE1114 Introduction to Systems Thinking and Dynamics*	4

IE2110 Operations Research I*	4
IE2150 Human Factors Engineering*	4
IE3105 Fundamentals of Systems Engineering and Architecture*	4
IE3102 System Engineering Project	8
<u>Two Electives Modules</u>	8
Any two modules from the following:	
CS2113T Software Engineering	4
IE2130 Quality Engineering I	4
IE3101 Statistics for Engineering Applications	4
IE3110R Simulation	4
IE4240 Project Management (or equivalent)	4
IE4243 Decision Modeling and Risk Analysis	4
<u>Two Systems Modules</u>	8
Any two modules from the following:	
Industrial Systems	
IE3120 Manufacturing Logistics	4
IE4220 Supply Chain Modeling	4
IE4221 Transport Demand Modeling and Economics	4
IE4244 Energy: Security, Competitiveness and Sustainability	4
Infrastructure Systems	
CE3101 Integrated Infrastructure Project	4
CE3102 Engineering of Socio-Technical Systems	4
CE3121 Transportation Engineering	4

CE3132	Water Resources Engineering	4
CE4221	Design of Land Transport Infrastructures	4
CE4282	Building Information Modeling for Project	4
ESE3101	Solid and Hazardous Waste Management	4
Computer Systems		
CS2102	Database Systems	4
CS4244	Knowledge Based Systems	4
CS4246	AI Planning and Decision Making	4
Electrical/Electronic Systems		
EE3331C	Feedback Control Systems	4
EE3505C	Electrical Energy Systems	4
EE4214	Real Time Embedded Systems	4
EE4305	Introduction to Fuzzy/Neural Systems	4
EE4307	Control Systems Design and Simulation	4
EE4308	Advances in Intelligent Systems and Robotics	4
EE4501	Power Systems Management and Protection	4
EE4511	Sustainable Energy Systems	4
Mechanical Systems		
ME4246	Modern Control Systems	4
ME4263	Fundamentals of Product Development	4
ME4266	Energy and Thermal Systems	4
Chemical Systems		
CN4122	Process Synthesis and Simulation	4
CN4201R	Petroleum Refining	4

CN4238 Chemical and Biochemical Process Modelling 4

CN4245R Data Based Process Characterization 4

Biomedical Systems

BN3101 Biomedical Engineering Design 4

BN4203 Rehabilitation Engineering 4

Total	48
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For queries on the Second Major in Systems Engineering, please email us at isebox1@nus.edu.sg.