Bachelor of Engineering (Computer Engineering) Curriculum
Major Prescribed Electives for Specialisation
(For AY21/22 and later Cohort)

1. Students must choose to take the number of major prescribed elective (MPEs) courses based on their programme requirements from the list below

2. If a student has read at least 3 courses from one area regardless of whether the courses are read as MPEs or BDE, he will be deemed to have attained elective focus in that particular area. Students can exercise Flexible Grading Option (FGO) for the BDE and it will still be counted towards the elective focus area. (Note: students can only take MPE as BDE after fulfilling the MPE requirements

3. For CE students, Elective Focus (total of 9 AUs i.e 3 courses to qualify) attained will be reflected as "Elective Focus" in the result transcript, e.g. Elective Focus in Security. Currently, we do not offer Specialization for CE students

4. Students can be awarded Elective Focus in at most two (2) areas.

5. Topics to be offered can vary depending on factors such as availability of faculty; availability of visiting staff with certain expertise; new technological trends, etc. Special Topics may also replace the listed elective courses. Note that this list is subjected to changes every semester.

6. To get the most updated list of courses available in Sem 1 or Sem 2, students may check the course code via this link https://wis.ntu.edu.sg/webexe/owa/aus_schedule.main

Areas of Specialisation: ARTIFICAL INTELLIGENCE	Semester Offered		AU	Pre-requisite*
	S1	S2		
SC3000 Artificial Intelligence	√	√	3	SC1007 & SC2000 or SC1007 &MH2500
SC4000 Machine Learning	√	√	3	SC1004 & SC1007 & SC2000 or SC1007&MH2500
SC4001 Neural Networks & Deep Learning	√		3	SC1004 & SC1007 or MH2802& SC1007
SC4002 Natural Language Processing	√		3	SC2001 or MH1403 Year 3 Standing
SC4003 Intelligent Agents		√	3	SC1007 & SC2000 or SC1007 & MH2500
SC4061 Computer Vision	√		3	Year 3 Standing
SC4172 Internet of Things: Tiny Machine Learning		√	3	SC2107

Areas of Specialisation: SECURITY	Semester Offered		AU	Pre-requisite*
	S1	S2		
SC3010 Computer Security	√	√	3	SC2005
SC4010 Applied Cryptography	√		3	SC2000 or MH2500 Year 3 Standing
SC4011 Security Management	TBC			
SC4012 Software Security		√	3	SC2002 & SC2005
SC4014 Concepts and Techniques for Malware Analysis	TBC			
SC4015 Cyber Physical System Security		√	3	SC1006
SC4016 Cyber Threat Intelligence	√		3	Year 3 Standing
SC4063 Network Security		√	3	SC2005 & SC2008

Areas of Specialisation: DATA SCIENCE	Semester Offered		AU	Pre-requisite*
	S1	S2		
SC4020 Data Analytics and Mining	√		3	SC2001 or MH1403
SC4021 Information Retrieval		√	3	SC2001 or MH1403
SC4022 Network Science	TBC			

Areas of Specialisation: NETWORK	Semester Offered		AU	Pre-requisite*
	S1	S2		
SC3030 Advanced Computer Networks	√		3	SC2008
SC4030 Wireless and Mobile Network	√		3	SC2008
SC4031 Internet of Things: Communications Networking		√	3	SC2008

Areas of Specialisation: IOT	Semester Offered		AU	Pre-requisite*
	S1	S2		
SC4015 Cyber Physical System Security		√	3	SC1006
SC4031 Internet of Things: Communications & Networking		√	3	SC2008
SC4172 Internet of Things: Tiny Machine Learning		√	3	SC2107

NO SPECIALISATION: Other MPES	Semester Offered		AU	Pre-requisite*
	S1	S2		
SC3020 Database System Principles	√	√	3	SC2207
SC3040 Advanced Software Engineering	√		3	SC2006
SC3050 Advanced Computer Architecture	√		3	SC1006
SC4040 Advanced Topics in Algorithms	√		3	SC2001
SC4050 Parallel Computing	√			SC2001 & SC3050
SC4051 Distributed Systems		√	3	SC2005 & SC2008
SC4052 Cloud Computing		√	3	SC1004 or MH2802 Year 3 standing
SC4053 Blockchain Technology	√		3	SC1007 & SC2001 & MH1812
SC4064 GPU Programming		√	3	SC2001, SC2005, SC2008
SC4054 Simulation and Modelling	**TBC**			
SC4060 Virtual and Augmented Reality	**TBC**			

*In addition to the Pre-requisite shown here, students also need to be of at least Study Year 3 standing.