Bachelor of Engineering (Computer Engineering) Curriculum
Major Prescribed Electives and Elective Focus Areas
(For AY2020 and earlier Cohort)

1. Students must choose to take the number of major prescribed elective 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 Prescribed Elective or Unrestricted Elective, he will be deemed to have attained elective focus in that particular area. Students can exercise S/U for the Unrestricted Elective and it will still be counted towards the elective focus area. (*Note: students can only take MPE as UE after fulfilling the MPE requirements*)

3. 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.

4. The "Specialisation" attained will be reflected as "Elective Focus" in the result transcript, e.g. Elective Focus in Cyber Security.

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

Areas of Elective Focus	Semester Offered		AU	Pre-requisite*
ARTIFICAL INTELLIGENCE	**SEM 1**	**SEM 2**		
CE4041 Machine Learning	√	√	3	CE1107 & CE2100 or CE1007 & CE1011
CE4042 Neural Networks & Deep Learning	√		3	CE1104 & CE1107 or CE1007 & CE1011 & CE1012
CE4045 Natural Language Processing	√		3	CE2001
CE4046 Intelligent Agents		√	3	CE1107 & CE2100 or CE1007 & CE1011
CE4172 Internet of Things: Tiny Machine Learning		√	3	CE2007
CE4001 Virtual and Augmented Reality		√	3	(Year 3)
CE4003 Computer Vision	√		3	(Year 3)
CYBER SECURITY	**SEM 1**	**SEM 2**	**AU**	**Pre-requisite***
CE4010 Applied Cryptography	√		3	CE2100
CE4055 Cyber Physical System Security		√	3	CE1106 or CE1006
CE4062 Computer Security	√	√	3	CE2005
CE4064 Security Management	√		3	CE2006
CE4067 Software Security		√	3	CE2002 & CE2005
CE4069 Concepts and Techniques for Malware Analysis		√	3	(Year 3)
CE4070 Cyber Threat Intelligence	√		3	CE1006 & CE2005

	SEM 1	SEM 2	AU	
Cx4024 Cryptography & Network Security#	NA	NA	3	Phased out
Cx4065 Digital Forensics#	NA	NA	3	Phased out
Cx4068 Application Security#	NA	NA	3	Phased out
DATA SCIENCE & ANALYTICS	**SEM 1**	**SEM 2**	**AU**	**Pre-requisite***
CE4031 Database System Principles	√	√	3	CE2001 & CZ2007
CE4032 Data Analytics and Mining	√		3	CE2001
CE4034 Information Retrieval		√	3	CE2101 or CE2001
CE4041 Machine Learning	√	√	3	CE1107 & CE2100 or CE1007 & CE1011
CE4062 Computer Security	√	√	3	CE2005
CE4071 Network Science		TBC	3	CE2101 or CE2001
CE4123 Big Data Management		√	3	CE4031
Cx4073 Data Science for Business#	NA	NA	3	Phased out
NETWORKING & MOBILITY	**SEM 1**	**SEM 2**	**AU**	**Pre-requisite***
CE4013 Distributed Systems		√	3	CE2005 & CE3005
CE4022 Wireless and Mobile Networks	√		3	CE3005
CE4023 Advanced Computer Networks	√		3	CE3005
CE4171 Internet of Things: Communications & Networking		√	3	CE3005
Cx4021 Pervasive Networks#	NA	NA	3	Phased out
Cx4024 Cryptography & Network Security#	NA	NA	3	Phased out
HIGH PERFORMANCE COMPUTING	**SEM 1**	**SEM 2**	**AU**	**Pre-requisite***
CE4013 Distributed Systems		√	3	CE2005 & CE3005
CE4015 Simulation and Modelling		√	3	CE1107 & CE2100 or CE1007 & CE1011
CE4016 Advanced Topics in Algorithms	√		3	CE2001
CE4052 Cloud Computing		√	3	CE1004 or CE1104
IOT & EDGE COMPUTING	**SEM 1**	**SEM 2**	**AU**	**Pre-requisite***
CE4171 Internet of Things: Communications & Networking		√	3	CE3005
CE4172 Internet of Things: Tiny Machine Learning		√	3	CE2007

CE4055 Cyber Physical System Security		√	3	CE1106 or CE1006

CYBER PHYSICAL SYSTEMS	SEM 1	SEM 2	AU	
CE4055 Cyber Physical System Security		√	3	CE1106 or CE1006
CE4056 Cyber-Physical Systems Design#	NA	NA	3	Phased out
CE4057 Real-Time Computing#	NA	NA	3	Phased out
CE4058 Cyber-Physical Software Development#	NA	NA	3	Phased out

ELECTIVE COURSES WITH NO FOCUS AREA	SEM 1	SEM 2	AU	Pre-requisite*
CE4153 Blockchain Technology	√		3	CE2001 & MH1812 or CE2101 & MH1812

*In addition to the Pre-requisite shown here, student also needs to be of at least Study Year 3 standing.
 #Students who had completed these courses prior to AY22 Sem 1 can still count them towards fulfilling the respective Elective Focus as indicated.