

Bachelor of Engineering (Computer Engineering) Curriculum

Elective Focus Areas and Elective Focus Criteria

- Students must choose to take the number of required prescribed/technical courses (based on their programme requirements) from the list below.
- If a student has read at least 3 courses from one area regardless of whether the courses are read as Technical Elective or Unrestricted Elective, he will be deemed to have attained elective focus in that area. ***Students can exercise S/U for the Unrestricted Elective and it will still be counted towards the elective focus area.***
- At any one semester, at least 2 elective courses will be offered. **Special Topics to be mounted 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.**
- The “Specialisation” attained will be reflected as “Elective Focus” in the result transcript, e.g. Elective Focus in Cyber Security.
- Students can be awarded Elective Focus in at most two (2) areas.

Areas of Elective Focus	Semester Offered		AU	Pre-requisite**
HIGH PERFORMANCE COMPUTING	SEM 1	SEM 2		
CE/CZ4013 Distributed Systems		√	3	CE/CZ2005, CE3005 or CZ3006
CE/CZ4015 Simulation and Modelling		√	3	CE/CZ1007, CE/CZ1011
CE/CZ4016 Advanced Topics in Algorithms	√		3	CE/CZ2001
NETWORKING & MOBILITY	SEM 1	SEM 2	AU	Pre-requisite**
CE/CZ4013 Distributed Systems		√	3	CE/CZ2005, CE3005 or CZ3006
CE/CZ4021 Pervasive Networks	TBD		3	CE3005 or CZ3006
CE/CZ4022 Personal Mobile Networks	√		3	CE3005 or CZ3006
CE/CZ4023 Advanced Computer Networks	√		3	CE3005 or CZ3006
CE/CZ4024 Cryptography and Network Security		√	3	CE3005 or CZ3006
CYBER PHYSICAL SYSTEMS	SEM 1	SEM 2	AU	Pre-requisite**
CE/CZ4055 Cyber Physical System Security*		√	3	CE/CZ1006
CE4056 Cyber-Physical Systems Design	TBD		3	CE/CZ1006, CE2007
CE/CZ4057 Time-Critical Computing	TBD		3	CE/CZ1006, CE/CZ2005
CYBER SECURITY	SEM 1	SEM 2	AU	Pre-requisite**
CE/CZ4024 Cryptography and Network Security		√	3	CE3005 or CZ3006

CE/CZ4055 Cyber Physical System Security*		√	3	CE/CZ1006
CE/CZ4062 Computer Security (System Security)	√		3	CE/CZ2005
CE/CZ4064 Security Management	√		3	CE/CZ2006
CE/CZ4065 Digital Forensics	TBD		3	CE3005 or CZ3006, CE/CZ4062
CE/CZ4067 Software Security*		√	3	CE/CZ2002, CE/CZ2005
CE/CZ4068 Application Security	TBD		3	CE/CZ2005, CE3005 or CZ3006
CE/CZ4069 Concepts and Techniques for Malware Analysis		√	3	CE/CZ1006, CE/CZ2005
ARTIFICIAL INTELLIGENCE	SEM 1	SEM 2	AU	Pre-requisite**
CE/CZ4001 Virtual and Augmented Reality		√	3	CZ2003
CE/CZ4003 Computer Vision	√		3	-
CE/CZ4041 Machine Learning		√	3	CE/CZ1007, CE/CZ1011
CE/CZ4042 Neural Networks & Deep Learning	√		3	CE/CZ1003, CE/CZ1007, CE/CZ1011, CE/CZ1012
CE/CZ4045 Natural Language Processing (Special Topic)	√		3	CE/CZ2001
CE/CZ4046 Intelligent Agents (Special Topic)		√	3	CE/CZ1007, CE/CZ1011
DATA SCIENCE & ANALYTICS	SEM 1	SEM 2	AU	Pre-requisite**
CE/CZ4031 Database System Principles	√		3	CE/CZ2001, CZ2007
CE/CZ4032 Data Analytics and Mining	√		3	CE/CZ2001
CE/CZ4034 Information Retrieval		√	3	CE/CZ2001
CE/CZ4041 Machine Learning		√	3	CE/CZ1007, CE/CZ1011
CE/CZ4062 Computer Security (System Security)	√		3	CE/CZ2005
CE/CZ4071 Network Science		√	3	CE/CZ2001
CE/CZ4073 Data Science for Business	TBD		3	CE/CZ1007, CE/CZ1011
ELECTIVE COURSES WITH NO FOCUS AREA	SEM 1	SEM 2	AU	Pre-requisite**
CE/CZ4153 Blockchain Technology*	√		3	MH1812, CE/CZ1007, CE/CZ2001
CE/CZ4171 Internet of Things: Communications & Networking		√	3	CE3005 or CZ3006

*Can only be registered as Unrestricted Elective (UE) course type after student had completed all the AU requirements for Major Prescribed Electives (MPE).

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

Note:

Students who have completed CE/CZ4021 Pervasive Networks OR CE4056 Cyber-Physical Systems Design OR CE/CZ4057 Time-Critical Computing OR CE/CZ4073 Data Science for Business prior to AY20 Sem 2 can still count them towards fulfilling the respective Elective Focus.

CE/CZ4021 Pervasive Networks → Networking & Mobility

CE4056 Cyber-Physical Systems Design OR CE/CZ4057 Time-Critical Computing → Cyber Physical Systems

CE/CZ4073 Data Science for Business → Data Science & Analytics