

Computer Science MPE List (Electives for Specialisation) For AY2021 and later Cohorts

Important Note for CSC MPE:

- Students must take at least 5 major prescribed elective (MPE) courses in each Specialisation area to qualify for the Specialisation as shown in the list below.
- If a student has read at least 5 courses from one Specialisation and a minimum of 15 AUs regardless of whether the courses are read as MPE or Broadening & Deepening Elective (BDE), the student will be deemed to have attained that particular Specialisation. (Note: Students can only take MPE as BDE after fulfilling the MPE requirements)
- The same course cannot count towards more than one specialisation for a student.
- Courses where Flexible Grading Option (FGO) option have been exercised will not be counted towards the award of a Specialisation.
- Courses taken during exchange: Only TWO Pass/Fail graded MPEs (including equivalent and generic MPEs) can be counted by specialisation. Students can take at most TWO generic MPEs. Among the two generic MPEs, only ONE generic MPE can count towards at most one specialisation. No double counting of MPEs is allowed across specialisations.
- Students can be awarded up to TWO Specialisations. No double counting of MPEs is allowed across specialisations.
- The "Specialisation" attained will be reflected in the result transcript, e.g., Specialisation in Security.
- 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 specialisation courses. Note that this list is subjected to changes.
- Semester offered is indicative only. Students should refer to the official [class schedule](#) for the latest course offering information prior to registration.
- Courses marked as "TBC" indicate that the semester of offering (S1/S2) has yet to be confirmed. Students are encouraged to plan with flexibility and check for updates during the course registration period.

ARTIFICIAL INTELLIGENCE					
Course Code	Course Title	AU	Offering		Pre-requisite
			S1	S2	
SC3000	Artificial Intelligence	3	√	√	SC1007 & SC2000 / SC1007 & MH2500
SC4000	Machine Learning	3	√	√	SC1004 & SC1007 & SC2000 / SC1007&MH2500
SC4001	Neural Networks & Deep Learning	3	√		SC1004 & SC1007 / MH2802& SC1007
SC4002	Natural Language Processing	3	√		SC2001 / MH1403
SC4003	Intelligent Agents	3		√	SC1007 & SC2000 / SC1007 & MH2500
SC4061	Computer Vision	3	√		Year 3 Standing
SC4062	Generative Artificial Intelligence – Advanced Topics	3	√		SC4001 & SC4002
SC4172	Internet of Things: Tiny Machine Learning	3		√	SC2107
SC4262	Introduction to Generative AI	TBC			
SECURITY					
Course Code	Course Title	AU	Offering		Pre-requisite
			S1	S2	
SC3010	Computer Security	3	√	√	SC2005
SC4010	Applied Cryptography	3	√		SC2000 or MH2500
SC4011	Security Management	TBC			
SC4012	Software Security	3		√	SC2002 & SC2005
SC4013	Application Security	3	√		SC2005 & SC2008
SC4014	Concepts and Techniques for Malware Analysis	TBC			
SC4015	Cyber Physical System Security	3		√	SC1006
SC4016	Cyber Threat Intelligence	3	√		Year 3 Standing
SC4017	Data Privacy & Security	TBC			
SC4063	Network Security	3		√	SC2005 & SC2008
DATA SCIENCE					
Course Code	Course Title	AU	Offering		Pre-requisite
			S1	S2	
SC3020	Database System Principles	3	√		SC2207
SC3021	Data Science Fundamental	3		√	SC1005
SC4000	Machine Learning	3	√	√	SC1004 & SC1007 & SC2000 or SC1007&MH2500

SC4002	Natural Language Processing	3	√		SC2001 / MH1403
SC4020	Data Analytics and Mining	3	√		SC2001 or MH1403
SC4021	Information Retrieval	3		√	SC2001 or MH1403
SC4022	Network Science	TBC			
SC4023	Big Data Management	3		√	SC2207
SC4024	Data Visualisation	3	√		SC1003 & MH2500 or SC1003 & SC2000
SC4025	Developing Data Products	3	√		SC2006

HPC

Course Code	Course Title	AU	Offering		Pre-requisite
			S1	S2	
SC3050	Advanced Computer Architecture	3	√		SC1006
SC4050	Parallel Computing	3			SC2001
SC4051	Distributed Systems	3			SC2005 & SC2008
SC4052	Cloud Computing	3	√	√	SC1004 or MH2802
SC4055	Introduction to Quantum Computing	TBC			
SC4064	GPU Programming	3			SC2001 & SC2005

OTHER MPEs

Course Code	Course Title	AU	Offering		Pre-requisite
			S1	S2	
SC3030	Advanced Computer Networks	3	√		SC2008
SC3040	Advanced Software Engineering	3	√		SC2006
SC3060	Computer Graphics and Visualization	3	√		Year 3 Standing
SC3061	Human-Computer Interaction	3	√		Year 3 Standing
SC3270	Reasoning About Programs	3	√	√	SC2001 or SC2301 or MH1812 & MH1403
SC4030	Wireless and Mobile Network	3	√		SC2008
SC4031	Internet of Things: Communications Networking	3		√	SC2008
SC4040	Advanced Topics in Algorithms	3	√		SC2001
SC4053	Blockchain Technology	3		√	SC1007 & SC2001 & MH1812
SC4054	Simulation and Modelling	TBC			
SC4060	Virtual and Augmented Reality	TBC			
SC4242	Compiler Techniques	3	√	√	SC2001&SC2006