

**AY2022-23 CURRICULUM FOR
COMPUTER SCIENCE**

SUMMARY OF ACADEMIC UNIT REQUIREMENT

Year of Study	Major Core	MPE	ICC		Broadening and Deepening Electives (BDE)	Total AU
			Common Core (CC)	Foundational Core (CC)		
1	25	0	9	3	0	37
2	21	3	8	0	6	38
3	4	9	0	12	3	28
4	8	12	0	0	12	32
Total	58	24	17	15	21	135

Suggested Course Schedules

YEAR 1 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite
SC1003	Introduction to Computational Thinking & Programming	C	3	Nil
SC1005	Digital Logic	C	3	Nil
SC1013	Physics for Computing	C	2	Nil
MH1810	Mathematics I	C	3	Nil
MH1812	Discrete Mathematics	C	3	Nil
CC0003	Ethics & Civics in a Multi-Cultural World	C-Core	2	Nil
CC0005	Healthy Living & Wellbeing	C-Core	3	Nil
HW0001	Introduction to Academic Communication	-	0	For student who failed QET
			19	

YEAR 1 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite
SC1004	Linear Algebra for Computing	C	3	MH1810, SC1003
SC1006	Computer Organisation & Architecture	C	3	SC1005
SC1007	Data Structures & Algorithms	C	3	SC1003
EG1001	Engineers in Society	C	2	Nil
SC1015	Introduction to Data Science & AI	F-Core	3	SC1003
CC0001	Inquiry and Communication in an Interdisciplinary World	C-Core	2	Nil
CC0002	Navigating the Digital World	C-Core	2	Nil
			18	

YEAR 2 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite
SC2000	Probability and Statistics for Computing	C	3	MH1810
SC2001	Algorithm Design and Analysis	C	3	SC1007, MH1812
SC2002	Object Oriented Design and Programming	C	3	SC1003
SC2005	Operating Systems	C	3	SC1006, SC1007
CC0007	Science & Technology for Humanity	C-Core	3	Nil
	Broadening & Deepening Elective	BDE	3	
			18	

YEAR 2 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite
SC2006	Software Engineering	C	3	SC2002
SC2207	Introduction to Database	C	3	SC2001
SC2008	Computer Networks	C	3	SC1004, SC2000
SC3000	Artificial Intelligence	MPE-1	3	SC1007, SC1015, SC2000
CC0006	Sustainability: Society, Economy & Environment	C-Core	3	Nil
ML0004	Career & Entrepreneurial Development for the Future World	C-Core	2	Nil
	Broadening & Deepening Elective	BDE	3	
			20	

YEAR 3 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite
SC3010	Computer Security	MPE-1	3	SC2005
SC30xx	Major Prescribed Elective	MPE-1	3	Year 3 standing
SC30xx	Major Prescribed Elective	MPE-1	3	Year 3 standing
SC2079	Multidisciplinary Design Project	C	4	Year 3 standing
HW0288	Engineering Communication	F-Core	2	CC0001, Year 3 standing
	Broadening & Deepening Elective	BDE	3	Nil
			18	

YEAR 3 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite
SC3079	Professional Internship	F-Core	10	Year 3 standing
			10	

YEAR 4 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite
SC4079	Final Year Project	C	4	Year 4 standing
SC4xxx	Major Prescribed Elective	MPE-2	3	Year 3 standing
SC4xxx	Major Prescribed Elective	MPE-2	3	Year 3 standing
	Broadening & Deepening Elective	BDE	3	Nil
	Broadening & Deepening Elective	BDE	3	Nil
			16	

YEAR 4 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite
SC4079	Final Year Project	C	4	
SC4xxx	Major Prescribed Elective	MPE-2	3	Year 3 standing
SC4xxx	Major Prescribed Elective	MPE-2	3	Year 3 standing
	Broadening & Deepening Elective	BDE	3	
	Broadening & Deepening Elective	BDE	3	
			16	

CS Major Prescribed Electives

Group	Code	Title
Artificial Intelligence	SC3000	Artificial Intelligence*
	SC4000	Machine Learning
	SC4001	Neural Networks and Deep Learning
	SC4002	Natural Language Processing
	SC4003	Intelligent Agents
Security	SC3010	Computer Security*
	SC4010	Applied Cryptography
	SC4011	Security Management
	SC4012	Software Security
	SC4013	Application Security
	SC4014	Concepts and Techniques for Malware Analysis
	SC4015	Cyber Physical System Security
	SC4016	Cyber Threat Intelligence
Data Management and Analytics	SC3020	Database System Principles
	SC4020	Data Analytics and Mining
	SC4021	Information Retrieval
	SC4022	Network Science
	SC4023	Big Data Management
	SC4024	Data Visualisation
Networking and Mobility	SC3030	Advanced Computer Networks
	SC4030	Wireless and Mobile Communication
	SC4031	IoT - Communications and Networking
	SC4032	Information Theory
	SC4033	Network Security
Software Engineering and Programming	SC3040	Advanced Software Engineering
	SC4040	Advanced Topics in Algorithms
	SC4041	Programming Languages
	SC4242	Compiler Techniques
Systems and Architecture	SC3050	Advanced Computer Architecture
	SC4050	Parallel Computing
	SC4051	Distributed Systems
	SC4052	Cloud Computing
	SC4053	Blockchain Technology
	SC4054	Simulation and Modelling
Visual and Interactive Computing	SC3060	Computer Graphics and Visualisation
	SC3061	Human-Computer Interaction
	SC4060	Virtual and Augmented Reality
	SC4061	Computer Vision

CS Specialization Tracks (Minimum five within a group)**ARTIFICIAL INTELLIGENCE**

SC3000 Artificial Intelligence

SC4000 Machine Learning

SC4001 Neural Networks and Deep Learning

SC4002 Natural Language Processing

SC4003 Intelligent Agents

SC4020 Data Analytics and Mining

SC4061 Computer Vision

SECURITY

SC3010 Computer Security

SC4010 Applied Cryptography

SC4011 Security Management

SC4012 Software Security

SC4013 Application Security

SC4014 Concepts and Techniques for Malware Analysis

SC4015 Cyber Physical System Security

SC4016 Cyber Threat Intelligence

SC4033 Network Security

DATA SCIENCE

SC3020 Database System Principles

SC4020 Data Analytics and Mining

SC4021 Information Retrieval

SC4000 Machine Learning

SC4002 Natural Language Processing

SC4022 Network Science

SC4023 Big Data Management

SC4024 Data Visualisation