

AY2021-22 CURRICULUM FOR COMPUTER ENGINEERING (With Poly Exemption)

SUMMARY OF ACADEMIC UNIT REQUIREMENT						
Year of Study	Core	MPE	Known as GER for intakes before S1 AY21-22			Total AU
			C-Core	F-Core	BDE	
1	25	0	9	3	0	37
2	31	0	8	0	0	39
3	10	3	0	12	0	25
4	4	9	0	0	0	13
Total	70	12	17	15	0	114

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
EG1001	Engineers in Society	C	2	Nil
CC0003	Ethics & Civics in a Multi-Cultural World	C-Core	2	Nil
CC0005	Healthy Living & Mental Wellbeing	C-Core	3	Nil
HW0001	Introduction to Academic Communication	-	0	For student who failed QET
			18	

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
MH1812	Discrete Mathematics	C	3	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
			19	

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
SC2104	Sensors, Interfacing & Digital Control	C	3	SC1006
SC2107	Microprocessor System Design and Development	C	3	SC1006
SC3102	Signal, Systems and Transform	C	3	SC1004
CC0007	Science & Technology for Humanity	C-Core	3	Nil
			18	

YEAR 2 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite
SC2002	Object Oriented Design and Programming	C	3	SC1003
SC2103	Digital System Design	C	3	SC1005
SC2005	Operating Systems	C	3	SC1006, SC1007
SC3103	Embedded Programming	C	3	SC2107
SC2079	Multidisciplinary Design Project	C	4	Year 3 standing
CC0006	Sustainability: Society, Economy & Environment	C-Core	3	Nil
ML0004	Career & Entrepreneurial Development for the Future World	C-Core	2	Nil
			21	

YEAR 3 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite
SC3079	Professional Internship	F-Core	10	Year 3 standing
			10	

YEAR 3 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite
SC4079	Final Year Project	C	4	Year 4 standing, *Continue in
SC2006	Software Engineering	C	3	SC2002
SC2008	Computer Networks	C	3	SC1004, SC2000
HW0288	Engineering Communication	F-Core	2	CC0001, Year 3 standing
SC3xxx/SC4xxx	Major Prescribe Elective 1	MPE	3	Year 3 standing
			15	

YEAR 4 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite
SC4079	Final Year Project	C	4	
SC3xxx/SC4xxx	Major Prescribe Elective 2	MPE	3	Year 3 standing
SC3xxx/SC4xxx	Major Prescribe Elective 3	MPE	3	Year 3 standing
SC3xxx/SC4xxx	Major Prescribe Elective 4	MPE	3	Year 3 standing
			13	

Total AU for Graduation: **114**

2. CE Curriculum Overview

Components/Courses			Prerequisite	AUs	Subtotal
Common Core	CC0001	Inquiry and Communication in an Interdisciplinary World	Nil	2	17
	CC0002	Navigating the Digital World	Nil	2	
	CC0003	Ethics & Civics in a Multicultural World	Nil	2	
	ML0004	Career & Entrepreneurial Development for the Future World	Nil	2	
	CC0005	Healthy Living & Mental Wellbeing	Nil	3	
	CC0006	Sustainability: Human, Social, Economic & Environment	Nil	3	
	CC0007	Science & Technology for Humanity	Nil	3	
Foundational Cores	HW0288	Engineering Communication	Nil	2	15
	SC1015	Introduction to Data Science and AI	Nil	3	
	SC3079	Professional Internship	Nil	10	
BD Electives		Free choices by students (Exempted)	Nil	0	0
Eng & Science Fundamentals	EG0001	Engineers Ethics	Nil	2	4
	SC1013	Physics for Computing	Nil	2	
Computer Engineering (CE) CORE	MH1810	Mathematics 1	Nil	3	54
	MH1812	Discrete Mathematics	Nil	3	
	SC1004	Linear Algebra for Computing	MH1810, SC1003 (Co-requisite)	3	
	SC2000	Probability and Statistics	MH1810	3	
	SC1003	Introduction to Computational Thinking and Programming	Nil	3	
	SC1005	Logic Design	Nil	3	
	SC1006	Computer Organisation and Architecture	SC1005 (Co-requisite)	3	
	SC1007	Data Structures and Algorithms	SC1003	3	
	SC2001	Algorithm Design and Analysis	MH1812, SC1007	3	
	SC2002	Object Oriented Design & Programming	SC1003	3	
	SC2103	Digital System Design	SC1005	3	
	SC2104	Sensors, Interfacing & Digital Control	SC1006	3	
	SC2005	Operating Systems	SC1006, SC1007	3	
	SC2007	Software Engineering	SC2002 (Co-requisite)	3	
	SC2107	Microprocessor System Design and Development	SC1006	3	
	SC2008	Computer Networks	SC1004, SC2000	3	
	SC3102	Signal, Systems and Transform	SC1004	3	
	SC3103	Embedded Programming	SC2107	3	
CE Major Prescribed Electives (MPE) & Elective Focus		Take Four courses offered at Level 3 or 4 ¹ . least Three MPEs in an Elective Focus ² .		12	12
Projects	SC2079	Multidisciplinary Design Project	Year 3 standing	4	12
	SC4079	Final Year Project	Year 4 standing	8	
				Total A	114

1. There are seven MPE Groups consisting of SC3--- and SC4--- courses (refer to Section 3).
2. Courses with code SC4- in Section 3.
3. There are three Specializations (refer to Section 4): i) Artificial Intelligence, ii) Security; and iii) Data Science.

3. CE Major Prescribed Electives & Focus Areas (Minimum three within a group)

Group	Code	Title	Prerequisite
Artificial Intelligence	SC4000	Machine Learning	SC1004, SC1007, SC2000 (Year 3 standing)
	SC4001	Neural Networks and Deep Learning	SC1004, SC1007, SC2000 (Year 3 standing)
	SC4002	Natural Language Processing	SC2001 (Year 3 standing)
	SC4003	Intelligent Agents	SC1004, SC1007, SC2000 (Year 3 standing)
	SC4172	IoT – Tiny Machine Learning	SC2107 (Year 3 standing)
	SC4061	Computer Vision	NIL (Year 3 standing)
Security	SC3010	Computer Security	SC2005
	SC4010	Applied Cryptography	MH1812 (Year 3 standing)
	SC4011	Security Management	SC2006 (Year 3 standing)
	SC4012	Software Security	SC2005, SC2006 (Year 3 standing)
	SC4033	Network Security	SC2008 (Year 3 standing)
	SC4013	Application Security	SC2005, SC2008 (Year 3 standing)
	SC4014	Concepts and Techniques for Malware Analysis	SC2005 (Year 3 standing)
Data Science	SC4015	Cyber Physical System Security	SC1006 (Year 3 Standing)
	SC4020	Data Analytics and Mining	SC2001 (Year 3 standing)
	SC4021	Information Retrieval	SC2001 (Year 3 standing)
	SC4022	Network Science	SC2001 (Year 3 standing)
IoT	SC4024	Data Visualisation	SC1003, SC2000 (Year 3 standing)
	SC4031	IoT-Communications and Networking	SC2008 (Year 3 standing)
	SC4172	IoT-Tiny Machine Learning	SC2107 (Year 3 standing)
Networking	SC4015	Cyber Physical System Security	SC1006 (Year 3 Standing)
	SC3030	Advanced Computer Networks	SC2008 (Year 3 standing)
	SC4030	Wireless and Mobile Communication	SC2008 (Year 3 standing)
	SC4031	IoT - Communications and Networking	SC2008 (Year 3 standing)
No Focus	SC4032	Information Theory	SC2008 (Year 3 standing)
	SC3050	Advanced Computer Architecture	SC1006
	SC4050	Parallel Computing	SC1006, SC2001 (Year 3 standing)
	SC4051	Distributed Systems	SC2005, SC2008 (Year 3 standing)
	SC4052	Cloud Computing	SC2005, SC2008 (Year 3 standing)
	SC4053	Blockchain Technology	MH1812, SC1007, SC2008 (Year 3 standing)
	SC4054	Simulation and Modelling	SC1007, SC2000