

AY2023 AND LATER COHORTS CURRICULUM FOR COMPUTER ENGINEERING (With Poly Exemption)

a) Doing PI

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
SC1015	Introduction to Data Science & AI	F-Core	3	SC1003
MH1812	Discrete Mathematics	C	3	Nil
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
CC0007	Science & Technology for Humanity	C-Core	3	Nil
SC3102	Signal, Systems and Transform	C	3	SC1004
			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	

b) Doing PA

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	5	0	44
3	14	12	0	2	5	33
Total	70	12	17	10	5	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
SC2008	Computer Networks	C	3	SC1004, SC2000
SC2079	Multidisciplinary Design Project	C	4	Year 3 standing
CC0006	Sustainability: Human Society Economic & Environment	C-Core	3	Nil
ML0004	Career & Entrepreneurial Development for the Future World	C-Core	2	Nil
			21	

YEAR 2 SPECIAL SEMESTER				
Course Code	Course Title	Type	AU	Pre-Requisite
SC3126	Professional Attachment	F-Core	5	Year 3 standing
			5	

YEAR 3 SEMESTER 1				
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
SC3103	Embedded Programming	C	3	SC2107
HW0288	Engineering Communication	F-Core	2	CC0001, Year 3 standing
SC3xxx/SC4xxx	Major Prescribe Elective 1	MPE	3	Year 3 standing
	Broadening & Deepening Elective	BDE	3	
			18	

YEAR 3 SEMESTER 2				
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
	Broadening & Deepening Elective	BDE	2	
			15	

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