

KULLIYAH OF INFORMATION AND COMMUNICATION TECHNOLOGY
BACHELOR OF COMPUTER SCIENCE (HONOURS)
(FOR BATCH 171 AND ABOVE)

GENERAL PROGRAMME STRUCTURE, CREDIT HOUR AND GRADUATION REQUIREMENTS

Program Structure	Credit Hours
University Required Courses	20
Kulliyah Required Courses	39 + 2
Department Required Courses	33
Industrial Attachment	9
Final Year Project (I &II)	8
Electives/Specialization Courses	21
Total Credit Requirements for graduation (Malaysian)	132
Total Credit Requirement for graduation (International)	130

University Required Courses (20 credit hours)

General Studies Course (8 credit hours)

Course Code	Course Name (credit hours)	Offering Dept	Pre-requisite
UNGS 2060 or MPU 3112	Malay Virutes, Heritage & Malaysian Society (2) • <i>International</i> Hubungan Etnik (2) • <i>Malaysian</i>	IRKHS MALAY	- -
UNGS 2080	Creative Thinking and Problem Solving (2)	IRKHS	-
UNGS 2080	Ethics and Fiqh for Contemporary Issues (2)	IRKHS	-
UNGS 2090	Islamic Worldview & Civilization (2)	IRKHS	-

Language Courses (7 credit hours)

LM 1030	Bahasa Melayu I Untuk Pelajar Asing (1)	CELPAD	-
LM 1031	Bahasa Melayu II Untuk Pelajar Asing (1)	CELPAD	LM 1030
LM 1040	Bahasa Melayu Nusantara I (S'pura, Brunei, Indonesia) (1)	CELPAD	-
LM 1041	Bahasa Melayu Nusantara II (S'pura, Brunei, Indonesia) (1)	CELPAD	LM 1040
MPU 3122	Tamadun Islam & Tamadun Asia Tenggara (2)	MALAY	-
LE 4000	English for Academic Writing (3)	CELPAD	-
LQ 1008	Quranic Language I (0.5)	CELPAD	-
LQ 2008	Quranic Language II (0.5)	CELPAD	LQ 1008
TQ 1001	Tilawah Al-Quran I (0.5)	CELPAD	-
TQ 2001	Tilawah Al-Quran II (0.5)	CELPAD	TQ 1001

Co-curricular Courses and USRAH 1&2 (3 credit hours)

USRAH 3&4 (2credit hours)

Students may choose from Spiritual, Leadership and Interest-based package

Kulliyah required courses (41 credit hours)

No	Course Code	Description (number of credit hours)	Pre-requisite
1	INFO 1501	Business Fundamentals (3)	-
2	CSC 1100	Elements of Programming (3)	-
3	INFO 1103	Database Systems (3)	-
4	CSC 1103	Object-Oriented Programming (3)	CSC 1100
5	CSC 1401	Introduction to Computer Organization (3)	CSC 1707
6	CSC 1707	Mathematics for Computing I (3)	-
7	INFO 2401	System Analysis & Design (3)	CSC 1100
8	INFO 4501	ICT & Islam (3)	4 th year student /TBD
9	CSC 1706	Probability and Statistics (3)	-
10	CSC 1501	Introduction to Software Engineering (3)	-
11	INFO 4504	Technopreneurship (3)	4 th year student/ TBD
12	CSC 3401	Operating Systems (3)	CSC 1401
13	INFO 3401	Human Computer Interaction (3)	INFO 2401
14	LM 2026	Bahasa Melayu Kerjaya (Sains dan Teknologi)	-

TOTAL=41 Credit Hours, 14 courses

Department required courses for BCS (50 credit hours)

No	Course Code	Description (number of credit hours)	Pre-requisite
1	INFO 2302	Web Technologies (3)	-
2	CSC 2104	Data Structures and Algorithms I (3)	CSC 1103
3	CSC 2201	Computer Networking (3)	CSC 1707
4	CSC 2401	Digital Systems Fundamentals (3)	CSC 1401
5	CSC 2602	Principles of IT Security (3)	CSC 2201
6	CSC 2301	Intelligent Systems (3)	CSC 2706
7	CSC 3402	Computer Architecture and Assembly Language (3)	CSC 2401
8	CSC 3102	Data Structures and Algorithms II (3)	CSC 2104
9	CSC 2706	Mathematics for Computing II (3)	CSC 1707
10	CSC 4101	Computation and Complexity (3)	CSC 3102
11	CSC 3701	Mathematics for Computing III (3)	CSC 2706
12	CSC 4903	Final Year Project I (4)	Earned credit hours >=90
13	CSC 4904	Final Year Project II (4)	CSC 4903
14	CSC 4905	Industrial Attachment (9)	Earned credit hours >=90 or completed all courses of BCS

TOTAL=50 Credit Hours, 14 courses (inclusive of Final Year Project and Industrial Attachment)

LIST OF SPECIALIZATIONS

Software Engineering (21 credit hours)			
No	Course Code	Course Title (credit hours)	Pre-requisite(s)
1	CSC 3503	Software Testing (3)	CSC 1501
2	CSC 3504	Project Management In Software Engineering (3)	CSC 1501, INFO 2401
3	CSC 3505	Software Design And Architecture (3)	CSC 1501, INFO 2401
4	CSC 3506	Requirements Engineering (3)	CSC 1501
5	CSC 4507	Database Application Development (3)	CSC 1501, INFO 1103
6	CSC 4501	Software Quality Assurance (3)	CSC 1501
7	CSC 4508	Empirical Methods In Software Engineering (3)	CSC 1501

Network and Security (21 credit hours)			
No	Course Code	Course Title (credit hours)	Pre-requisite(s)
1	CSC 4210	Networking Concepts and Practices (3)	CSC 1707 CSC 2201
2	CSC 4209	Enterprise Network (3)	CSC 1707 CSC 2201
3	CSC 4605	Digital Evidence Forensics (3)	CSC 2602, CSC 3401, CSC 3402
4	CSC 4604	Cryptography (3)	CSC 2706
5	CSC 4201	Network and Systems Administration (3)	CSC 2201
6	CSC 4607	Security in Programming (3)	CSC 2602 CSC 3401
7	CSC 4606	Network Security (3)	CSC 4201, CSC 4605

Data Science and Computational Intelligence (21 credit hours)			
No	Course Code	Course Title (credit hours)	Pre-requisite(s)
1	CSC 3304	Machine Learning (3)	CSC 2301
2	CSC 3303	Big Data Analytics (3)	CSC 2301
3	CSC 4309	Natural Language Processing (3)	CSC 2301
4	CSC 3305	Data Science (3)	CSC 2301
5	CSC 4310	Introduction to Affective Computing (3)	CSC 2301
6	CSC 4311	Computational Modelling and Simulation (3)	CSC 3701
7	CSC 4312	Bio-inspired Computing (3)	CSC 3304
8	INFO 2103	Database Programming (3)	INFO 1103
9	INFO 4101	Data Mining (3)	INFO 2103
10	INFO 3102	Data Warehousing (3)	INFO 2103

Free Elective (21 credit hours)			
No	Course code	Course Title (Credit hours)	Pre-requisite(s)
1	CSC 3503	Software Testing (3)	CSC 1501
2	CSC 3504	Project Management In Software Engineering (3)	CSC 1501, INFO 2401
3	CSC 3505	Software Design And Architecture (3)	CSC 1501, INFO 2401
4	CSC 3506	Requirements Engineering (3)	CSC 1501
5	CSC 4210	Networking Concepts and Practices (3)	CSC 1707 CSC 2201
6	CSC 4209	Enterprise Network (3)	CSC 1707 CSC 2201
7	CSC 4605	Digital Evidence Forensics (3)	CSC 2602, CSC 3401, CSC 3402
8	CSC 4604	Cryptography (3)	CSC 2706
9	CSC 3304	Machine Learning (3)	CSC 2301
10	CSC 3303	Big Data Analytics (3)	CSC 2301
11	CSC 4309	Natural Language Processing (3)	CSC 2301
12	CSC 3305	Introduction to Data Science (3)	CSC 2301
13	CSC 4506	Mobile Application Development (3)	CSC 1103

**PROPOSED STUDY PLAN FOR BACHELOR OF COMPUTER SCIENCE (HONOURS)
(BATCH 171 AND ABOVE)**

YEAR 1 SEMESTER 1 (TOTAL CH 16)			YEAR 1 SEMESTER 2 (TOTAL CH 16)		
COURSE CODE	DESCRIPTION	CREDIT HOURS	COURSE CODE	DESCRIPTION	CREDIT HOURS
CSC 1100	Elements of Programming	3	CSC 1706	Probability & Statistics	3
INFO 1103	Database Systems	3	CSC 1501	Introduction to Software Engineering	3
CSC 1707	Mathematics for Computing I	3	CSC 1103	Object Oriented Programming	3
INFO 1501	Business Fundamental	3	CSC 1401	Introduction to Computer Organization	3
LM 1030 / LM 1040 MPU 3122	Bahasa Melayu I for Foreign students * Bahasa Melayu Nusantara I * Tamadun Islam & Tamadun Asia Tenggara (* <i>Malaysian</i>)	1 @ 2	LM 1041/ LM 1041 LM 2026/	Bahasa Melayu for Foreign students * Bahasa Melayu Nusantara II * Bahasa Melayu Sains & Teknologi	1@2
UNGS 2011	Creative Thinking and Problem Solving	2	MPU 3112 UNGS 2060	Hubungan Etnik (* <i>Malaysian</i>) Malay Virtues, Heritage & Malaysian Society (* <i>International</i>)	2
TQ 1001	Tilawah Al-Quran I	0.5	TQ 2001	Tilawah Al-Quran 2	0.5
CCCD 1611	USRAH 1	0.5	CCCD 1612	USRAH 2	0.5

YEAR 2 SEMESTER 1 (TOTAL CH 18)			YEAR 2 SEMESTER 2 (TOTAL CH 19)		
COURSE CODE	DESCRIPTION	CREDIT HOURS	COURSE CODE	DESCRIPTION	CREDIT HOURS
INFO 2302	Web Technologies	3	CSC 2602	Principles of IT Security	3
CSC 2201	Computer Networking	3	CSC 2301	Intelligent Systems	3
CSC 2706	Mathematics for Computing II	3	CSC 2401	Digital Systems Fundamentals	3
UNGS 2080	Ethics and Fiqh for Contemporary Issues	2	INFO 3401	Human Computer Interaction	3
INFO 2401	System Analysis and Design	3	CSC 3401	Operating System	3
CSC 2104	Data Structures and Algorithms I	3	LE 4000	English for Academic Writing	3
LQ 1008	Elementary Quranic Language I	0.5	LQ 2008	Elementary Quranic Language II	0.5
CC 2XXX	Leadership I	0.5	CC 2XXX	Leadership II	0.5

YEAR 3 SEMESTER 1 (TOTAL CH 18.5)			YEAR 3 SEMESTER 2 (TOTAL CH 19.5)		
COURSE CODE	DESCRIPTION	CREDIT HOURS	COURSE CODE	DESCRIPTION	CREDIT HOURS
CSC 3101	Data Structures and Algorithms II	3	INFO 4504	Technopreneurship	3
CSC 3402	Computer Architecture and Assembly Language	3	INFO 4501	ICT & Islam	3
CSC 3701	Mathematics for Computing III	3	CSC XXXX	Specialization III	3
UNGS 2090	The Islamic Worldview & Civilization	2	CSC XXXX	Specialization IV	3
CSC XXXX	Specialization I	3	CSC XXXX	Specialization V	3
CSC XXXX	Specialization II	3	CSC 4903	FYP I	4
CC 3XXX	Skill I	0.5	CC 3XXX	Skill II	0.5
CCCD 1621	USRAH 3	1			

YEAR 4 SEMESTER 1 (TOTAL CH 14)			YEAR 4 SEMESTER 2 (TOTAL CH 9)		
COURSE CODE	DESCRIPTION	CREDIT HOURS	COURSE CODE	DESCRIPTION	CREDIT HOURS
CSC 4101	Computation and Complexity	3	CSC 4901	Industrial Attachment	9
CSC 4904	FYP II	4			
CSC XXXX	Specialization VI	3			
CSC XXXX	Specialization VII	3			
CCCD 1622	USRAH 4	1			