School of Engineering and Technology

Programme Handbook

April 2024

BSc (Hons) in Computer Science

Contents

Appendix

1. Introduction

This handbook is intended to provide advice and assistance to students and academics about the BSc (Hons) Computer Science. It serves as a handy reference for practical information about the organisation of the programme, assessment and award. Students are recommended to keep and refer to the handbook throughout the duration of their study.

For further details, students are advised to also read the ***Academic Regulations***, the ***Sunway University Student Code of Conduct*** and the ***Student Handbook***. The latest version of these handbooks can be downloaded from the Student Portal (https://iZone.sunway.edu.my/) within or outside University campus. For any omission or contradiction between this handbook and the current version of the Academic Regulations, the latter will prevail.

The programmes offered by the School of Engineering and Technology are reviewed periodically to ensure that they are meeting the standards required, professionally and otherwise. Therefore, the University reserves the right to vary programmes and their availability.

It is hoped that the information contained in this handbook will be of use to students, staff and sponsors. We welcome your comments and ideas for improvement. Please e-mail your feedback to Ms Cheong Pooi Fong at pooifongc@sunway.edu.my

Prof. Ir Denny Ng Kok Sum
Dean, School of Engineering and Technology

* *Information in the handbook is correct at the time of publication. All information is subject to change.*

2. Academic Calendar for 2024

SEMESTER	DATE	DURATION
JANUARY SEMESTER		
Orientation for new students [January 2024 intake] (except for BA (Hons) Contemporary Music (Audio Technology, Bachelor of Arts (Honours) Music Performance and BA (Hons) Digital Film Production)	29 Jan to 30 Jan 2024	2 days
Classes commence	31 Jan 2024	
Exam	18 to 22 Mar 2024	1 week
Semester Break	25 Mar to 19 Apr 2024	4 weeks
APRIL SEMESTER		
Orientation for new students [April 2024 intake]	18 Apr to 19 Apr 2024	2 days
Classes commence	22 Apr 2024	
Mid-Semester Break	17 Jun to 21 Jun 2024	1 week
Classes recommence	24 Jun 2024	
Exam	05 Aug to 16 Aug 2024	2 weeks
Semester Break	19 Aug to 13 Sep 2024	4 weeks
SEPTEMBER SEMESTER		
Orientation for new students [September 2024 intake]	12 Sep to 13 Sep 2024	2 days
Classes commence	16 Sep 2024 *(*As 16th Sep 2024 is a public holiday, class will commence the day after)*	
Mid-Semester Break	28 Oct to 01 Nov 2024	1 week
Classes recommence	04 Nov 2024	
Exam	30 Dec to 10 Jan 2025	2 weeks

Public Holidays in 2024

Date, Day	Occasion
1 January, Monday	New Year’s Day
25 January, Thursday	Thaipusam Day
10 & 11 February, Saturday & Sunday	Chinese New Year
12 February, Monday	Chinese New Year (replacement leave)
28 March, Thursday	Nuzul Al-Quran
10 & 11 April, Wednesday & Thursday	Hari Raya Aidilfitri
1 May, Wednesday	Labour Day
22 May, Wednesday	Wesak Day
3 June, Monday	Yang di-Pertuan Agong's Birthday
17 June, Monday	Hari Raya Haji
7 July, Sunday	Awal Muharram
8 July, Monday	Awal Muharram (replacement leave)
31 August, Saturday	Malaysia’s National Day (Merdeka Day)
16 September, Monday	Prophet Muhammad’s Birthday
16 September, Monday	Malaysia Day
17 September, Tuesday	Malaysia Day (replacement leave)
31 October, Thursday	Deepavali
11 December, Wednesday	Sultan of Selangor’s Birthday
25 December, Wednesday	Christmas Day

3. Programme Management

The Dean of School is the main academic officer responsible for a programme. In the School of Engineering and Technology, the present Dean is Prof. Ir Denny Ng Kok Sum. The Dean is assisted by the Heads of Department and Programme Leaders/Coordinators.

3.1 Head of Department

The Head of Department is: **Dr Saad Aslam**

Room no. AE-327 (Level 3, Sunway University), Ext. 7143

E-mail: saada@sunway.edu.my

3.2 Programme Leader

The Programme Leader is: **Dr Chin Teck Min**

Room no. AE-309 (Level 3, Sunway University), Ext. 7141

E-mail: teckminc@sunway.edu.my

You may approach the Programme Leader regarding matters concerning:

- Withdrawal from Programme
- Transfer Programme

Programme Coordinator

The Programme Coordinator is: **Cheong Pooi Fong**

Room no. SET Admin Office (Level 3, Sunway University), Ext. 7327

E-mail: pooifongc@sunway.edu.my

You may approach the Programme Coordinator regarding matters concerning:

- Counselling
- Subject Registration
- Add or Drop Subject
- Fees Structure
- Subject Exemption
- Credit Transfer

- Completion of Programme
- Defer Studies
- Progress Report
- Leave of Absence

3.3 Academic & Administrative Staff

Academic Staff

Name (& Designation)	Phone ext.	E-mail (@sunway.edu.my)	Location/ Room no.
Prof. Ir Denny Ng Kok Sum (Dean)	7131	dennyng@sunway.edu.my	SET Admin Office
Prof. Lau Sian Lun Associate Dean- (International & Industry)	7155	sianlunl@sunway.edu.my	SET Admin Office
Prof. Angela Lee Siew Hoong (Associate Dean- Employment & Engagement)	7156	angelal@sunway.edu.my	AE-317
Prof. Ts. Lee Chien Sing (Professor)	7149	chiensingl@sunway.edu.my	AE-324
Prof. Angela Amphawan (Professor)	7132	angelaa@sunway.edu.my	AE-318
Prof. Dr Chua Hui Na (Professor)	7138	huinac@sunway.edu.my	AE-306
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Assoc. Prof. Dr Low Yeh Ching Associate Dean – (Education)	7135	yehchingl@sunway.edu.my	AE-303
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Dr Mehran Behjati (Lecturer)	7157	mehranb@sunway.edu.my	AE-311
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Dr Samuel Mofoluwa Ajibade (Senior Lecturer)	7502	samuelma@sunway.edu.my	AE-315
Assoc. Prof. Dr Anwar P.P. Abdul Majeed (Associate Professor)	7502	anwarm@sunway.edu.my	AE-315
Dr Muhammed Basheer Jasser (Senior Lecturer)	7187	basheerj@sunway.edu.my	AE-329
Dr Ahmad Sahban Rafsanjani (Lecturer)	7187	ahmadsahban@sunway.edu.my	AE-329
Charis Kwan Shwu Chen (Lecturer)	7134	charisk@sunway.edu.my	AE-302
Lim Woan Ning (Senior Teaching Fellow)	7136	woanningl@sunway.edu.my	AE-304
Dr Chin Teck Min (Senior Teaching Fellow)	7141	teckminc@sunway.edu.my	AE-309
Ts. Yeap Boon Han (Teaching Fellow)	7141	boonhany@sunway.edu.my	AE-309

Nurul Aiman Abdul Rahim (Lecturer)	-	nurulaiman@sunway.edu.my	SU Staff room – L3
Dr Noor Hafizah Hassan (Senior Lecturer)	-	nhafizahh@unway.edu.my	SU Staff room – L3
Dr Matthew Yeow Yit Hang (Lecturer)	-	matthewyyh@sunway.edu.my	SU Staff room – L3
Maisarah Mansor (Lecturer)	-	maisarahma@sunway.edu.my	SU Staff room – L3
Dr Ganesh Kumar (Lecturer)	-	ganeshk@sunway.edu.my	SU Staff room – L3

Administrative Staff

Name (& Designation)	Phone ext.	E-mail (@sunway.edu.my)
Teo Wei Nie (Senior School Manager)	7186	weiniet@sunway.edu.my
Sandra Poon (Assistant Manager)	7130	sandrap@sunway.edu.my
Catherine Chan Poh Looi (Assistant Manager)	7121	catherinec@sunway.edu.my
Christine Chong Ai Ping (Senior Executive –Administration)	7502	aipingc@sunway.edu.my

You can approach the staff below from the Administrative Office with regards to the following matters:

Issue	Staff to Consult	Form to fill
Absent from exam due to medical reason	Christine Chong Ai Ping	Application for Special Examination
Certificate collection	Mr. Alykusno (Registry Office)	Certificate and Transcript Request Form
Class timetable	Thirumeni Sinnappoo	
Teaching and Learning Resources	Thirumeni Sinnappoo	

4. The Programme

The BSc (Hons) in Computer Science is a programme accredited by the Malaysian Qualifications Agency (MQA) and validated by Lancaster University,

UK. It is a 3-year degree programme with a requirement of 120 credits for the award.

4.1 Programme Aims and Objectives

The programme aims to train and equip students with the necessary knowledge, principles, and skills in developing new technological and innovative solutions, particularly in the field of Computer Science. They will be trained to possess theoretical computing knowledge in analysing, modelling, designing, developing, and evaluating computing solutions. Students have the option to extend their area of studies through electives in specialised areas such as programming or embedded system.

The BSc (Hons) in Computer Science is a general degree that provides students with theoretical and algorithmic foundations to develop cutting edge computing solutions and/or software. The programme also enables students to continue postgraduate study, take up research positions, or expand into cross-disciplinary innovation. While many IT disciplines may produce graduates with job-related skills for immediate employment, this degree offers a comprehensive foundation that permits graduates to understand and adapt to new technologies and create new ideas for future growth of ICT industries.

The objectives of the programme are:

1. Knowledgeable and technically competent in dealing with issues and challenges in the field of Computer Science.
2. Demonstrate good interpersonal and leadership skills and effective in communication while working in a team of people within an organization/ community.
3. Solve advanced issues in the field of Computer Science using related technology and numerical tools in an ethical and professional manners.
4. Demonstrate self-advancement and entrepreneurial skills in Computer Science field.

Overall, the programme is designed to reflect industry expectations and educational progression. It provides and exposes students to the fundamental theories as core subjects, while introducing current industry led subject for familiarization and exploration. The programme also introduces skill-based training to better prepare students for work environment and to bridge the gap between input by academics and the output expected by ICT industries especially on areas pertaining to soft skills such as communication skills, social and ethical responsibilities, lifelong learning as well as entrepreneurial skills. These subjects are incorporated into the degree to enhance students' overall study experience.

4.2 Programme Learning Outcomes

Upon successful completion of the programme, students are expected to be able to:

1. Demonstrate knowledge of essential facts, concepts, principles, impacts and theories related to Computer Science.
2. Demonstrate critical thinking in solving issues related to Computer Science.
3. Apply relevant theories, tools and techniques used by industry to solve Computer Science problems.
4. Perform as a good team player with the sense of responsibilities and accountabilities.
5. Communicate effectively with peers, clients, superiors and society.
6. Use digital media and various digital solutions to support academic, and/or career development.
7. Use quantitative and visual data to support academic, and/or career development.
8. Demonstrate effective leadership, autonomy and manage responsibility in a team with accountabilities.
9. Engage in self-directed lifelong learning in academic, and/or career development.
10. Demonstrate entrepreneurial competency when providing solutions relating to Computer Science.
11. Demonstrate professionalism, and ethical consideration in accordance with ethical and legal principles.

4.3 Programme Structure

Compulsory General Studies Subjects

All students are required to take and pass MPU (Mata Pelajaran Umum) general studies subjects as part of the graduating requirements. The MPU general studies subjects are divided into the following categories:

U1: Appreciation of philosophy, values and history

U2: Mastery of skills

U3: Broadening of knowledge about Malaysia

U4: Inculcation of community/societal management skills which are practical in nature such as community service and co-curriculum

Local students who have not obtained credit in Bahasa Melayu SPM or did not sit for SPM are also required to take and pass Bahasa Kebangsaan A.

Specific Requirements

Students joining BSc (Hons) in Computer Science are required to have a credit in Additional Mathematics at SPM level or its equivalent based on the MQA's requirement.

Hence, candidates without a credit in Additional Mathematics subject at SPM level are required to enrol and Pass a Mathematics Enhancement subject MAT1013 Micro-credential in Computer Mathematics Fundamentals offered by the programme.

Note: Above requirements can be excluded if the Foundation/Matriculation programmes offered a Mathematics subject and the achievements are equivalent/higher than a requirement of a credit in Additional Mathematics at SPM level.

Students are required to pay additional fees for the subject.

Students must pass MAT1013 Micro-credential in Computer Mathematics Fundamentals before enrolling to MTH1114 Computer Mathematics.

Students are required to enrol to Micro-credential in Computer Mathematics Fundamentals as planned by the Programme Leader and are required to pass this subject in Year 1 of study.

List of subjects to be completed in this programme (Normal Entry).

Important Notes:
Please refer to Appendix E for pre-requisite information.
Student may view video trailers of Elective Subjects available in department eLearn to guide students in choosing Elective Subjects

YEAR 1		
Subject Code	**Subject Name**	**Credit Value**
NET1014	Networking Principles	4
CSC1024	Programming Principles	4
MTH1114	Computer Mathematics	4
ENG1044	English for Computer Technology Studies	4
SEG1201	Database Fundamentals	4
PRG1203	Object Oriented Programming Fundamentals	4
OSS1014	Operating Systems Fundamentals	4
CSC1202	Computer Organisation	4
WEB1201	Web Fundamentals	4
MPU 3112	Penghayatan Etika dan Peradaban	2
MPU 3142	Malay Language for Communication 2	2
MPU 3122	Falsafah dan Isu Semasa	2

MPU 3132	Appreciation of Ethics and Civilisation	2
YEAR 2		
Subject Code	**Subject Name**	**Credit Value**
CSC2103	Data Structure & Algorithms	4
PRG2104	Object Oriented Programming	4
ENG2044	Communication Skills	4
SEG2202	Software Engineering	4
ENT2012	Entrepreneurial Mindset and Skills	2
MPU 3332	Integrity and Anti-Corruption (KIAR)	2
MPU 3212	Critical Thinking	2
MPU 3232	Bahasa Kebangsaan A	2
Year 2 Discipline Electives: Choose any 3		
NET2102	Data Communications	4
SEG2102	Database Management Systems	4
CSC2014	Digital Image Processing	4
CSC2044	Concurrent Programming	4
PRG2214	Functional Programming Principles	4
BIS2216	Data Mining and Knowledge Discovery Fundamentals	4
BIS2102	Information System Analysis & Design	4
CSC2074	Mobile Application Development	4
SWA2124	Social and Web Analytics	4
PRG2205	Programming Languages	4
NET2201	Computer Networks	4
Free Electives: Choose 3		
*	Free Elective 1	4
*	Free Elective 2	4
*	Free Elective 3	4

Note: These are just some of the free electives. More subjects to be included. The details of Free Elective subjects offered will be communicated to students before the semester offering.

- *BIO3024 Current Topics in Biomedical Science*
- *ECN1034 Economics for Business*
- *FIN1034 Introduction to Business Finance*
- *BST1014 Business Statistics*
- *ENT1014 Principles of Entrepreneurship*
- *MKT1014 Principles of Marketing*
- *ACC1024 Accounting for Decision Making*
- *TOU1054 Business of Tourism and Hospitality*
- *ENVS1014 Introduction to Environmental Studies*
- *STAT2014 Introduction to Statistics with SPSS Lab*
- *DECN2014 Digital Economy*
- *PHYS 1014 College Physics I*
- *ETP2014 Startup Foundry*

YEAR 3		
Subject Code	**Subject Name**	**Credit Value**
MPU 3422	Community Service for Planetary Health	2
CSC3024	Human Computer Interaction	4
CSC3206	Artificial Intelligence	4
NET3204	Distributed Systems	4
PRJ3213	Capstone Project 1	3
PRJ3223	Capstone Project 2	3
SEG3203	Internship	6
Year 3 Discipline Electives: Choose any 2		
CSC3064	Database Engineering	4
CSC3209	Software Architecture and Design Patterns	4
CSC3014	Computer Vision	4
CSC3034	Computational Intelligence	4
CSC3044	Computer Security	4
CSC3074	Cloud Computing	4
PRG3014	UI/UX Design and Development	4

Programme structure for the respective intakes are as follows:

(Normal Entry)

Semester	2024		2025			2026			2027
	April	**September**	**January (Short semester)**	**April**	**September**	**January (Short semester)**	**April**	**September**	**January (Short semester)**
	Sem 1	**Sem 2**	**Sem 3**	**Sem 4**	**Sem 5**	**Sem 6**	**Sem 7**	**Sem 8**	**Sem 9**
April 2024 Intake	ENG1044 English for Computer Technology Studies (4)	SEG1201 Database Fundamentals (4)	MPU 3122 / MPU 3132 Falsafah dan Isu Semasa / Appreciation of Ethics and Civilisation (U1) (2)	CSC2103 Data Structure & Algorithms (4)	Free Elective (4)	ENT2012 Entrepreneurial Mindset and Skills (2)	CSC3206 Artificial Intelligence (4)	Discipline Elective 5 (Year 3) (4)	SEG3203 Internship (6)
	CSC1202 Computer Organisation (4)	PRG1203 Object-Oriented Programming Fundamentals (4)	MPU 3112 / MPU 3142 Penghayatan Etika dan Peradaban / Malay Language for Communication 2 (U1) (2)	Discipline Elective 1 (Year 2) (4)	Free Elective (4)	SEG2202 Software Engineering (4)	Discipline Elective 3 (Year 2) (4)	NET3204 Distributed Systems (4)	
	CSC1024 Programming Principles (4)	WEB1201 Web Fundamentals (4)	NET 1014 Networking Principles (4)	PRG 2104 Object-Oriented Programming (4)	Free Elective (4)	MPU 3212 Critical Thinking / MPU 3232 Bahasa Kebangsaan A (2)	Discipline Elective 4 (Year 3) (4)	CSC3024 Human Computer Interaction (4)	
	MTH1114 Computer Mathematics (4)	OSS1014 Operating System Fundamentals (4)		ENG2044 Communication Skills (4)	Discipline Elective 2 (Year 2) (4)		PRJ3213 Capstone Project 1 (3)	PRJ3223 Capstone Project 2 (3)	
				MPU3332 Integrity and Anti-Corruption (KIAR) (2)			MPU3422 Community Service for Planetary Health (2)		

- Information is correct at the time of printing.
- This serves as a guide only. Not all subjects will be offered every semester and subject to availability. Student should take ownership to plan and decide the subjects to be taken every semester. However, they can seek advice from the Programme Coordinator.
- Local students who did not sit for SPM or did not obtain a Credit in SPM Bahasa Melayu, are required to take Bahasa Kebangsaan A.
- Malaysian & International students are required to pass MPU general studies subjects.
- For Local students: Penghayatan Etika dan Peradaban, Falsafah dan Isu Semasa.
- For International students: Malay Language for Communication 2, Appreciation of Ethics and Civilisation.

(Direct Entry)

Semester	2024		2025			2026
	April	**September**	**January (Short Semester)**	**April**	**September**	**January (Short Semester)**
	Sem 4	**Sem 5**	**Sem 6**	**Sem 7**	**Sem 8**	**Sem 9**
April 2024 Intake (Direct Entry)	CSC2103 Data Structure & Algorithms (4)	Free Elective (4)	ENT2012 Entrepreneurial Mindset and Skills (2)	CSC3206 Artificial Intelligence (4)	Discipline Elective 5 (Year 3) (4)	SEG3203 Internship (6)
	Discipline Elective 1 (Year 2) (4)	Free Elective (4)	MPU 3212 Critical Thinking / MPU 3232 Bahasa Kebangsaan A (2)	Discipline Elective 3 (Year 2) (4)	NET3204 Distributed Systems (4)	
	PRG 2104 Object-Oriented Programming (4)	Free Elective (4)	SEG2202 Software Engineering (4)	Discipline Elective 4 (Year 3) (4)	PRJ3223 Capstone Project 2 (3)	
	ENG2044 Communication Skills (4)	Discipline Elective 2 (Year 2) (4)		PRJ3213 Capstone Project 1 (3)	CSC3024 Human Computer Interaction (4)	
	MPU 3122 / MPU 3132 Falsafah dan Isu Semasa / Appreciation of Ethics and Civilisation (U1) (2)	MPU 3112 / MPU 3142 Penghayatan Etika dan Peradaban / Malay Language for Communication 2 (U1) (2)		MPU 3332 Integrity and Anti-Corruption (KIAR) (2)	MPU 3422 Community Service for Planetary Health (2)	

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- Local students who did not sit for SPM or did not obtain a Credit in SPM Bahasa Melayu, are required to take Bahasa Kebangsaan A.
- Malaysian & International students are required to pass MPU general studies subjects.
- For Local students: Penghayatan Etika dan Peradaban, Falsafah dan Isu Semasa.
- For International students: Malay Language for Communication 2, Appreciation of Ethics and Civilisation.

(Special Subject Line-up) For students who did not meet the entry requirement for SPM Additional Mathematics or equivalent.

Semester	2024		2025			2026			2027
	April	**September**	**January (Short semester)**	**April**	**September**	**January (Short semester)**	**April**	**September**	**January (Short semester)**
	Sem 1	**Sem 2**	**Sem 3**	**Sem 4**	**Sem 5**	**Sem 6**	**Sem 7**	**Sem 8**	**Sem 9**
April 2024 Intake	ENG1044 English for Computer Technology Studies (4)	SEG1201 Database Fundamentals (4)	MPU 3122 / MPU 3132 Falsafah dan Isu Semasa / Appreciation of Ethics and Civilisation (U1) (2)	CSC2103 Data Structure & Algorithms (4)	Free Elective (4)	ENT2012 Entrepreneurial Mindset and Skills (2)	CSC3206 Artificial Intelligence (4)	Discipline Elective 5 (Year 3) (4)	SEG3203 Internship (6)
	CSC1202 Computer Organisation (4)	PRG1203 Object-Oriented Programming Fundamentals (4)	MPU 3112 / MPU 3142 Penghayatan Etika dan Peradaban / Malay Language for Communication 2 (U1) (2)	Discipline Elective 1 (Year 2) (4)	Free Elective (4)	MPU 3212 Critical Thinking / MPU 3232 Bahasa Kebangsaan A (2)	Discipline Elective 3 (Year 2) (4)	NET3204 Distributed Systems (4)	
	CSC1024 Programming Principles (4)	OSS1014 Operating System Fundamentals (4)	NET 1014 Networking Principles (4)	PRG 2104 Object-Oriented Programming (4)	Free Elective (4)	SEG2202 Software Engineering (4)	Discipline Elective 4 (Year 3) (4)	CSC3024 Human Computer Interaction (4)	
	WEB1201 Web Fundamentals (4)	MTH1114 Computer Mathematics (4)		ENG2044 Communication Skills (4)	Discipline Elective 2 (Year 2) (4)		PRJ3213 Capstone Project 1 (3)	PRJ3223 Capstone Project 2 (3)	
	MAT1013 Micro-credential in Computer Mathematics Fundamentals (3)			MPU 3332 Integrity and Anti-Corruption (KIAR) (2)			MPU 3422 Community Service for Planetary Health (2)		

- Information is correct at the time of printing.
- This serves as a guide only. Not all subjects will be offered every semester and subject to availability. Student should take ownership to plan and decide the subjects to be taken every semester. However, they can seek advice from the Programme Coordinator.
- Local students who did not sit for SPM or did not obtain a Credit in SPM Bahasa Melayu, are required to take Bahasa Kebangsaan A.
- Malaysian & International students are required to pass MPU general studies subjects.
- For Local students: Penghayatan Etika dan Peradaban, Falsafah dan Isu Semasa.
- For International students: Malay Language for Communication 2, Appreciation of Ethics and Civilisation.

4.4 Curriculum Content

4.4.1 CSC1024 – Programming Principles

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Explain the basic programming concepts according to a specific programming language terminology. • Design a computational solution that complies with the coding standards of a specific programming language. • Implement a computational solution using the decision statement, control structures, and user-defined functions with a specific programming language.
Synopsis:	This course aims to provide students with the understanding of the fundamentals principles of programming. Students will learn and practice the basic components of programming including variables, constants, expressions, control structures, functions, pointers and arrays. Students will also learn to apply problem solving skill using programming construct with best practices.

4.4.2 MTH1114 – Computer Mathematics

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Explain various problems in software engineering from mathematical modelling point of view • Apply discrete mathematics, applied probability and statistics approaches to solve software engineering-related problems • Use statistical computer packages to analyze software engineering-based problems
Synopsis:	Concepts and notations from discrete mathematics, applied probability and statistics are useful for the study of software-related problems. Students studying this should already have a good grasp of secondary school level mathematics (basic calculus and algebra). This subject builds on that foundation through the study of logic and proofs, set theory, number theory, basic relations and counting models that assist students in approaching problem solving in a logical manner. In addition, the study of various graph theory and trees helps to form the basis of good software design. Statistics is essential in analysing problems associated with software engineering.

4.4.3 ENG1044 – English for Computer Technology Studies

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Analyse and critically evaluate opinions and arguments presented in text forms to determine merit and accuracy. • Write unified, orderly and coherent essays in a variety of genres. • Write to present their position on specific issues through logical development of arguments and use of supporting evidence. • Plan, organise and write a formal report based on their own research of a specific area of concern. • Paraphrase and summarise the work of others by using correct citation and referencing method based on the Harvard Referencing style.

Synopsis: This course focuses on reading skills with the main objective to improve students' analytical and critical thinking skills. Activities in class will be geared towards analysing opinions, making inferences and evaluating arguments made by authors. It also focuses on essay writing at university level. Students will be exposed to expository, argumentative and persuasive essay writing. In order to improve the necessary writing skills, grammar and structure will be reviewed. Proper referencing when using others' work in their writing will also be emphasised. This course is also designed to increase the students' knowledge and understanding of business communication. The course covers important business concepts, vocabulary, and forms (emails, memos, reports) and develops strategies and writing skills based on audience awareness.

4.4.4 SEG1201 – Database Fundamentals

Credit value: 4

Learning outcomes: Upon completion of this subject, students should be able to

- Apply data modelling and the underlying concepts of database systems.
- Implement a database design group project using appropriate tools such as Oracle SQL.
- Use SQL for data creation and retrieval.

Synopsis: This course covers the underlying concepts of analysis, design and implemention a database using relational data modeling, SQL and database management system.

4.4.5 PRG1203 – Object Oriented Programming Fundamentals

Credit value: 4

Learning outcomes: Upon completion of this subject, students should be able to

- Apply the basic object oriented knowledge in programming design
- Create executable program according to object oriented conventional practices
- Design object oriented solution for simple problem using UML diagrams

Synopsis: This subject charts a general overview of the basic ideas of OO programming. The fundamental concepts such as object encapsulation and object message passing. The students will learn the problem-solving skill and appreciate the significance of Object-Oriented programming.

4.4.6 CSC1202 – Computer Organisation

Credit value: 4

Learning outcomes: Upon completion of this subject, students should be able to

- Describe the basic organisation, characteristics, functions, and operations of major components in a digital computer system.
- Write and interpret basic assembly language instructions and programs
- Solve computer arithmetic and digital logic problems.

Synopsis: The subject aids in the understanding of computer organisation, and the concept of the digital computer. It includes the study of the various functional units of digital computers comprising the Central Processing Unit, memory and input/output organisation, the assembler, arithmetic and logic that forms the basis of a digital computer system's problem-solving capabilities. Supporting and extending this knowledge are the various processor characteristics, functions and

operations, as well as the various architectures that exist in industrial applications today.

4.4.7 NET1014 – Networking Principles

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Describe the basic concepts and technologies of data communication and computer networking. • Compare, categorise and contrast common network protocols and commonly used network hardware. • Evaluate and modify a local area network according to given requirements.
Synopsis:	This course aims to provide students a basic understanding of networking terms and the skills to be able to plan and setup the network infrastructure for homes and small businesses. The topics include basic concepts and technologies of transmission and communication, networking hardware, standards, networking topologies, protocols and network design process.

4.4.8 WEB1201 – Web Fundamentals

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Explain how the Internet works and concepts of Web environment. • Apply Web design principles and techniques in the designing of Web pages. • Design and develop Web pages using HTML, CSS and JavaScript. • Build a Web site with Web usability features.
Synopsis:	The course introduces students to the fundamentals of Web development which includes Web design principles, usability issues to the core of Web technologies. Students will be exposed to the techniques of Web design, the different types of Web site layouts, Web site design themes and the architecture that is deployed.

4.4.9 OSS1014/CSC2104 – Operating System Fundamentals

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Describe the concepts, structures and designs related to operating systems. • Demonstrate the use of scripting and programming skills in solving tasks related to operating systems. • Compare and contrast solutions and algorithms from different perspectives.
Synopsis:	This course introduces the students operating, its structures, objectives and functions, it explains the characteristics of modern operating systems, process management, storage management, paging and segmentation, virtual memory, hardware and control structures. It also discusses the issues related to security and protection.

4.4.10 MPU 3112 – Penghayatan Etika dan Peradaban

Credit value:	2

Learning outcomes:

Setelah tamat kursus ini pelajar dapat

- Menjelaskan konsep etika dan peradaban dalam konteks penghayatannya mengikut acuan Malaysia
- Menganalisis sistem, tahap perkembangan, kemajuan sosial dan kebudayaan merentas etnik.
- Menilai isu kontemporari berkaitan ekonomi, politik, sosial, budaya dan alam sekitar daripada perspektif etika dan peradaban.

Synopsis:

Kursus ini mempersiapkan pelajar untuk menghayati etika dan peradaban yang wujud dalam masyarakat kepelbagaian etnik di Malaysia untuk memperteguhkan pemikiran kritikal dan analitikal mereka bagi menangani kehidupan yang lebih mencabar. Pengisian kursus ini memfokuskan kepada penghayatan etika dan peradaban dalam acuan Malaysia. Pelajar akan didedahkan dengan dinamika konsep etika dan peradaban yang menjadi kekuatan kepada pembentukan negara Malaysia berdasarkan susur masa evolusi sejarahnya dari era pra-kolonial sehingga ke pasca-kolonial. Kefahaman tentang pembentukan etika dan peradaban dalam masyarakat kepelbagaian dibincangkan bagi meningkatkan penghayatan etika dan peradaban ke arah pemantapan kesepaduan nasional dan bangsa Malaysia. Peradaban acuan Malaysia perlu dikupas serta diperdebatkan dalam aktiviti akademik berpandukan Perlembagaan Persekutuan sebagai tapak integrasi dan wahana etika dan peradaban. Pembinaan kesepaduan nasional amat dipengaruhi oleh globalisasi dan perkembangan teknologi maklumat dan komunikasi yang kompleks. Oleh kerana itu, penghayatan etika dan peradaban menzahirkan perilaku tanggungjawab sosial dan digerakkan pada peringkat individu, keluarga, komuniti, masyarakat, dan negara. Justeru, perubahan yang berlaku dalam masyarakat dan pembangunan langsung ekonomi telah membawa cabaran baru dalam mengukuhkan kelestarian etika dan peradaban di Malaysia. Amalan Pendidikan Berimpak Tinggi (HIEPs) dipraktikkan dalam pengajaran dan pembelajaran bagi mendalami kursus ini. (pengajaran & pembelajaran).

4.4.11 MPU 3142 - Malay Language for Communication 2

Credit value: 2

Learning outcomes:

Setelah tamat kursus ini pelajar dapat

- Menerangkan kandungan teks penuh yang menggunakan ayat mudah dan ayat berlapis
- Bertutur dalam pelbagai situasi dengan menggunakan ayat mudah dan ayat berlapis
- menyusun idea secara kreatif dan sistematik dalam penulisan karangan pendek

Synopsis:

Kursus ini melatih pelajar antarabangsa untuk berkomunikasi dalam bahasa Melayu asas yang meliputi situasi kehidupan harian. Pelajar akan diperkenalkan dengan pertuturan dan penulisan bahasa Melayu mudah. Pengajaran dan pembelajaran akan dilaksanakan dalam bentuk kuliah, tutorial, tugasan dan pengalaman pembelajaran pelajar di dalam dan di luar kelas. Pada akhir kursus ini, pelajar diharapkan dapar berkomunikasi dengan berkesan.

4.4.12 MPU 3122 – Falsafah dan Isu Semasa

Credit value: 2

Learning outcomes:

Setelah tamat kursus ini pelajar dapat

- Menjelaskan isu semasa berlandaskan ilmu falsafah, Falsafah Pendidikan Kebangsaan dan Rukun Negara.
- Menerangkan isu semasa berdasarkan aliran pemikiran utama dalam pelbagai aliran falsafah.
- Menganalisis isu semasa melalui perspektif perbandingan falsafah sebagai asas bagi menjalin dialog antara budaya.

Synopsis: Kursus ini merangkumi hubungan ilmu falsafah dengan Falsafah Pendidikan Kebangsaan dan Rukun Negara. Penggunaan falsafah sebagai alat untuk memurnikan budaya pemikiran dalam kehidupan melalui seni dan kaedah berfikir serta konsep insan. Topik utama dalam falsafah iaitu epistemologi, metafizik dan etika dibincangkan dalam konteks isu semasa. Penekanan diberikan kepada falsafah sebagai asas bagi menjalin dialog antara budaya serta memupuk nilai sepunya. Di hujung kursus ini pelajar akan mampu melihat disiplin-disiplin ilmu sebagai satu badan ilmu yang komprehensif dan terkait antara satu sama lain.

4.4.13 MPU 3132 - Appreciation of Ethics and Civilisation

Credit value: 2

Learning outcomes:

Upon completion of this subject, students should be able to

- Explain the concept of ethics and civilization in the context of its appreciation according to the Malaysian perspectives
- Analyze the growth of ethics and civilization from various civilization perspectives
- Evaluate on the contemporary issues related to economic, political, social, culture and environment from an ethical and civilization perpective

Synopsis: This course prepares students to appreciate the ethics and civilization that exists in the multi-ethnic society in Malaysia to strengthen their critical and analytical thinking to deal with a more challenging life. The content of this course focuses on the appreciation of ethics and civilization in the Malaysian mold. Students will be exposed to the dynamics of the concept of ethics and civilization which is a strength to the formation of Malaysia based on the timeline of its historical evolution from the pre-colonial to the post-colonial era. An understanding of the formation of ethics and civilization in a diverse society is discussed to enhance the appreciation of ethics and civilization towards strengthening national unity and the Malaysian nation. Malaysian mold civilization needs to be peeled and debated in academic activities guided by the Federal Constitution as a site of integration and a vehicle of ethics and civilization. The construction of national unity is strongly influenced by globalization and the development of complex information and communication technologies. Therefore, the appreciation of ethics and civilization reveals the behavior of social responsibility and is mobilized at the individual, family, community, community, and national levels. Thus, the changes that have taken place in society and the direct development of the economy have brought new challenges in strengthening the sustainability of ethics and civilization in Malaysia. High Impact Education Practices (HIEPs) are practiced in teaching and learning to deepen this course (teaching & learning).

4.4.14 MPU 3212 – Critical Thinking

Credit value: 2

Learning outcomes:

Upon completion of this subject, students should be able to

- To identify the fundamental concepts of critical thinking.
- To analyze information and arguments critically.
- To apply critical thinking methods in problem-solving.

Synopsis: This subject focused on developing critical thinking skills among students. This subject guides students to cultivate analytical, evaluative, and problem-solving skills. Students will understand the fundamental concepts of critical thinking, practice logical thinking, and apply these skills in various contexts. Through learning activities students will sharpen their critical awareness to make informed decisions. The subject also encourages students to think creatively and innovatively in addressing current challenges. Emphasizing critical thinking, this

subject helps shape students into individuals capable of thinking systematically, logically, and creatively in the face of the complexities of the modern world.

4.4.15 MPU 3232 – Bahasa Kebangsaan A

Credit value:	2
Learning outcomes:	Upon completion of this subject, students should be able to • Bertutur dengan berkesan dalam situasi rasmi. • Menghasilkan penulisan yang jelas dan bersistematik. • Membina hubungan baik dalam kerja berpasukan/organisasi.
Synopsis:	Kursus ini menawarkan kemahiran berbahasa dari aspek mendengar, bertutur, membaca dan menulis sesuai dengan tahap ientelek pelajar. Tujuan kursus ini adalah untuk meningkatkan kecekapan berbahasa dalam konteks rasmi dan tidak rasmi. Pengajaran dan pembelajaran akan dilaksanakan dalam bentuk kuliah, tutorial, tugasan, aktiviti kebahasaan, main peranan (role play), ujian dan peperiksaan. Pada akhir kursus ini, pelajar diharapkan dapat menguasai kemahiran berbahasa secara lisan dan tulisan.

4.4.16 CSC3024 – Human Computer Interaction

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Explain the methods and tools that can be used construct a human/user-centred system. • Describe in writing how knowledge of human factors and the adherence of different design rules influences student's practice of user interface design • Devise user research for a small interactive system to draw conclusions of the suitability of its interface design to fulfill the specified user's needs
Synopsis:	This subject mainly focuses on the underlying principles, theories and methods of human-computer interaction. Students will be guided on human aspects of systems design. Examples of innovative and mundane interactive applications will be provided. This subject also includes practical application designs for a small but real interactive system.

4.4.17 CSC2103 – Data Structures & Algorithms

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Explain various types of data structures, algorithms, and its usages in computing for specific problem-solving. • Solve practical problems where the choice of data structures and algorithms are essential to implement effective programs with acceptable time and space requirements. • Implement a group project requiring the implementation of appropriate data structures and algorithms for a problem both independently and cooperatively.
Synopsis:	This course introduces the students a variety of data structures such as stacks queues, lists, trees, graphs, hash tables together with algorithms for manipulating these structures. Many forms of application scenarios are covered with the

emphasis being put on algorithm efficiency, program structure, and abstract data types. This course also covers the algorithms that are appropriate to solve real-word applications related to software engineering, networking, and security aspects.

4.4.18 PRG2104 – Object Oriented Programming

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Explain advanced object-oriented programming concepts - inheritance, polymorphism, parametric polymorphism.
- Apply advanced OOP concepts through abstraction and object-oriented modeling in problem solving.
- Demonstrate how to use collections framework / library components and exceptions in team.
- Write computer programs that utilise third-party object-oriented libraries.

Synopsis: This subject emphasizes the object-oriented concepts of advanced programming. The students will learn effective ways of writing rigorous OO programs. The students will be taught to further appreciate the object-oriented approach through the writing of a GUI application.

4.4.19 ENG2044 - Communication Skills

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Identify and explain specific problems/ concepts in interpersonal and group communication situations
- Apply a variety of strategies and techniques to overcome these problems
- Present persuasive speeches that are well-developed, that are supported with credible evidence, and that makes effective use of technology and visual aids
- Adopt appropriate job interview skills and prepare a resume and cover email

Synopsis: This is an interactive course which combines online discussion and a variety of oral activities meant to give students opportunities to practise and master the basic concepts in communicating. Students are expected to be able to participate in synchronous and asynchronous discussions which focus on various aspects of communication. In addition, students are expected to demonstrate their understanding of the issues discussed and the skills needed for effective communication through a variety of oral assignments.

4.4.20 ENT2012 – Entrepreneurial Mindset & Skills

Credit value: 2

Learning outcomes:

Upon completion of this subject, students should be able to

- Explain key characteristic and the mindset of an entrepreneur in the 21st Century.
- Demonstrate entrepreneurial mindset & skills in solving SDG-related problems.

Synopsis: This subject introduces students to the entrepreneurial mindset and skills needed to be a successful entrepreneur in the 21st Century. It explains what an entrepreneurial venture is and covers the key mindset qualities and characteristics and skills needed for entrepreneurial endeavour. Lastly, it explains the necessity of entrepreneurship for the future.

4.4.21 MPU3422 – Community Service for Planetary Health

Credit value: 2

Learning outcomes: Upon completion of this subject, students should be able to

- Apply the concept of planetary health, its core principles and key issues, especially in relation to local communities
- Design a solution for a diagnosed planetary health problem at the level of the community
- Appreciate one's civic responsibility and potential contribution in advancing planetary health at the community level in collaboration with others

Synopsis: This module aims to introduce to undergraduate students the new concept of planetary health – a holistic approach that integrates the care of the health of people and that of planet Earth. The course will also create awareness of civic responsibility among students and the contributions they can make to advance planetary health at the community level. The course will develop students' knowledge and skills that will enable them to investigate planetary health problems and to develop projects that will help solve them. Together with a host organisation, students will work in teams in tackling a specific planetary health issue affecting a particular community, such as marginalised groups, patients, businesses, young people, among others.

4.4.22 MPU3332 – Integrity and Anti-Corruption (KIAR)

Credit value: 2

Learning outcomes: Upon completion of this subject, students should be able to

- Explain the concept of integrity and anti-corruption in daily activities.
- Assess forms of corruption and abuse of power in daily activities and organisations.
- Relate the values of integrity and anti-corruption with current issues.

Synopsis: This course covers the basic concept of corruption including the value of integrity, anti-corruption, forms of corruption, abuse of power in daily activities and organizations as well as ways to prevent corruption. Cases related to corruption are discussed. Teaching and learning methods are implemented in the form of 'experiential learning' through individual and group activities. At the end of this course, students are able to understand the practice of integrity, the concept of corruption, anti-corruption, abuse of power as well as the prevention of corruption in society and organizations.

4.4.23 NET2201 – Computer Networks

Credit value: 4

Learning outcomes: Upon completion of this subject, students should be able to

- Explain how communication network protocols at different layers work.

- Analyze operation of different network protocols in action by using networking tools.
- Demonstrate the strengths and weaknesses of each communication network protocol.
- Manage networking problems by performing network diagnosis and troubleshooting tools.

Synopsis: The purpose of this course is to provide students with an in-depth understanding of key issues in the effective development and use of computer networking and telecommunications. This would involve an analysis of the architecture, standards and protocols that have been developed and adopted for computer communications.

4.4.24 SEG2202 – Software Engineering

Credit value: 4

Learning outcomes: Upon completion of this subject, students should be able to

- Apply software process model into different software product deliverables.
- Analyze the quality of multiple software designs based on key design principles and concepts and its phases including the deliverables that are produced.
- Relate the principal issues associated with software development and their impact on the software life cycle.
- Demonstrate skills to work in a team.

Synopsis: Software engineering is the discipline concerned with the application of theory, knowledge and practice for effectively and efficiently building software systems that satisfy the requirements of users and customers. It is applicable to small, medium and large scale systems. It encompasses all phases of the life cycle of a software system. The life cycle includes requirement analysis and specification, design, construction testing and operation and maintenance.

4.4.25 CSC2014 – Digital Image Processing

Credit value: 4

Learning outcomes: Upon completion of this subject, students should be able to

- Describe the fundamental theories and operations of image and video processing techniques in spatial-domain and frequency-domain.
- Apply different spatial-domain image and video processing techniques for specific visual processing problems.
- Apply different frequency-domain and image and video processing techniques for specific visual processing problems.
- Create a real-world visual application by using different image and video processing techniques.

Synopsis: This course teaches the students the basics of digital imaging processing. It also introduces the concepts and algorithms of various types of image processing techniques, which include image filtering, enhancement, restoration, compression, and segmentation In addition, the students will learn to program and implement these techniques as well.

4.4.26 NET2102 – Data Communications

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Describe the basics of data communications.
- Compare different approaches in physical layer signalling.
- Solve mathematical models for analogue and digital communications.
- Analyze various transmission impairments for a type of media and signalling method.

Synopsis:

This course teaches the students the basics of digital and analogue data communication. It explains the basic mechanism used in physical layer signalling such as wired and wireless links. It gives an overview of the basics of networking.

4.4.27 SEG2102 – Database Management Systems

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Examine the advanced concept of database systems from the aspects of models design, data integrity, database scability and access control.
- Perform the mechanism for enabling data integrity, database scability and access control.
- Assess different database models with respect to their design, strengths and weaknesses.

Synopsis:

This course teaches students the knowledge and skills of designing and managing database from the performance aspects of data security and integrity, which include the following :

- Advanced concepts and application of a database analysis and design
- Design and build an efficient database system with core query performance, data security and integrity functionalities
- Apply the knowledge using programming tools MYSQL / ORACLE together with PL/SQL
- Introduction to real world databases design approaches such as data warehouse, distributed databases, NoSQL databases

4.4.28 PRG2205 – Programming Languages

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Evaluate the trade-offs between the different paradigms in terms of space and time efficiency (of computer and programmer), safety and power of expression.
- Describe the various phases of programming language translation.
- Explain the role of declaration models and types with respect to programming-in-the-large.
- Explain how abstraction mechanisms support the creation of reusable software components.
- Describe how the various programming language components and mechanisms impact programming language design.

Synopsis:

A programming language is a programmer's principal interface with the computer. More than just knowing how to program in a single language, programmers need to understand the different styles of programming promoted by different languages. In their professional life, they will be working with many different languages and styles at once, and will encounter many different languages over the course of their careers. Understanding the variety of

programming languages and the design trade-offs between the different programming paradigms makes it much easier to master new languages quickly.

4.4.29 BIS2102 - Information Systems Analysis & Design

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Apply the planning and analysis phases from the systems development life cycle.
- Combine the output from analysis and design phases through project documentation.
- Demonstrate the system's design and construction layers.

Synopsis:

Information Systems are considered by all organizations as critical to their ability to compete and gain competitive advantage. This subject focuses on the analysis and design of Information Systems. In particular, the analysis process is applied to business requirements for Information Systems so that the Information Systems are designed to fulfil those business requirements. Therefore, the product of systems analysis and design is an information system. Within the context of Information Systems, the emphasis of this subject is on the business issues that concern the owners and users of Information Systems.

4.4.30 CSC2074 – Mobile Application Development

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Apply the mobile programming knowledge in developing basic mobile application.
- Create executable mobile application by utilizing the application development tool.
- Construct mobile application using various mobile programming components and libraries.

Synopsis:

This subject aims to provide students with a good range of techniques features in the development of Android mobile application. This will include the introduction to mobile application development framework as well as the development environment, various components and features required to develop the mobile application.

4.4.31 CSC2044 – Concurrent Programming

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Describe the strengths and weaknesses of concurrent programming in solving real-world problems.
- Demonstrate the knowledge in resolving concurrency problems with different solutions.
- Demonstrate good programming practice in the design of concurrent program.
- Develop concurrent program that uses the concept of multi-threading and synchronisation.

Synopsis:

This subject provides a strong foundation of concurrent programming in theory and practice. The syllabus covers the overview of concurrent programming and shared variable programming. In addition, the students will learn to program by using the concurrent concepts.

4.4.32 PRG2214 – Functional Programming Principles

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Explain the principal of functional programming
- Use polymorphism and higher-order functions and demonstrate problem solving skill in Functional approach
- Develop and design program in functional styles

Synopsis:

This subject mainly focuses on the basic of functional programming. The fundamental concept such lambda function, recursion, evaluation of expression, and currying. The students will be taught problem solving tools utilizing functional approach to implement their design ideas

4.4.33 BIS2216 – Data Mining and Knowledge Discovery Fundamentals

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Examine the fundamental concept of data mining process
- Apply basic data mining process using related industry used software tools
- Analyse real world data mining applications

Synopsis:

This course teaches the student:

- Data mining process and knowledge discovery methods
- Basic data exploratory techniques and tools used for understanding, analysing and interpreting data
- Fundamental concept of descriptive and predictive data modelling techniques and tools used

4.4.34 SWA2124 – Social and Web Analytics

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Analyze the theoretical concepts behind social and web analytics
- Execute appropriate social and web analytics techniques in problem solving
- Create insights from the social and web analytics in real world applications

Synopsis:

This subject teaches the student:

- theory of social and web networks
- techniques and insights for extracting information and knowledge out of social and web networks
- to apply analytics techniques on solving real world problems.

4.4.35 CSC3206 – Artificial Intelligence

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Evaluate suitability of AI methods to solve computational problem.
- Implement appropriate AI method to solve a computational problem
- Construct a programming script to solve a real-world problem with AI method.

Synopsis:

The field of artificial intelligence (AI) is concerned with solving problems that are difficult or impractical to solve with other methods. An AI system has to be able to represent the domain knowledge correctly, deploy appropriate search algorithms to identify the solution, as well as to interpret the solution in meaningful ways to the human users. This subject introduces the student to popular search strategies and to the most common knowledge representation schemes. One of these schemes, called production rules, forms the basis of one of the most successful AI accomplishments in its history – expert systems.

4.4.36 NET3204 – Distributed Systems

Credit value: 4

Learning outcomes:

Upon completion of this subject, students should be able to

- Discuss distributed systems, the rationale for developing such systems, principles and protocol, design and implementation issues or potential problems of the systems.
- Analyse and evaluate the important factors involved client-server paradigm, middleware technology in term of their scalability, reliability performance and security concerns.
- Appreciate the Legal, Ethical, and Professional Issues in Distributed System Security.
- Develop simple distributed systems with application of principles and protocols of distributed computing.

Synopsis:

This course aims to familiarize students with the middleware tools and techniques increasingly used to build large scale modern computing applications and services. It offers an in-depth look at the range of modern middleware techniques, including AKKA, MOM and RM-ODP. Students will be able explore hands-on aspects of these technologies as well as the more theoretical architectures. At the end of the course students will have a better understanding of the different distributed technologies and will be better able to make decisions on the choice of middleware technologies for different problems.

4.4.37 PRJ3213 – Capstone Project 1

Credit value: 3

Learning outcomes:

Upon completion of this subject, students should be able to

- Analyze relevant literature to make informed choices in planning the project.

- Formulate a plan, design, or approaches for the problem space within the given timeframe.
- Communicate with all stakeholders in an ethical and professional manner and confidently defend ideas and proposals.

Synopsis: This is the culmination of the degree in Computing. It requires the student to use a range of practices and techniques in solving a substantial problem related to their programmes. There are aspects of the Computing discipline from different Computing programmes that cannot be presented adequately in the formal classroom setting. These skills can be developed only in the framework of an independent capstone experience. This course is separated into two phases. First phase focuses on the proposal stage and phase 2 focusses on the development, implementation, evaluation and documentation stage.

4.4.38 PRJ3223 – Capstone Project 2

Credit value: 3

Learning outcomes: Upon completion of this subject, students should be able to

- Demonstrate the ability of self-conduct and application of respective programme's concepts and theory in the project development.
- Communicate professionally the results and finding orally or written.
- Design and develop a substantial project, as well as to devise testing or validation regimes to ensure quality deliverables.

Synopsis: This is the culmination of the degree in Computing. It requires the student to use a range of practices and techniques in solving a substantial problem related to their programmes. There are aspects of the Computing discipline from different Computing programmes that cannot be presented adequately in the formal classroom setting. These skills can be developed only in the framework of an independent capstone experience. This course is separated into two phases. First phase focuses on the proposal stage and phase 2 focusses on the development, implementation, evaluation and documentation stage.

4.4.39 SEG3203 – Internship

Credit value: 6

Learning outcomes: Upon completion of this subject, students should be able to

- Adapt relevant technical and analytical skills in the workplace.
- Act upon the potential goals and choices in relation to various career opportunities within the chosen field effectively.
- Display appropriate ethics and professionalism at workplace.

Synopsis: Students are placed in companies or organisations in positions relevant to their training and education. This placement offers them the opportunity to apply, develop, or expand their current skills and knowledge. Additionally, they gain insight into the production and/or business aspects of the internship company. The internship program spans 12 weeks.

4.4.40 CSC3064 – Database Engineering

Credit value: 4

Learning outcomes: Upon completion of this subject, students should be able to

- Explain the underlying concept of database systems and apply this knowledge to propose an appropriate local/remote database system for enterprise.

- Compare, Construct, and evaluate complex database functionalities for database Administration / performance / tuning.
- Implement a group project requiring the implementation of appropriate database systems for specific enterprise data management both independently and cooperatively.
- Discuss and evaluate the methods of storing, managing and interrogating complex data.

Synopsis: This module provides the advanced concepts and detailed internal aspects of relational and non-relational database management systems. This subject uses latest database techniques and heavy emphasis on hands-on experience with projects using Oracle, and other leading database systems. This module allows the students to learn distributed database techniques, database persistence, Object Oriented Databases, transactions, crash recovery, cloud databases, and technologies in terms of corporate data management.

4.4.41 CSC3209 – Software Architecture and Design Patterns

Credit value: 4

Learning outcomes: Upon completion of this subject, students should be able to

- Create a usable architecture for a client.
- Apply common and popular design patterns in the process of forming the architecture.
- Convert requirements and scenario into an architecture.

Synopsis: This course introduces the concepts and practice of software architecture. It also discusses what a system is designed to do and how its components are meant to interact with each other.

4.4.42 CSC3014 – Computer Vision

Credit value: 4

Learning outcomes: Upon completion of this subject, students should be able to

- Critically evaluate literature on existing computer vision systems to identify approaches used to solve a given problem space.
- Design and implement a basic computer vision system to solve a real-world problem.

Synopsis: The aim of computer vision is to make useful decisions about real physical objects and scenes based on sensed images. This entails the construction of scene descriptions from images. This subject teaches the students to extract meaningful information or description from images using low level image analysis, pattern recognition and motion. From this extracted information, students are thought on how to use neural networks or fuzzy systems to come to a decision.

4.4.43 CSC3034 – Computational Intelligence

Credit value: 4

Learning outcomes: Upon completion of this subject, students should be able to

- Implement appropriate CI-based solution on typical CI problems..
- Implement appropriate hybrid CI system to solve a computational problem.
- Evaluate quality of CI solutions using appropriate performance metrics.

Synopsis: Computational Intelligence (CI) is a set of Nature-inspired computational methodologies and approaches designed to address complex problems of real-

world scenarios to which traditional methodologies and algorithmic approaches are ineffective / infeasible. It primarily includes Evolutionary Computation, Neural Networks, and Fuzzy Systems. These three methodologies would then be combined to create hybrid CI systems. The performance of these hybrids would then be measured using industry relevant tests.

4.4.44 CSC3044 – Computer Security

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Describe the basics of computer security, and distinguish different types of security mechanisms. • Apply security mechanisms to various functions and components of a computer system such as database and software. • Evaluate security aspects of computer system. • Develop and revise security solutions to real scenarios.
Synopsis:	This course addresses a wide range of areas in computer security, covering topics in identification and authentication, access control, reference monitors, Windows security, database security, software security, security models, security evaluations, encryption and authentication applications. This course will also explore challenges in the design and analysis of the security aspects of computer systems. This course enables students to understand, think about, and analyze computer security issues.

4.4.45 CSC3074 – Cloud Computing

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Describe the characteristics, pricing, supports, concepts and technologies related to cloud computing. • Apply proper security measures to secure data stored on the cloud. • Create an application that incorporates the use of cloud virtual machine, cloud storage and/or cloud database.
Synopsis:	This curriculum combines web development essentials with hands-on Cloud experience, enhancing career readiness and industry relevance.

4.4.46 PRG3014 – UI/UX Design and Development

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Assess the definition and principles of UI/UX Design in order to design with intention. • Integrate the industry-standard tools and specific project deliverables in UI/UX. • Explain the design decisions, through presentations of assignments and portfolio.
Synopsis:	Each digital interface/interaction, including web and mobile applications, car dashboards, and smart appliances, is crafted to address a specific need or enhance our daily lives. From the buttons we press to the gestures we make, the font selections to the color palettes—all aspects are meticulously designed by UI/UX professionals. In essence, UI/UX serves as the intermediary channel bridging the gap between computer software and users. This course, structured around practical

projects, delves into the fundamentals and implementation of user interface and user experience design for digital platforms.

4.4.47 MKT2224 – Principles of Marketing

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Identify and explain the role of marketing in organisations. • Evaluate the impact of the environment on marketing. • Present a coherent marketing mix effectively.
Synopsis:	The Principles of Marketing subject is an introduction to the Marketing discipline. This subject addresses key issues in marketing such as identifying customer needs and wants, identifying target markets, examining the marketing mix and methods of conducting marketing research. This subject also highlights the important areas in marketing that deserve emphasis in today's globally challenging business world. These areas include creating customer satisfaction through superior value, quality and service. This subject can be used as a foundation for those intending to major in marketing and as an aid to those intending to major in other related fields (business, management, sociology, psychology).

4.4.48 ENT2114 - Principles of Entrepreneurship

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Develop a degree of familiarity with the theory and practice of entrepreneurship including entrepreneurial behaviour. • Gain an understanding of the fundamental processess of enterprise creation and development. • Develop understanding of the nature and problems of entrepreneurship in different context.
Synopsis:	The subject is systematically organised around the initiation, planning, growth, and development of new and emerging ventures. The subject begins with introduction to entrepreneurial mind-set and examines the entrepreneurial revolution that has taken root across the globe. The organizational perspective of corporate entrepreneurship and the rising trend of social entrepreneurship are also among the first few discussion topics of the subject. The subject then examines the initiation of entrepreneurial ventures. Topics to be discussed including opportunity identification, assessment of opportunities, the pathway of starting a new venture and the development of an entrepreneurial plan. The subject concludes with the valuation challenge in entrepreneurship that focuses on the importance of business valuation and the final harvest of a new venture which includes the management of succession strategy and exit strategy for an enterprise.

4.4.49 DECN2014 – Digital Economy

Credit value:	4
Learning outcomes:	Upon completion of this subject, students should be able to • Discuss the factors that contribute to the development of a digital economy. • Develop a vision board of the future digital economy for the country.

- Research and analyse the status of digital infrastructure element in your country.
- Conduct market analysis and apply different strategies to manage different challenges.

Synopsis: This subject exposes students to the components related to the digital economy landscape in terms of infrastructure, consumer sentiments, business vialibility and setting up of e-businesses.

4.4.50 ETP2014 – Startup Foundry

Credit value: 4

Learning outcomes: Upon completion of this subject, students should be able to

- Apply design thinking methodology to tackle industry challenges.
- Build prototypes as a test model to obtain user feedback for potential solutions.
- Apply the best innovation practices and strategies on new business opportunity creation.
- Develop a business proposal presentation to communicate to external audiences effectively.

Synopsis: A learn by doing course using design thinking and entrepreneurship methodology. In this course, students will develop a "growth mind set", which includes problem solving skills and the creation of feasible solutions to problem statements that have significant economic value and/or meaningful impact to the society. Students will be working in teams on real life industry challenges by building prototype solutions and pitching this to a panel of industry experts and investors.

5. Assessment

All courses will be assessed. Each course will specify learning outcomes and assessment criteria by which students can demonstrate the achievement of the course learning outcomes.

5.1 Submission of Assignments

Assignments submission must be made by the deadline and in the format required (either hardcopy and/or electronic or any other format specified). Electronic copies must be submitted through "Turnitin" software available in eLearn. Please refer to Student Handbook for information on the Academic Malpractice.

5.2 Extensions and Penalties for Late Submissions

The University requires students to adhere to submission deadlines for any form of assessment.

Course lecturers have the authority to approve extensions of deadlines for coursework within their own courses and such agreements will be documented.

Extensions must be requested by students to course lecturer in advance of the deadline, and proper justifications be provided for the request.

Any work submitted after the deadline, or after any period of extension granted shall be marked as a Fail or awarded a zero

With strong justification(s), a student may appeal to the School against a fail or zero-mark result for a late submission of an assessment component. If the appeal case is upheld, the result of the assessment component will be capped at minimum passing marks.

5.3 Grading Scheme

Sunway University operates a standard grading scheme based on percentages to denote student performance in each course as follows:

Marks (%)	Point	Grade	Description
80 – 100	4.00	A+	Distinction
75 – 79	3.75	A	Merit
70 – 74	3.50	A-	Merit
65 – 69	3.25	B+	Good
60 – 64	3.00	B	Good
55 – 59	2.75	B-	Satisfactory
50 – 54	2.50	C	Satisfactory
45 – 49	2.25	C-	Satisfactory
40 – 44	2.00	D	Pass
30 – 39	1.50	F	Fail Note: Applies to: 1. Student fails a course that does not have the requirement to pass both continuous and final assessment components 2. Student fails both assessment components of a course that has the requirement to pass both continuous and final assessment components.
20-29	1.00	F	
0-19	0	F	
30 and above	1.50	F*	Failed grade where student has failed one component of a course that has the requirement to pass both continuous and final assessment components.
20 – 29	1.00	F*	
0 – 19	0	F*	
30 – 39	1.50	F#	Condoned Failure. Failed at third attempt but allowed to progress by Assessment Board.
		*	Pass at Resit attempt.
		**	Pass at Repeat attempt.
		EX	Exemption
		INC	Incomplete
		P	Pass Internship
		P**	Pass Internship at Repeat attempt

		(Z)	Course that is in progress. No credits or marks have awarded as yet.
		(F)	A failed elective course that has been replaced by an alternative course.
		W	Withdrawn
		^	Credit transfer from another programme
		AU	Audit course taken voluntarily to enhance knowledge but will not be included in the total credit hours required for graduation.

Note:

- Only grade P (Pass) or F (Fail) is denoted for Internship courses.
- For students enrolled on courses offered under a different grading scheme, a grade conversion formula will be applied to convert the course's grade to the correct programme grading.

5.4 Additional requirement to pass a subject

Computing courses in this programme require the students to pass both continuous assessment and final assessment severally to pass the subject. For this purpose, all continuous assessments for the course are taken together by their weighted-average as a single assessment component and are not considered separately.

A failure of either assessment component will result in a fail grade, even if the total mark is 40 or above. Such failure of course due to failure in either assessment component is referred to herein as component failure. It is considered similar to a course failure with regard to study progression.

Applicable for Component failures only

i. Students repeating courses due to course or *component failure* shall be required to attend classes and participate in all learning activities including those relating to components which have previously been passed.

6. Publication of Coursework Marks and Examination Results

6.1 Publication of Results

Examination results will be posted on iZone after endorsement by the Programme Assessment Board. All marks are considered provisional until confirmation is given by the Programme Assessment Board.

6.2 Return of marked assignments

Marks for coursework (e.g. assignments, presentations, learning tasks, etc.) will be published on eLearn no later than three (3) teaching weeks from the submission deadline. The University practice for return of marked assignments is normally within two to four weeks of the submission deadline.

Lecturers may mark the assignments either by annotating the electronic copy or by writing on the paper copy. It is the student's responsibility to collect the marked assignments. Any marked assignments not collected within one month will be destroyed.

7. Progression

Decisions on progression of a student pursuing an award are made by the Programme Assessment Board (PAB). Progression in any award is dependent on achieving a minimum pass of 40% or had exemptions given, in all courses.

7.1 Progression

- A student who passes all courses in a semester will progress to the following semester.
- A student who has accumulated 3 failed courses or more, or 10 credits of courses will not be allowed to take new courses in the following semester. However, an exception can be made if the failed courses are not offered in the following semester whereby the student will be allowed to take up to a maximum of 3 new courses (not more than 12 credits) in order to fulfil requirements for full-time study provided that the failed courses are not pre-requisites for the new courses.
- Unless prohibited by professional body regulations, undergraduate students are given two (2) reassessment opportunities in any courses which has been failed in the first attempt, except where an irretrievable fail has been awarded as a result of malpractice. The reassessment may take place in the form of repeat or re-sit in accordance to the stipulated conditions (7.2)

  If the student waives the opportunity to re-sit, he/she will have 2 remaining attempts to repeat the courses. If the student decides to sit for re-sit and fail again, he/ she will have only one (1) reassessment opportunity left and is required to repeat the courses as the final attempt.
  At any point, the student will be required to repeat the courses at the first available opportunity.
- Please also refer to section 8.4 for other conditions that can affect the progression of a student

7.2 Reassesment

- Unless prohibited by professional body regulations, undergraduate students are given two reassessment opportunities in any course which has been failed in the first attempt, except where an irretrievable fail has been awarded as a result of malpractice. The reassessment may take place in the form of repeat or re-sit in accordance to regulations J2.2 and J2.3.
- If the student waives the opportunity to re-sit, the student will have two (2) remaining attempts to repeat the course. Upon failing the re-sit at the second attempt, student is required to repeat the course as the final attempt.
- A repeat is an opportunity to make another attempt at all assessment components of a course.
- For a repeat, the student will have to attend classes and take the failed course in its entirety. The normal tuition fees as applicable to the course will be charged. The student will be allowed to take additional courses in the semester on top of the course/s repeated on condition that
    i) the total credits taken in the semester does not exceed 19 for a full semester and 10 for a short semester.
    ii) accumulated failed credit is below 10 credits.
- A re-sit is an opportunity to make another attempt at the failed assessment component of the course (such as sit for another written examination or re-submit coursework) following a marginal failure (30% - 39%) or a component failure.
- The student will have to pay a RM200 fee for each course reassessed.
- Programme Assessment Board may consider allowing re-sit for all courses except Capstone Project and Internship.

- A re-sit may be considered under the following circumstances:
    i) Marginal failure in courses where the assessment is fully based on coursework (applicable only to students from intakes before March 2017).
    ii) A student who marginally failed a course, where it is not required to pass all assessment components, and who have attained an overall course mark that is no more than 10% below the required course passing mark, may re-sit the one or more failed assessment components required to attain the overall passing mark.
    iii) Students who fail a course due to component failure in a course where it is required for all components to be passed will be offered the opportunity to re-sit the failed component(s), providing that the total mark for all assessment components combined is equivalent to a marginal course failure, that is the first course failure mark is equivalent or less than 10% below the required course passing mark.

iv) The course marks after a re-sit are calculated from the total of the marks achieved for the previously passed component(s) and the marks for any component(s) that are reassessed. Components may be passed at different times and do not need to be passed in the same assessment cycle.

v) Students with one or two marginal course failures from the final semester of study and who have no other outstanding reassessment.

- Re-sit needs to be conducted at the earliest available opportunity before the end of the subsequent semester.
- Students repeating courses due to course or component failure shall be required to attend classes and participate in all learning activities including those relating to components which have previously been passed.
- Marks awarded to students from August 2019 intake onwards will be based on the actual marks obtained in the re-assessment attempt and will not be capped. However, grades from failed attempt(s) will be recorded in the progress report and transcript. If the student has to repeat the course in another semester, the failed attempt will contribute towards the GPA. CGPA will only be calculated based on the student's latest reassessment attempt.
- The maximum mark that can be awarded for any course after reassessment due to course failure or component failure is the minimum passing mark (applicable for intakes prior to August 2019). If the previous mark and the reassessed marks are below the minimum pass mark, then the highest of the marks for the course and/ or component will be counted as the final mark.
- Students from 2013 intake onwards are allowed to repeat a passed course if required for professional accreditation under specific accreditation arrangements. However, the marks obtained in the subsequent attempt(s) will not be recorded on student's transcript and will not be used in any calculation of student's programme marks or grade. The marks and/ or grades of any assessment repeated for professional accreditation will be recorded in a separate letter issued by the Registrar to confirm the examination results.

Lecturers setting coursework for re-sit, must fulfil the following criteria:

i. Only set for 1 coursework (not required to follow existing coursework components setting)
ii. Coursework weightage must be at least 30% of overall subject
iii. Coursework must be individual work.

7.3 Condonement

A student who after failing all opportunities to pass a course but had achieved a mark of between 30% and 39% in any of the attempts may be given condonement for the said course. The failed course must be proposed

to the Programme Assessment Board for condonement. The maximum that can be condoned is 12 credits for a bachelor's degree.

Conditions for Condonement are as below:

i) All Programme Learning Outcomes continue to be met;

ii) The mark for the course is at least 30% in any of the attempts;

iii) The mark for the failed assessment component (referring to component failure) is no more than 10% below the minimum component pass mark in any of the attempts;

iv) The student's CGPA at time of Condonement is at least 2.00;

v) Professional body requirements do not stipulate that all assessment components must be passed and do not prohibit condonement.

7.3 Mandatory Exit

A student with outstanding failures after all opportunities of reassessment have been exhausted, will be required to exit from the programme.

8. Programme Award and Results

Awards are recommended by the Programme Assessment Board (PAB). In order to be recommended for the award, students must have:

- Achieved passes in the credit requirements specified for the award.
- Passed any additional requirements specified by the programme associated with the award, including compulsory courses, defined combinations of courses and placements.
- Achieved CGPA greater than or equal to 2.00 from courses that are taken into account towards the award classification.
- Met any required Professional or Statutory Body requirements for the award

8.1 Honours Degree Award Classification

The classification of awards will be based on the cumulative grade points average of contributing courses. The contributing courses for an Honours Degree are derived from the results of Year 2 and Year 3 only. Typically, for Bachelor's level, Year 1 courses, MPU courses, and Internship are not calculated towards the overall award marks and classification.

The classification of degree awards, with honours, are as follows:

CGPA	Classification
3.50 – 4.00	Class I
3.00 – 3.49	Class II (I)
2.50 – 2.99	Class II (II)
2.00 – 2.49	Class III

8.2 Calculation Grade Point Average

Grade Point Average (GPA) is calculated by multiplying grading point with course credit and dividing the figure by the number of total credits taken in a semester. Formula as below :

$$\text{GPA} = \frac{\textit{Sum of (Grading Point x Course Credits) for all courses}}{\textit{Sum (Total number of credits)}}$$

Upon completion of study, student will get a Cumulative Grade Point Average (CGPA).

Student may refer to the Academic Regulations for a sample calculation of GPA, and CGPA.

8.3 A higher class shall be awarded when a student's overall profile falls into the following scenario:

i) The Cumulative Grade Point Average (CGPA) is not more than 0.05 points below the recommended class; AND
ii) At least half of the counting credits, or half + 0.5 in the case of an uneven number of credits are in the recommended class.

8.4 Academic Standing

Determination of students' academic standing is based on GPA and CGPA

i) Good Standing - a student is in good standing whenever the student's CGPA is at 2.00 or above.
ii) Warning - Whenever the GPA for any enrolment period is less than 2.00, but the CGPA is 2.00 or above, the student will receive a warning notification.
iii) Probation - The student will be placed on probation whenever the student's CGPA falls below 2.00.
iv) Extended Probation - The student will be placed on Extended Probation when, following a semester on probation, the student's CGPA is still below 2.00, even though the GPA for the enrolment period is 2.00 or

above. Students with this status may only be permitted to register a maximum of 12 credits.

v) Final Probation - The student will be placed on Final Probation when, following a semester on Extended Probation, the student's CGPA continues to be below 2.00, even though the student's GPA for the enrolment period is 2.00 or above. Students may only register not more than 12 credits in that particular semester.

vi) Dismissal - Students on Extended Probation who fails to achieve at least a 2.00 GPA for the enrolment period, or students on Final Probation who fails to achieve a 2.00 CGPA will have to exit the programme.

8.5 A student who is dissatisfied with the result of an examination or other decision by the Assessment Board may submit a formal application of appeal to either Examination Unit or School. Please refer to Student Handbook for more details.

9. Graduation

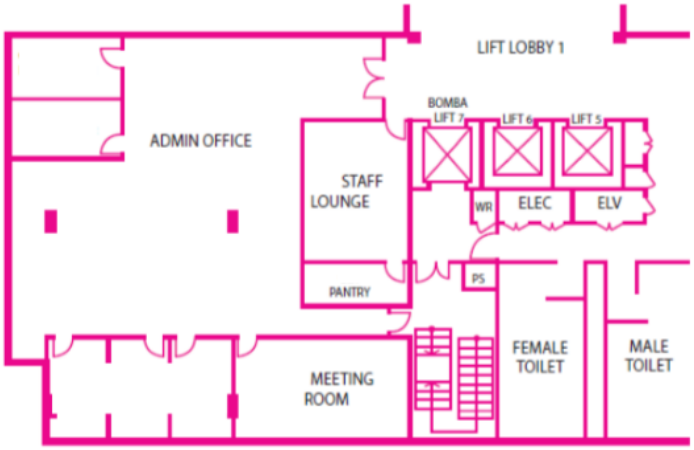
The Graduation registration details will be sent to your personal email before the Graduation Ceremony. Graduands are required to reply by the stipulated deadline.

10. Others

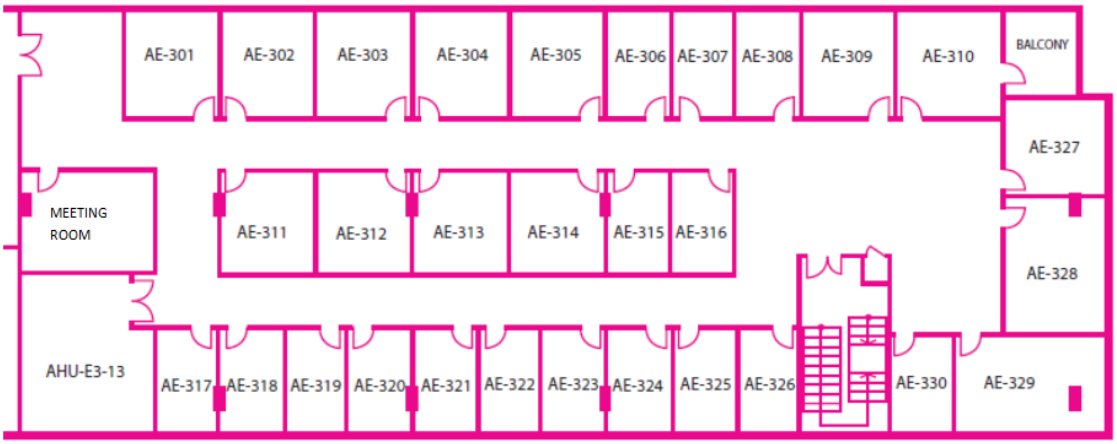
Sunway University advocates the Bring Your Own Device (BYOD) environment. All students are required to bring their own personal notebook devices to campus for study and exam-related activities. With modern learning becoming heavily digital, the adoption of BYOD environment is fitting as it enables learning anytime and anywhere for our students. Make sure you have a Windows notebook that meets our recommended minimum specifications. Please visit the FAQ page at https://izone.sunway.edu.my/faq/byod.html for more information on BYOD.

Appendix A: Floor plan of School of Engineering and Technology

Level 3: Administration Office (East Wing)

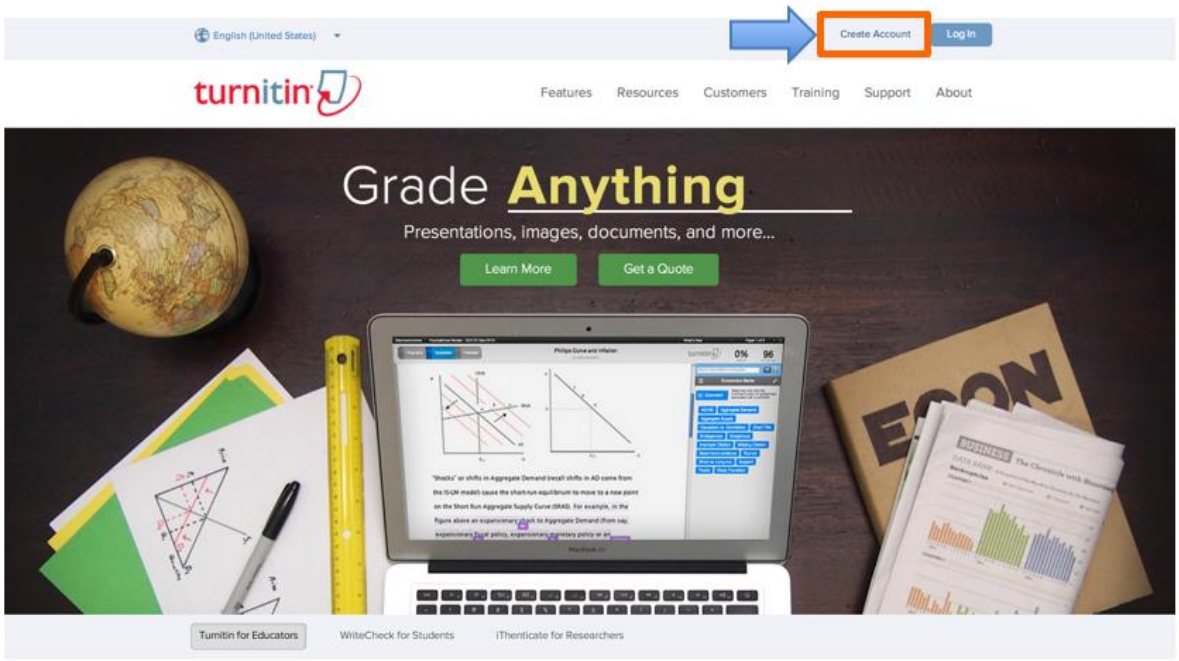


Level 3: Academic Offices (East Wing)

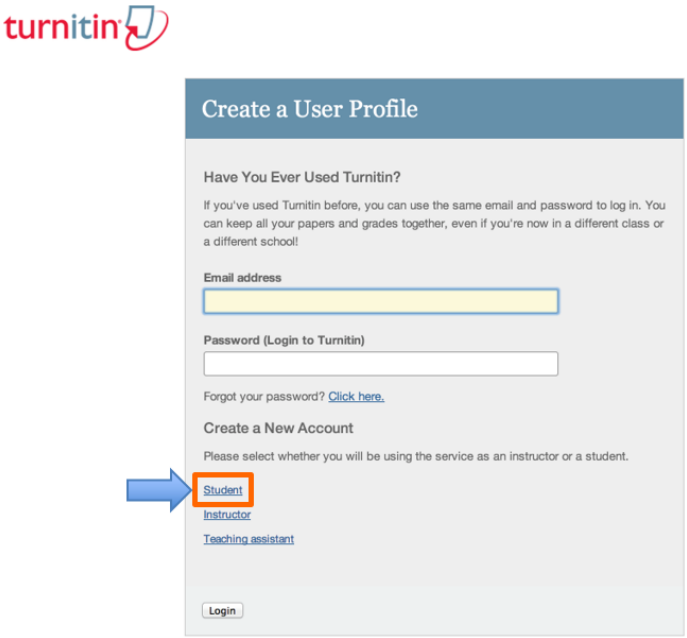


Turnitin

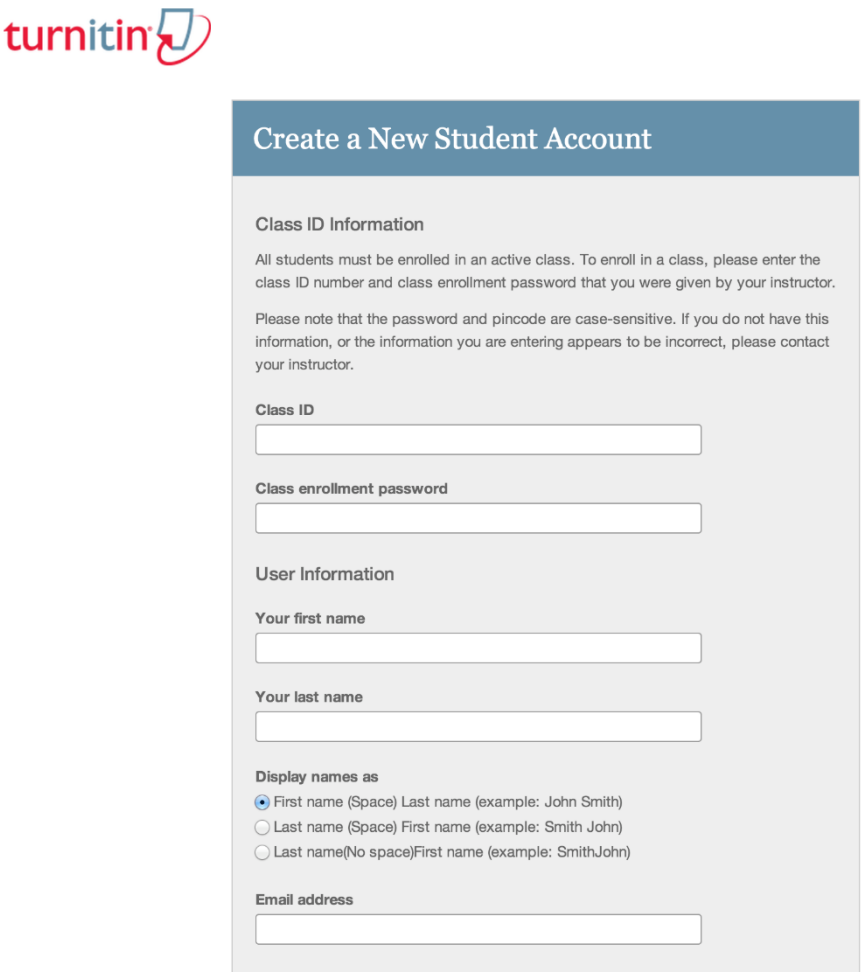
1) Go to http://www.turnitin.com/ and click on the "Create Account" button.



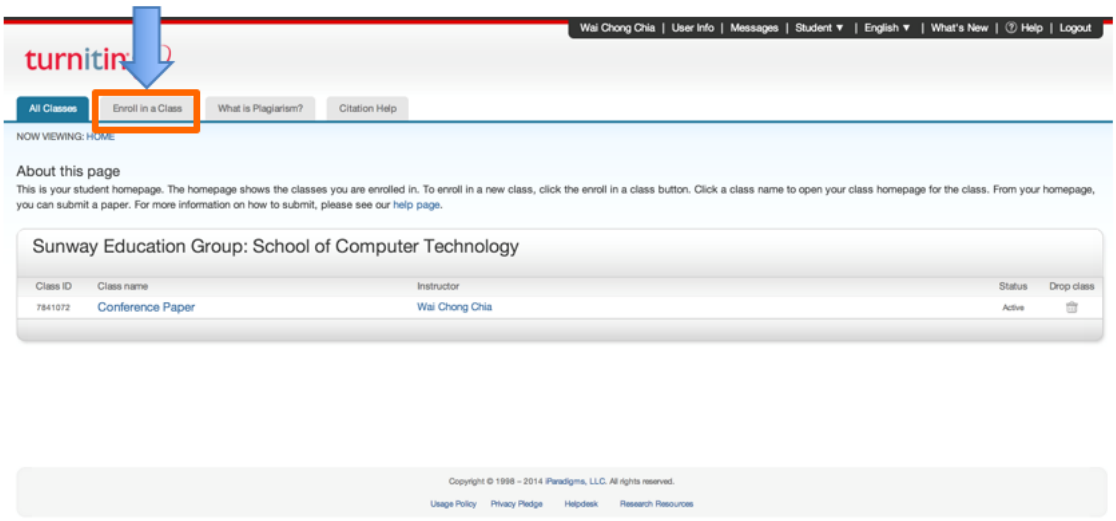
2) Select "Student".



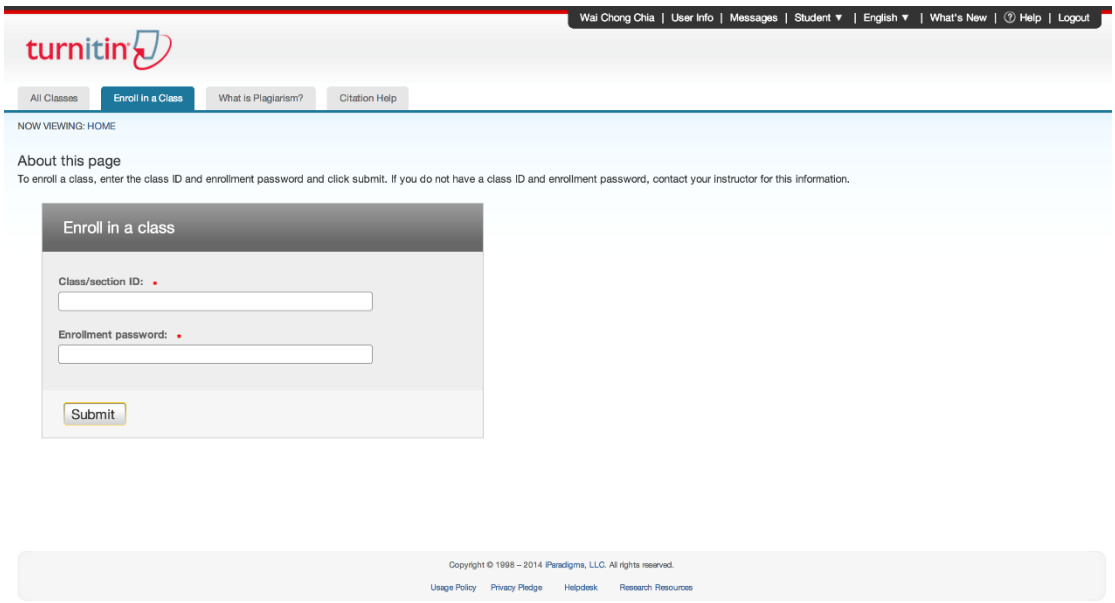
3) Enter all the details. Your lecturer will give you the class ID and the enrollment password. Please use your imail address for the registration.



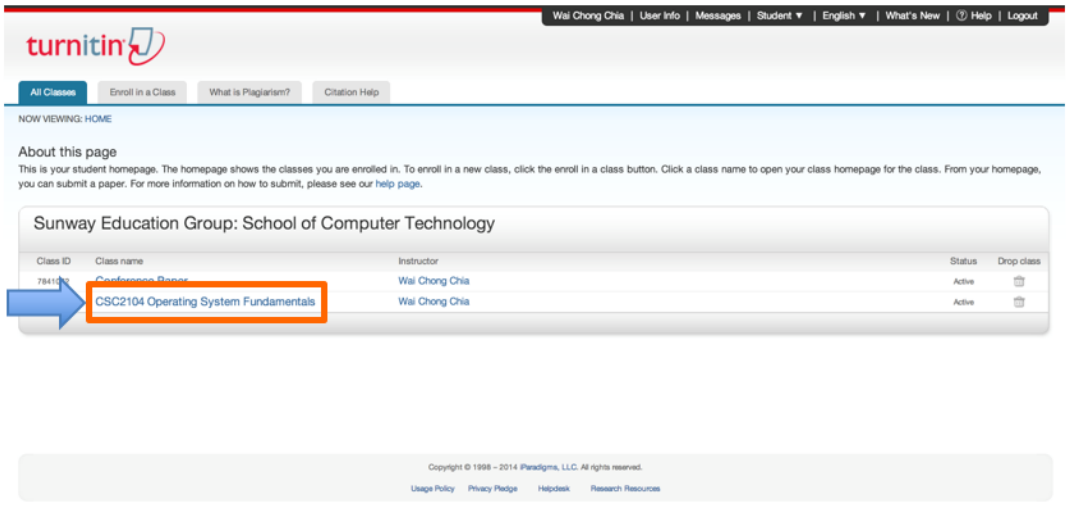
4) Log into your account, you should be able to see the class that you have enrolled. If you want to enroll for another class, just click on the "Enroll in a Class" tab.



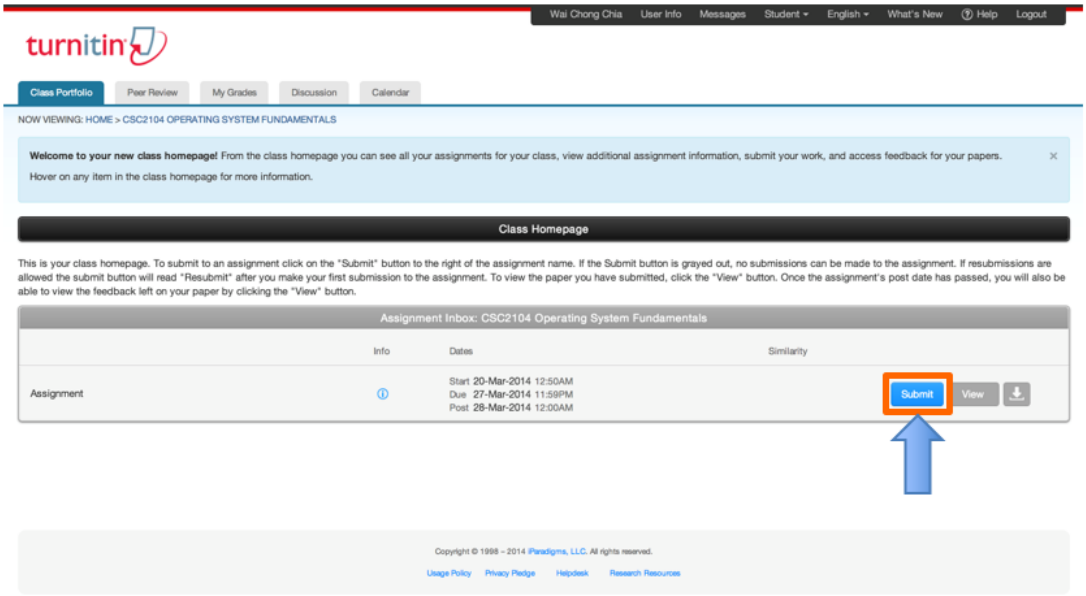
5) Again, enter the class ID and the enrollment password given by your lecturer.



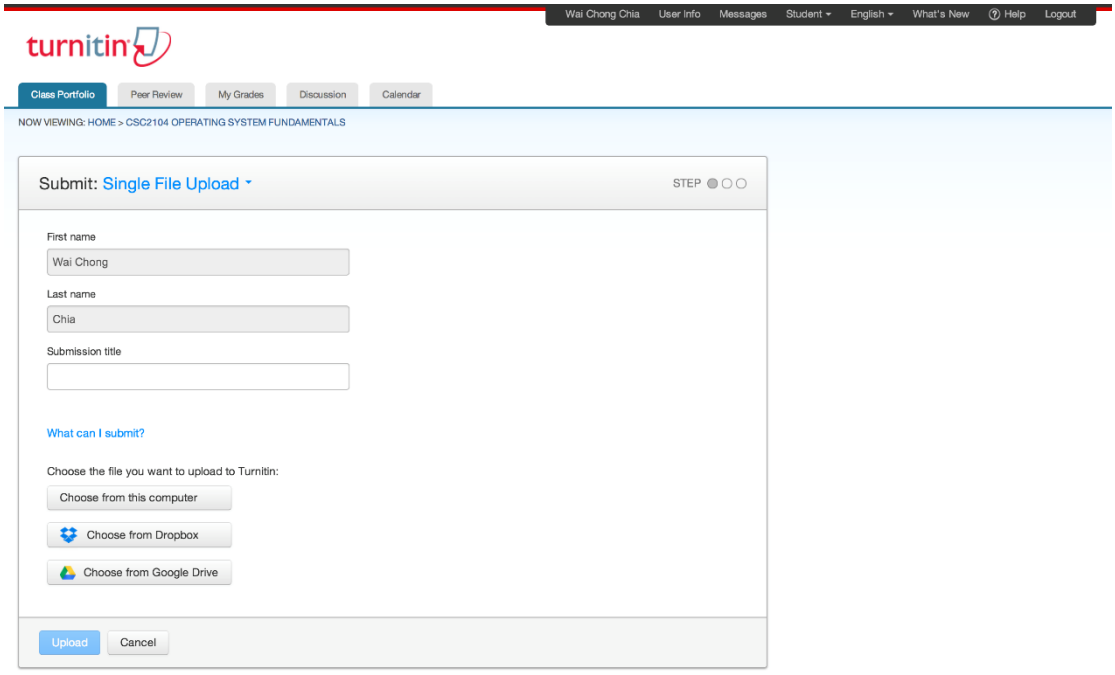
6) You should be able to see the new class that you have enrolled. If you want to submit an assignment for a particular class, you just have to click on the class name.



7) You should be able to see the assignment that you're required to submit. Click on the "Submit" button.



8) Select the file that you would like to submit.



Appendix C: Terms of References for School Board of Studies, Programme Committee and Student Staff Committee

SCHOOL BOARD OF STUDIES (SBOS)

Committee name	**SCHOOL BOARD OF STUDIES**	
Purpose	The School Board of Studies is a standing committee of Academic Senate. It provides support to the Academic Senate in the development and implementation of the University's strategic initiatives at the School level. It also advises the Dean and Academic Senate on the academic matters, research and HDR activities of the School; the schedule of Degrees offered by the School; academic standards and quality, and teaching effectiveness in the School; and other issues referred to the School by the Vice-Chancellor, Dean or Academic Senate.	
Reports to	Academic Senate	
Membership	Chair	Dean of School
	Alternate Chair	Appointed by the Chair
	Members	1. Heads of Department/Heads of Centre 2. Associate Deans 3. Academic Staff Appointed by the Dean 4. Undergraduate and Postgraduate student representative
	Ex-officio	N.A.
	By invitation (no voting rights)	1. External examiners, 2. Course consultants and members from professional bodies, as and when necessary 3. Any member of academic staff of the School (whether full or part-time) 4. Academic Dean (Lancaster University) (applicable only to the consideration of students also enrolled on Lancaster validated programmes)
Secretary in Attendance	A School Administrator appointed by Dean	
Attendance	1. The quorum shall be at least 50% of the total members eligible to vote. 2. All members are expected to attend meetings convened unless valid reasons are given. 3. If unavailable, Members may send a representative to attend a meeting; however, the representative shall not have any voting rights.	
Decision Making	1. Decisions shall be made as necessary by a vote of members. 2. Matters shall be decided by a simple majority of voting members present at the meeting.	
Frequency of Meetings	1. Four times a year. 2. The Chair may convene additional meetings, when necessary, with reasonable notice. 3. Minutes of meeting to be submitted to Academic Senate for noting.	
Duties, Responsibilities and Authority	1. To develop and review the academic and research strategies and performance of the School in line with university strategic plans.	

	2. To oversee the effective implementation of academic policy and regulation as determined by Senate. 3. To assure the academic quality and standards of provision by reviewing reports or minutes from School Teaching and Learning Committees and Programmes Committees. 4. To consider recommendations from School Research and Enterprise Committee on research strategies for the further development of the School's research and enterprise endeavour, and to review their implementation. 5. To develop and approve Programme Plans for the school, for recommendation to the Partnership and Programme Approval Committee. 6. To approve proposals for new programmes and proposals for major changes to programmes for recommendation to the Partnership and Programme Approval Committee. 7. To approve minor revisions to existing programmes. 8. To recommend suspension or termination of an existing programmes. 9. To endorse the admission of diploma, undergraduate and postgraduate students, including admission with advanced standing, credit transfer/exemption and articulation agreements with other higher education institution. 10. To engage with the student body, through representation and consideration of feedback, to support the academic quality of provision and associated student satisfaction. 11. To establish such committees of the School as it deems fit, with membership that may include external advisers, in order to provide expert advice on matters within the School's areas of responsibility. 12. To review and take action on any matters which may be referred to it by the Senate. 13. To discuss and raise matters pertinence to other committees of the university for the purpose of ensure the maintenance or enhancement of the standards and quality of the University's educational offer (including research)
Conflict of Interest	Members must avoid conflict of interest and disclose all potential conflicts, and safeguard the institution's assets and interests and ensure the integrity of its management, operations, services and organisational health.
Approval	Senate: 13 Nov 2013 Senate: 17 February 2017 Senate: 15 November 2019 Senate: 16 April 2021
Standing Committees	School Teaching and Learning Committee School Research and Enterprise Committee Programmes Committee

PROGRAMMES COMMITTEE (PC)

Committee Name	PROGRAMMES COMMITTEE	
Purpose of the committee	The Programmes Committee is a standing committee of the School Board of Studies. The committee is responsible for the design and development of new programmes and oversees the delivery of the programme according to the approved programme offering. It has a function of enacting policies relevant to the design and delivery process of each programme under its purview (including programmes under development). It ensures that the programme is aligned with the School's mission statement and that it complies with the University standards and policies and relevant accreditation standards.	
Reports to	School Board of Studies	
Membership	Chair	Head of Department or a senior member of academic staff appointed by the Dean
	Alternate Chair	Appointed by the Chair
	Members	1. Programme Leader(s) 2. Other academic members who are given the responsibility for designing, developing, planning, implementing, evaluating and enhancing a programme. The following may be co-opted: 1. Subject experts from within Sunway University and other local or foreign universities; 2. Administrative staff who are familiar with MQA and MOHE regulations on programme structures and admission requirements connected with the programme; 3. Representatives from the industry or profession that is likely to employ graduates of the programme; 4. Selected alumni who may be able to contribute to the curriculum development.
Secretary in Attendance	Appointed by the Chair	
Attendance	1. The quorum shall be at least 50% of the total members eligible to vote. 2. All members are expected to attend meetings convened unless valid reasons are given. 3. If unavailable, Members may send a representative to attend a meeting; however, the representative shall not have any voting rights.	
Decision Making	1. Decisions shall be made as necessary by a vote of members. 2. Matters shall be decided by a simple majority of voting members present at the meeting.	
Frequency of Meetings	1. Four times a year. 2. The Chair may convene additional meetings, when necessary, with reasonable notice. 3. Minutes of meeting to be submitted to School Board of Studies for noting.	

Duties, Responsibility and Authority	The Programmes Committee has the following functions: 1. To make recommendations for new programmes to the School Board of Studies for approval 2. To formulate curricula for new programmes under its purview, formulating Programme and Subject Learning Outcomes 3. Devising the teaching, learning and assessment methodologies for the programme 4. To prepare documentation for submission to both the University and external agencies for purposes of getting programme Approval 5. To address recommendations given by relevant committees or officers of the university as part of the programme development and review processes of the University. 6. To amend curriculum where necessary according to recommendations provided by Curriculum Design Review Panel. 7. To see through all procedures with regards to new programme approval application. 8. To approve subject sequencing for the delivery of the programme 9. To approve the sequencing of continuous and other in-course assessments of the programme, ensuring assessments are reasonably distributed 10. To consider advanced standing, transfer of credits and exemptions for admission of students into the programme 11. To review assessment methods and assign responsibility for internal moderation or vetting of examination questions and answer scripts 12. To monitor and review student progress and performance. 13. To evaluate the effectiveness of the curriculum and delivery in tandem with Programme Assessment Board findings at the end of the semester 14. To ensure the programme complies with University's internal quality assurance and enhancement processes and procedures and provide reports including: a) Annual Review Report b) Periodic Quality Review Report c) Student Subject Evaluation Feedback Analysis Report d) Student Experience Survey Feedback Report e) External Examiner Reports f) Student Attrition Analysis Report 15. To conduct a full review of the programme annually and at the end of every programme cycle using feedback from internal and external stakeholders such as students, lecturers, external examiners, programme review panel report and industry and validating partners. 16. To implement revisions and improvement plans for the programme based on results of programme review. 17. To coordinate the preparation of documents for MQA accreditation of the programme. 18. With due prior approval of the Chair, other parties including staff members and outside parties may be invited to attend a meeting fully or partially for discussion of items on the agenda for which their input or expert advice is required or desired.
Documents and Presentations	All business papers for meetings (including PowerPoint presentation) should be submitted to the appointed Meeting Secretary in softcopy one week before the meeting date.

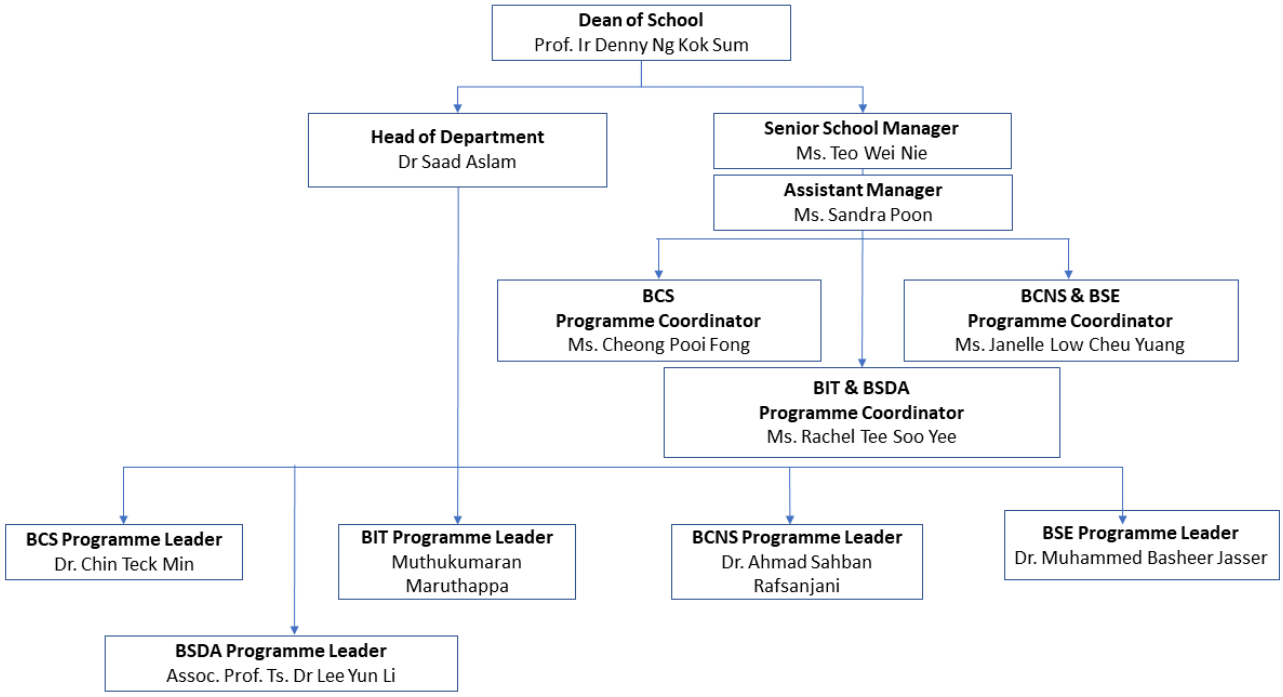
Conflict of Interest	Members must avoid conflict of interest and disclose all potential conflicts, and safeguard the institution's assets and interests and ensure the integrity of its management, operations, services and organisational health.
Approval	Senate: 13 November 2013 Senate: 17 February 2017 Senate: 15 November 2019
Advisory Committees	Student-Staff Committee Programme Review Panel External Advisory Committee

STUDENT-STAFF COMMITTEE (SSC)

Committee Name	STUDENT-STAFF COMMITTEE	
Purpose	Staff-Student Committee is an advisory committee to the Programmes Committee that is responsible for engaging with students; considering their views on the quality of the programme; seeking views on strengths, areas for improvement and responding to issues raised.	
Reports to	Programmes Committee	
Membership	Chair	A Programme Leader or a senior member of academic staff appointed by the Head of Department
	Alternate Chair	Senior academic Appointed by Head of Department from the committee
	Members	1. Members of staff with responsibilities for programme delivery; 2. One Student Representative from each cohort of each programme.
	By invitation (no voting rights)	For Undergraduate or Diploma programmes the Academic Affairs Director of the Sunway University Student Council, or nominee, may attend as an observer. For Postgraduate programmes the Sunway University Postgraduate Representative, or nominee, may attend as an observer. Representatives of any University service or service provider such as the Library, IT Service, Facilities Service and any other central University services to be invited, as appropriate.
Secretary in Attendance	Appointed by the Chair	
Attendance	1. The quorum shall be at least two-thirds of the total members eligible to vote. 2. All members are expected to attend meetings convened unless valid reasons are given. 3. If unavailable, members may send a representative to attend a meeting; however, the representative shall not have any voting rights.	
Frequency of meeting	1. Once per semester. 2. At each meeting the date of the next meeting should be set and published in the minutes. 3. Meeting agendas and notifications shall be circulated to members and students at least five working days before the meeting date 4. Minutes of meeting will be sent to Programmes Committee. 5. Summary minutes of meetings will be sent for consideration to School Teaching and Learning Committees and published electronically for students	
Functions and responsibilities	1. To provide a platform for communication on academic matters between staff and students within a particular programme. 2. To receive feedback from students relating to the student learning experience including matters raised by student representatives and matters on which the programme academic unit wishes to seek student views including: a. teaching, learning and assessment; b. student support and guidance; c. career development (graduate skills and employability);	

	d. teaching and learning resources; e. review of existing subjects and programmes; f. accreditation by professional, statutory and regulatory bodies; g. issues arising from student surveys and other feedback mechanisms h. any matters referred to the SSC by the relevant School Board of Studies (SBoS). 3. To provide a forum for consultation to discuss students' perspectives on agendas of mutual interest and to aid planning for the development and improvement of a programme. 4. To submit an annual summary of key issues and status of actions taken in addressing the matters discussed in the Committee to Sunway University Students' Council, SBoS, and UTLC.
Documents and Presentations	All business papers for meetings (including PowerPoint presentation) should be submitted to the appointed Meeting Secretary in softcopy one week before the meeting date.
Conflict of Interest	Members must avoid conflict of interest and disclose all potential conflicts, and safeguard the institution's assets and interests and ensure the integrity of its management, operations, services and organisational health.
Approval	Senate: 13 November 2013 Senate: 17 February 2017 Senate: 15 November 2019 Senate: 16 April 2021

Appendix D : Organisational Chart



Appendix E : Pre-requisite List

BSc (Hons) in Computer Science

Subject Code	Name of Subject	Credit Hour	Pre-Requisite	Calculated in Honours System	Compulsory pass for both FE and CW
MTH1114	Computer Mathematics	4	Nil	NO	YES
ENG1044	English for Computer Technology Studies	4	Nil	NO	NO
SEG1201	Database Fundamentals	4	Nil	NO	YES
PRG1203	Object Oriented Programming Fundamentals	4	CSC1024 Programming Principles	NO	YES
CSC1202	Computer Organisation	4	Nil	NO	YES
WEB1201	Web Fundamentals	4	Nil	NO	YES
CSC1024	Programming Principles	4	Nil	NO	YES
NET1014	Networking Principles	4	Nil	NO	YES
OSS1014	Operating Systems Fundamentals	4	Nil	NO	YES
MPU 3112	Penghayatan Etika dan Peradaban	2	Nil	NO	NO
MPU 3142	Malay Language for Communication 2 (Bahasa Melayu Komunikasi 2)	2	Nil	NO	NO
MPU 3122	Falsafah dan Isu Semasa	2	Nil	NO	NO
MPU 3132	Appreciation of Ethics and Civilisation	2	Nil	NO	NO
CSC2103	Data Structure & Algorithms	4	CSC1024 Programming Principles	YES	YES
PRG2104	Object Oriented Programming	4	PRG1203 Object Oriented Programming Fundamentals	YES	YES
SEG2202	Software Engineering	4	PRG1203 Object Oriented Programming Fundamentals	YES	YES
ENT2012	Entrepreneurial Mindset and Skills	2	Nil	YES	NO
ENG2044	Communication Skills	4	Nil	YES	NO
MPU3332	Integrity and Anti-Corruption (KIAR)	2	Nil	NO	NO

MPU 3212	Critical Thinking	2	Nil	NO	NO
MPU 3232	Bahasa Kebangsaan A	2	Nil	NO	NO
BIS2102	Information Systems Analysis & Design	4	Nil	YES	YES
BIS2216	Data Mining and Knowledge Discovery Fundamentals	4	Nil	YES	YES
CSC2014	Digital Image Processing	4	Nil	YES	YES
CSC2044	Concurrent Programming	4	PRG1203 Object Oriented Programming Fundamentals, PRG2104 Object Oriented Programming	YES	YES
CSC2074	Mobile Application Development	4	PRG1203 Object Oriented Programming Fundamentals	YES	YES
NET2102	Data Communications	4	Nil	YES	YES
NET2201	Computer Networks	4	Nil	YES	YES
PRG2205	Programming Languages	4	PRG1203 Object Oriented Programming Fundamentals	YES	YES
PRG2214	Functional Programming Principles	4	CSC1024 Programming Principles, MTH1114 Computer Mathematics	YES	YES
SEG2102	Database Management Systems	4	SEG1201 Database Fundamentals	YES	YES
SWA2124	Social and Web Analytics	4	CSC1024 Programming Principles	YES	YES
MPU3422	Community Service for Planetary Health	2	Nil	NO	NO
CSC3024	Human Computer Interaction	4	WEB1201 Web Fundamentals	YES	YES
CSC3206	Artificial Intelligence	4	CSC1024 Programming Principles	YES	YES
NET3204	Distributed Systems	4	PRG2104 Object Oriented Programming	YES	YES
SEG3203	Internship	6	ENG2044 Communication Skills, Completion of all Year 2 subjects	NO	NO
PRJ3213	Capstone Project 1	3	ENG1044 English for Computer Technology Studies, PRG2104 Object Oriented Programming	YES	NO

PRJ3223	Capstone Project 2	3	PRJ3213 Capstone Project 1	YES	NO
CSC3064	Database Engineering	4	SEG2102 Database Management Systems	YES	YES
CSC3209	Software Architecture and Design Patterns	4	PRG2104 Object Oriented Programming, SEG2202 Software Engineering	YES	YES
CSC3014	Computer Vision	4	CSC2014 Digital Image Processing	YES	YES
CSC3034	Computational Intelligence	4	CSC3206 Artificial Intelligence (co-req)	YES	YES
CSC3044	Computer Security	4	SEG1201 Database Fundamentals, CSC1024 Programming Principles, WEB1201 Web Fundamentals	YES	YES
CSC3074	Cloud Computing	4	NET1014 Networking Principles	YES	YES
PRG3014	UI/UX Design and Development	4	PRG1203 Object Oriented Programming Fundamentals, CSC3024 Human Computer Interaction (co-req), WEB1201 Web Fundamentals	YES	YES

* Information is correct at the time of printing. All information is subject to change.

* Subjects listed are based on BSc (Hons) in Computer Science latest programme structure. For subjects not listed in this list, please refer to your Programme Coordinator.