Agensi Kelayakan Malaysia
Malaysian Qualifications Agency

GUIDELINES OF CURRICULUM: FOUNDATION

(GCF)

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PREFACE

The Malaysian Qualifications Agency (MQA), as the sole national higher education quality assurance organisation, facilitates quality through the development of quality assurance documents. These documents are Malaysian Qualifications Framework (MQF), Code of Practice, Guidelines to Good Practices, and Programme Standards, all of which must be used as a reference point in the conduct of an academic programme of study in Malaysia.

Guidelines of Curriculum: Foundation (GCF) is developed to provide specific guidelines to providers in a particular field or course of study so as to prepare students for bachelor studies. The GCF includes specific guidelines on programme aims and objectives, programme learning outcomes, course learning outcomes, curriculum design, course information (CI) and assessment of student learning.

The document is rich in underlying principles and experiences of best practices, visionary ideas, and practical suggestions. It is hoped that Higher Education Providers (HEPs) will benefit from the use of the GCF, which will in turn benefit generations of learners who are expected to be participative national and global citizens.

My deepest gratitude goes to the panel members and MQA officers who put forth tremendous efforts and generously gave their time in realising the GCF.

Congratulations.

Chief Executive Officer
Malaysian Qualifications Agency

ABBREVIATIONS

1.	CI	Course Information
2.	CLO	Course Learning Outcome
3.	COPIA	Code of Practice for Institutional Audit
4.	COPPA	Code of Practice for Programme Accreditation
5.	HEP	Higher Education Provider
6.	HLI	Higher Learning Institution
7.	MOHE	Ministry of Higher Education
8.	MQA	Malaysian Qualifications Agency
9.	MQF	Malaysian Qualifications Framework
10.	PLO	Programme Learning Outcome
11.	QA	Quality Assurance

1. INTRODUCTION

The Guidelines of Curriculum: Foundation (GCF) is a higher education pathway programme that prepares students for undergraduate studies. Upon completion of the programme and subject to meeting all entry requirements of the Higher Learning Institution (HLI), the student qualifies for admission into undergraduate studies.

The purpose of this document is to guide and facilitate quality conduct of this programme. This document should be read together with:

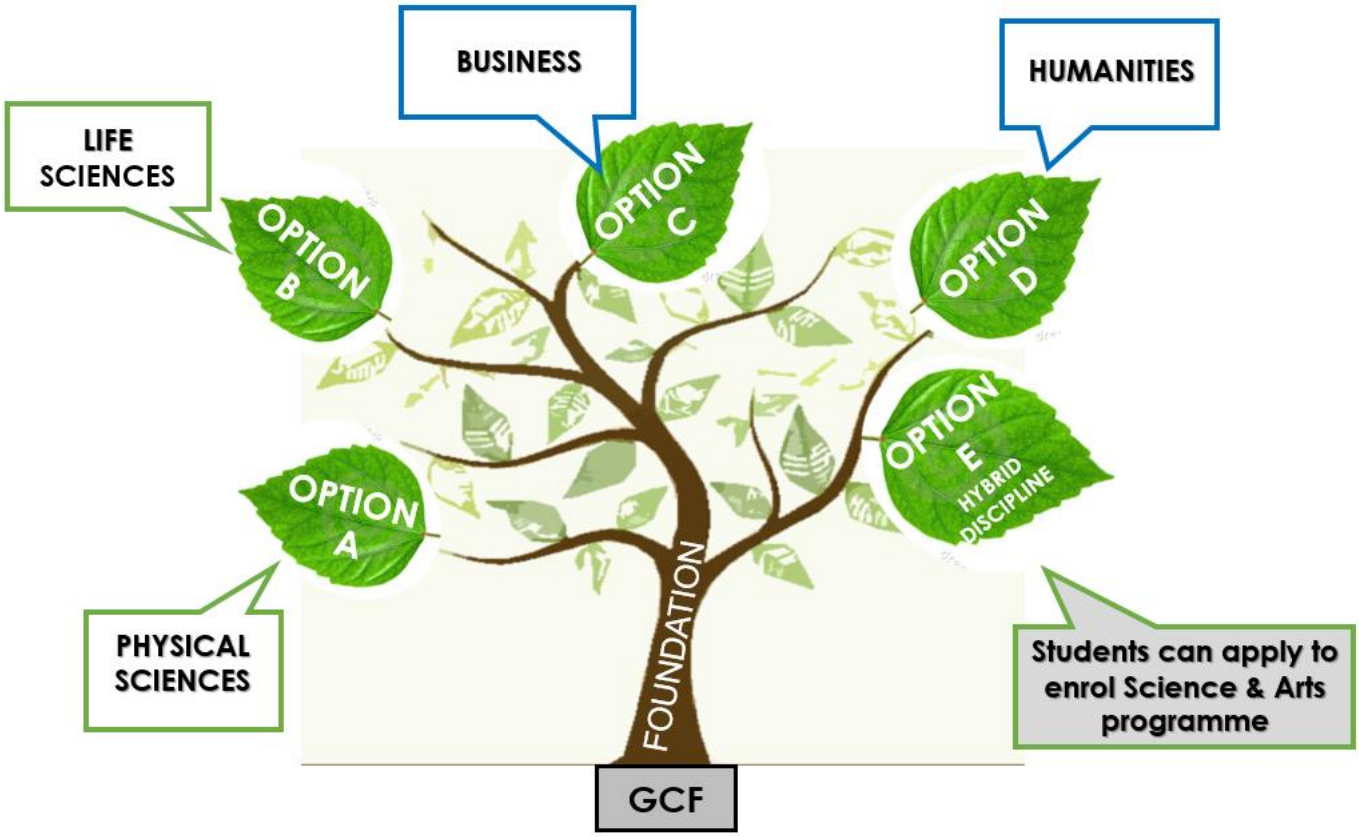
i. The Malaysian Qualifications Framework (MQF);
ii. The Code of Practice for Programme Accreditation Version 2.0 (COPPA Version 2.0);
iii. The Code of Practice for Institutional Audit (COPIA); and
iv. Programme Standards for Foundation 2014 [Standard Kursus Asas (Foundation) 2014].

The GCF is offered in three tracks:

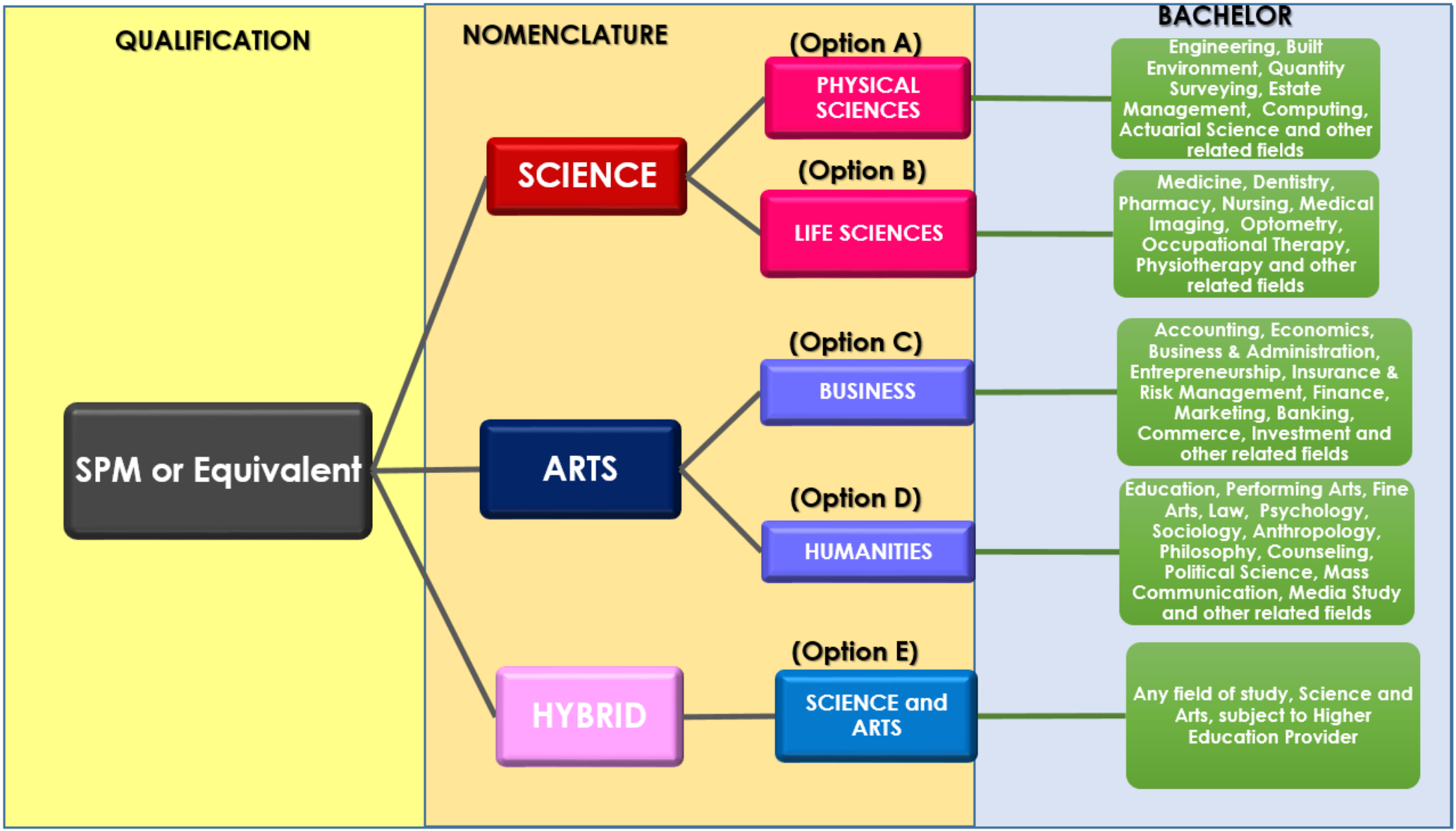
i. Foundation in Science
ii. Foundation in Arts
iii. Foundation in Science and Arts

The scope of this programme covers Physical Sciences, Life Sciences, Business and Humanities.

Each track comprises a set of common core, core and elective courses with specific course requirements. All tracks focus on knowledge (subject-matter content), skills, values, and attitudes relevant to producing holistic and balanced graduates.


BUSINESS
HUMANITIES
LIFE SCIENCES
OPTION C
OPTION B
OPTION D
OPTION E
HYBRID DISCIPLINE
OPTION A
FOUNDATION
PHYSICAL SCIENCES
Students can apply to enrol Science & Arts programme
GCF

PATHWAY DIAGRAM



2. PROGRAMME AIMS

This programme provides students with the theoretical and practical foundations for knowledge and skills acquisition in various disciplines of study in sciences or arts and prepares them for undergraduate studies at Higher Learning Institutions (HLIs) throughout Malaysia.

At the end of this programme, students will be able to explain concepts, theories, and principles in their area of study, source and process data using appropriate digital/technology applications, analyse and apply information to solve problems, and develop their skills for lifelong learning and communication in responsible ways.

3. LEARNING OUTCOMES

Students' achievements and success in the Guidelines of Curriculum: Foundation (GCF) are measured through their attainment of the learning outcomes of this Programme and its courses. These learning outcomes are statements on what students should know, understand, and perform upon completing their programme and/or course of study.

The GCF's Programme Learning Outcomes (PLO) are that students, by the end of the Programme, will be able to:

1. Utilise facts to describe and discuss concepts, principles, and processes in a specific field of study;
2. Apply fundamental principles in the field of study to identify and solve problems;
3. Conduct academic activities such as collect, analyse, organise, and process data/information to make conclusions individually or in groups;
4. Communicate effectively orally and in writing;
5. Utilise basic digital technology applications to seek and process data related to a specific field of study; and
6. Search, interpret, and use relevant information to pursue lifelong learning independently.

Each course within the Foundation in Science, Foundation in Arts, and Foundation in Science & Arts has its own set of Course Learning Outcomes (CLO).

4. CURRICULUM DESIGN

The credit requirement for this programme is 50 credits. The programme can be conducted in either two (2) or three (3) semesters within a period of ONE (1) year.

The credit value indicates the amount of time spent on teaching and learning activities for each course. The allocation of credit value and student learning time (SLT) is linked to the level of complexity, difficulty, and mastery required in the courses concerned.

Throughout the programme, students will undertake the following courses:

A. Foundation in Science

i. Six (6) common core courses;
ii. Five (5) core courses; AND
iii. Three (3) specialisation courses for Life Sciences OR Physical Sciences.

B. Foundation in Arts

i. Six (6) common core courses;
ii. Six (6) core courses; AND
iii. Two (2) optional courses.

C. Foundation in Science and Arts*

i. Six (6) common core courses;
ii. Five (5) core courses; AND
iii. Three (3) optional courses (according to the intended field of study and entry requirements by HEPs).

Table 4.1 COMPONENTS OF THE PROGRAMME: FOUNDATION IN SCIENCE

Course Classification	Credit Value	Percentage (%)
Common Core	18	36.0
Core	20	40.0
Specialisation	12	24.0
TOTAL	**50**	**100.0**

Table 4.2 COMPONENTS OF THE PROGRAMME: FOUNDATION IN ARTS

Module Courses	Credit Value	Percentage (%)
Common Core	18	36.0
Core	24	48.0
Optional	08	16.0
TOTAL	**50**	**100.0**

Table 4.3 COMPONENTS OF THE PROGRAMME: FOUNDATION IN SCIENCE AND ARTS

Module Courses	Credit Value	Percentage (%)
Common Core	18	36.0
Core	20	40.0
Optional	12	24.0
TOTAL	**50**	**100.0**

Table 4.4 PROGRAMME STRUCTURE FOR FOUNDATION IN SCIENCE (PHYSICAL AND LIFE SCIENCES)

COURSES			CREDIT
COMMON CORE			
THINKING SKILLS			3
BASIC INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)			3
ENGLISH I			3
ENGLISH II			3
MATHEMATICS I			4
CO-CURRICULUM			2
TOTAL			**18**
CORE			
CHEMISTRY I			4
CHEMISTRY II			4
BIOLOGY I			4
PHYSICS I			4
MATHEMATICS II			4
TOTAL			**20**
SPECIALISATION			
PHYSICAL SCIENCES	**CREDIT**	**LIFE SCIENCES**	**CREDIT**
PHYSICS II	4	BIOLOGY II	4
ENGINEERING MATHEMATICS	4	BIOCHEMISTRY	4
INTRODUCTION TO PROGRAMMING	4	INTRODUCTION TO PSYCHOLOGY	4
TOTAL	**12**		**12**
GRAND TOTAL	**50**		

Table 4.5 PROGRAMME STRUCTURE FOR FOUNDATION IN ARTS (BUSINESS AND HUMANITIES)

COURSES		CREDIT
COMMON CORE		
THINKING SKILLS		3
BASIC ICT		3
ENGLISH I		3
ENGLISH II		3
MATHEMATICS		4
CO-CURRICULUM		2
TOTAL		**18**
CORE		
BUSINESS (CORE)	**HUMANITIES (CORE)**	**CREDIT**
ESSENTIALS OF ECONOMICS	ESSENTIALS OF ECONOMICS	4
INTRODUCTION TO LAW	INTRODUCTION TO LAW	4
INTRODUCTION TO MANAGEMENT	INTRODUCTION TO MANAGEMENT	4
INTRODUCTION TO MARKETING	INTRODUCTION TO PSYCHOLOGY	4
FINANCIAL ACCOUNTING	INTRODUCTION TO SOCIOLOGY	4
MANAGEMENT ACCOUNTING	WRITING & RESEARCH SKILLS	4
TOTAL		**24**
OPTIONAL (CHOOSE ANY TWO)		**CREDIT**
INTRODUCTION TO FINANCE		4
INTRODUCTION TO PSYCHOLOGY		4
WRITING & RESEARCH SKILLS		4
INTRODUCTION TO VISUAL ARTS		4
INTRODUCTION TO MASS MEDIA AND COMMUNICATION		4
INTRODUCTION TO LEGAL SKILLS		4
TOTAL		**8**
GRAND TOTAL		**50**

Table 4.6 PROGRAMME STRUCTURE FOR FOUNDATION IN SCIENCE AND ARTS*

COURSES	CREDIT
COMMON CORE	
THINKING SKILLS	3
BASIC INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)	3
ENGLISH I	3
ENGLISH II	3
MATHEMATICS I	4
CO-CURRICULUM	2
TOTAL	**18**
CORE	
CHEMISTRY I	4
BIOLOGY I	4
PHYSICS I	4
ESSENTIALS OF ECONOMICS	4
INTRODUCTION TO MANAGEMENT	4
TOTAL	**20**
OPTIONAL (CHOOSE ANY THREE)	
BIOCHEMISTRY	4
BIOLOGY II	4
CHEMISTRY II	4
PHYSICS II	4
ENGINEERING MATHEMATICS	4
MATHEMATICS II	4
INTRODUCTION TO PROGRAMMING	4
INTRODUCTION TO MARKETING	4
FINANCIAL ACCOUNTING	4

COURSES	CREDIT
MANAGEMENT ACCOUNTING	4
INTRODUCTION TO LAW	4
WRITING & RESEARCH SKILLS	4
INTRODUCTION TO FINANCE	4
INTRODUCTION TO LEGAL SKILLS	4
INTRODUCTION TO PSYCHOLOGY	4
INTRODUCTION TO SOCIOLOGY	4
INTRODUCTION TO VISUAL ARTS	4
INTRODUCTION TO MASS MEDIA AND COMMUNICATION	4
TOTAL	**12**
GRAND TOTAL	**50**

**** Note:***

i. The Higher Education Provider can offer the above courses in 2 or 3 semester structures accordingly.

ii. Entry requirements into the Foundation in Science and Arts programme follow that of the Foundation in Science.

5. COURSE INFORMATION

COMMON CORE

1. Course Name and Code: **THINKING SKILLS**

2. Synopsis: Critical thinking is the process by which we develop and support our beliefs and evaluate the strength of arguments made by others in real-life situations. It involves actively and skilfully conceiving, applying, analysing, and evaluating information gathered from observation, experience, reflection, reasoning or communication as a guide to belief and action. This course encourages students to reflect on the processes of thinking, as well as developing and practising thinking skills

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 3

6. Pre-requisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of this course, students should be able to:
   CLO 1 - explain the concept of critical and creative thinking.
   CLO 2 - outline the attributes of being critical, creative and innovative in learning and life.
   CLO 3 - make better decisions through critical thinking and creative problem solving.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	Programme Learning Outcomes (PLO)						Teaching Methods	Assessment
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6		
CLO 1			✓				Lectures/ Tutorials	Assignment/Mini Project, Quizzes/Test, Final Examination
CLO 2		✓				✓	Lectures/ Tutorials	Assignment/Mini Project, Quizzes/Test, Final Examination
CLO 3		✓				✓	Lectures/ Tutorials	Assignment/Mini Project, Quizzes/Test, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Introduction to Critical Thinking** 1.1 Definition 1.2 Critical thinking theories 1.3 Importance of critical thinking 1.4 Types of thinking 1.5 Characteristics and skills of a critical thinker	1,2	4	4				8	16
2.	**Critical Thinking and Creative Thinking** 2.1 Introduction to creative thinking 2.2 Three basic principles of creative thinking 2.3 Characteristics of a creative thinker 2.4 Creative thinking techniques i. Brainstorming ii. Mind mapping 2.5 Six thinking hats and its benefits 2.6 Critical thinking vs Creative thinking	1,2	4	4				8	16
3.	**Argument, Conclusion and Reasoning** 3.1 Introduction to argument i. Premises ii. Conclusion 3.2 Argument validity 3.3 Argument mapping 3.4 Introduction of conclusion 3.5 Identify conclusion 3.6 Definition of reason 3.7 Identify reasons 3.8 Inductive reasoning 3.9 Deductive reasoning	1,2,3	3	3				6	12
4.	**Flaws, Assumptions and Analogies** 4.1 Definition of flaws 4.2 Fallacies 4.3 Differences between a fallacy and a logical fallacy 4.4 Categories of fallacy 4.5 Fallacies of relevance 4.6 Assumptions 4.7 Analogies	1,2,3	3	3				6	12
5.	**Evidence** 5.1 Introduction of evidence 5.2 Types of evidence i. Primary source ii. Secondary source 5.3 Evaluating evidence	1,2,3	3	3				6	12

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
6.	**Constructing Arguments** 6.1 Constructing arguments 6.2 Recognising arguments 6.3 Arguments are inferences 6.4 Evaluating arguments	1,2,3	4	4				8	16
7.	**Thoughts** 7.1 Elements of thought 7.2 Reflective thoughts 7.3 Thought awareness 7.4 Evaluating thoughts 7.5 Unhealthy thinking patterns 7.6 Addressing negative thoughts 7.7 Method to change negative thought patterns	1,2,3	3	3				6	12
	TOTAL		24	24				48	96

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Quizzes & Assignment	40	2	8	10
Test	20	1	5	6
Final Examination	40	2	6	8
			GRAND TOTAL SLT	**120**

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

Note: HEPs to update and ensure the latest edition/publication.

- Cottrell, S. (2017). *Critical thinking skills: Developing effective analysis and argument* (3rd ed.). MacMillan Education, UK.
- Kallet, M. (2014). *Think smarter: Critical thinking to improve problem-solving and decision-making skills*. New Jersey: John Wiley & Sons, Inc.

13. Other additional information:

1. Course Name and Code: **BASIC INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)**

2. Synopsis: This course aims to prepare students with sufficient up-to-date information and communication technology knowledge and skills that are consistent with current ICT trends. It covers IT literacy, information system, social informatics and network computing.

3. Name(s) of academic staff:

4. Semester offered: Semester 1

5. Credit Value: 3

6. Prerequisite/co-requisite (if any):

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO 1- describe concepts and processes related to ICT effectively.
   CLO 2- apply suitable ICT tools to solve ICT related problems.
   CLO 3- solve problems using appropriate ICT tools.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓						Lectures, Demonstration, Tutorials	Assignments Tests Final Examination
CLO 2		✓			✓	✓	Lectures, Demonstration, Tutorials	Assignments Tests Final Examination
CLO 3		✓			✓	✓	Lectures, Demonstration, Tutorials	Assignments Tests Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

	Course Content Outline	CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1	**INFORMATION TECHNOLOGY LITERACY** 1.1 Basic terminologies and related equipment such as modem, file server, LAN, internet, intranet, storage device. 1.2 Basic online terminologies & concepts, namely bandwidth, satellite, downlink, virtual reality. 1.3 Common files such as JPEG, JPG, GIF, PDF. 1.4 Common agents, expert systems and AI: search engine, voice recognition.	1	4		2		2	6	14
2	**INFORMATION SYSTEM** 2.1 Technology, software, hardware 2.2 Data & databases 2.3 Networking 2.4 Processes 2.5 People and roles	1,2	6		3		2	8	19
3	**SOCIAL INFORMATICS** 3.1 Impact of digital systems and innovation towards technology and application domain 3.2 Principle and methodology for digital system 3.3 Application of social informatics and challenges 3.4 Awareness of current areas in social informatics using relevant controversies	2,3	12		6		4	14	36
4	**NETWORK COMPUTING** 4.1 Trend 1: Internet of Thing (IoT). 4.2 Trend 2: Machine learning & cognitive computing 4.3 Trend 3: Microservice architectures 4.4 Trend 4: Adaptive security 4.5 Trend 5: Virtual/augmented reality 4.6 Trend 6: Cloud computing 4.7 Trend 7: Smart personal assistants 4.8 Trend 8: Blockchain (bitcoin)	2,3	10		5		4	12	31
	Total		32		16		12	40	100

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Assignments	30	1	3	4
Tests	20	2	6	8
Final Examination	50	2	6	8
			GRAND TOTAL SLT	**120**

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):
    i. Computer lab
    ii. Adobe Dreamweaver & Photoshop
    iii. PHP & MySQL
    iv. Cloud Computing Software: AWS / Azure / Oracle

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

- Gannon, D. B. and Foster, I. (2017). *Cloud computing for science and engineering.* MIT Press.
- Kumar, N. and Thakre, A. (2017). *Ubiquitous communications and network computing.* Springer.
- Ciampaglia, G. L., Mashhadi, A. and Yasseri, T. (2017). *Social informatics: Lecture notes on computer science.* Springer.

13. Other additional information:

1. Course Name and Code: **ENGLISH I**

2. Synopsis: This course aims to equip learners with listening and speaking skills in English. During the course, they will develop knowledge and skills in vocabulary, pronunciation and grammar. The use of technology is encouraged throughout the course to reinforce learning and support independent study.

3. Name(s) of academic staff:

4. Semester offered: Semester 1

5. Credit Value: 3

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of this course, students should be able to:
   CLO 1- distinguish various information from a range of listening tasks.
   CLO 2- analyse information from extended discussion.
   CLO 3- deliver information and viewpoints effectively.
   CLO 4- use correct grammar and appropriate vocabulary in spoken communication.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	√		√	√			Lectures, Tutorials	Quizzes, Oral Summaries, Final Examination
CLO 2			√	√			Lectures, Tutorials, Seminars	Oral Assignments, Final Examination
CLO 3				√			Lectures, Tutorials, Seminars	Presentation, Final Examination
CLO 4	√			√			Lectures, Tutorials, Seminars	Oral Assignments, Presentation, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	Listening and speaking in simple exchanges and everyday contexts, making requests and asking questions (e.g., small talks)	3,4	2	2				5	9
2.	Habits and factors affecting effective listening	3,4	2	2				5	9
3.	Listening for the gist	1,2,4	2	2				6	10
4.	Listening for key words and specific details	1,4	2	2				6	10
5.	Listening to instructions (e.g., SOP, process flow)	1,4	2	2				6	10
6.	Elements of speaking, making statements of facts, and critiquing/providing feedback	2,3,4	2	2				7	11
7.	Communication contexts: agreeing, disagreeing, suggesting, proposing	2,3,4	5	2				8	15
8.	Presentations skills	3,4	5	2				8	15
9.	Introduction, wrapping up, revision of the course		2	2				3	7
10.	Practice: preparation and delivery of the oral presentation	1,2,3, 4	2	1				3	6
11.	Preparation for assessments							9	9
Total			26	19				66	111

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Listening test	25%	1	1	2
Presentation / Group discussion	25%	1	1	2
Final examination (including listening tasks)	50%	2	3	5
Total				9
			GRAND TOTAL SLT	**120**

L = Lecture, T = Tutorial, P = Practical/Presentation, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify special requirement or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

- Betsis, A. & Haughton, S. (2015). Succeed in Trinity ISE I: Listening & Speaking Student's Book. London: Global ELT.
- Betsis, A. & Mamas, L. (2016). Succeed in IELTS Life Skills: Speaking & Listening. London: Global ELT.
- Ostrowska, S. (2016). Unlock: Listening & Speaking Skills 3. Cambridge: Cambridge University Press.

Note: HEPs are to update and ensure the latest edition/publication. Each HEP can select its own materials. Nevertheless, the materials aimed at developing proficiency skills should encompass at least CEFR B1 materials.

13. Other additional information:

Further details on methods of assessment for the final exam (50%):

As the focus of this course in on listening and speaking, the final examination can adopt the MUET method for both components. For example, in assessing 'listening', students can listen for information and provide written answers through MCQ, filling in the blanks, and etcetera.

To assess 'writing', students may be given topics for discussion and/or debates in groups and be assessed on how they apply their skills for communicating in contexts, i.e. agreeing, disagreeing, suggesting, proposing, and etcetera.

1. Course Name and Code: **ENGLISH II**

2. Synopsis: This course aims to equip learners with reading and writing skills in English. During the course, students will develop knowledge in vocabulary, grammar, and writing. The use of technology is encouraged throughout the course to reinforce the learning and to support independent study.

3. Name(s) of academic staff:

4. Semester offered: Semester 2 or Semester 3

5. Credit Value: 3

6. Prerequisite/co-requisite (if any): English I

7. Course learning outcomes (CLO):
   Upon completion of this course, students should be able to:

   CLO 1- analyse and evaluate information from a range of reading tasks.

   CLO 2- write the thesis statement, topic sentence, supporting details, and main ideas in reading and writing tasks.

   CLO 3- compose different types of essays using appropriate writing conventions.

   CLO 4- use complex, accurate, fluent language and appropriate lexical items in written communication.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1				√	√	√	Lectures, Tutorials	Quizzes, Oral & Written Assignments, Final Examination
CLO 2				√	√		Lectures, Tutorials, Seminars	Oral & Written Assignments, Final Examination
CLO 3				√		√	Lectures, Tutorials, Seminars	Oral & Written Assignments, Final Examination
CLO 4				√		√	Lectures, Tutorials, Seminars	Oral & Written Assignments, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	Reading comprehension and strategies (e.g. skimming, scanning, predicting)	1, 2	5	5				20	30
2.	Thesis statement, topic sentence, supporting details, main ideas	1, 2, 4	7	7				25	39
3.	Paragraph writing: effective writing, coherence and unity in content paragraph	2, 4	3	3				4	10
4.	Essay types (e.g., opinion, argumentative essays)	2, 3, 4	6	6				18	30
5.	**Total**		21	21				67	109

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Reading test	15%	1	1	2
Writing test	15%	1	1	2
Assignments	20%	1	1	2
Final examination	50%	2	3	5
Total				11
			GRAND TOTAL SLT	**120**

L = Lecture, T = Tutorial, P = Practical/Presentation, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

- Betsis, A. & Lethem, L. (2018). Practising for Trinity ISE I: Reading & Writing. London: Global ELT.
- Blanchard, K. & Root, C. B. (2016). Ready to Write 2 (B1) Student Book with Essential Online Resources. London: Pearson ELT.
- Westbrook, C. (2014). Unlock: Reading & Writing Skills 3. Cambridge: Cambridge University Press

NOTE: *HEPs are to update and ensure the latest edition/publication. Each HEP can select its own materials. Nevertheless, the materials aimed at developing proficiency skills should encompass at least CEFR B1, moving towards B2 materials.*

13. Other additional information

1. Course Name and Code: **MATHEMATICS /MATHEMATICS I**

2. Synopsis: This course is designed to develop students' confidence with mathematical concepts and relationships and use of mathematics and statistical skills and techniques in a range of contexts specifically problem solving and abstract thinking. Topics covered are numbers, functions and polynomials, sequence and series, matrices, derivatives, integrals, basic statistics and probability.

3. Name(s) of academic staff:

4. Semester offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO 1- describe the fundamental concepts and principles of various mathematical methods.
   CLO 2- apply a range of mathematical skills as a logical and coherent subject.
   CLO 3- solve problems through a quantitative approach.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓						Lecture, Tutorial	Assignment, Quizzes, Final Examination
CLO 2	✓	✓	✓				Lecture, Tutorial	Assignment, Quizzes, Final Examination
CLO 3		✓	✓				Lecture, Tutorial	Assignment, Quizzes, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Numbers** 1.1 Introduction to real and complex numbers 1.2 Indices (exponent) 1.3 Surd 1.4 Logarithm 1.5 Complex numbers	1,2	2	2				4	8
2.	**Functions** 2.1 Definition and types of functions 2.2 Linear functions 2.3 Quadratic functions 2.4 Exponential and logarithmic functions 2.5 Limits of functions	1,2	4	3				7	14
3.	**Sequence and Series** 3.1 Introduction to sequence and series 3.2 Arithmetic progression and series 3.3 Geometric progression and series 3.4 Application of geometric and arithmetic series 3.5 Binomial expansion	1,2,3	4	3				7	14
4.	**Matrices** 4.1 Definition and types of matrices 4.2 Operations and properties of matrices 4.3 Determinants and inverses 4.4 Solving systems of linear equations	1,2,3	4	3				7	14
5.	**Derivatives** 5.1 Concept of differentiation and derivatives 5.2 Rules of differentiation 5.3 Application of differentiation 5.4 Partial derivatives	1,2,3	5	5				10	20
6.	**Integrals** 6.1 Definition of integral and rules of integration 6.2 Substitution technique 6.3 Definite integral and areas 6.4 Applications of integration	1,2,3	5	5				10	20
7.	**Introduction to statistics** 7.1 Basic terms 7.2 Descriptive data	1,2,3	5	5				10	20

	7.3 Central tendency measurement: mean, median, mode 7.4 Dispersion measurement: range, quartile, variance, standard deviation 7.5 Skewness								
8.	**Introduction to probability** 8.1 Probability approach 8.2 Concepts of events, sample space, set, subset, combination, union 8.3 Probability of simple, complex, dependent and independent events 8.4 Conditional probabilities	1,2,3	4	3				7	14
	Total		33	29				62	124

Assessment	**Percentage (%)**	**F2F**	**NF2F**	**Total SLT**
Quizzes & Assignments	30	2	9	11
Test	20	1	6	7
Final Examination	50	2	16	18
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify special requirement or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

    - Sullivan, M. (2016). *Algebra and trigonometry* (10th ed.). Pearson.
    - Weiss, N. A. (2016). *Introductory statistics* (10th ed.). Pearson.
    - Sullivan, M. (2016). *Precalculus* (10th ed.). Pearson.
    - Devore, J. L. (2015). *Probability and statistics for engineering and the sciences* (9th ed.). Cengage Learning, Boston.

13. Other additional information:

1. Course Name and Code: **CO-CURRICULUM**

2. Synopsis: This course aims to generate students who are able to apply soft skills in terms of basic practical skills, communication, and life-long learning skills to promote a positive attitude and moral values. The course is implemented through students' involvement in faculty courses in activities, practices, or tasks comprising sports and games, clubs and societies, as well as uniformed units.

3. Names (s) of academic staff:

4. Semester Offered: Semester: Semester 1 or 2

5. Credit Value: 2

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO 1- perform basic practical skills learned through course work in a group.
   CLO 2- search and share information on current issues related to the co-curriculum activities.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1		√					Group work	Project (Activity/Event)
CLO 2				√			Case study	Presentation

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Introduction** 1.1 History/importance of sports or games/clubs or societies/ uniformed units 1.2 Concept 1.3 Definition 1.4 Goal and objective 1.5 Patriotism	2				2	2	4	8
2.	**Activeness** 2.1 Based on health 2.2 Based on psychomotor **or** **Safety Management** 2.3 Concept 2.4 Sports safety 2.5 Types: Self/family/group 2.6 First aid skills	2			4	4	4	6	18
3.	**Management Skills (Clubs and Societies)** 3.1 Planning and managing organisation 3.2 Etiquette 3.3 Preparing a proposal paper 3.4 Filing management 3.5 Financial management 3.6 Basic risk management **or** **Management Skills (Sports and Games)** 3.7 Organising and planning competition activities 3.8 Competition system 3.9 Introduction to the main sports equipment 3.10 Managing and handling sports equipment/tools **or** **Marching Skills (Uniformed Units)** 3.11 Common instructions 3.12 Steps and marching 3.13 Drill and formation	1			8	8	8	8	32

4.	**Reflection** 4.1 Self/programme assessment	2				2	6		8
	Total		**0**	**0**	**12**	**16**	**8**	**30**	**66**

Assessment	**Percentage (%)**	**F2F**	**NF2F**	**Total SLT**
Group work	50	2	6	8
Case study	50	2	6	8
			GRAND TOTAL SLT	**82**

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:
Note: HEPs to update and ensure the latest edition/publication.

- Ahmad Esa, Mohd. Khir Mohd Nor, Nawawi Jusoh, Norashidah Abd Rahman & Zalinah Salehon (2015). *Citra kokurikulum*. Penerbit UTHM.
- Wankel, L. A., & Wankel, C. (Eds.) (2016). *Integrating curricular and co-curricular endeavors to enhance student outcomes*. Emerald Group Publishing Limited.

13. Other additional information:

SCIENCE

(CORE)

1. Course Name and Code: **CHEMISTRY I**

2. Synopsis:
   This course is designed to provide the essential foundations of chemistry to prepare students for higher studies where chemistry or chemistry-related subjects are taught. Students will be exposed to a thorough introduction to chemistry, scientific methods and development of skills relevant to the safe practice of science. Coverage of this course includes stoichiometry, atomic structure, the periodic table, chemical bonding, thermochemistry, hydrocarbon and halogenalkanes, chemical equilibrium and reaction kinetics.

3. Names (s) of academic staff:

4. Semester Offered: 2

5. Credit Value: 4

6. Prerequisite/co-requisite (if any):

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO 1- describe the concepts of physical and inorganic chemistry theories related to definitions, laws/principles, chemical bonding and reactions.
   CLO 2- solve problems with analytical and critical thinking by applying chemistry facts and principles.
   CLO 3- apply some techniques used in chemistry experiments.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	Programme Learning Outcomes (PLO)						Teaching strategies	Assessment
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6		
CLO 1	✓						Lectures, Tutorials	Test, Quizzes, Final Examination
CLO 2	✓	✓					Lectures, Tutorials,	Test, Quizzes, Final Examination, Assignment (Essay)
CLO 3		✓	✓	✓			Laboratory Practicals	Lab reports, Presentations

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline	CLO*	Teaching and Learning Activities						Total SLT
		Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
		L	T	P	O			
1. Stoichiometry 1.1 Structure of atoms 1.2 Proton number, nucleon number, isotopes, Avogadro number 1.3 Relative atomic masses 1.4 Composition (%) of compounds with the empirical and molecular formula 1.5 Concentration of solution 1.6 Limiting reagent and application to stoichiometric calculations	1,2,3	6	2	2			10	20
2. Atomic structure 2.1 Nucleus of atom 2.2 Bohr atomic model 2.3 Bohr atom and Rydberg equation calculations 2.4 Atomic orbital & quantum numbers 2.5 Electronic configurations of elements 2.6 Rules of the electronic configuration	1,2,3	4	1	2			7	14
3. Periodic Table 3.1 Introduction 3.2 Classification 3.3 Periodicity properties	1,2	3	1				4	8
4. Chemical Bonding 4.1 Lewis dot symbol 4.2 Three types of chemical bonding: ionic, covalent and metallic bonding 4.3 Intermolecular bonding 4.4 Lewis dot structures 4.5 Molecular shape and polarity 4.6 Orbital overlap and hybridisation	1,2,3	5	2	2			9	18
5. Chemical Equilibrium 5.1 Equilibrium and the equilibrium constant 5.2 Writing expressions of the equilibrium constant 5.3 Direction of reaction 5.4 Le Chatelier's principle and its application	1, 2,3	3	2	2			8	15

5.5 Factors affecting chemical equilibrium								
6. Thermochemistry 6.1 Introduction to thermochemistry 6.2 Enthalpy of reaction 6.3 Specific heat capacity and heat capacity 6.4 Hess Law 6.5 Born-Haber cycle	1,2,3	4	2	2			8	16
7. Introduction to Organic Chemistry 7.1 Functional groups and nomenclature 7.2 Nucleophiles, electrophiles, free radicals, homolytic and heterolytic cleavage of bonds 7.3 Isomerism: structural (chain, positional, functional group) and stereoisomerism (geometrical, cis-trans)	1,2	6	2				9	17
8.Hydrocarbons & Halogenalkanes 8.1 Alkanes 8.2 Alkenes 8.3 Arenes: resonance structure, IUPAC nomenclature, physical properties, reaction, mechanism 8.4 Classification of alkyl halides 8.5 Hydrolysis, formation of nitriles primary amines and elimination reaction (Grignard reagents)	1,2,3	5	2	2			10	19
Total		**36**	**14**	**12**			**65**	**127**

Laboratory Practical (12 hours):

1. Introduction to Lab Techniques and Apparatus
2. Determination of Formula Unit of a Compound
3. Properties of Ionic and Covalent Bonds
4. Chemical Equilibria and Le Chatelier's Principle
5. Determination of Heat & Reaction
6. Chemical properties of Alkanes and Alkenes

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Lab reports	15	3	6	9
Test	20	2	6	8
Assignments	15	2	4	6
Final Examination	50%	2.5	7.5	10
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8.

11. Identify special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:
    Note: HEPs to update and ensure the latest edition/publication.

    - Prof. Madya Dr. Norbani Abdullah et al. (2018). *Comprehensive college chemistry.* SAP Education.
    - Nivaldo J. Tro (2013). *Principles of chemistry: A molecular approach* (2nd ed.). Pearson.

13. Other additional information:

1. Course Name and Code: **CHEMISTRY II**

2. Synopsis: This course is designed to develop a broader and deeper understanding of concepts, process and principles in chemistry related to other disciplines. This organic chemistry course covers nomenclature, acids & bases, hydrocarbon, alkanes & alkenes, alcohol, esters & esterification process, carbohydrates, synthetic polymers, carbonyl compounds, and carboxylic acid.

3. Names (s) of academic staff:

4. Semester Offered: Semester 2 or 3

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Chemistry 1

7. Course learning outcomes (CLO):

   Upon completion of the course, students should be able to:

   CLO 1- describe the concept of scientific phenomena, definitions, laws, and conventions in organic chemistry.

   CLO 2- solve problems with analytical and critical thinking by applying knowledge, principle and skills in organic chemistry.

   CLO 3- use experimental skills to carry out investigations.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓						Lectures, tutorials	Test, Quizzes, Final examination
CLO 2	✓	✓					Lectures, tutorials	Test, Quizzes, Final examination, Assignment
CLO 3		✓	✓	✓			Laboratory practical	Lab reports, Presentation

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline	CLO*	Teaching and Learning Activities						Total SLT
		Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
		L	T	P	O			
1. Acids and Bases 1.1 Theory of acids and bases (Arrhenius, Lewis, Bronsted-Lowry) 1.2 Conjugate acid-base pair 1.3 Strengths of acids and bases 1.4 The terminology of pH, pOH, K_w, K_a, and K_b and application in calculations 1.5 Buffer solution	1,2,3	6	2	2			10	20
2. Electrochemistry 2.1 Half-cell and redox reaction 2.2 Standard electrode potential 2.3 Galvanic cell 2.4 Nernst equation 2.5 Electrolytic cell	1,2	4	2				6	12
3. Reaction Kinetics 3.1 Rate of reaction and stoichiometry 3.2 Determination of rate law 3.3 Relationship between reactant, concentration, and time half-life of a reaction 3.4 Activation of energy and enzymes as catalysts 3.5 Factors affecting the rate of chemical reaction	1,2,3	4	2	2			8	16
4. Alcohols 4.1 Classification of alcohols (naming, physical properties) 4.2 Reaction to form halogen alkanes, reaction with sodium, oxidation, dehydration, esterification 4.3 Iodoform test, Lucas' test	1,2,3	2	1	2			5	10
5. Phenols 5.1 Naming and physical properties 5.2 Acidity, reaction with sodium hydroxide, nitration and halogenation	1, 2	2	1				3	6
6. Carbonyl Compounds 6.1 Naming and physical properties 6.2 Oxidation, reduction, the addition of HCN, nucleophilic addition 6.3 Reaction with 2,4-dinitrophenyl hydrazine 6.4 Aldehydes	1, 2, 3	5	2	2			10	19

6.5 Ketones 6.6 Tri-iodomethane reaction/test, Tollens' reagent, Fehling's solution								
7. Carboxylic acid 7.1 Naming, physical properties and acidity 7.2 Formation from the oxidation of alkene, alkylbenzenes and primary alcohols and hydrolysis of nitriles 7.3 Reduction	1, 2, 3	4	1	2			8	15
8. Acyl Chloride Reaction with alcohols, phenols and primary amines	1,2	1					2	3
9. Esters Esterification process, hydrolysis and reduction with $LiAlH_4$	1,2,3	1		2			3	6
10. Nitrogen Compounds 10.1 Primary amines 10.2 Amides 10.3 Classification, naming, formation of compounds, reaction 10.4 Diazonium compounds 10.5 Amino acids: formation of zwitterions 10.6 Proteins: identify linkage, structure	1, 2	5	2				7	14
11. Synthetic Polymers 11.1 Chain growth polymers (addition polymerisation), photopolymers, copolymers) 11.2 Condensation polymerisation	1, 2	2	1				3	6
Total		**36**	**14**	**12**			**65**	**127**

Lab Practical:

1. Acids & Bases
2. Factors Affecting the Rate of Chemical Reaction
3. Classification of Alcohols
4. Aldehydes and Ketones
5. Carboxylic Acids & Its Derivatives
6. Physical Properties of Esters & Soap Production

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Lab reports	15%	3	6	9
Tests	20%	2	6	8
Assignments	15%	2	4	6
Final Examination	50%	2.5	7.5	10
			GRAND TOTAL SLT	**160**

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:
    Note: HEPs to update and ensure the latest edition/publication.
    - G. Wade, Jr. (2013). *Organic chemistry* (8th ed.). Pearson.
    - Siti Asiah Ahmad Junan (2009). *Organic chemistry for matriculation* (2nd ed.). Oriental Academic Publication.

13. Other additional information:

1. Course Name and Code: **BIOLOGY I**

2. Synopsis: This course is designed to expose students to basic knowledge and understanding of biology. Training in basic manipulative scientific skills will also be provided in carrying out experiments in biology. The major disciplines in biology covered in this course are the basic concepts and features of cells, genetics reproduction, development and growth.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):

   Upon completion of the course, students should be able to:

   CLO 1- analyse information to solve problems related to biological principles.

   CLO 2- conduct biological experiments in designated topics using standard laboratory equipment to answer hypotheses in lab reports.

   CLO 3- apply cognitive skills in the formulation of problems, data gathering and analysis, and interpretation of results to solve biological problems.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓	✓					Lectures, Tutorials	Test, Final Examination
CLO 2		✓	✓				Laboratory Practicals	Laboratory Reports
CLO 3			✓		✓		Lectures, Discussion & Presentations	Assignment (Essay)

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Basic Elements in Life** 1.1 Water 1.2 Protein 1.3 Lipid 1.4 Carbohydrate 1.5 Nucleic Acid Lab 1. Basics in using a microscope Lab 2. Food tests	1,2	4	2	4		3	12	25
2.	**Cell Structures and Functions** 2.1 Cell theory 2.2 Prokaryotic cells 2.3 Eukaryotic cells 2.4 Plant & animal cells 2.5 Cell wall, cell membranes and cytoplasm: structure, function & distribution 2.6 The cell as a basic unit in organisms Lab 3. Cell structure and organelles	2	3	1	2			7	13
3.	**Cell Transport** 3.1 Active transport 3.2 Passive transport 3.3 Pinocytosis 3.4 Phagocytosis Lab 4. Transport across membranes	2,3	2	1	2			7	12
4.	**Cell Division** 4.1 The concept of cell division 4.2 Cell cycle 4.3 Mitosis 4.4 Meiosis	1	3	2				3	8
5.	**Cell Respiration** 5.1 Respiration 5.2 Aerobic respiration 5.3 Anaerobic respiration Lab 5. Cell respiration	1,2, 3	2	1	2		1	6	12
6.	**Genetic Inheritance** 6.1 Mendelian genetics 6.2 Deviations from Mendelian Inheritance 6.3 Genetic mapping	1,2,3	3	2		4		3	12

7.	**Population Genetic** 7.1 Concept of a gene pool 7.2 Hardy-Weinberg Law	1,3	1	1				1	3
8.	**Expressions of Biological Information** 8.1 DNA and genetic information 8.2 DNA replication 8.3 Protein synthesis: transcription and translation 8.4 Gene regulation and expression: Lac Operon 8.5 Gene technology: recombinant DNA & cloning	1,2,3	4	3		2		3	12
9.	**Mutation** 9.1 Concept of mutation 9.2 Genetic mutation 9.3 Chromosomal mutation	1,3	1	1				1	3
10.	**Reproduction and Development** 10.1 Asexual reproduction 10.2 Sexual reproduction 10.3 Human reproductive system 10.4 Fertilisation and embryology 10.5 Roles of hormones	1,2,3	4	4		3		3	14
11.	**Growth** 11.1 Growth phases and measurement 11.2 Growth patterns and rates 11.3 Growth under extreme conditions	1,2,3	3	2		3	1	2	11
	Total		30	20	10	12	5	48	125
	Laboratory Practical (10 hours): Lab 1. Basics in using a microscope Lab 2. Food tests Lab 3. Cell structure and organelles Lab 4. Transport across membranes Lab 5. Cell respiration								

Assessment	**Percentage (%)**	**F2F**	**NF2F**	**Total SLT**
Lab reports	20	2	5	20
Tests	10	1	3	
Assignments	20	1	6	
Final Examination	50	2	16	15
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8.

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

    Biology/science laboratory

12. Recommended text/reading:

Note: HEPs to update and ensure the latest edition/publication.

- Glen and Susan Toole (2015). *Biology in context*. (2nd ed.). Nelson Thornes.
- Leong, L.S. Sudin, S. Rashid, K.A. Ching, L.S. Aziz N.A.A. and Zakaria, F. (2016). *Biology for matriculation* semester 1 (5th ed.). Oxford Fajar Sdn. Bhd., Selangor.

13. Other additional information:

1. Course Name and Code: **PHYSICS I**

2. Synopsis: This course is designed to enable students to learn the basic concepts and principles of elementary physics. The topics include mechanics, gravitation, statics, states of matter, fluids, simple harmonic motion, waves, wave optics and sound.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):

   Upon completion of the course, students should be able to:

   CLO 1- state and explain the basic concepts in physics in mechanics, gravitation, statics, states of matter, fluids, simple harmonic motion, waves, wave optics and sound.

   CLO 2- use basic principles of physics to solve physics problems in mechanics, gravitation, statics, states of matter, fluids, simple harmonic motion, waves, wave optics and sound.

   CLO 3- apply basic principles of physics in laboratory works in mechanics, gravitation, statics, states of matter, fluids, simple harmonic motion, waves, wave optics and sound.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓	✓					Lectures and Tutorials	Quizzes, Tests, and Final Examination
CLO 2	✓	✓					Lectures and Tutorials	Quizzes, Tests, Assignments, and Final Examination
CLO 3		✓	✓				Laboratory Practical	Laboratory Report

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Mechanics (Circular Motion)** 1.1 Displacement, velocity and angular acceleration (relation between circular motion and linear motion) 1.2 Circular motion under constant angular acceleration 1.3 Centripetal acceleration and centripetal force 1.4 Motion on a curve – level and banked curves 1.5 Circular motion in a horizontal circle 1.6 Circular motion in a vertical circle. 1.7 Conical pendulum 1.8 Centre of mass & torque 1.9 Moment of inertia and parallel axes theorem 1.10 Rotational kinetic energy 1.11 Angular momentum & conservation of angular momentum	1,2,3	12	4	3			17	36
2.	**Gravitation** 2.1 Newton's law of gravitation 2.2 Gravitational acceleration 2.3 Gravitational potential energy 2.4 Motion of satellites 2.5 Escape velocity	1,2	3	1				5	9
3.	**States of Matter** 3.1 Deformation of solids and elasticity 3.2 Stress, strain and Young's modulus 3.3 Hooke's law, shear modulus and bulk modulus	1,2,3	3	1	3			5	12
4.	**Fluid** 4.1 Hydrostatics – Buoyancy and Archimedes' principle 4.2 Hydrodynamics – flow rate, continuity principle & Bernoulli's principle 4.3 Poiseuille's law, viscosity & Stoke's law	1,2	3	1				3	7
5.	**Simple Harmonic Motion** 5.1 Kinematics of simple harmonic motion in spring and simple pendulum 5.2 Energy in simple harmonic motion. 5.3 Damped and forced oscillations & resonance	1, 2,3	3	1	3			5	12

6.	**Waves** 6.1 Properties and types of waves 6.2 Propagation of wave on a stretched string & progressive wave 6.3 Huygens' principle & superposition principle	1, 2	3	1				5	9
7.	**Waves Optics** 7.1 Constructive and destructive interference 7.2 Stationary waves 7.3 Single slit diffraction and diffraction grating 7.4 Light interference – Young's double slit experiment 7.5 Newton's ring & interference in thin films 7.6 Polarisation – Malus' law and Brewster's law	1, 2, & 3	6	2	3			9	20
8.	**Sound** 8.1 Sound wave properties and speed of sound 8.2 Intensity and sound level (decibel scale) 8.3 Resonance – sound waves in pipe column (closed pipe) 8.4 Resonance – sound waves in pipe column (open pipe) 8.5 Doppler effect	1,2,3	6	2	3			9	20
	Total		39	13	15			58	125

Laboratory Practicals (15 hours)
Under the topics of:

1. Mechanics (Circular Motion)
2. States of Matter
3. Simple Harmonic Motion
4. Wave Optics
5. Sound

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Quizzes/ Assignments	15	1	4	5
Tests	15	1	4	5
Laboratory Report	20	2	5	7
Final Examination	50	2	16	18
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

Note: HEPs to update and ensure the latest edition/publication.

- Serway, S. A. & Vuille, S. (2015). *College physics* (10th ed.). Cengage Learning.
- Halliday, D. A., Resnick, R. & Walker, J. (2014). *Fundamentals of physics* (10th ed.). Wiley.
- Young, H. D. & Freedman, R. A. (2015). *University physics with modern physics* (14th ed.). Addison Wesley.

13. Other additional information:

1. Course Name and Code: **MATHEMATICS II**

2. Synopsis: This course is designed to develop students' confidence with mathematical concepts and relationships and use of mathematics and statistical skills and techniques in a range of contexts specifically problem solving and abstract thinking. The topics covered are series, polynomials, algebra, logarithm and exponents, trigonometry, and discrete and continuous distributions.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Mathematics I

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO1- describe the fundamental concepts and principles of various mathematical methods.
   CLO 2- apply arrange of mathematical skills as a logical and coherent subject.
   CLO 3- solve problems through a quantitative approach.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓						Lectures, Tutorials	Assignments, Quizzes, Final Examination
CLO 2	✓	✓	✓			✓	Lectures, Tutorials	Assignments, Quizzes, Final Examination
CLO 3		✓	✓			✓	Lectures, Tutorials	Assignments, Quizzes, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Outlines		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Sequence and Series** 1.1 Definition of sequence and notation 1.2 Arithmetic and geometric progressions 1.3 Binomial expansions 1.4 Use of series for approximation	1,2	3	3				6	12
2.	**Polynomial Functions** 2.1 Addition, subtraction and multiplication of polynomials 2.2 The meaning of the degrees and coefficients of polynomials 2.3 The condition for the equality of two polynomials 2.4 The factors and roots of polynomials 2.5 The remainder and factor theorems 2.6 Application of the factor theorem and remainder theorem in relation to factors, polynomial equations or unknown coefficients	1,2	3	3				6	12
3.	**Algebra** 3.1 The definition of | x | 3.2 Solutions of algebraic equations and inequalities 3.3 $\|a\| = \|b\| \Leftrightarrow a^2 = b^2$ and $\|x - a\| < b \Leftrightarrow a - b < x < a + b$	1,2	2	2				4	8
4.	**Logarithms and Exponents** 4.1 Integral and rational exponents 4.2 Relationship between logarithms and exponents 4.3 The laws of exponents and laws of logarithms and different bases 4.4 Equations and inequalities of exponents and logarithms	1,2	3	3				6	12
5.	**Trigonometry** 5.1 The law of sines 5.2 The law of cosines 5.3 The area of a triangle 5.4 Equations in a harmonic form 5.5 Knowledge of the secant, cosecant and cotangent; their relationship to cosine, sine and tangent 5.6 Simplification and exact evaluation of expressions	1,2,3	3	3				6	12

6.	**Vectors** 6.1 The significance of symbols in the equation of a straight line of the form **r** = **a** + *t***b** 6.2 Types of lines: parallel, intersect or skew 6.3 The angle between two lines and the point of intersection of two lines, if any 6.4 The significance of symbols in the equation of a plane of the form ax + by + cz = d or (r – a) • n = 0 6.5 The line of intersection of two non-parallel planes and the angle between two planes	1,2,3	3	3				6	12
7.	**Complex Numbers** 7.1 The idea of a complex number (real part, imaginary part, modulus, argument, and conjugate) 7.2 Equality of two complex numbers 7.3 Operations of two complex numbers 7.4 Representation of complex numbers in an Argand diagram *7.5* Multiplication and division of two complex numbers in polar form $r(\cos\theta + i \sin\theta) \equiv re^{i\theta}$ 7.6 The two square roots of a complex number 7.7 Geometrical representations: conjugate of a complex number and of addition, subtraction, multiplication, and division of two complex numbers	1,2,3	3	3				6	12
8.	**Discrete Random Variable** 8.1 Concept of a discrete random variable 8.2 Probability distribution table 8.3 The concept of mathematical expectation 8.4 Mean and variance of a discrete random variable	1,2,3	2	2				4	8
9.	**Binomial & Poisson Distributions** 9.1 Formulae for probabilities for the Binomial distribution and Poisson distribution 9.2 Poisson distribution as an approximation to the binomial distribution, where appropriate 9.3 If X and Y have independent Poisson distributions, then X + Y has a Poisson distribution	1,2	2	2				4	8

10.	**Continuous Random Variable** 10.1 Probability density function 10.2 Relationship between the probability density function and the cumulative distribution function 10.3 Mean and variance of a continuous random variable	1,2,3	2	2				4	8
11.	**Normal Distribution** 11.1 Standardising a normal variable 11.2 Normal distribution tables 11.3 Normal distribution as an approximation to the binomial distribution, where appropriate	1,2,3	2	2				4	8
	Total		28	28				56	112

Assessment	**Percentage (%)**	**F2F**	**NF2F**	**Total SLT**
Quizzes & Assignments	30	2	12	14
Tests	20	1	9	10
Final Examination	50	2	22	24
		GRAND TOTAL SLT		**160**

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

    - John, W. C. (2015). *Algebra & trigonometry* (3rd ed.). McGraw-Hill, New York.
    - Weiss, N. A. (2016). *Introductory statistics* (10th ed.). Pearson.
    - Devore, J. L. (2015). *Probability and statistics for engineering and the sciences* (9th ed.). Cengage Learning, Boston.

13. Other additional information:

PHYSICAL SCIENCES (SPECIALISATION)

1. Course Name and Code: **PHYSICS II**

2. Synopsis: This course is designed to enable students to study the extension of basic concepts and principles of physics. This course covers topics such as modern physics, electrostatics, electricity, magnetism, electromagnetism, heat and thermodynamics.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Physics I

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO 1- state and explain the basic concepts in physics in the topics of modern physics, electrostatics, electricity, magnetism, electromagnetism, heat and thermodynamics.
   CLO 2- use the basic principles of physics to solve physics problems in modern physics, electrostatics, electricity, magnetism, electromagnetism, heat and thermodynamics.
   CLO 3- apply the basic principles of physics in laboratory works in modern physics, electrostatics, electricity, magnetism, electromagnetism, heat and thermodynamics.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓	✓			✓		Lectures and Tutorials	Quizzes, Test, and Final Examination
CLO 2	✓	✓			✓		Lectures and Tutorials	Quizzes, Test, Assignments, and Final Examination
CLO 3		✓	✓				Laboratory Practical	Laboratory Report

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Electrostatics** 1.1 Electric charges and Coulomb's law 1.2 Electric field & electric flux 1.3 Gauss' law 1.4 Electric potential energy & distribution of charges and electric potential 1.5 Capacitor – dielectric and energy storage 1.6 Combination of capacitor – series and parallel	1,2	6	2				8	16
2.	**Electricity (Direct Current)** 2.1 Electrical conduction, drift velocity of charges in a conductor 2.2 Current density, resistance and resistivity 2.3 Electromotive force 2.4 Energy and power in an electrical circuit. 2.5 Kirchoff's rules – concept 2.6 Kirchoff's rules – examples of circuit 2.7 Electrical measurement – Wheatstone bridge - potential divider	1,2,3	6	2	3			9	20
3.	**Electricity (Alternating Current)** 3.1 Average and root mean square (rms) values for current and voltage. 3.2 Phasor diagram and potential difference 3.3 R-L-C circuit 3.4 Resistance, reactance, and impedance 3.5 R-L circuit (power & energy) 3.6 R-C circuit (power & energy) 3.7 R-L-C circuit (power & energy)	1,2,3	6	2	3			9	20
4.	**Magnetism** 4.1 Magnetic field of charges 4.2 Magnetic force on moving charges 4.3 Magnetic force on current carrying conductor 4.4 Ampere law 4.5 The force between two current carrying conductors (concept and calculations) 4.6 Charges in electric and magnetic fields	1,2,3	6	2	3			9	20

5.	**Electromagnetism** 5.1 Introduction to magnetic flux 5.2 Induced electromotive force 5.3 Faraday law & Lenz law 5.4 Electromagnetic induction in a conductor 5.5 Mutual and self induction 5.6 Energy stored in an inductor 5.7 Transformer	1, 2,3	6	2	3			9	20
6.	**Heat** 6.1 Heat transfer process: conduction, convection and radiation 6.2 Thermal expansion: linear, surface and volume	1,2	3	1				5	9
7.	**Thermodynamics** 7.1 Ideal gas equation 7.2 Kinetic theory of gases 7.3 Velocity distribution of gases 7.4 Energy in gas 7.5 The first law of thermodynamics 7.6 Isobaric and isovolumetric process 7.7 Adiabatic and isothermal process 7.8 Isobaric, isovolumetric, adiabatic and isothermal graphs	1,2,3	6	2	3			9	20
	Total		39	13	15			58	125

Assessment	**Percentage (%)**	**F2F**	**NF2F**	**Total SLT**
Quizzes/ Assignments	15	1	4	5
Test	15	1	4	5
Laboratory Report	20	2	5	7
Final Examination	50	2	16	18
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify special requirement or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

- Serway, S. A. & Vuille, S. (2015). *College physics* (10th ed.). Cengage Learning.
- Halliday, D. A., Resnick, R. & Walker, J. (2014). *Fundamentals of physics* (10th ed.). Wiley.
- Young, H. D. & Freedman, R. A. (2015). *University physics with modern physics* (14th ed.). Addison Wesley.

13. Other additional information:

1. Course Name and Code: **ENGINEERING MATHEMATICS**

2. Synopsis: This course will enable students to study the basic concepts of calculus. Topics include functions, limits, derivatives and integrals of polynomial, rational, radical, exponential and logarithmic functions with a strong emphasis on engineering application.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Mathematics I

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO 1- find the limit of a function and identify the existence of a limit.
   CLO 2- find integrals using the various integral methods.
   CLO 3- apply appropriate techniques to solve differentiation problems.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1		✓					Lectures, tutorials	Assignments, Quizzes, Test, Final Examination
CLO 2		✓	✓				Lectures, tutorials	Assignments, Quizzes, Test, Final Examination
CLO 3		✓	✓		✓		Lectures, tutorials	Assignments, Quizzes, Test, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

	Course Content Outline	CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1	**Limits** 1.1 The existence and the value of the left-hand limit, right-hand limit, or limit of a function 1.2 The continuity of a function	1,2	4	4				8	16
2	**Differentiation** 2.1 Notations f'(x), f''(x), $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ 2.2 Derivatives of exponential, logarithmic and trigonometric functions 2.3 Differentiate products and quotients 2.4 Use the first derivative of parametric or implicit functions 2.5 Higher-order differentiation	1,2,3	6	4				10	20
3	**Application of Differentiation** 3.1 Gradients, tangents and normals 3.2 Stationary points and sketching graphs 3.3 Approximate value for a root using the Newton-Raphson method 3.4 Rate of change, minimum values, and maximum values	2,3	6	4				10	20
4	**Integration** 4.1 Integration of $kf(x)$ and $f(x) \pm g(x)$ 4.2 Integrate a rational function by means of decomposition into partial fractions 4.3 Use substitutions to obtain integrals 4.4 Use integration by parts 4.5 Definite integrals 4.6 Approximate values by using the trapezium rule	2,3	7	5				12	24
5	**Differential Equations** 5.1 Order and degree of a differential equation 5.2 The first order differential equation with separable variables 5.3 The first order homogeneous differential equation 5.4 Family of solution curves 5.5 Problems that can be	1,2,3	10	6				16	32

	modelled by a differential equation								
	Total		33	23				56	112

Assessment	**Percentage (%)**	**F2F**	**NF2F**	**Total SLT**
Quizzes & Assignments	30	2	12	14
Test	20	1	9	10
Final Examination	50	2	22	24
			GRAND TOTAL SLT	**160**

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

    - Larson, R. and Edwards, B. (2017). *Calculus of a single variable* (11th ed.). Cengage Learning, USA.
    - Strang, G. (2017). *Calculus (*3rd ed.). Wellesley-Cambridge Press, US.
    - Bird, J. (2017). *Basic engineering mathematics* (7th ed.). Routledge, USA.
    - Stewart, J. (2016). *Calculus*: *Concepts and contexts* (8th ed.). Cengage Learning, USA.

13. Other additional information.

1. Course Name and Code: **INTRODUCTION TO PROGRAMMING**

2. Synopsis:

   This course is designed to develop students' skill in problem solving through designing and developing computer programs. Topics covered are problem-solving techniques, introduction to structured programming, basic algorithms for searching and sorting, and the modular programming approach.

3. Names (s) of academic staff:

4. Semester Offered: 3

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):

   Upon completion of the course, students should be able to:

   CLO 1- apply the computational thinking approach in solving problems.

   CLO 2- design solutions using pseudo codes and flowcharts.

   CLO 3- develop computer programs using a structured and modular approach.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓	✓					Lectures, Tutorials, Hands on (lab)	Quizzes, Test, Lab Exercise, Assignments, Final Examination
CLO 2	✓	✓	✓		✓		Lectures, Tutorials, Hands on (lab)	Quizzes, Test, Lab Exercise, Assignments, Final Examination
CLO 3	✓	✓			✓		Lectures, Tutorials, Hands on (lab)	Lab exercise, Assignment, Project, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1	**Problem-Solving Techniques** 1.1 Computational thinking 1.2 Software development life cycle 1.3 Computer program development 1.4 Computer programming tool revisited: Pseudo code & flowchart	1	2	1		2	1	3	9
2	**Structured Programming** 2.1 What is an IDE 2.2 Programming language structure: Logic and arithmetic operators, statement, identifiers 2.3 Data types & symbols, class of storage, variables & constants (i.e. global, automatic, register, static)	1	2	1		2	1	3	9
3	**Formatted Input & Output** 3.1 Library file stdio.h, math.h, stdlib.h, string.h 3.2 Output formatting (print, format specifier & escape sequences) 3.3 Input formatting (read, address, operator & style)	1	2	1		2	1	3	9
4	**Sequential Control Structure** 4.1 Arithmetic calculations & expressions 4.2 Arithmetic errors & inaccuracies in C programming (logic errors vs syntax errors)	1	2	1		2	1	3	9

5	**Simple Selection Control Structure** 5.1 Theory, application, & program sample 5.2 if, if..else structure 5.3 Nested selection structure 5.4 Logical operators 5.5 Input validation (ensuring data entered by the user is correct and match the expectation of the program)	2	2	1		2	2	3	10
6	**Complex Selection Control Structure** 6.1 Theory, application & program sample 6.2 if..elseif..else structure 6.3 switch case.break structure 6.4 Menu program	2	2	1		2	2	3	10
7	**Simple Repetition Control Structure** 7.1 Loops: pre-test (for, while) & post-test (do. While) 7.2 Counter controlled (for, while, do. While) 7.3 Sentinel controlled (while, do. While)	2	2	1		2	2	3	10
8	**Complex Repetition Control Structure** 8.1 Nested Loop 8.2 Infinite Loop Jump statement (i.e. *break*, *continue, return, go to*)	2	2	1		2	2	3	10
9	**One-Dimensional and Two-Dimensional Array** 9.1 Array concept, declaration, & initialisation 9.2 String 9.3 Searching within an array (linear search, finding the largest/smallest value) 9.4 Sorting (bubble sort)	3	2	1		2	2	3	10
10	**Modular Programming (Subprogram) I** 10.1 User-defined functions, standard library functions, and the advantage of using functions 10.2 Function prototype, definition and function call 10.3 Global and local variables' scope	3	2	1		2	2	3	10
11	**Modular Programming (Subprogram) II** 11.1 Call-by-value 11.2 Call-by-reference (variable, array)	3	2	1		2	2	3	10

12	**File Oriented Input and Output** 12.1 Concepts of I/O text files (files vs. streams) 12.2 Retrieving text files 12.3 Creating & copying text files 12.4 Additional I/O functions	2	2	1		2	2	3	10
13	**One-Dimensional and Two-Dimensional Array**	3	2	1		2	2	3	10
14	**Combination of Control Structures, Arrays and 32Subprograms**	3	2	1		2	2	3	10
	Total		28	14		28	24	42	136

Assessment	**Percentage (%)**	**Total SLT**
Quizzes	10	2
Test	15	6
Assignments: Lab exercises	10	Counted for under column 'O'
Assignments	10	Counted for under column 'Guided NF2F'
Project	15	10
Final Examination	40	6
	GRAND TOTAL SLT	**160**

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):
    - Computer lab, programming development tool (IDE)

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

    - Deitel, P. J., & Deitel, H. M. (2016). *C: How to program* (8th ed.). New York, NY: Pearson.
    - Mittal, M., & Porwal, S. (2016). *C programming* (ISBN 978-1-84265-644-0). Oxford: Alpha Science Intl.

13. Other additional information

LIFE SCIENCES (SPECIALISATION)

1. Course Name and Code: **BIOLOGY II**

2. Synopsis: This course is designed to enable students to be able to analyse data, evaluate biological problems, and propose possible solutions to problems based on biological principles. Based on the basic knowledge and understanding in Biology I, this course will introduce students to the next level of biology covering biodiversity, ecology, population ecology, variations, biocatalysis, photosynthesis, gaseous exchange, homeostasis, human skeletal system, coordination and immunity.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Biology I

7. Course learning outcomes (CLO):
   Upon the completion of this course, students should be able to:
   CLO 1- apply the concepts in biology to solve problems related to biological principles.
   CLO 2- conduct experiments in designated topics using appropriate scientific methods to answer the hypothesis in a scientific report.
   CLO 3- relate biological facts and principles to offer solutions to biological problems.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓	✓					Lectures, Tutorials	Test, Final Examination
CLO 2		✓	✓				Laboratory Practicals	Laboratory Reports
CLO 3		✓	✓		✓		Lectures, Discussion,	Assignment (Essay & Presentation)

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Biodiversity** 1.1 Concept of biodiversity and taxonomy 1.2 Kingdom Monera, Protista, Fungi, Plantae, and Animalia Lab 1 Identifying bacteria using Gram Stain Lab 2 Plant diversity Pteridophyta, Bryophyta Gymnosperms & Angiosperms Lab 3 Animal diversity - invertebrates & vertebrates	1,2, 3	4	3	6			10	23
2.	**Ecology** 2.1 Concept of ecosystem 2.2 Energy flow 2.3 Biogeochemical cycles 2.4 Conservation & management of biodiversity 2.5 Population growth	1,3	4	1				5	10
3.	**Variation** 3.1 Types of variation 3.2 Sources of variation 3.3 Selection 3.4 Speciation	1,3	4	1				5	10
4.	**Biocatalysis** 4.1 Enzymes – properties & mechanisms of actions 4.2 Classification of enzymes 4.3 Cofactors 4.4 Inhibition	1,3	4	1				5	10
5.	**Photosynthesis** 5.1 Concept of photosynthesis 5.2 Light reaction & dark reaction 5.3 An alternative mechanism of carbon fixation 5.4 Factors limiting the rate of photosynthesis Lab 4 Photosynthesis Factors limiting the rate of reactions	1,2, 3	4	1	2			9	16
6.	**Gaseous Exchange & Its Control** 6.1 Gaseous exchange & its control in mammals 6.2 Chemoreceptors' role in controlling breathing 6.3 Gaseous exchange & its control in plants	1,3	4	1				4	9
7.	**Transport system** 7.1 The transport system in mammals – heart & its regulation	1,3	4	1				4	9

	7.2 Lymphatic system 7.3 Transport in plants								
8.	**Homeostasis** 8.1 Concept of homeostasis 8.2 Negative feedback mechanism 8.3 Liver 8.4 Kidney Lab 5 Kidney & urine Urinalysis	1,2, 3	4	1	2			10	17
9.	**Coordination** 9.1 Nervous system 9.2 Human skeletal system 9.3 Human muscle contractions 9.4 Hormones in mammals & plants	1,3	4	3				5	12
10.	**Immunity** 10.1 Concept of immunity 10.2 Development of immunity 10.3 Immune disorder	1,3	3	2				4	9
	Total		39	15	10			61	125

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Lab reports	20	2	5	20
Test	10	1	3	
Assignments	20	1	6	
Final Examination	50	2	16	15
			GRAND TOTAL SLT	**160**

L = Lecture, T = Tutorial, P= Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8.

11. Identify special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):
    - Biology/science laboratory

12. Recommended text/reading: Main references:

    Note: HEPs to update and ensure the latest edition/publication.

    - MHE India (2016). *Comprehensive chemistry*. JEE Advanced.
    - Derek B. Lowe (2016). *The chemistry book*. Sterling Company Incorporated.
    - Tracy Poulsen (2015). *Introduction to chemistry*. Create Space Independent Publishing Platform.

13. Other additional information:

1. Course Name and Code: **BIOCHEMISTRY**

2. Synopsis: This course provides students with the understanding of functional groups, chemical bonds in biochemistry, water, acids and bases, and buffers. Students will also learn about structures and functions of the major classes of biomolecules: amino acids and peptides, proteins, enzymes, coenzymes, vitamins, lipids, nucleic acids and carbohydrates. In addition, students will be exposed to metabolism and electron transportation.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Biology I

7. Course learning outcomes (CLO):
   At the end of this course, students should be able to:
   CLO 1- explain the basic concepts and principles of biochemistry such as amino acids and peptides, proteins, enzymes and lipid.
   CLO 2- conduct biochemistry lab work on nucleic acids, carbohydrates and metabolism to identify and solve problems.
   CLO 3- solve problems related to biotechnology, metabolism and electron transportation in response to environmental changes.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓						Lectures/ Tutorials	Final Examination
CLO 2			✓				Laboratory	Practical Test
CLO 3		✓					Lectures/ Tutorials	Assignments

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Introduction to Biochemistry** 1.1 Functional groups 1.2 Chemical bonds in biochemistry 1.3 Water – hydrogen bonds, polarity, effect on dissolved biomolecules 1.4 Acids and bases 1.5 Buffers	1	4	4				8	16
2.	**Amino Acids and Peptides** 2.1 Structures and properties of amino acids 2.2 Amino acids can act as acids and bases 2.3 Peptic bond 2.4 Peptides of physiological interest 2.5 Biological activities of polypeptides	1	4	4			4	4	16
3.	**Proteins** 3.1 Size, composition and properties 3.2 Functions of proteins 3.3 Primary structure of proteins 3.4 Secondary, tertiary and quaternary structures 3.5 Synthesis of proteins	1	3	3			3	3	12
4.	**Enzymes** 4.1 General properties 4.2 Mechanisms of enzymes 4.3 Coenzymes and vitamins	1	2	2			2	2	8
5.	**Lipids** 5.1 Chemistry of lipids 5.2 Lipids with biological activities 5.3 Resolution and analysis of lipids 5.4 Fat-soluble vitamins 5.5 Constituents of membranes 5.6 Solute transport across the membrane	1	4	4			4	4	16
6.	**Nucleic Acids** 6.1 Structure of nucleic acids 6.2 Chemistry of nucleosides and nucleotides 6.3 Other functions of nucleotides Lab Report 1 (Individual)	2	2	2	2		3	3	12
7.	**Nucleic acids in Biotechnology** 7.1 Recombinant DNA 7.2 The product of recombinant DNA technology 7.3 DNA replication and repair 7.4 Genetic engineering 7.5 Lab Report 2 (Individual)	2	2	2	2		3	3	12

8.	**Carbohydrates** 8.1 Monosaccharide 8.2 Disaccharide 8.3 Polysaccharide 8.4 Glycoprotein and glycolipid Lab Report 3 (Individual)	2	2	2	2		3	3	12
9.	**Introduction to Metabolism** 9.1 Overview of catabolism and anabolism 9.2 The citric acid cycle 9.3 Oxidation of fatty acids 9.4 Production of urea Lab Report 4 (Individual)	2	2	2	2		3	3	12
10.	**Carbohydrate Metabolism** 10.1 Glycolytic pathways 10.2 Regulation to carbohydrate catabolism 10.3 Fermentation of carbohydrates 10.4 Group work assignment: Topic Choice 1	3	2	4			3	3	12
11.	**Electron Transport Chain** 11.1 Types of electron carriers 11.2 Reactions 11.3 Mechanism of ATP formation 11.4 ATP synthesis coupled with electron flow 11.5 Energy considerations 11.6 Group work assignment: Topic Choice 2	3	2	4			3	3	12
12.	**Responding to Environmental Changes** 12.1 Human diseases and biochemistry 12.2 Group work assignment: Main Theme	3	1	2			1	2	6
	Total		30	35	8		32	41	146

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Final Examination	53	2	6	8
Practical Test/ Laboratory Report	27	1	3	4
Assignments	20	0	3	3
			GRAND TOTAL SLT	161

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

Note: HEPs to update and ensure the latest edition/publication.

- Tortora, G. J. & Derrickson, B. (2018). *Principles of anatomy & physiology* (2nd revised ed.). Australia: John Wiley & Sons, Inc.
- Nelson, D. L. & Cox. M. M. (2017). *Lehninger: Principles of biochemistry* (7th ed.). New York: W. H. Freeman & Co. Ltd.
- Campbell, N. A., Reece, J. B., Urry, L. A., Cain, M. L., Wassermen, S. A., Minorsky, P. V. & Jackson, R. B. (2016). *Biology* (11th ed.). USA: Pearson.
- Hartwell, L., Hood, L., Goldberg, M., Reynolds, A. & Silver, L. (2015). *Genetics: From genes to genomes* (5th ed.). New York: McGraw-Hill.

13. Other additional information:

1. Course Name and Code: **INTRODUCTION TO PSYCHOLOGY**

2. Synopsis: This course develops students with an understanding of the concepts, principles, history, and approaches in psychology.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of this course, students should be able to:

   CLO 1- describe the concepts and principles used in psychology, their applications, and their connections.

   CLO 2- explain how concepts and methods of psychology can be applied to everyday life situations and in the study of human behaviours.

   CLO 3- discuss how the history and study of psychology has developed in terms of approaches and treatments for psychological disorders.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓			✓		✓	Lectures, Tutorials	Presentation/ Quizzes, Written Assignments, Final Examination
CLO 2	✓			✓		✓	Lectures, Tutorials, Seminars	Quizzes, Written Assignments, Final Examination
CLO 3	✓	✓				✓	Lectures, Tutorials, Seminars	Quizzes, Written Assignments, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

	Course Content Outline	CLO*	Teaching and Learning Activities (14 weeks, 4 hours/week)						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	Introduction to psychology – history and approaches	1	4	4			Online resources – notes and exercises - 4	7	19
2.	Biology, brain, and behaviour – concepts of consciousness, sensation, perception, etc.	1,2	8	4			Online resources – notes and exercises - 8	12	32
3.	Learning and cognition – theories by Pavlov, Piaget, and Skinner	1,2	8	4			Online resources – notes and exercises - 8	12	32
4.	Human development – explaining personality, intelligence, motivation and individual differences	1,2	8	4			Online resources – personality tests (e.g. MBTI) - 4	12	28
5.	Social psychology – understanding and managing mental states, stress, and wellness	1,2,3	8	4			Online resources – notes and exercises - 8	12	32
	Total		36	20			32	55	143

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Presentations/Quizzes	20	1	3	4
Written assignments	30	1	4	5
Final Examination	50	2	6	8
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2 F= Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

Note: HEPs to update and ensure the latest edition/publication.

- Johnson, J.G. (2011). *Introduction to psychology* (2nd ed.). Harper Collins Publisher. ISBN-13: 978-0060881528.
- Myers, D.G. and DeWall, C.N. (2015). *Psychology* (11th ed.). Worth Publishers. ISBN-13: 978-1464140815.
- Myers, D.G. (2013). *Psychology* (10th ed.). Worth Publishers. ISBN-13: 978-1429261784.

13. Other additional information:

ARTS

BUSINESS (CORE)

1. Course Name and Code: **INTRODUCTION TO MANAGEMENT**

2. Synopsis: This course will prepare students with a basic understanding of the nature of management processes in business organisations. It relates to the principles and theories of management, practices of Planning, Organising, Leading, and Controlling (POLC), organisational design and communication within business entities.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 3

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO 1- explain and apply the concepts, practice and role of management processes and tools within business organisations.
   CLO 2- describe the management processes, leadership and communication of managers or administrators.
   CLO 3- apply management principles in business entities.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	Programme Learning Outcomes (PLO)						Teaching Methods	Assessment
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6		
CLO 1	√	√					Lectures, Tutorials	Presentation, Quizzes/ Test, Assignments, Final Examination
CLO 2	√						Lectures, Tutorials	Presentation, Quizzes/Test, Assignments, Final Examination
CLO 3		√	√			√	Lectures, Tutorials	Presentation, Quizzes/Test, Assignments, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Nature of Management** 1.1 Overview of management 1.2 Management roles and functions 1.3 Types of managers	1	3	2				8	13
2.	**Basic Management Theories** 2.1 Classical theory 2.2 Behavioural theory 2.3 Contingency theory	2	3	2			3	5	13
3.	**Planning** 3.1 The planning process 3.2 Goals and objectives of planning 3.3 Advantages of planning 3.4 Types of plans	2,3	3	2			3	5	13
4.	**Organising** 4.1 Organising authority 4.2 Chain of command 4.3 Span of control 4.4 Centralisation and decentralisation	2,3	3	2			3	5	13
5.	**Leading** 5.1 Management and leading process 5.2 Power and influence	2,3	3	2			3	5	13
6.	**Controlling** 6.1 Control systems 6.2 Control models 6.3 Production, operations and quality control 6.4 Human resource control 6.5 Financial control 6.6 Strategic control	1,2,3	3	2			4	6	15
7.	**Leadership** 7.1 Leadership theories 7.2 Types of leadership 7.3 Effective leadership	1,2	6	4			2	7	19
8.	**Organisational Structure and Design** 8.1 Organisational structure 8.2 Organisational design 8.3 Authority 8.4 Span of control 8.5 Delegation	1,2	3	2			1	8	14

9.	**Communication** 9.1 Types of communication 9.2 Effective communication 9.3 Verbal and non-verbal communication	2,3	3	4			4	4	15
10.	**Motivation** 10.1 Motivational theories 10.2 Reward systems 10.3 Empowerment	2,3	3	2			2	6	13
	Total		33	24			25	59	141

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Presentation	20	1	1	2
Quizzes/Tests	10	2	2	4
Assignments	20	2	2	4
Final Examination	50	2	7	9
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:
Note: HEPs to update and ensure the latest edition/publication.

- Certo, S.C., & Certo, S.T., (2016). *Modern management: Concepts and skills* (14th ed.). Pearson.
- Robbins, S. P., & Coulter, M.A. (2018). *Management* (14th ed.). Pearson.
- Robbins, S. P., Coulter, M.A., & De-Cenzo, D.A. (2017). *Fundamentals of management* (10th ed.). Pearson.

13. Other additional information:

1. Course Name and Code: **INTRODUCTION TO MARKETING**

2. Synopsis: This course provides students with an understanding of marketing concepts, functions and roles in business organisations. It exposes students to product, pricing, distribution, promotion, marketing communication, and basic internet marketing.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO 1- explain marketing concepts, theories and strategies in making effective and efficient marketing activities.
   CLO 2- describe appropriate marketing tools in business activities.
   CLO 3- apply basic marketing principles in daily marketing decisions.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	√	√					Lectures, Tutorials	Presentation, Quizzes/Test, Assignments, Final Examination
CLO 2	√	√					Lectures, Tutorials	Presentation, Quizzes/ Test, Assignments, Final Examination
CLO 3		√	√			√	Lectures, Tutorials	Presentation, Quizzes/Test, Assignments, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

	Course Content Outline	CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Introduction to Marketing Concepts** 1.1 Definition of Marketing and Sales 1.2 The core concepts of marketing	1	3	2				6	11
2.	**Marketing Environment** 2.1 Local environment 2.2 International environment	1	3	2				8	13
3.	**Market Segmentation** 3.1 Types of segmentation 3.2 Segmentation strategy	1,2	3	2			3	5	13
4.	**Market Targeting and Positioning** 4.1 Target market 4.2 Market positioning strategy	2	3	2			2	6	13
5.	**Product** 5.1 Product and service decisions 5.2 New product development strategy 5.3 Product lifecycle	2,3	3	2			2	3	10
6.	**Price** 6.1 Pricing approaches 6.2 New product pricing strategies 6.3 Product mix pricing strategies 6.4 Price adjustment strategies	1,2,3	3	2			2	3	10
7.	**Place – Distribution / Channelling** 7.1 Supply chains and network 7.2 Channel behaviour 7.3 Channel management	2	3	2			1	4	10
8.	**Promotion** 8.1 Branding strategy	2	3	2			2	5	12
9.	**Consumer Behaviour** 9.1 Consumer buying behaviour 9.2 Business buying behaviour	2	3	2			2	5	12
10.	**Customer Service** 10.1 Direct marketing 10.2 Sales promotion 10.3 After sales services	1,2,3	3	2			2	5	12
11.	**Marketing Communication** 11.1 Advertising 11.2 Sales promotion 11.3 Public relation	1,2,3	3	2			3	5	13

	11.4 Personal selling 11.5 Managing the sales force 11.6 Direct marketing								
12.	**Internet Marketing** 12.1 Cyber marketing 12.2 E-commerce 12.3 Online marketing & security	2	3	2			4	3	12
	Total		36	24			23	58	141

Assessment	**Percentage (%)**	**F2F**	**NF2F**	**Total SLT**
Presentation	10	1	1	2
Quizzes / Tests	20	2	2	4
Assignments	20	2	2	4
Final Examination	50	2	7	9
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:
Note: HEPs to update and ensure the latest edition/publication.

- Armstrong, G., and Kotler, P. (2017). *Marketing: An introduction* (13th ed.). Pearson.
- Solomon, M.R., Marshall, G. W., and Stuart E. W. (2018). *Marketing: Real people, real choices* (9th ed.). Pearson.

13. Other additional information:

1. Course Name and Code: **INTRODUCTION TO LAW**

2. Synopsis: The course provides students with an understanding of legal concepts, meaning, functions, classification and some basic principles of legal liability. It outlines the brief history, sources and organisation of courts in the English and Malaysian legal system. It also exposes students to legal professions in Malaysia.

3. Names (s) of academic staff:

4. Semester Offered: Semester

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO 1- explain and describe the meaning, functions and classification of law.
   CLO 2- identify the various sources of law.
   CLO 3- explain the operations of law and institutions related to it.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	√		√		√		Lectures, Tutorials (Collaborative Learning)	Project Paper/ Assignment, Quizzes,
CLO 2	√		√		√		Lectures, Tutorials (Collaborative Learning)	Project Paper/ Assignment, Quizzes, Presentation
CLO 3	√		√	√	√		Lectures, Tutorials (Collaborative Learning)	Presentation, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**The meaning and functions of law**	1	4	2				8	14
2.	**Major classifications of law** 2.1 Private and public law 2.2 Civil and criminal law 2.3 Municipal and international law 2.4 Substantive and procedural law	1	4	2				8	14
3.	**Law and morality** 3.1 Law and justice 3.2 Law and human rights	1	6	2			2	8	18
4.	**Some basic principles of legal liability** (civil, criminal, contract, and torts)	1	6	2				9	17
5.	**Introduction to English legal system** 5.1 Brief history 5.2 Sources of law • Case law • Legislation • Delegated legislation 5.3 Organisation of courts	2,3	8	2			4	8	22
6.	**Introduction to Malaysian legal system** 6.1 Brief history 6.2 The federal constitution 6.3 Reception of English law in Malaysia (Section 3 & 5 of the Civil Law Act 1956)	2,3	8	2			4	8	22
7.	**Organisation of courts in Malaysia** 7.1 Jurisdiction of civil courts 7.2 Jurisdiction of Syariah courts	3	4	2			2	6	14
8.	**The legal profession** 8.1 Public sector 8.2 Private sector	3	2	2				6	10
	Total		42	16			12	61	131

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Quizzes/Tests	20	2	4	6
Project Paper/Assignments	20	2	4	6
Presentation	10	1	2	3
Final Examination	50	2	12	14
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:
    Note: HEPs to update and ensure the latest edition/publication.

    - Williams, G. (2016). *Learning the law* (16th ed.). London: Sweet & Maxwell.
    - Partington, M. (2018). *Introduction to the English legal system* (13th ed.). Oxford University Press.

13. Other additional information:

1. Course Name and Code: **FINANCIAL ACCOUNTING**

2. Synopsis: This course provides students with basic knowledge and skills in accounting concepts, bookkeeping concepts and financial reporting procedures, which are applicable to business entities. Students will learn about the accounting equation, double entry system, journal and ledger, and preparing financial statements for financial reporting purposes.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any):

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:

   CLO 1- describe and apply concepts and principles of basic financial accounting and its applications in business entities.

   CLO 2- explain and apply the concepts and appropriate methods of financial accounting in daily business transactions.

   CLO 3- apply basic accounting tools to prepare financial statements.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	√	√						
CLO 2	√	√		√			Lectures, Tutorials	Quizzes, Test, Project Paper/Assignments, Final Examination
CLO 3		√	√	√		√	Lectures, Tutorials	Quizzes, Test, Project Paper/Assignments, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Introduction – The Context and Purposes of Financial Reporting** 1.1 Activities of the accounting process 1.2 Users of accounting information	1	2	0				2	4
2.	**Fundamental Accounting Concepts** 2.1 Generally accepted accounting principles 2.2 Assumptions in financial reporting 2.3 Principles in financial reporting 2.4 Qualities of useful information	1	2	2			2	2	8
3.	**Accounting Equation** 3.1 Assets 3.2 Liabilities 3.3 Owner's equity	1	2	4				6	12
4.	**The use of double-entry and accounting systems** 4.1 The accounts 4.2 Debit and credit 4.3 Summary of debit and credit rules	3	2	4			1	5	12
5.	**Accounting Cycle** 5.1 Steps in the accounting cycle 5.2 Source documents and business transactions 5.3 Recording process 5.4 Trial balance and financial statements 5.5 Closing entries	3	2	4			2	4	12
6.	**Analysis of Business Transactions** 6.1 Service 6.2 Merchandising	3	1	4			2	3	10
7.	**Journals and Ledgers** 7.1 Special journals and general	3	4	8				12	24

	journals 7.2 Subsidiary and general ledgers 7.3 Cash book 7.4 Petty cash 7.5 Bank reconciliation								
8.	**Trial Balance** 8.1 Preparation of the trial balance 8.2 Limitation of the trial balance	2	1	4				5	10
9.	**Inventory** 9.1 Periodic system and perpetual system 9.2 Journal entries 9.3 Valuation methods – FIFO, LIFO and weighted average	2	2	4				6	12
10.	**Adjustment Entries** 10.1 Accrual 10.2 Pre-payment 10.3 Depreciation 10.4 Bad debts	2,3	2	6				8	16
11.	**Financial Statements** 11.1 Profit and Loss Statements 11.2 Balance Sheet	3	1	6			2	5	14
12.	**Accounting Information System** 12.1 Basic concepts of Accounting Information System 12.2 Computerised accounting systems 12.3 Accounting software – examples	3	1	2			1	2	6
			22	48			10	60	140

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Quizzes / Tests	20	2	2	4
Project Paper / Assignments	30	1	5	6
Final Examination	50	2	8	10
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

    - Sangster, A., & Wood, F. (2019). *Business accounting volume 2* (14th ed.). Pearson.
    - Sangster, A., & Wood, F. (2018). *Business accounting volume 1* (14th ed.). Pearson.
    - Weagant, J.J., Kimmel, P.D., & Keiso, D.E. (2018). *Accounting principles* (12th ed.). Wiley.

13. Other additional information:

1. Course Name and Code: **MANAGEMENT ACCOUNTING**

2. Synopsis: This course provides students with basic knowledge and skills in managerial accounting concepts, budgeting and costing procedures applicable to business entities. Students will learn about the cost, overhead, cost behaviour, budgets and variance analysis in performing a cost analysis of business organisations.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value:4

6. Prerequisite/co-requisite (if any):

7. Course learning outcomes (CLO):

   Upon completion of the course, students should be able to:

   CLO 1- explain and apply basic management accounting concepts and principles in business.
   CLO 2- explain and apply the concepts and appropriate methods of basic management accounting in daily business operations.
   CLO 3- apply appropriate basic management accounting methods to analyse, manage, record and report all business transactions.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	√		√					
CLO 2	√	√					Lectures, Tutorials	Quizzes, Project Paper/Assignments, Final Examination
CLO 3				√		√	Lectures, Tutorials	Quizzes, Project Paper/Assignments, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Introduction to Management Accounting** 1.1 Management function 1.2 Financial Accounting versus Management Accounting 1.3 Manufacturing cost and non-manufacturing cost 1.4 Cost of goods manufactured	1	2	4				6	12
2	**Cost for Materials** 2.1 Direct materials and indirect materials 2.2 Purchase of materials 2.3 Cost of direct materials used 2.4 Inventory control	1	1	6			2	5	14
3	**Cost for Labour** 3.1 Direct labour and indirect labour 3.2 Direct labour cost	1	1	2				3	6
4	**Manufacturing Overhead** 4.1 Indirect cost 4.2 Actual overhead and applied overhead 4.3 Normal costing 4.4 Predetermined overhead rate 4.5 Under/over-applied overhead	2	1	6			2	5	14
5	**Cost Behaviour** 5.1 Fixed cost 5.2 Variable cost 5.3 Mixed cost 5.4 High-low method	2	2	4			2	4	12
6	**Absorption and Marginal Costing** 6.1 Cost of product 6.2 Contribution margin 6.3 Financial statements 6.4 Reconciliation of net profits	3	2	6				8	16
7	**Break-even analysis** 7.1 Importance of break-even analysis	3	2	6			3	5	16

	7.2 Assumptions for the break-even point 7.3 Margin of safety 7.4 Sensitivity analysis								
8	**Budgets** 8.1 Benefits of budgets 8.2 Master budget and its components 8.3 Sales budget 8.4 Production budget 8.5 Direct materials budget 8.6 Direct labour budget 8.7 Manufacturing overhead budget 8.8 Cash budget	3	2	8			2	8	20
9	**Flexible budget and standard costing** 9.1 Static budget versus flexible budget 9.2 Standard costing 9.3 Standard material 9.4 Standard labour 9.5 Standard overhead	3	2	6			1	7	16
10	**Variance analysis** 10.1 Direct material variances 10.2 Direct labour variances 10.3 Overhead variances	3	1	6			1	6	14
	Total		16	54			13	57	140

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Quizzes/ Tests	20	2	2	4
Project Paper / Assignments	30	1	5	6
Final Examination	50	2	8	10
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

- Bhimani, A., Datar, S.M., Horngren, C.T., & Rajan, M.V. (2019). *Management and cost accounting* (7th ed.). Pearson.
- Braun, K.W., & Tietz, W.M. (2018). *Managerial accounting* (5th ed.). Pearson.
- Horngren, C.T., Sundem, G.L., Stratton, W.O., Burgstahler, D., & Schatzberg, J.O. (2016). *Introduction to management accounting* (16th ed.). Pearson.

13. Other additional information:

1. Course Name and Code: **ESSENTIALS OF ECONOMICS**

2. Synopsis: This course aims to provide students with an overview of economics. The course facilitates students with an understanding of basic economic concepts and disciplines. Students will be exposed to the core areas of microeconomics and macroeconomics. The course introduces students to market fluctuations which involve the behaviours of consumers and producers. It also introduces the basic macro study such as national growth and its issues, as well as analysing policies in influencing economic conditions.

3. Names (s) of academic staff:

4. Semester Offered: Semester: 1 or 2

5. Credit Value: 4

6. Prerequisite/co-requisite (if any):

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO 1- explain the basic concepts and theories in economics.
   CLO 2- analyse concepts related to basic economic problems, market equilibrium, and production cost.
   CLO 3- identify issues related to market structure in a group.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	√						Lectures	Final Examination
CLO 2			√				Tutorials	Quizzes
CLO 3		√					Case Study	Group Assignment
CLO 4						√		

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Introduction** 1.1 Introduction 1.2 Definition of economics 1.3 Economic resources 1.4 Basic economic concepts 1.5 Basic economic problems 1.6 Production possibility curve 1.7 Economic systems	2	2	2			2	2	8
2.	**Demand, Supply and Elasticity** 2.1 Definition of demand 2.2 Classification of goods and services 2.3 Law of demand 2.4 Determinants of demand 2.5 Change in quantity demanded vs change in demand 2.6 Exceptional and inter-related demand 2.7 Price, income and cross elasticity of demand 2.8 Definition of supply 2.9 Law of supply 2.10 Determinants of supply 2.11 Change in quantity supplied vs change in supply 2.12 Exceptional and inter-related supply 2.13 Price, income and cross elasticity of supply	1	6	6			6	6	24
3.	**Market Equilibrium** 3.1 Definition 3.2 Equilibrium price and output 3.3 Changes in equilibrium price and output	2	2	2			2	2	8
4.	**Theory of Consumer Behaviour** 4.1 Definition of consumer behaviour 4.2 Utility approach 4.3 Cardinal approach 4.4 Law of diminishing marginal utility 4.5 Ordinal approach 4.6 Indifference curve 4.7 Budget line 4.8 Income effect: price effect and substitution effect 4.9 Consumer surplus	1	6	6			6	6	24

5.	**Theory of Production** 5.1 Definition of production 5.2 Classification of factors of production 5.3 Production function 5.4 Short run production function: one variable and one fixed input 5.5 Isoquant analysis 5.6 Isoquant map 5.7 Marginal rate of technical substitution 5.8 Long-run production function	1	6	6			6	6	24
6.	**Cost of Production** 6.1 Cost concept 6.2 Cost curves in the short run 6.3 The isocost analysis 6.4 Isocost map 6.5 The cost minimising technique 6.6 Cost curves in the long run 6.7 Economies of scale 6.8 Diseconomies of scale 6.9 Economies and diseconomies of scope 6.10 Concept of revenue	2	2	4			3	3	12
7.	**Market Structure I: Perfect competition and monopoly** 7.1 Theory of a firm 7.2 Market structure 7.3 Perfect competition 7.4 Monopoly 7.5 Comparison of monopoly and perfect competition	3	3	4			4	3	14
8.	**Market Structure II: Monopolistic Competition and Oligopoly** 8.1 Monopolistic competition 8.2 Oligopoly	3	3	4			4	3	14
9.	**Factor Market and Theory of Distribution** 9.1 Payment of factors of production 9.2 Theory of marginal productivity 9.3 Wages 9.4 Interest 9.5 Rent 9.6 Profit	3	3	4			4	3	14
	Total		**33**	**38**			**37**	**34**	**142**

Assessment	**Percentage (%)**	**F2F**	**NF2F**	**Total SLT**
Final examination	50	3	9	12
Quizzes	20	1	2	3
Group Assignment	30	2	4	6
			GRAND TOTAL SLT	163

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

- Hubbard, R.G., & O'Brien, A.P. (2019). *Essentials of economics* (6th ed.). United Kingdom: Pearson.
- Mankiw, N. G. (2018). *Essentials of economics* (8th ed.). Connecticut: Cengage.
- Sloman, J., & Garratt, D. (2018). *Essentials of economics.* United Kingdom: Pearson Education.

13. Other additional information:

OPTIONAL FOR BUSINESS COURSES (CHOOSE TWO)

1. Course Name and Code: **INTRODUCTION TO FINANCE**

2. Synopsis: This course prepares students with the concepts, roles, and principles of financial management in business organisations. Students will review the roles of financial markets, institutions and environment as well as performing basic analysis in regards to the time value of money, financial statements and capital budgeting for business decision.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of this course, students should be able to:

   CLO 1- explain and apply basic financial tools and concepts in a business environment.

   CLO 2- describe and apply basic terminologies and concepts used in financial management and financial markets.

   CLO 3- apply related financial management tools and techniques to solve financial related problems.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	Programme Learning Outcomes (PLO)						Teaching Methods	Assessment
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6		
CLO 1	✓	✓					Lectures, Tutorials	Presentation, Quizzes/Test, Project Paper/Assignments, Final Examination
CLO 2	✓	✓			✓		Lectures, Tutorials	Presentation, Quizzes/Test, Project Paper/Assignments, Final Examination
CLO 3	✓		✓				Lectures, Tutorials	Presentation, Quizzes/Test, Project Paper/Assignments, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Introduction to Financial Management** 1.1 Overview of finance 1.2 Roles and functions of the financial manager 1.3 Financial objectives	1	3	2				4	9
2.	**Financial Environments, Markets, and Institutions** 2.1 Financial markets (capital, money and derivatives market) 2.2 Financial institutions 2.3 Central bank 2.4 Primary and secondary markets	2	3	2			2	6	13
3.	**Interest Rate** 3.1 Nominal interest 3.2 Effective interest rate 3.3 Base lending rate	3	3	2			2	8	15
4.	**Time Value of Money: Present Value** 4.1 Time line 4.2 PV of a single amount 4.3 PV of annuities 4.4 Perpetuities	3	3	2				10	15
5.	**Time Value of Money: Future Value** 5.1 FV of a single amount 5.2 FV of annuities 5.3 Loan amortisation	3	3	2				10	15
6.	**Financial Statements Analysis** 6.1 Types of ratios 6.2 Ratio analysis & interpretation 6.3 Trend analysis	3	3	4			4	6	17
7.	**Working Capital Management** 7.1 Cash budget 7.2 Trade credit	3	3	2			2	8	15
8.	**Basic Capital Budgeting** 8.1 Cost of capital 8.2 WACC 8.3 Projected cash flow	2,3	3	2				10	15
9.	**Capital Budgeting Analysis** 10.1 Payback period 10.2 Discounted payback period 10.3 Net present value 10.4 Internal rate of return	2,3	6	8			2	10	22
	Total		30	26			12	72	140

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Presentation	20	1	3	4
Quizzes/ Tests	10	1	1	2
Project Paper/Assignments	20	1	3	4
Final Examination	50	2	8	10
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

- Brigham, E.F., & Houston, J.F. (2020). *Fundamentals of financial management* (10th ed.). Cengage.
- Brooks, R. (2019). *Financial management: Core concepts* (4th ed.). Pearson.
- Gitman, L.J., & Zutter, C. J. (2015). *Principles of managerial finance* (7th ed.). Pearson.
- Titman, S. & Keown, A.J. (2018). *Financial management: Principles and applications* (13th ed.). Pearson.

13. Other additional information:

1. Course Name and Code: **WRITING AND RESEARCH SKILLS**

2. Synopsis: This course prepares students for social sciences research, skills of scientific and academic writing, and different research methods. Students will develop skills to understand and analyse texts. In addition, students will practise and develop paraphrasing and summarising skills.

3. Names (s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of this course, students should be able to:
   CLO 1- explain and apply research concepts, process and methods.
   CLO 2- demonstrate skills in writing academic papers.
   CLO 3- recognise different types of research and writing techniques.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓		✓				Lectures, Tutorials	Assignments, Quizzes/ Test, Final Examination
CLO 2	✓		✓	✓			Lectures, Tutorials	Assignments, Quizzes/Test, Final Examination
CLO 3	✓		✓	✓		✓	Lectures, Tutorials	Assignments, Quizzes/Test, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Introduction to Writing** 1.1 Ethics of academic writing 1.2 Plagiarism and avoiding plagiarism 1.3 Do's and Don'ts in academic writing	1	4				2	6	12
2.	**Writing Skills** 2.1 Understanding texts 2.2 Paragraph development 2.3 Writing an academic essay	2	4	2			1	5	12
3.	**Introduction to References Style** 3.1 APA style 3.2 Canada style 3.3 Others	2	6	2				8	16
4.	**Introduction to Research** 3.1 Criteria of research 3.2 Important concepts in research	3	4	2				5	11
5.	**Review of Literature** 5.1 Finding and selecting ideas 5.2 Locating past literature 5.3 Reading past literature 5.4 Organising and writing a literature review	3	8	2			4	6	20
6.	**Sampling** 6.1 Sample and population 6.2 Representativeness and generalisability 6.3 Random and non-random sampling 6.4 Sample size and sampling error	3	8	2			2	8	20
7.	**Research Methods** 7.1 Quantitative and qualitative research 7.2 Validity and reliability 7.3 Experiment and non-experiment 7.4 Ethical and practical considerations in research	3	8	2			2	8	20
8.	**Research Report Writing**	4	4				2	4	10
9.	**Research Report Presentation**	4	2						2
	Total		48	12			13	50	123

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Quizzes/ Tests	10	2	2	4
Midterm	30	2	9	11
Research Report Writing	30	3	8	11
Research Report Presentation	30	1	10	11
			GRAND TOTAL SLT	160
L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face *Indicates the CLO based on the CLO's numbering in Item 8				

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

- Ahmad Munawar Ismail & Mohd Nor Shahizan Ali. 2018. *Kaedah penyelidikan sosial dari perspektif Islam.* Bangi: UKM Press.
- Othman Lebar.2014. *Penyelidikan kualitatif: Pengenalan kepada teori dan metode*. Perak: UPSI.
- Leedy, P. D., & Omrod, J. E. (2013). *Practical research: Planning and design*. Upper Saddle River, NJ: Pearson.
- American Psychological Association (2010). *Publication manual of the American Psychological Association*. Washington, DC: American Psychological Association.

13. Other additional information:

Note: For the Introduction to Psychology course, you may refer to pages 66–67 for its course information.

HUMANITIES (CORE)

1. Course Name and Code: **INTRODUCTION TO SOCIOLOGY**

2. Synopsis: This course prepares students with an understanding of the principles of sociology. The coverage of the topics relates to the origins and historical development of sociology. Students will learn about culture, society, socialisation and social institution within a contemporary social structure.

3. Name(s) of academic staff:

4. Semester Offered: Semester 1, 2 or 3

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of the course, students should be able to:
   CLO 1- explain and apply basic sociological concepts.
   CLO 2- explain and apply three major perspectives in sociology.
   CLO 3- describe and discuss sociological issues within the contemporary environment.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	
CLO 1	√	√					Lectures, Tutorials
CLO 2	√	√		√		√	Lectures, Tutorials
CLO 3	√	√	√				Lectures, Tutorials

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**The Foundation of Sociology** 1.1 Meaning and scope 1.2 Origin and historical development	1	4	2			2	8	16
2.	**Introduction to the Major Perspectives of Sociology** 2.1 The structural-functionalism 2.2 The social-conflict 2.3 The symbolic-interaction	2	6	2			2	8	18
3.	**Culture** 3.1 Definition 3.2 Components 3.3 Multiculturalism	1,3	6	2			2	8	18
4.	**Society and Community** 4.1 Types of society 4.2 Characteristics of society 4.3 Contemporary Issues	1,3	6	2			4	8	20
5.	**Socialisation** 5.1 Agents of Socialisation 5.2 Theories of human development 5.3 Socialisation through the life course	1,3	6	2			4	10	22
6.	**Social Institutions – Family, Economics, Politics, Education and Religion** 6.1 Basic concepts 6.2 Theoretical analysis 6.3 Contemporary Issues	2,3	6	2			4	10	22
7.	**Social Class and Inequality** 7.1 Definition 7.2 Sex 7.3 Gender	2, 3	6	2			3	10	21
	Total		40	14			21	62	137

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Oral Tests	15	1	2	3
Oral Presentation	20	2	3	5
Mid-Term Exam	20	2	3	5
Group Project	30	2	5	7
Group Presentation	15	1	2	3
			GRAND TOTAL SLT	160

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

    - Macionis, J. J. (2018). *Sociology* (17th ed.). New Jersey: Prentice Hall Inc.
    - Schaefer, R.T. (2016) *Sociology: A brief Introduction* (12th ed.). New York: McGraw-Hill.

13. Other additional information:

Note: For other courses, you may refer to the pages stated below for the course information:

- Introduction to Psychology (pages 66–67)
- Introduction to Management (pages 68–70)
- Introduction to Law (pages 74–76)
- Essentials of Economics (pages 84–87)
- Writing & Research Skills (pages 91–93)

OPTIONAL FOR HUMANITIES COURSES (CHOOSE TWO)

1. Course Name and Code: **INTRODUCTION TO VISUAL ARTS**

2. Synopsis: This course aims to provide a basic understanding of the role of visual arts. Students will explore creative art solutions through the application of basic art materials and image/ mark-making techniques. The latest technology in visual arts will be learnt and applied in the form of 3-dimensional designs, motion picture and digital techniques in improving visual arts quality.

3. Name(s) of academic staff:

4. Semester offered: Semester 3 (14 weeks)

5. Credit Value: Four (4)

6. Prerequisite/co-requisite (if any): NIL

7. Course learning outcomes (CLO):
   Upon completion of this course, students should be able to:
   CLO 1- recognise the roles of visual arts, formal aspects, and art criticisms.
   CLO 2- deploy a process of exploration, trial and error to aid in the development of creative art solutions.
   CLO 3- apply a range of materials, images and mark-making techniques as appropriate to the creation of visual artworks.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO 1	**PLO 2**	**PLO 3**	**PLO 4**	**PLO 5**	**PLO 6**		
CLO 1	√	√		√			Lectures, Tutorials	Presentation
CLO 2	√	√					Lectures, Tutorials, Practical	Coursework
CLO 3		√	√				Lectures, Tutorials, Practical	Coursework

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1	**Introductory Lecture** 1.1 Overview of the course 1.2 Introduction to visual arts 1.3 A brief history of arts and cultural applications	1,2	4	0	0		3	2	9
2	**Visual Art Elements: Dots & Lines**	1,2,3	1	1	2		3	2	9
3	**Visual Art Elements: Shapes**	1	1	1	2		3	2	9
4	**Visual Art Elements: Texture**	2,3	1	1	2		3	2	9
5	**Visual Art Elements: Colour Theory 1**	3	1	1	2		3	2	9
6	**Visual Art Elements: Colour Theory 2**	2,3	1	1	2		3	2	9
7	**Visual Art Principles: Composition and Layout**	1,2	1	1	2		3	2	9
8	**Visual Art Principles: Composition and Layout**	1,3	1	1	2		3	2	9
9	**3-Dimensional Design: Elements and principles**	1,3	1	1	2		3	2	9
10	**3-Dimensional Design: Elements and principles**	1,2	1	1	2		3	2	9
11	**Introduction to Visual Arts in the Motion Picture**	1	1	1	2		3	2	9
12	**Introduction to Visual Arts in the Digital Age**	1	1	1	2		3	2	9
13	**Project Consultations**	1,2,3	0	2	2		3	2	9
14	**Performance Evaluation and Feedback**	1,2,3	0	3	3		2	2	10
	Total		15	16	27		41	28	127

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Art Projects	50	**2**	**12**	20
Report Writing	20	**2**	**4**	
Presentation	10	**1**	**2**	3
Major Project	20	**3**	**7**	10
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course:
    - Design/ Drawing Studio, Lecture hall

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

    - Stewart, M., 2014. *Launching the imagination.* McGraw-Hill Education.
    - Evans, P., 2012. *Exploring the elements of design.* Cengage Learning.

13. Other additional information:

1. Course Name and Code: **INTRODUCTION TO MASS MEDIA AND COMMUNICATION**

2. Synopsis: This course provides students with an overview of the effect and impact of mass communication on contemporary life and society. All topics cover the historical evolution of media as well as the contemporary development of new media and issues. Students will learn about mass media channels, advertising, public relations and their social effects.

3. Names (s) of academic staff:

4. Semester Offered: 2 or 3

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Nil

7. Course learning outcomes (CLO):
   Upon completion of this course, students should be able to:
   CLO 1- explain and apply mass communication concepts, models, channels and techniques.
   CLO 2- identify and apply appropriate use of media channels and techniques.
   CLO 3- analyse mass media tools and sources in delivering information effectively and ethically.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	✓	✓					Lectures, Tutorials	Quizzes, Assignments, Final Examination
CLO 2	✓	✓		✓			Lectures, Tutorials	Quizzes, Assignments, Final Examination
CLO 3		✓		✓	✓		Lectures, Tutorials	Quizzes, Assignments, Video, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

Course Content Outline		CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Introduction to Mass Communication** 1.1 History and development of mass communication 1.2 Communication process and models 1.3 Types of communication	1	3	2				6	11
2.	**The Mass Media** 2.1 The roles and functions of mass media 2.2 The importance and impact of mass media	1	3	2				6	11
3.	**Newspaper** 3.1 Roles and importance of newspaper 3.2 Daily newspaper 3.3 Newspaper development and challenges	1	3	2			2	6	13
4.	**Magazines** 4.1 Roles and importance of magazines 4.2 Consumer and industry magazines 4.3 Magazines development and challenges	1	3	2			2	6	13
5.	**Books** 5.1 Book categories 5.2 The development and trends of books 5.3 The evaluation of books	1,2,3	3	2			1	4	10
6.	**Radio** 6.1 The history and development of radio 6.2 Significance of radio 6.3 Broadcasting techniques and regulations	1,2	3	2			2	3	10
7.	**Sound Recordings** 7.1 Music and society 7.2 Sound and recording technologies 7.3 Recording industry	1,2	3	2			1	4	10
8.	**Broadcasting** 8.1 Television 8.2 Internet television 8.3 Online broadcasting 8.4 Cable and satellite broadcasting	1,2	3	2			3	6	14
9.	**Movies** 9.1 Movie industry and development 9.2 Industry ownership 9.3 Copyrights and ethics	1,2,3	3	2			2	6	13

10.	**Internet and Social Media** 10.1 Internet and social networking 10.2 Video games 10.3 Convergence of technology 10.4 Issues and ethics	1,2	3	2			5	3	13
11.	**Advertising and Public Relations** 11.1 History and evolution of advertising and public relations 11.2 Differences between advertising and public relations 11.3 Trends and convergence in advertising and public relations	1,2	3	2			2	6	13
12.	**The Social Effects and Ethics of Mass Communication** 12.1 Media-depicted violence 12.2 Media and cultural formation 12.3 Media ethics	3	3	2			2	6	13
	Total		36	24			22	62	144

Assessment	Percentage (%)	F2F	NF2F	Total SLT
Quizzes/Test	10	1	1	2
Assignments	20	1	2	3
Folio/Projects	20	1	2	3
Final Examination	50	2	6	8
			GRAND TOTAL SLT	160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course (e.g., software, nursery, computer lab, simulation room):

12. Recommended text/reading:

Note: HEPs to update and ensure the latest edition/publication.

- Baran, S., (2017). *Introduction to mass communication: Media literacy and culture* (8th ed.). McGraw Hill.
- Dominick, J.R., (2012). *The dynamic of mass communication: Media in transition* (12th ed.). McGraw Hill.

13. Other additional information:

1. Course Name and Code: **INTRODUCTION TO LEGAL SKILLS**

2. Synopsis: This course provides students with basic skills in research, reading, analysing and application of legal sources.

3. Name(s) of academic staff:

4. Semester Offered:

5. Credit Value: 4

6. Prerequisite/co-requisite (if any): Introduction to Law

7. Course learning outcomes (CLO):

   Upon completion of the course, students should be able to:

   CLO 1- explain and apply common legal terminologies.

   CLO 2- conduct basic information search using relevant methods.

   CLO 3- identify appropriate legal authorities in problem solving.

8. Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:

Course Learning Outcomes (CLO)	**Programme Learning Outcomes (PLO)**						**Teaching Methods**	**Assessment**
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**		
CLO 1	√	√					Lectures, Tutorials (Collaborative Learning)	Assignments, Quizzes/Test, Final Examination
CLO 2	√	√	√				Lectures, Tutorials (Collaborative Learning)	Assignments, Quizzes/Test, Final Examination
CLO 3	√		√			√	Lectures, Tutorials (Collaborative Learning)	Assignments, Presentation, Final Examination

9. Transferable Skills (if applicable):

10. Distribution of Student Learning Time (SLT):

	Course Content Outline	CLO*	Teaching and Learning Activities						Total SLT
			Guided Learning (F2F)				Guided Learning (NF2F) e.g., e-Learning	Independent Learning (NF2F)	
			L	T	P	O			
1.	**Introduction & Mind Setting of the Course** 1.1 Learning the law	1	2					7	9
2.	**English for Law** - legal terminologies/ abbreviations/maxims	1	6	2				8	16
3.	**Reading Skills** – legal news/articles/ text books	1,2	4	2				8	14
4.	**Primary and Secondary Legal Sources** 4.1 Finding legal sources (search technique, manual and electronic searching)	1,2	4	2			2	6	14
5.	**Understanding Statutes** 5.1 Structure of a statute 5.2 Reading a statute 5.3 Analysing a statute 5.4 Cross reference	2,3	6	2			2	8	18
6.	**Understanding Case Law** 6.1 Structure of law reports 6.2 Reading a case 6.3 Analysing a case 6.4 Case briefing	2,3	6	2			2	8	18
7.	**Writing Skills** – constructive and argumentative essay	3	4	2				8	14
8.	**Speaking Skills** – etiquette/ professionalism/constructive /argumentative speeches	3	4	2				8	14
9.	**Legal Research**	1,2,3	4	2			2	6	14
			40	16			8	67	131

	Assessment	Percentage (%)	F2F	NF2F	Total SLT
	Quizzes/Tests	10	1	2	3
	Assignments	20	2	4	6
	Presentation	20	1	5	6
	Final Examination	50	2	12	14
	GRAND TOTAL SLT				160

L = Lecture, T = Tutorial, P = Practical, O = Others, F2F = Face to Face, NF2F = Non Face to Face
*Indicates the CLO based on the CLO's numbering in Item 8

11. Identify the special requirements or resources to deliver the course:

12. Recommended text/reading:

    Note: HEPs to update and ensure the latest edition/publication.

    - Fatinski, E. F. and S. (2017). *Legal skills* (6th ed.). Oxford: Oxford University Press.
    - Hanson, S. (2016). *Learning legal skills and reasoning* (4th ed.). Taylor and Francis LTD.

13. Other additional information:

6. ASSESSMENT OF STUDENT LEARNING

Student Assessment

Assessment involves the systematic and cyclical evaluation of students' performance and development through the continuous collection, analyses, and review of direct and indirect data from diverse sources that evidence students' learning for the purpose of improving the quality of students' learning. The aim of conducting assessments is to establish students' levels of understanding of what they know and can do, to provide feedback for improving their learning, and for effective curriculum and programme planning (Brown, 1997; Walvood, 2010). Data collected from assessments are used by students, teachers, curriculum planners, and administrators to improve students' learning and not for forming judgement (MQA, 2014: GGP Assessment of Students). It is recommended that HLIs encourage good practice and innovative methods in teaching, learning, and assessments (TLA) through initiatives that improve TLA and include feedback from the stakeholders.

Relationship between Assessment and Learning Outcomes

Assessment principles, methods, and practices must align with the learning outcomes of a programme and must be consistent with the levels defined in the Malaysian Qualifications Framework (MQF) Teaching and learning outcomes must also align appropriately with types of assessments.

Assessment Methods

A variety of methods and tools can be used for the assessment of learning outcomes and competencies. It is recommended that HLIs make use of both summative (final examination) and formative (continuous assessment) methods in the programme. HLIs can also develop a course assessment plan that conforms to constructive alignment (as described below). It is important that HLIs evaluate the effectiveness of various methods and tools for assessing learning outcomes and competencies (Angelo & Cross, 1993). Additionally, HLIs must develop and implement procedures to ensure the periodic review of the validity, reliability, integrity, currency, and fairness of assessment methods.

Constructive Alignment

Constructive alignment refers to ways of designing teaching and learning activities, including assessment tasks, that relate directly to the desired learning outcomes to be achieved through non-conventional methods, i.e., that cannot be attained from traditional lectures, tutorial and examinations (MOHE, 2016; pg. 117). Biggs (2003) offers some theoretical underpinnings of constructive alignment for outcome-based curriculum. The constructive alignment model explains the coherence between assessments, teaching strategies, and intended learning outcomes in an educational programme (McMahon & Thakore, 2006). Also, Mohamed Nadzri Mohd Yusoff (2017) describes constructive alignment as follows:

"It is to ensure that each course will be able to achieve the intended learning outcomes utilising the appropriate teaching and learning activities and making sure that the learning outcomes are measured using the appropriate assessment methods. Alignment is about getting students to take responsibility for their own learning and establishing trust between the student and the teacher. Thus, the teacher must have a clear idea of what we want the students to be able to do at the end of a unit of study, and communicate these intended learning outcomes to students so they can at least share in the responsibility of achieving them."

Management of Student Assessment

The department and its academic staff must have appropriate levels of autonomy to manage student assessments. The management of student assessments takes into consideration the roles, rights, and powers of the department and the academic staff concerned. It also requires the HLI and academic staff to put in place mechanisms that ensure the security of assessment documents and records.

It is important that HLIs provide timely feedback to students on the results of their assessments. This is to ensure that students obtain prompt and constructive feedback for purposes of improving their learning and performance, and identifying timely corrective measures including remedial actions for students to undertake. Assessment results must be communicated to students before the commencement of a new semester to facilitate progression decisions. The department must periodically review its management of students' assessments and records, and act on findings appropriately.

It is also important to establish authority over the management of assessments via a permanent review committee that has purview over the processes of verifying and moderating summative assessments. The review committee can work in consultation with a panel of external advisors comprising assessors/examiners, students, alumni, and industry players. All HLIs must develop guidelines and mechanisms to address matters like frequency, methods, and criteria of student assessments as well as issues relating to academic conduct like plagiarism among students. The guidelines should include grading systems, appeal policies, and frameworks for reviewing assessment methods. Changes made to student assessment methods must comply with the HLI's established guidelines and procedures. All guidelines, procedures, and changes must be documented and communicated to students upon commencement of the programme.

7. PANEL MEMBERS

SCIENCE (PHYSICAL and LIFE SCIENCE)

NO.	NAME	ORGANISATION
1.	Mr. Sahubar Ali Mohamed Nadhar - Chairperson	Universiti Utara Malaysia (UUM)
2.	Dr. Izlina Binti Supa'at	Universiti Malaya (UM)
3.	Ms. Maznah Ali	Universiti Sains Malaysia (USM)
4.	Dr. Saharawati Binti Shahar	Bahagian Matrikulasi, KPM

ARTS (BUSINESS and HUMANITIES)

NO.	NAME	ORGANISATION
1.	Mr. Ahmad Raflis Che Omar - Chairperson	Universiti Kebangsaan Malaysia (UKM)
2.	Mr. Adnan bin Husin	Majlis Peperiksaan Malaysia (MPM)
3.	Mr. Murshid bin Kassim	Universiti Islam Antarabangsa Malaysia (UIAM)
4.	Ms. Mien Wee Cheng	Sunway University

Secretariat: Mr. Mohd Imran Nul Hakim Derasip (MQA)

8. NOMENCLATURES FOR THE FOUNDATION

	Foundation in Science
	Foundation in Arts
	Foundation in Science and Arts

9. REFERENCES

Angelo, T.A. & Cross, Kass. P. (1993). *Classroom assessment techniques* (2nd ed.). San Francisco, CA: Jossey-Bass.

Brown, G., Bull, J., & Pendlebury, M. (1997). *Assessing student learning in higher education*. London: Routledge.

Biggs, J. (2003). *Teaching for quality learning at university: What the student does* (2nd ed.). Buckingham: Society for Research into Higher Education and Open University Press.

Cambridge Assessment (2017). *Guided Learning Hours*. https://support.cambridgeenglish.org/hc/en-gb/articles/202838506-Guided-learning-hours. Date of Access – 21st September 2017

Guba, E. G. and Lincoln, Y. S. (1989). Fourth generation evaluation. Newbury Park: Sage. Huba, M. E. & Freed, J. E. (2000). *Learner-centered assessment on college campuses: shifting the focus from teaching to learning*. Boston: Allyn and Bacon.

James, R., McInnis, C. & Devlin, M. (2002). *Assessing learning in Australian universities: Ideas, strategies and resources for quality in student assessment. Melbourne*: Centre for the Study of Higher Education.

McMahon.T., Takhore .H (2006). *Achieving Constructive Alignment: Putting Outcomes First*, Quality of Higher Education, v3 p10-19. https://files.eric.ed.gov/fulltext/EJ874250.pdf.

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Malaysian Qualifications Agency (2013). *Standards: Master's and Doctoral Degree*. Petaling Jaya, Malaysia.

Malaysian Qualifications Agency (2014). *Guidelines to Good Practices: Assessment of Students. Petaling Jaya, Malaysia.*

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National Accreditation Board (2003). *The Guidelines on Criteria and Standards for PHEI Course of Study*. Petaling Jaya, Malaysia.

National Board for Technical Education (2004) *National Diploma, Computer Science Curriculum and Course Specifications*. UNESCO Project, Federal Republic of Nigeria.

10. GLOSSARY

No.	Terms	Description
1.	Credit	A quantitative measurement that represents the learning volume or academic load to achieve the respective learning outcomes.
2.	Core Course	Specific courses for a specific discipline of Education.
3.	Common Core	Modules that are deemed common to all disciplines by the programme.
4.	Educators	Professionals in the field of education including teachers, lecturers, counsellors, administrators, etcetera.
5.	Good Practices	A set of internationally accepted standards, which are expected to be fulfilled to maintain a high quality of education. Best practices are also commonly used to refer to “good”, “mature” or “excellent” practices which people or organisations choose to emulate.
6.	Higher Education Provider (HEP)	A body, corporation, organisation, institution or other body or person which conducts higher education or training programmes leading to the award of higher education qualification.
7.	Learner	A person enrolled in a programme or course of study offered by the HEP. Learners are typically students, young or adult and include teachers, lecturers, counsellors, administrators, etc.
8.	Learning Outcomes	Statements on what a learner should know, understand and can do upon the completion of a period of study.
9.	Lifelong Learning	Continuous building of skills and knowledge through formal and informal experiences encountered during the course of a lifetime. It is the voluntary and self-motivated pursuit of knowledge for either personal or professional reasons.
10.	Malaysian Qualifications Framework (MQF)	An instrument that classifies qualifications based on a set of criteria that are approved nationally and benchmarked against international best practices.

No.	Terms	Description
11.	Programme	An arrangement of courses that are structured for a specified duration and learning volume to achieve the stated learning outcomes leading to an award of a qualification.
12.	Programme Aims	An overarching statement on the purpose, philosophy and rationale in offering a programme.
13.	Specialisation	Modules taken to fulfil the requirements within an identified/specific discipline of a programme.
14.	Quality Assurance	Comprises planned and systematic actions (policies, strategies, attitudes, procedures and activities) to provide an adequate demonstration that quality is being maintained and enhanced, and meet the specified standards of teaching, scholarship and research as well as student-learning experience.
15.	Resource Centre/Library	A library in the HEP that includes different kinds of holdings of knowledge resources, and encourages the use of audio-visual aids and other special resources and materials for learning, in addition to books, periodicals, etc.
16.	Student Learning Time (SLT)	A period of time that a learner should spend on the learning-teaching activities for a given credit which comprises guided learning, independent learning and assessment.
17.	Summative Assessment	The assessment of learning which summarises the progress of a learner at a particular time and is used to assign the learner a course grade.
18.	Formative Assessment	The assessment of student progress throughout a course, in which feedback from learning activities is used to improve student attainment.