STUDENT GUIDE BOOK

Science and Medicine
Foundation Programme
UniSZA

Semester II Session 2023/2024

NAME : .... MATRIC NO :....................

TEACHING LECTURER ACADEMIC SESSION 2023/2024 (SEMESTER II)
(UniSZA SCIENCE AND MEDICINE FOUNDATION CENTRE)

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COURSE CONTENT

SUBJECT: BIOLOGY II

CONTENT SYNOPSIS:

This course is designed to enable students to be able to analyze 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, variation, biocatalysis, cellular respiration, photosynthesis, gaseous exchange and its control, transport system, homeostatis, coordination and immunity. Active learning environment through direct involvement of students is encouraged. At the end of this course, the students will be able to analyze basic biology principles to solve problems related to biodiversity, ecology, variation, human and plant physiology, construct biology experiments based on the given instructions and discuss the outcomes of the experiments in writing, demonstrate self-confidence and ability to respect and interact with other team members in performing designated group activity related to plant and animal physiology topics.

COURSE LEARNING OUTCOMES

At the end of this course the students will be able to: -

CLO 1 : Analyze basic biology principles to solve problems related to biodiversity, ecology, variation, human and plant physiology. (C4, PLO2)

CLO 2 : Display basic laboratory skills in the area of biodiversity, cellular respiration, photosynthesis and homeostasis to be implemented in laboratory work. (P3, PLO3)

CLO 3 : Demonstrate self-confidence and ability to respect and interact with other team members in performing designated group activity related to plant and animal physiology topics. (A3, PLO4)

LEARNING ACTIVITIES

- Lectures
- Tutorials
- E-learning
- Lab Practical
- Group discussion

ASSESSMENT METHODS

Assessment Methods		Percentage (%)	
Formative	Mid Semester Test	20	50
	Assignment/Quiz/Presentation	10	
	Lab Test	20	
Summative	Final examination	50	

OUTLINE OF COURSE CONTENT & LEARNING OUTCOMES (LECTURE)

Week	Lecture	Lecturer	Topics	Learning Outcomes
1	Sunday	Dr. Syuhada	**11. BIODIVERSITY** 11.1 Biodiversity and classification 11.2 Kingdom Monera 11.3 Kingdom Protista/ Protoctista 11.3 1 Algae 11.3.2 Protozoa 11.4 Kingdom Fungi	Biodiversity and Classification • State the types of biodiversity (genetic, species and ecosystem diversity) • State hierarchical classification • State the classification systems: (a) Five-kingdom system (b) Three-domain system (Bacteria, Archaea and Eukarya) • Explain the unique characteristics of prokaryotes • Classify prokaryotes into two domains: Bacteria and Archaea • Describe the diversity of bacteria (based on cell shapes, Gram-stain and position) Domain Eukarya: Kingdom Protista/Protoctista • Describe the unique characteristics of Protista • State the classification of Protista into two major phyla of algae and four major phyla of protozoa • Describe the unique characteristics of algae • Describe the unique characteristics of protozoa Domain Eukarya: Kingdom Fungi • Describe the unique characteristics of Fungi • State the classification of Fungi into three major phyla based on types of spore- bearing structure
	Tuesday & Thursday	Dr. Syuhada	**TUTORIAL BIODIVERSITY**	
2	Sunday	Dr. Syuhada	11.5 Kingdom Plantae 11.5.1 Bryophyta 11.5.2 Pteridophyta 11.5.3 Gymnosperms 11.5.4 Angiosperms 11.5.5 Evolutionary relationship in plant kingdom 11.6 Kingdom Animalia	• Describe the unique characteristics of Plantae • Classify Plantae into bryophytes, pteridophytes, gymnosperms and angiosperms • Describe the unique characteristics of bryophytes • State the classification of bryophytes into three phyla • Describe the sexual life cycle of Polytrichum sp. to show alternation of generations • Describe the unique characteristics of pteridophytes

			11.6.1 Phylum Porifera 11.6.2 Phylum Coelentrata/ Cnidaria 11.6.3 Phylum Platyhelminthes	• State the classification of pteridophytes into two phyla • Describe the unique characteristics of gymnosperms • State the classification of gymnosperms into four phyla • Describe the unique characteristics of angiosperms • State the classification of angiosperms into two classes • Explain the evolutionary relationship among groups in the plant kingdom (bryophytes to angiosperms) • Describe the unique characteristics of Kingdom Animalia • State the classification of Animalia into nine phyla • Describe the unique characteristics of Porifera • Describe the unique characteristics of Coelenterata • State three common classes of Coelenterata: Hydrozoa, Scyphozoa, Anthozoa • Describe the unique characteristics of Platyhelminthes • State three common classes of Platyhelminthes: Cestoda, Trematoda, Turbellaria
	Tuesday & Thursday	Dr. Syuhada	**TUTORIAL BIODIVERSITY**	
3	Sunday	Dr. Syuhada	**12. ECOLOGY** 12.1 Introduction to ecology 12.2 Ecosystem concept 12.3 Energy flow through ecosystem 12.4 Biogeochemical cycles 12.5. Biodiversity: conservation and management	Introduction to Ecology • Define basic terminologies in ecology: niche, habitat, organism, population, community, ecosystem, biome, biosphere Ecosystem Concept • Explain ecosystem concept • Explain the components of an ecosystem with examples (a) Biotic components (b) Abiotic components (c) Interactions between biotic components (d) Interactions between biotic and abiotic components • Describe the structures of the following ecosystems: (a) Lake ecosystem (b) Tropical rainforest (a terrestrial ecosystem)

				Energy Flow through an Ecosystem • Describe food chain, food web and ecological pyramid in relation to trophic levels and energy transfer Biogeochemical Cycles • Describe biogeochemical cycle components (cycling pool and reservoir pool) Conservation and Management • Explain sustainable development • Discuss threats to biodiversity in Malaysia • Discuss conservation of biodiversity in Malaysia
	Tuesday & Thursday	Dr. Syuhada	**TUTORIAL ECOLOGY**	
4	Sunday	Dr. Syuhada	**13. POPULATION ECOLOGY** 13.1 Population Growth	Population Growth • Explain biotic potential and environmental resistance and their effects on population growth • Explain carrying capacity and its importance • Describe natality and mortality and their effects on the rate of population growth • Explain population growth curves: (a) Exponential growth curve (b) Logistic growth curve • Explain the limiting factors affecting population size: density-dependent factors and density-independent factors
	Tuesday	Dr. Syuhada	**TUTORIAL POPULATION ECOLOGY**	
5	Tuesday & Thursday	Dr. Syuhada	**REVISISON**	
6	Sunday	Dr. Syuhada	**16. CELLULAR RESPIRATION** 16.1 Type of respiration: aerobic and anaerobic 16.2 Aerobic respiration 16.2.1 Glycolysis 16.2.2 Krebs cycle	Cellular Respiration • Describe the need for energy and the role of respiration in living organisms • Describe aerobic and anaerobic respiration and the equirements for such conditions Aerobic Respiration

			16.2.3 Oxidative phosphorylation: Electron Transport Chain and chemiosmosis 16.3 Anaerobic Respiration: Fermentation and its application	• Describe the oxidation of glucose which involves glycolysis, Krebs cycle and oxidative phosphorylation • Describe glycolysis pathway (from glucose to pyruvate) • Describe link reaction (conversion of pyruvate to acetyl coenzyme A) • Describe Krebs cycle • Describe electron transport chain • Explain chemiosmosis: proton motive force • Explain complete oxidation of one molecule of glucose in active cells • Anaerobic Respiration: Fermentation and Its Application • Explain what is meant by fermentation • State the importance of fermentation in industry (a) Bakery (b) Wine, beverage and alcohol production (c) Dairy industry – cheese and yoghurt (d) Local food
	Tuesday & Thursday	Dr. Syuhada	**TUTORIAL CELLULAR RESPIRATION**	
7	Sunday	Dr. Yusran	**14. VARIATION** 14.1 Introduction 14.1.1 Continuous and discontinuous variations 14.1.2 Sources of variation 14.2 Selection 14.3 Speciation	• Explain variation and its importance • Describe types of variation: continuous (quantitative) and discontinuous (qualitative) variations • Compare continuous and discontinuous variations, including examples of each variation • Explain genetic variation • Explain environmental variation Selection • Explain natural selection • Explain types of natural **Selection**: (a) Stabilising selection (b) Directional selection (c) Disruptive selection • Explain artificial selection • Explain inbreeding and outbreeding **Speciation** • Define the biological species concept • Describe modes of speciation: sympatric and allopatric • State the factors involved in the formation of new species:

				(a) Isolation (b) Genetic drift (c) Hybridisation (d) Adaptive radiation • Explain isolation that leads to new species • Explain genetic drift • Explain hybridisation (allopolyploidy) • Explain adaptive radiation
	Tuesday & Thursday	Dr. Yusran	**TUTORIAL VARIATION**	
8	Sunday	Dr. Yusran	**15. BIOCATALYSIS** 15.1 Properties of enzyme and mechanism of actions 15.2 Cofactors 15.3 Inhibition 15.4 Enzyme classification according to common name and IUB into 6 classes of enzyme	Enzyme and Mechanism of Action • State the properties of enzymes • Explain the mechanism of enzyme action (lowering of activation energy) • Describe the hypotheses related to the mechanism of action of enzymes: induced fit model and lock-and-key model • Explain factors that affect the enzymatic reaction Cofactors • Explain the types and functions of cofactors Inhibition • Explain the roles and types of inhibitors • Explain reversible inhibition: competitive and non-competitive inhibitors • Explain irreversible inhibition • State the six classes of enzyme according to IUB classification
	Tuesday & Thursday	Dr. Yusran	**TUTORIAL BIOCATALYSIS**	
9	**MID SEMESTER TEST (10 – 14 MARCH 2024)**			
	MID SEMESTER BREAK (15 – 23 MARCH 2024)			
10	Sunday	Dr. Syuhada	**17. PHOTOSYNTHESIS** 17.1 Overview of photosynthesis 17.2 Absorption spectrum of photosynthetic pigments 17.3 Light dependent reaction	An Overview of Photosynthesis • Give an overall outline of the photosynthetic process that leads to the production of glucose Absorption Spectrum of Photosynthetic Pigments • State the photosynthetic pigments involved in photosynthesis Light-Dependent Reaction

			17.4 Light independent reaction/ Calvin cycle 17.5 Alternative mechanisms of carbon fixation: Hatch Slack (C4) and Crassulacean Acid Metabolism (CAM) pathways 17.6 Factors limiting the rate of photosynthesis	• Explain the photoactivation of chlorophyll resulting in the conversion of light energy into ATP and reduced NADP$^+$ Light-Independent Reaction (Calvin Cycle or C3 Pathway) • Describe the Calvin cycle involving carbon fixation, reduction of PGAL/G3P and regeneration of RuBP Alternative Mechanisms of Carbon Dioxide Fixation • Describe carbon fixation in C4 and CAM plants • Explain the factors limiting the rate of photosynthesis
	Tuesday	Dr. Syuhada	**TUTORIAL PHOTOSYNTHESIS**	
11	Sunday	Dr. Syuhada	**18. GASEOUS EXCHANGE AND ITS CONTROL** 18.1 Gaseous exchange and control in mammals 18.2 Role of chemoreceptors in controlling breathing.	Gaseous Exchange and Control in Mammals • Describe the structure of haemoglobin and its characteristics as a respiratory pigment • Describe the oxygen dissociation curve of haemoglobin • Explain the Bohr effect due to the partial pressure of carbon dioxide • Compare the oxygen dissociation curves of haemoglobin and myoglobin • Explain the transport of carbon dioxide by haemoglobin Role of Chemoreceptors in Controlling Breathing • Explain the role of chemoreceptors in controlling the rate of breathing
	Tuesday & Thursday	Dr. Syuhada	18.3 Gaseous exchange and control in plants. **ASSIGNMENT & TUTORIAL GASEOUS EXCHANGE AND ITS CONTROL**	Gaseous Exchange and Control in Plants • Explain the regulation of stomatal opening and closing based on starch–sugar hypothesis
12	Sunday	Dr. Yusran	**19. TRANSPORT SYSTEM** 19.1 Mammalian heart and its regulation	The Mammalian Heart and Its Regulation • Explain the initiation of heartbeat and its control • Explain the cardiac cycle • Describe ECG • Explain the factors affecting heartbeat

	Tuesday	Dr. Yusran	**TUTORIAL**	
13	Sunday	Dr. Yusran	19.2 Lymphatic system: role in transport 19.3 Transport in plants	Lymphatic System: Role in Transport • Give an overview of the human lymphatic system • Describe the transport of lipids from the small intestine into the blood stream Transport in Plants • Describe the pathway by which water is transported from the surrounding soil to the root vascular system • Describe water movement via xylem by the transpiration–cohesion–tension mechanism and root pressure • Describe mineral ion uptake in roots by active transport and diffusion • Describe the pressure flow hypothesis in phloem
	Tuesday & Thursday	Dr. Yusran	**TUTORIAL**	
14	Sunday	Dr. Yusran	**20. HOMEOSTASIS** 20.1 Concept of Homeostasis 20.2 Negative feedback Mechanism	Concept of Homeostasis • Explain the concept of homeostasis and describe the homeostatic control system Negative Feedback Mechanism • Explain the negative feedback mechanism in controlling blood glucose
	Tuesday & Thursday	Dr. Yusran	**TUTORIAL**	
15	Sunday	Dr. Yusran	20.3 Human Homeostatic Organs: liver and Kidney 20.3.1 Structure and functions of liver 20.3.2 Structure and functions of kidney	• Homeostatic Organ: Liver and Kidney • Describe the structure of the liver and kidney and its functional unit • Describe urine formation: ultrafiltration, reabsorption and secretion • Describe the concentration of urine by countercurrent multiplier mechanism • Explain the regulation of blood water content • Explain the regulation of $Na+$ reabsorption
	Tuesday & Thursday	Dr. Yusran	**TUTORIAL HOMEOSTASIS**	

16	Sunday	Dr. Yusran	**21. COORDINATION** 21.1 Nervous system 21.2 Mechanism of muscle contraction	Nervous System • State the organisation of the nervous system • Explain the generation of action potential, characteristics of nerve impulse and transmission of nerve impulse along an axon • Describe the structure of synapse and explain the mechanism of impulse transmission across synapses • Compare the transmission of impulse at the synapse and along the axon • Explain the mechanism of action of drugs on the nervous system Mechanism of Muscle Contraction • Describe the structure of a neuromuscular junction and explain impulse transmission at the junction • Describe the structure of a sarcomere • Describe the mechanism of muscle contraction based on the sliding filament theory
	Tuesday & Thursday	Dr. Yusran	**TUTORIAL**	
17	Sunday	Dr. Yusran	21.3 Hormones in mammals 21.4 Hormones in plants	Hormones in Mammals • List the types and characteristics of hormones • Explain the mechanism of hormone action Hormones in Plants • State the major functions of hormones in plants: auxin, gibberellin, cytokinin, abscisic acid, ethylene • Explain the role of phytochrome in the regulation of flowering
	Tuesday & Thursday	Dr. Yusran	**TUTORIAL**	
18	Sunday	Dr. Yusran	**22. IMMUNITY** 22.2 Immune response 22.2 Development of immunity: primary and secondary response 22.3 Immune	Immune Response • Describe immunity • Describe the general structure and state the classes of antibodies • State the roles of lymphoid organs in immunity • State the various types of antigen and antibody interactions

			disorder: SLE (Systemic Lupus Erythematosus) and AIDS (Acquired Immune Deficiency Syndrome)	Development of Immunity • Explain humoral and cell-mediated immune responses • Explain the primary and secondary immune responses • Explain about SLE and AIDS.
	Tuesday & Thursday	Dr. Yusran	**TUTORIAL IMMUNITY**	
	STUDY WEEK (26 MAY – 1 JUNE 2024)			
	FINAL EXAMINATION (3 – 13 JUNE 2024)			

OUTLINE OF COURSE CONTENT (PRACTICAL)
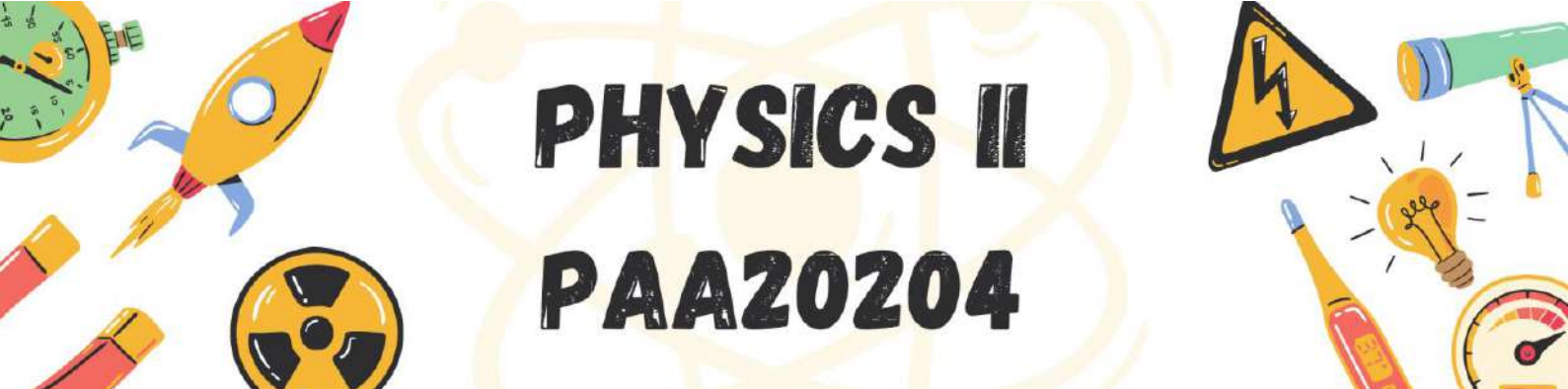
Lab (Week/Date)	Lecturer	Title	Learning Outcomes
Practical 1	Dr.Syuhada Dr.Yusran	Identifying Bacteria Using Gram Stain	1. Identify Gram positive and Gram negative bacteria. 2. Apply the basic principle of a Gram staining technique. 3. Distinguish the type of shapes/ morphology of bacteria.
Practical 2	Dr.Syuhada Dr.Yusran	Plant Diversity I - Bryophyta & Pteridophyta Animal Diversity-Invertebrates	1. Identify the plants species in Bryophytes and Pteridophyta. 2. Describe the characteristics of different species of plant in Bryophytes and Pteridophyta. 3. Draw the important structures of plants in both phylum species. 4. Classify the diversity of invertebrates. 5. Describe the characteristics of different species in the phylum of invertebrates.
Practical 3	Dr.Syuhada Dr.Yusran	Cellular Respiration by Yeast	1. Describe the cellular respiration of yeast (Saccharomyces cerevisiae). 2. Describe the effect of sucrose concentration on the rate of cellular respiration in yeast.
Practical 4	Dr.Syuhada Dr.Yusran	Photosynthesis (Chromatography)	1. Describe the process of photosynthesis. 2. Point out the factors that influence photosynthesis process.
Practical 5	Dr.Syuhada Dr.Yusran	Kidney And Urine : Urinalysis	1. Illustrate the importance of urinary system. 2. Identify the main structures of a kidney and their functions. 3. Examine tests of urine urinalysis.

TEXT BOOK

1. Ching, L.S., Sudin, S., Nalini, B. and Jacqueline, R.S. (2019). Biology for Matriculation Semester 2, 5th Edition.Oxford Fajar Sdn. Bhd, Selangor.

REFERENCES

1. Reece, J.B., Urry, L.A., Cain, M.L., Wasserman, S.A., Minorsky, P.V. and Jackson, R.B. (2014). Campbell Biology, 10th Edition. Pearson Education, USA.
2. Urry, L.A., Cain, M.L., Wasserman, S.A., Minorsky, P.V. and Reece, J.B. (2016). Campbell biology 11th edition. Pearson Education, USA.
3. Leong, L.S., Sudin, S., Rashid, K.A., Ching, Hoon, T.S., Aziz, N.A.A., Zakaria, F. and Hamzah, H. (2013). Q & A for Matriculation Biology Semester 1, 2nd Edition. Oxford Fajar Sdn Bhd, Selangor.
4. Solomon, E., Berg, L. and Martin, D. (2015). Biology, 10th Edition. Cengage Learning, USA.

PHYSICS II
PAA20204

SUBJECT: PHYSICS II

CONTENT SYNOPSIS:

This course is designed to enable students to learn the basic concepts and principles of elementary physics. The topics include electrostatics, electricity, magnetism, electromagnetism, heat and thermodynamics. After completing this course, the students will be able to explain apply knowledge in the areas of electrostatics, electricity, magnetism, electromagnetism, heat and thermodynamics to solve physics problem, demonstrate social communication, respect and self-confidence in displaying basic scientific skills in the fields of electromagnetism, heat and thermodynamics and display basic laboratory skills in the areas of electrostatics, electricity and heat to be implemented in laboratory work.

COURSE LEARNING OUTCOMES (CLO):

At the end of this course the students will be able to:

1.   Apply knowledge in the areas of electrostatics, electricity, magnetism, electromagnetism, heat and thermodynamics to solve physics problem. (C4,PLO2)
2.   Demonstrate social communication, respect and self-confidence in displaying basic scientific skills in the fields of electromagnetism, heat and thermodynamics. (A3,PLO4)
3.   Display basic laboratory skills in the areas of electrostatics, electricity and heat to be implemented in laboratory work. (P3,PLO3)

LEARNING ACTIVITIES

a.   Lectures
b.   Lab Practical
c.   Tutorials

ASSESSMENT METHODS

Assessment Methods		Percentage (%)	
Continuous/Formative	Mid Semester Test	20	50
	Assignment/Quizzes	10	
	Lab test	20	
Summative	Final examination	50	

OUTLINE OF COURSE CONTENT & LEARNING OUTCOMES (LECTURE)

Week	Lecture	Lecturer	Title	Learning Outcomes
1	**Physics 1 (2 hours)**	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz	**C1: ELECTROSTATICS** 1.1. Electric charges and Coulomb's Law 1.2. Electric field & Electric flux	• State the Coulomb's Law • Sketch the electric force and apply Coulomb's law for a system of point charges • Define and use electric field strength • Use $E = \frac{kQ}{r^2}$ • Sketch the electric field strength diagram • Determine electric field strength, *E* for a system charge
	Physics 2 (1 hour)	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz **Tutorial 1** K1, K2, K3, K4		
2	**Physics 3 (2 hours)**	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz	1.3. Gauss Law 1.4. Electric potential energy & distribution of charges and electric potential	• State the Gauss's Law and apply in problem solving • Define electric potential • Deduce the change in potential energy between two points in electric field • Determine potential energy of a system of point charges • Define and sketch equipotential lines and surface • Use $V = \frac{kQ}{r}$ • Determine potential difference
	Physics 4 (1 hour)	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz **Tutorial 2** K1, K2, K3, K4		

3	**Physics 5 (2 hours)**	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz	1.5. Capacitor - dielectric and energy storage 1.6. Combination of capacitor -series and parallel	• Define and use capacitance • Derive and use energy stored in a capacitor • Derive and determine the effective capacitance for capacitors arranged in series and parallel
	Physics 6 (1 hour)	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz **Tutorial 3** K1, K2, K3, K4		
4	**Physics 7 (2 hours)**	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz	**C2: ELECTRICITY** 2.1 Electrical conduction, drift velocity of charges in a conductor 2.2 Current density, resistance and resistivity	• Define and use of electric current formula • State and use Ohm's Law • Define and use resistivity formula
	Physics 8 (1 hour)	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz **Tutorial 4** K1, K2, K3, K4		
5	**Physics 9 (2 hours)**	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz	2.3 Electromotive force 2.4 Energy and power in an electrical circuit.	• Use power, $P = IV$ • Use electrical energy, $W = VIt$
	Physics 10 (1 hour)	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz **Tutorial 5** K1, K2, K3, K4		

6	**Physics 11 (2 hours)**	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz	2.5 Kirchoff's rules – concept 2.6 Electrical measurement (Wheatstone bridge - potential divider)	• State and use of Kirchhoff's Law
	Physics 12 (1 hour)	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz **Tutorial 5** K1, K2, K3, K4		

7	**Physics 13 (2 hours)**	Dr. Siti Maisarah Aziz
		
		Dr. Nurulhuda Mohammad Yusoff
			C3: MAGNETISM
			
			3.1 Magnetic field of charges
			
			3.2 Magnetic force on moving charges
			
			3.3 Magnetic force on current carrying conductor
				• Define magnetic field lines
				• Identify magnetic field sources and sketch the magnetic field lines.
				• Use formula magnetic field
				  -long straight wire
				  -the centre of a circular coil
				  -the centre of a solenoid
				• Use formula $\vec{F} = q\vec{v} \times \vec{B}$
				• Describe circular motion of a charge in a uniform magnetic field
				• Use magnetic force, F = IL x B

	Physics 14 (1 hour)	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff **Tutorial 7** K1, K2, K3, K4		
8	**Physics 15 (2 hours)**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	3.4 Ampere law 3.5 The force between two current carrying conductors (concept and calculations) 3.6 Charges in electric and magnetic fields	• Derive magnetic force per unit length of two parallel current-carrying conductors • Use formula for force per unit length • Define one ampere • Explain motion of charged particle in magnetic and electric fields

	Physics 16 (1 hour)	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff **Tutorial 8** K1, K2, K3, K4		
9	MID SEMESTER TEST (10 – 14 MARCH 2024)			
	MID SEMESTER BREAK (15 – 23 MARCH 2024)			
10	**Physics 17 (2 hours)**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	**C4: ELECTROMAGNETISM** 4.1 Introduction to magnetic flux 4.2 Induced electromotive force 4.3 Faraday law & Lenz law	• Define and use of magnetic flux and induced emf. • Explain induced emf using Faraday's experiment • Determine the direction of induced emf by using Faraday's law and Lenz's law
	Physics 18 (1 hour)	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff **Tutorial 9** K1, K2, K3, K4		
11	**Physics 19 (2 hours)**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	4.4 Electromagnetic induction in a conductor 4.5 Mutual and self-induction 4.6 Energy stored in an inductor 4.7 Transformer	• Define self-inductance • Apply self-inductance, $L = -\frac{\varepsilon}{dI/dt}$ for a coil and solenoid • Derive and use energy stored in and inductor, $U = \frac{1}{2} L I^2$ • Define mutual inductance • Use mutual inductance, $M = \mu_0 N_1 N_2 A$ • Understand the principle construction working and real life application of transformer.
	Physics 20 (1 hour)	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff **Tutorial 10** K1, K2, K3, K4		

12	**Physics 21 (2 hours)**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	**C5: Alternating Current (AC)** 5.1 Average and root mean square (rms) values for current and voltage. 5.2 Phasor diagram and potential difference	• Define alternating current • Sketch sinusoidal a.c. waveform • Use sinusoidal voltage and current equations • Sketch and use phasor diagram and sinusoidal waveform • Show a relationship between current and voltage for pure resistor, *R*, pure capacitor, *C* and pure inductor, *L*
	Physics 22 (1 hour)	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff **Tutorial 12** K1, K2, K3, K4		
13	**Physics 23 (2 hours)**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	5.3 R-L-C circuit 5.4 Resistance, reactance, and impedance 5.5 R-L circuit 5.6 R-C circuit 5.7 R-L-C circuit	• Show a relationship between current and voltage for pure resistor, *R*, pure capacitor, *C* and pure inductor • Show a relationship between current and voltage for pure resistor, *R*, pure capacitor, *C* and pure inductor, *L* • Use phasor diagram to analyse current, voltage and impedance of RL, RC, RLC seires circuit • Apply average power, instantaneous power and power factor in AC circuit consisting of R, RL, RC and RCL in series. • Define and use formula for capacitive reactance, inductive reactance, impedance and phase angle • Explain graphically the dependence of R, X_L, X_c and Z and relation with resonance
	Physics 24 (1 hour)	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff **Tutorial 12** K1, K2, K3, K4		

14	**Physics 25 (2 hours)**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	**C6: HEAT** 6.1 Heat transfer process: conduction, convection and radiation	• To study temperature and temperature scales. • To study heat transfer. • Define heat as energy transfer due to temperature difference.
	Physics 26 (1 hour)	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff **Tutorial 13** K1, K2, K3, K4		
15	**Physics 27 (2 hours)**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	6.2 Thermal expansion: linear, surface and volume	• To describe thermal expansion and its applications. • Define and use the coefficient of linear, area, and volume thermal expansion. • Use the relationship between the coefficients of expansion, $\beta = 2\alpha$, $\gamma = 3\alpha$
	Physics 28 (1 hour)	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff **Tutorial 14** K1, K2, K3, K4		
16	**Physics 29 (2 hours)**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	**C7: THERMODYNAMICS** 7.1 Ideal gas equation 7.2 Kinetic theory of gases 7.3 Velocity distribution of gases and Energy in gas	• Use the ideal gas equation • ($PV = nRT$) to: calculate P, V, n, or T given the other three variables and describe how a gas responds to changes in P, V, n, or T • State the assumptions of kinetic theory of gasses. • Describe the distribution of velocities for the particles in a gas sample and what factors affect this distribution
	Physics 30 (1 hour)	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff **Tutorial 15** K1, K2, K3, K4		

18	**Physics 31 (2 hours)**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	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	• State and use the First Law of Thermodynamics, $Q=\Delta U+W$ • Define the following thermodynamic processes: isothermal, isovolumetric, isobaric, adiabatic • Sketch p-V graph for all thermodynamic processes. • Determine work from the area under the p-V graph • Derive equation for work done in isothermal, isovolumetric, and isobaric processes • Calculate work done in Isothermal process and use, Isobaric process and use, Isovolumetric process and use • To examine the directions of thermodynamic processes.
	Physics 32 (1 hour)	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff **Tutorial 16** K1, K2, K3, K4		
	STUDY WEEK (26 MAY – 1 JUNE 2024)			
	FINAL EXAMINATION (3 – 13 JUNE 2024)			

OUTLINE OF COURSE CONTENT (PRACTICAL)

Week	Practical	Lecturer	Title	Learning Outcomes
1	**Practical 1**	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz	**Multimeter & Ohm's Law**	1. To identify and interpret meter scales, functions and ranges used for multimeter. 2. To identify the ohmmeter function and ranges. 3. To measure voltage, current and resistance using the multimeter.
5	**Practical 2**	Dr. Nurulhuda Mohammad Yusoff Dr. Siti Maisarah Aziz	**Current and Resistance in a Parallel Connection**	1. To study the parallel connection in circuit. 2. To learn how the loads in a parallel circuit are connected. 3. To calculate the voltage, drop, equivalent resistance and total current in the parallel circuit.
8	**Practical 3**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	**Kirchhoff law**	1. To apply Kirchhoff's rules for the circuit with two loop. 2. To verify Kirchhoff's Voltage Law (KVL) and Kirchhoff's Current Law (KCL) using mesh and nodal analysis of the circuit. 3. To determine the currents and voltage drops in each loop of the circuit.
12	**Practical 4**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	**Capacitors in Direct Current (DC) and Alternating Current (AC) Circuits**	1. To investigate the effect of capacitor into a direct current (DC) and alternating current (AC) circuit. 2. To describe the charging and discharging (decay) of the voltage on a capacitor.

				3. To examine equivalent capacitance in DC and AC circuit containing a capacitor.
18	**Practical 5**	Dr. Siti Maisarah Aziz Dr. Nurulhuda Mohammad Yusoff	**Heat capacitor of metals**	1. Define the heat capacity of metals. 2. To determine the heat capacity of the calorimeter by filling it with hot water and determining the rise in temperature. 3. To determine the specific heat capacity of aluminum, iron and brass.

REFERENCES

[1] David H., Jearl W. & Robert R. (2013). Fundamental of Physics, (10th ed.). John Wiley & Sons Inc, New York, United States

[2] Rama B., Jothilakshmi R., Balasubramanian E. (2014). University Physics, Narosa Publishing House Pvt. Ltd., New Delhi

[3] David S., Graham J., Gurinder C., Richard W. (2014). Cambridge International AS and A level Physics Coursebook, (2nd ed.). Cambridge University Press

[4] Serway, S. A. & Vuille, S. (2015). College physics (10th ed.). Cengage Learning.

[5] Halliday, D. A., Resnick, R. & Walker, J. (2014). Fundamentals of physics (10th ed.). Wiley.

[6] Young, H. D. & Freedman, R. A. (2015). University physics with modern physics (14th ed.). Addison Wesley

Chemistry II

PAA20304

SUBJECT: CHEMISTRY II

CONTENT SYNOPSIS:

This course is designed to develop a broader and deeper understanding of concepts, processes, and principles in chemistry related to other disciplines. It covers organic chemistry topics, including nomenclatures, mechanisms, and reactions in hydrocarbon, halogen alkanes, alcohols, phenols, carbonyl compounds, carboxylic acid, acyl chloride, ester, and extended physical chemistry topics; electrochemistry and thermochemistry. At the end of this course, students apply the theories, concepts, and chemical reactions to solve chemistry problems with high-order thinking, present good written communication skills along with adaptive delivery based on chemistry-related problems or phenomena and display basic laboratory skills in performing physical and organic chemistry experiments.

COURSE LEARNING OUTCOMES (CLO):

At the end of this course, students should be able to:

CLO1: Apply knowledge in the area of physical and organic chemistry to solve chemistry problems. **(C4, PLO2)**

CLO2: Present good written communication skills along with adaptive delivery based on chemistry-related problems or phenomena. **(A2, PLO5)**

CLO3: Display basic laboratory skills in the areas of physical and organic chemistry to be implemented in laboratory works. **(P3, PLO3)**

ASSESSMENT METHODS

Methods	Types	Percentage (%)	
Continuous/ Formative	Mid Semester Test	20	50
	Assignment (Article Report)	10	
	Lab Test	20	
Summative	Final Examination	50	

OUTLINE OF COURSE CONTENT & LEARNING OUTCOMES (LECTURE)

Week	Date	Lecture	Topic	Learning Outcomes
1	14/1–20/1 2024	Lecture 1 Dr. Salmiah Jamal Mat Rosid	**Thermochemistry** i. Introduction to thermochemistry ii. Enthalpy of a chemical reaction iii. Calorimetry	• Explain endothermic and exothermic using energy profile diagram. • State standard conditions of reactions and their enthalpy. • Define enthalpy of formation, combustion, atomization and neutralization. • Write thermochemical equations. • Define heat capacity (C) and specific heat capacity (c). • Calculate heat change in the constant-pressure calorimeter (simple calorimeter) and constant-volume calorimeter (bomb calorimeter).
		Lecture 2 Dr. Salmiah Jamal Mat Rosid	Tutorial	
2	21/1–27/1 2024	Lecture 3 Dr. Salmiah Jamal Mat Rosid	iv. Hess Law and Born Haber cycle	• Define lattice energy & electron affinity. • Explain the effect of ionic charges and radii on the magnitude of lattice energy. • Explain the dissolution process of simple ionic solids. • Define and construct Born-Haber cycle for simple ionic solids. • Calculate enthalpy using Born-Haber cycle.
		Lecture 4 Dr. Salmiah Jamal Mat Rosid	Tutorial	
3	28/1–3/2 2024	Lecture 5 Dr. Salmiah Jamal Mat Rosid	**Electrochemistry** i. Half-cell and redox reaction ii. Standard electrode potential iii. Galvanic cell	• Define oxidation, reduction, redox reaction and electrode potential. • Draw and describe the operation of voltaic/galvanic cell • State the function of salt bridge

Week	Date	Lecture	Topic	Learning Outcomes
				• Write cell notation, half-cell equation and overall cell reaction equation • Define standard reduction/electrode potential and standard cell potential • Draw and describe standard hydrogen electrode • Describe the method used to determine and the use of standard reduction potential.
		Lecture 6 Dr. Salmiah Jamal Mat Rosid	Tutorial	
4	4/2–10/2 2024 Chinese New Year **10/2/2024 (Saturday)**	Lecture 7 Dr. Salmiah Jamal Mat Rosid	iii. Nernst equation iv. Electrolytic cell	• Application of the Nernst equation. • Draw an electrolytic cell. • Describe the operation of an electrolytic cell. • Explain the factors (standard reduction potential of the species, concentration of the species and nature of electrolysis) on the selective discharge of a species at the electrode. • Explain the electrolysis of molten salts, water, concentrated and diluted aqueous NaCl and aqueous Na_2SO_4. • Predict the product of electrolysis using appropriate example. • Define faraday's first law of electrolysis. • Apply Faraday first law in calculation.
		Lecture 8 Dr. Salmiah Jamal Mat Rosid	Tutorial	
5	11/2–17/2 2024 Chinese New Year **11/2/2024 (Sunday)**	Lecture 9 Dr. Salmiah Jamal Mat Rosid	**Introduction to Organic Chemistry** i. Functional groups and nomenclature ii. Nucleophiles, electrophiles, free radicals, homolytic and	• Define and describe the organic chemistry, nomenclature. • Explain the reaction of organic compounds

Week	Date	Lecture	Topic	Learning Outcomes
			heterolytic cleavage of bonds	
		Lecture 10 Dr. Salmiah Jamal Mat Rosid	Tutorial	
6	18/2–24/2 2024 Israk dan Mikraj **18/2/2024 (Thursday)**	Lecture 11 Dr. Salmiah Jamal Mat Rosid	iii. Isomerism: structural (chain, positional, functional group) and stereoisomerism (geometrical, cis-trans)	• Explain the geometry of molecules and ions structural isomerism of simple organic molecules
		Lecture 12 Dr. Salmiah Jamal Mat Rosid	Tutorial	
7	25/2–2/3 2024	Lecture 13 Dr. Salmiah Jamal Mat Rosid	**Hydrocarbons & Halogenoalkanes** i. Alkanes: IUPAC nomenclature, physical properties, reaction, mechanism	• Describe the naming, physical properties, reactions and mechanism of alkanes.
		Lecture 14 Dr. Salmiah Jamal Mat Rosid	Continue	
8	3/3–9/3 2024 Anniversary Coronation of Sultan Terengganu **4/3/2024 (Monday)**	Lecture 15 Dr. Salmiah Jamal Mat Rosid	ii. Alkenes: IUPAC nomenclature, physical properties, reaction	• Describe the naming, physical properties, reactions and mechanism of alkenes.
		Lecture 16 Dr. Salmiah Jamal Mat Rosid	Tutorial	
9			**MID SEMESTER TEST (10 – 14 MARCH 2024)**	
			MID SEMESTER BREAK (15 – 23 MARCH 2024)	
10	24/3–30/3 2024 Nuzul Quran **28/3/2024 (Thursday)**	Lecture 17 Dr. Nurul Najidah Mohamed	iii. Arenes: resonance structure, IUPAC nomenclature, physical properties, reaction, mechanism	• Describe the naming, physical properties, reactions and mechanism of arenes.
		Lecture 18 Dr. Nurul Najidah Mohamed	Tutorial	
11	31/3–6/4 2024	Lecture 19 Dr. Nurul Najidah Mohamed	iv. Classification of alkyl halides, reaction, and mechanism	• Describe the classification, reactions and mechanism of alkyl halides.
		Lecture 20 Dr. Nurul Najidah Mohamed	Tutorial	
12	7/4–13/4 2024	Lecture 21 Dr. Nurul Najidah Mohamed	**Alcohol** i. Classification of alcohols (naming, physical properties)	• Draw the structures, classify and name of the alcohols according to IUPAC name

Week	Date	Lecture	Topic	Learning Outcomes
	Hari Raya Aidilfitri **10-11/4/2024 (Wednesday & Thursday**)		ii. Reaction to form halogen alkanes, reaction with sodium, oxidation, dehydration, and esterification **Remarks:** Submission article report	• Explain the physical properties of alcohol in terms of boiling point and solubility in water. • Explain the reaction of alcohols regarding to formation of halogen alkenes, reaction with sodium, oxidation, dehydration, and esterification.
		Lecture 22 Dr. Nurul Najidah Mohamed	Tutorial	
13	14/4–20/4 2024	Lecture 23 Dr. Nurul Najidah Mohamed	iii. Iodoform test, and Lucas test	• Explain the identification methyl carbinol group using Iodoform test. • Explain the identification classes of alcohols using Lucas test.
		Lecture 24 Dr. Nurul Najidah Mohamed	Tutorial	
14	21/4–27/4 2024 Birthday of Sultan Terengganu **26/4/2024 (Friday)**	Lecture 25 Dr. Nurul Najidah Mohamed	**Phenol** i. Naming and physical properties ii. Acidity, reaction with sodium hydroxide, nitration, and halogenation	• Explain naming and physical properties of phenol • Compare acidity of phenol to alcohol and water • Explain the chemical properties of phenol with reference to reaction with sodium hydroxide • Explain reaction of phenol regarding nitration and halogenation.
		Lecture 26 Dr. Nurul Najidah Mohamed	Tutorial	
15	28/4–4/5 2024 Labour Day **1/5/2024 (Wednesday)**	Lecture 27 Dr. Nurul Najidah Mohamed	**Carbonyl compounds** i. Naming and physical properties ii. Oxidation, reduction, the addition of HCN, and nucleophilic addition iii. Reaction with 2,4-dinitrophenyl hydrazine	• Draw structure and name the carbonyl compound for aldehyde and ketones according to IUPAC name. • Explain the preparation of carbonyl by oxidation of alcohols. • Explain the chemical properties of carbonyl compound regarding nucleophilic addition

Week	Date	Lecture	Topic	Learning Outcomes
				- and reduction to alcohol. - Explain the identification carbonyl compound by reaction with ,4-dinitrophenyl hydrazine
		Lecture 28 Dr. Nurul Najidah Mohamed	Tutorial	
16	5/5–11/5 2024	Lecture 29 Dr. Nurul Najidah Mohamed	iv. Aldehydes v. Ketones vi. Tri-iodomethane reaction, Tollens' reagent, and Fehling's solution	Explain the differentiation of aldehyde from ketone by Tollens' reagent, and Fehling's solution.
		Lecture 30 Dr. Nurul Najidah Mohamed	Tutorial	
17	12/5–18/5 2024	Lecture 31 Dr. Nurul Najidah Mohamed	**Carboxylic acid** • Naming, physical properties, and acidity • Formation from the oxidation of alkene, alkylbenzenes, and primary alcohols and hydrolysis of nitriles	- Draw structure and name carboxylic acid according to IUPAC name. - Give the common name for carboxylic acid. - Explain the physical properties of carboxylic acid in terms of boiling point and solubility in water and organic solvent - Explain acidity of carboxylic acid. - Explain the preparation of carboxylic acid through oxidation of alkene, alkylbenzenes, and primary alcohols and hydrolysis of nitriles.
		Lecture 32 Dr. Nurul Najidah Mohamed	Continue	
18	19/5–25/5 2024	Lecture 33 Dr. Nurul Najidah Mohamed	Tutorial	
	Wesak day **22/5/2024 (Wednesday)**	Lecture 34 Dr. Nurul Najidah Mohamed	Tutorial	
19	**STUDY WEEK (26 MAY – 1 JUNE 2024)**			
20-21	**FINAL EXAMINATION (3 – 13 JUNE 2024)**			

OUTLINE OF COURSE CONTENT (PRACTICAL)

Week	Practical	Title	Learning Outcomes
1 & 3	Practical 1	Determination heat of a reaction **Remarks:** Submit datasheet	• To calculate the enthalpy, change for a reaction from temperature data and specific heats. • To use Hess's Law to calculate the enthalpy change for a reaction.
3 & 4	Practical 2	Functional group identification in organic molecules **Remarks:** Submit lab report (group)	• To state reagents for the reactions. • To define set of organic reactions. • To predict compound using set of organic reactions.
6 & 8	Practical 3	Reaction of Aliphatic and aromatic hydrocarbon **Remarks:** Submit lab report (individual)	• To study the chemical properties of alkane, alkene and arene. • To differentiate alkane from alkene and arene.
8 & 10	Practical 4	Classification of alcohols **Remarks:** Submit datasheet	• To classify alcohols. • To study the chemical properties of alcohols.
		Lab Test: Classification of alcohols	
13 & 16	Practical 5	Carboxylic acid and its derivatives **Remarks:** Submit datasheet	• To study the chemical properties of carboxylic acids and its derivatives.

Main references supporting the course:

1. Norbani Abdullah & Lok W.F. (2018). Chemistry for Matriculation Semester 2. SAP Education.

Additional references supporting the course:

1. Silberberg, M. & Amateis, P. (2021). Chemistry: The Molecular Nature of Matter and Change. 9th edition. McGraw-Hill, New York.
2. Chang, R. & Overby, J. S. (2011). General Chemistry. The Essential Concepts. 6th edition. McGraw-Hill, New York.
3. Timberlake, K.C. & Orgill M. K. (2019). Chemistry: An Introduction to General, Organic, and Biological Chemistry. 13th Global edition. Pearson, New York.
4. Petrucci, R.H., Herring, G.E., Madurra, J. D. & Bissonnette, C. (2017). General Chemistry: Principles and Modern Applications. 11th edition. Pearson, New York.
5. Timberlake, K.C. (2014). Laboratory Manual for General, Organic and Biological Chemistry. 3rd edition. Pearson, Unite Stated of America.
6. Gerald, W. (2013). Experiments in General Chemistry. 9th edition. Pearson, New York.

Mathematics II
PAA20404

SUBJECT: MATHEMATICS II

CONTENT SYNOPSIS:

This course is designed to provide basic knowledge of mathematical concepts, terminology and notation involving two components, calculus and statistics. The topics covered for component of calculus include Limits and Continuity, Differentiation, Integration and Numerical Methods. For statistics, the topics are Data Description, Permutations and Combinations, Probability, Random Variables, Special Probability Distributions and Hypothesis Testing. This foundation enables the students to further develop the understanding of mathematical concepts, mathematical thinking and acquire skills in problem solving and the applications of calculus and statistics.

COURSE LEARNING OUTCOMES (CLO):

At the end of this course the students will be able to:-

CLO1   : Analyze mathematical problems by using suitable calculus and statistical concepts and models (C4, PLO2)

CLO2   : Present simple data analysis for calculus and statistical problems using appropriate digital software (A2, PLO6)

CLO3   : Increase proficiency in numeracy skills to solve a moderate mathematical or statistical problems (A3, PLO7)

LEARNING ACTIVITIES

a) Lectures
b) Tutorials
c) Group Work/Assignment
d) Classroom activities (games/creative presentation)

ASSESSMENT METHODS

Methods	Types	Percentage (%)	
Continous/Formative Assessment	Mid Exam	20	50
	Quizes/Assignments	30	
Summative Assessment	Final examination	50	

OUTLINE OF COURSE CONTENT (LECTURE)

Week	Lecture	Lecturer	Title	Learning Outcomes
1	**Lecture 1** (2 hours) K1, K2, K3 Tutorial 1 T4, T1, T2, T3 Tutorial 2 T1, T2, T3, T4	Mdm. Aida Othman	**CHAPTER 1: DATA DESCRIPTION** 1.1 Introduction to Statistics 1.2 Measures of Location 1.3 Measures of Dispersion	1. Identify discrete and continuous data 2. Identify ungrouped and grouped data 3. Construct and interpret stem-and-leaf diagrams
2	**Lecture 2** (2 hours) K1, K2, K3 Tutorial 3 T4, T1, T2, T3	Mdm. Aida Othman	**CHAPTER 1: DATA DESCRIPTION** 1.4 Histogram and Alternatives of Plots 1.5 Skewness	4. Find and interpret the mean, mode, median, quartiles and percentiles for ungrouped data 5. Construct and interpret box-and-whisker plots for ungrouped data 6. Construct and interpret stem-and-leaf diagrams 7. Find and interpret Pearson's coefficient of skewness
	Tutorial 4 T1, T2, T3, T4		**CHAPTER 2: PROBABILITY** 2.1 Permutations and Combinations	1. Use the techniques for counting 2. Find the permutations of a set of objects 3. Find the number of permutations of n different objects 4. Find the combinations of a set of objects 5. Determine the number of ways to form combinations of r objects from *n* different objects
3	**Lecture 3** (2 hours) K1, K2, K3 Tutorial 5 T4, T1, T2, T3	Mdm. Aida Othman	**CHAPTER 2: PROBABILITY** 2.2 Introduction to Probability 2.3 Concepts of events, Sample Space, Set, Subset, Combination, Union	1. Understand the concept of experiments, outcomes, events, sample spaces and random selections
	Tutorial 6 T1, T2, T3, T4		**CHAPTER 2: PROBABILITY** 2.4 Probability of Simple, Complex, Dependent and Independent Events	1. State the basic laws of probability 2. Find the probability of an event

4	**Lecture 4** (2 hours) K1, K2, K3 Tutorial 7 T4, T1, T2, T3	Mdm. Aida Othman	**CHAPTER 2:** **PROBABILITY** 2.5 Probability of Simple, Complex, Dependent and Independent Events	3. Determine the probabilities of the intersection and union of two events
	Tutorial 8 T1, T2, T3, T4		**CHAPTER 2:** **PROBABILITY** 2.6 Conditional Probability	4. Determine the conditional probability and identify independent events
5	**Lecture 5** (2 hours) K1, K2, K3 Tutorial 9 T4, T1, T2, T3	Dr. Siti Norziahidayu Amzee Zamri	**CHAPTER 3:** **LIMITS AND CONTINUITY** 3.1 Limits	1. State the limit of a function $f(x)$ as x approaches a given value a . $\lim_{x \to a} f(x) = L$ 2. Apply the basic properties of limits
	Tutorial 10 T1, T2, T3, T4		**CHAPTER 3:** **LIMITS AND CONTINUITY** 3.1 Limits	1. Find $\dfrac{\lim_{x \to a} f(x)}{\lim_{x \to a} g(x)}$ when $\lim_{x \to a} f(x) = 0$ and $\lim_{x \to a} g(x) = 0$ by methods (i) Factorization, (ii) Multiplication of conjugates 2. Find one-sided limits 3. Determine the existence of the limit of a function 4. Find infinite limits 5. Find limits at infinity
6	**Lecture 6** (2 hours) K1, K2, K3 Tutorial 11 T4, T1, T2, T3	Dr. Siti Norziahidayu Amzee Zamri	**CHAPTER 3:** **LIMITS AND CONTINUITY** 3.2 Asymptotes	1. Discuss the continuity of a function at a point 2. Determine the continuity of a function at a point
	Tutorial 12 T1, T2, T3, T4		**CHAPTER 3:** **LIMITS AND CONTINUITY** 3.3 Continuity	3. Find $\lim_{x \to \infty} \dfrac{f(x)}{g(x)}$ when $\lim_{x \to \infty} f(x)$ and $\lim_{x \to \infty} g(x)$ are undefined

				4. Use $\lim\limits_{x \to +\infty}\left(\dfrac{1}{x^n}\right) = 0$ and $\lim\limits_{x \to -\infty}\left(\dfrac{1}{x^n}\right) = 0$ for $n > 0$ 5. Determine vertical and horizontal asymptotes
7	**Lecture 7** (2 hours) K1, K2, K3 Tutorial 13 T4, T1, T2, T3	Dr. Siti Norziahi dayu Amzee Zamri	**CHAPTER 4: DIFFERENTIATION** 4.1 Derivative of Function 4.2 Rules of Differentiation	1. Determine the derivative of a function from the first principle 2. Determine the differentiability of a function at $x = 0$ Apply the rules of differentiation
	Tutorial 14 T1, T2, T3, T4		**CHAPTER 4: DIFFERENTIATION** 4.1 Derivative of Function 4.2 Rules of Differentiation	3. Apply the rules of differentiation 4. Perform the second and third order differentiation
	Lecture 8 (2 hours) K1, K2, K3 Tutorial 15 T4, T1, T2, T3	Dr. Siti Norziahi dayu Amzee Zamri	**CHAPTER 4: DIFFERENTIATION** 4.1 Derivative of Function 4.2 Rules of Differentiation	1. Determine the derivatives of the functions : (a) $e^x, e^{f(x)}, a^x, a^{f(x)}$ (b) $\ln x, \ln f(x)$ (c) $\sin u, \cos u, \tan u, \sec u$ $\cos ecu, \cot u$ (d) $\sin^n x, \cos^n x, \tan^n x, \sec^n x,$ $\cos ec^n x, \cot^n x$
	Tutorial 16 T1, T2, T3, T4		**CHAPTER 4: DIFFERENTIATION** 4.4 Differentiation of Exponential, Logarithmic and Trigonometric Functions 4.5 Implicit Differentiations	2. Solve problems involving the combination of differentiation rules. 3. Find the first and the second derivatives of implicit functions
		Dr. Siti Norziahi dayu Amzee Zamri	**CHAPTER 4: DIFFERENTIATION** 4.6 Parametric Differentiations	4. Use parametric differentiation to find first and second derivatives

9	MID SEMESTER TEST (10 MARCH 2024 – 14 MARCH 2024)			
	MID SEMESTER BREAK (15 MARCH 2023 – 23 MARCH 2024)			
10	**Lecture 9** (2 hours) K1, K2, K3 Tutorial 17 T4, T1, T2, T3	Dr. Siti Norziahi dayu Amzee Zamri	**CHAPTER 5: APPLICATION OF DIFFERENTIATION** 5.1 Extremum Problems	1. Find the critical points 2. Find the relative extremum using the first derivative test
	Tutorial 18 T1, T2, T3, T4		**CHAPTER 5: APPLICATION OF DIFFERENTIATION** 5.2 Extremum Problems	3. Find the extremum using the second derivative test 4. Solve the optimization problems
11	**Lecture 10** (2 hours) K1, K2, K3 Tutorial 17 T4, T1, T2, T3	Dr. Siti Norziahi dayu Amzee Zamri	**CHAPTER 5: APPLICATION OF DIFFERENTIATION** 5.3 Rate of Change	5. Solve the related rate problems
	Tutorial 18 T1, T2, T3, T4		**CHAPTER 5: APPLICATION OF DIFFERENTIATION** 5.3 Rate of Change	6. Solve the related rate problems
12	**Lecture 11** (2 hours) K1, K2, K3 Tutorial 19 T4, T1, T2, T3	Dr. Siti Norziahi dayu Amzee Zamri	**CHAPTER 6: INTEGRATION** 6.1 Integration of Functions	1. Relate the integration and differentiation 2. Use the basic rules of integration
	Tutorial 20 T1, T2, T3, T4		**CHAPTER 6: INTEGRATION** 6.2 Rules of Integration	3. Determine the integration of e^x, $\dfrac{1}{x}$ and a^x
13	**Lecture 12** (2 hours) K1, K2, K3 Tutorial 19	Dr. Siti Norziahi dayu Amzee Zamri	**CHAPTER 6: INTEGRATION** 6.3 Integration of Exponential, Rational and Trigonometric Functions	4. Determine the integral of the forms : (i) $\displaystyle\int \frac{f'(x)}{f(x)}dx$

	T4, T1, T2, T3			(ii) $\int f'(x)e^{f(x)}dx$ (iii) $\int f'(x)\left[f(x)\right]^{n}dx$ (iv) $\int a^{bx+x}dx$
	Tutorial 20 T1, T2, T3, T4		**CHAPTER 6: INTEGRATION** 6.4 Integration of Exponential, Rational and Trigonometric Functions 6.5 Techniques of Integration 6.6 Definite Integrals 6.7 Application of Integration	5. Integrate the trigonometric functions $\sin ax, \cos ax, \sec^{2} ax$ 6. Use the substitution method to find integrals
14	**Lecture 13** (2 hours) K1, K2, K3 Tutorial 19 T4, T1, T2, T3	Dr. Siti Norziahi dayu Amzee Zamri	**CHAPTER 6: INTEGRATION** 6.5 Techniques of Integration 6.6 Definite Integrals 6.7 Application of Integration	7. Perform integration by parts 8. Evaluate the integral of a rational function by means of decomposition into partial fractions
	Tutorial 20 T1, T2, T3, T4		**CHAPTER 7: NUMERICAL METHODS** 7.1 Solutions of Nonlinear Equations	1. Locate approximately a root of an equation, by means of graphical considerations and/or searching for a sign change
15	**Lecture 14** (2 hours) K1, K2, K3 Tutorial 21 T4, T1, T2, T3	Dr. Siti Norziahi dayu Amzee Zamri	**CHAPTER 7: NUMERICAL METHODS** 7.2 Newton-Raphson Method 7.3 Trapezoidal Rule	1. Find the root by the Newton-Raphson method 2. Use the trapezoidal rule to approximate definite integral
	Tutorial 22 T1, T2, T3, T4	Mdm. Aida Othman	**CHAPTER 8: RANDOM VARIABLES** 8.1 Probability Density Functions	1. Find the probability density function 2. Determine the probabilities from a probability density function or cumulative distribution function
16	**Lecture 15** (2 hours) K1, K2, K3 Tutorial 23 T4, T1, T2, T3	Mdm. Aida Othman	**CHAPTER 8: RANDOM VARIABLES** 8.2 Cumulative Distribution Functions	1. Find the cumulative distribution function for discrete and continuous random variables **2.** Find the probability density function from a cumulative distribution function and vice versa

	Tutorial 24 T1, T2, T3, T4		**CHAPTER 8:** **RANDOM VARIABLES** 8.3 Expectation and Variance	1. Calculate the expectation and variance for discrete random variables **2.** Calculate the expectation and variance for continuous random variables
17	**Lecture 16** (2 hours) K1, K2, K3 Tutorial 25 T4, T1, T2, T3	Mdm. Aida Othman	**CHAPTER 9:** **SPECIAL PROBABILITY** **DISTRIBUTIONS** 9.1 Binomial Distribution	1. Identify the binomial distribution, B(n,p) 2. Find the mean and variance of binomial distribution 3. Use the binomial distribution to solve related problems
	Tutorial 26 T1, T2, T3, T4		**CHAPTER 9:** **SPECIAL PROBABILITY** **DISTRIBUTIONS** 9.2 Poisson Distribution	4. Identify the Poisson Distribution, Po(λ) 5. Identify the mean and variance of Poisson distribution 6. Use the Poisson distribution to solve related problems
18	**Lecture 17** (2 hours) K1, K2, K3 Tutorial 23 T4, T1, T2, T3	Mdm. Aida Othman	**CHAPTER 9:** **SPECIAL PROBABILITY** **DISTRIBUTIONS** 9.3 Normal Distribution	7. Identify the normal distribution, N(μ, σ^2) 8. Standardize the normal random variable
	Tutorial 24 T1, T2, T3, T4		**CHAPTER 9:** **SPECIAL PROBABILITY** **DISTRIBUTIONS** 9.4 Normal Distribution	10. Determine the mean and variance of normal distribution problems 11. Use the normal distribution to solve related problems 12. Use the normal distribution to approximate the binomial distribution
STUDY WEEK (26 MAY 2024 – 1 JUNE 2024)				
FINAL EXAMINATION (2 JUNE 2024 – 13 JUNE 2024)				

Text Books

i. Ong Beng Sim, Maheran Nuruddin, Lee Khaik Yong, Che Noorlia Noor, Yong Zulina Zubairi, Miskiah Dzakaria . *Mathematics for Matriculation Semester 1*, 4th edition updated. Oxford Fajar Sdn. Bhd., 2014

ii. Abdul Hadi Yaakub, Ong Beng Sim, Yong Zulina Zubairi, Tan Cong Eng, Lye Min Soon, Lee Khaik Yong, Che Noorlia Noor, Maheran Nuruddin, Miskiah Dzakaria . *Mathematics for Matriculation Semester 2*, 4th edition updated. Oxford Fajar Sdn. Bhd., 2015

References Books

i. Bittinger, M.L., Ellenbogen, D.J. and Johson, B.L. 2013. Elementary and Intermediate Algebra: Concepts and Applications. 6th Edition. Pearson.

ii. Blitzer, R.F. 2012. Algebra and Trigonometry. 5th Edition. Pearson.

iii. Calter, P.A and Calter, M.A. 2011. Technical Mathematics with Calculus. 6th Edition. John Wiley.

iv. Lial, M., Hornsby, J. and McGinnis, T. 2011. Beginning Algebra. 11th Edition. Pearson.

v. Stewart, J., Redlin, L. and Watson, S. 2011. Precalculus: Mathematics for Calculus. 6th Edition. Cengage Learning.

INTRODUCTION TO PROGRAMMING
PAA20504

SUBJECT: INTRODUCTION TO PROGRAMMING

CONTENT SYNOPSIS:

This course aims to equip students with the knowledge, concept, principle and skills in programming. The topics emphasis on the concept of problem solving and algorithms in programming. The students will be exposed to programming languages and techniques. At theend of this course, the students should be able to construct programs using appropriate programming techniques to solve the problems.

COURSE LEARNING OUTCOMES (CLO):

At the end of this course the students will be able to:-

CLO 1 : Analyze the computational thinking approach in solving problems. (C4,PLO2)

CLO 2 : Construct programs using programming techniques to solve problems. (P3,PLO3)

CLO 3 : Demonstrate application of algorithms based on the problem statement. (A3,PLO6)

LEARNING ACTIVITIES

a. Lectures, e-learning
b. Computer Lab, practical

ASSESSMENT METHODS

Assessment Methods		Percentage (%)	
Formative	Mid Semester Test	20	50
	Practical (Lab Test)	20	
	Demonstration (Assignment)	10	
Summative	Final examination	50	

OUTLINE OF COURSE CONTENT (LECTURE & LAB)

Week	Lecture/ Lab	Lecturer	Title	Learning Outcomes
1-2	Lecture/ lab	Mdm.Jazu rainifariza Mdm. Rohana	**Programming and Languages** 1.1 Programs and Programming 1.2 Program Specification 1.3 Program Design 1.4 Program Code 1.5 Program Test 1.6 Program Documentation 1.7 Program Maintenance 1.8 CASE and OOP 1.9 Generations of Programming Languages	-Explain programming concept vs program -introduce the program specification by showing sample of case study -explain how to translate/convert from program into program design (show sample of pseudocode and flowchart) -introduce how to perform program testing -demonstrate how to write a program documentation -explain the Computer Aided Software Engineering (CASE) and Object Oriented Programming (OOP) -explain the language generation
3-4	Lecture/ lab	Mdm.Jazu rainifariza Mdm. Rohana	**Algorithm and Flowchart in Problem Solving** 2.1 Algorithm in Problem Solving 2.2 Flowchart in Problem Solving	-define algorithm and flowchart -distinguish between flowchart and pseudocode in writing algorithm -introduce and solve a simple case study to relate how to implement algorithm in problem solving -show sample in pseudocode vs flowchart
5-6	Lecture/ lab	Mdm.Jazu rainifariza Mdm. Rohana	**Introduction to Programming Language** 3.1 Introduction to C Languange 3.2 C Language	-Introduce programming language : C -explain briefly on the history of C language -demonstrate using simple sample code
7-8	Lecture/ lab	Mdm.Jazu rainifariza Mdm. Rohana	**Operators and Expressions** 4.1 Data type 4.2 Variable 4.3 Constant 4.4 Arithmetic Expression	-introduce on operators and expressions -explain the types of data -distinguish between variable and constant -describe how arithmetic expression is implemented
9	MID SEMESTER TEST (10 MARCH 2024 – 14 MARCH 2024)			
	MID SEMESTER BREAK (15 MARCH 2024 – 23 MARCH 2024)			
10-11	Lecture/ lab	Mdm.Jazurai nifariza Mdm. Rohana	**Data Input and Output** 5.1 Printf 5.2 Scanf	-introduce data input and data output -explain how to use in code

				-demonstrate the use of *printf* and *scanf* statements
12-13	Lecture/ lab	Mdm.Jazu rainifariza Mdm. Rohana	**Selection Structure** (Decision Making) 6.1 if statement 6.2 if … else statement 6.3 Nested..if	-introduce the selection structure -explain the use of *if, if..else* and *nested if* statements
14-15	Lecture/ lab	Mdm.Jazu rainifariza Mdm. Rohana	**Loop Structure** 7.1 while statement 7.2 for statement 7.3 do.. while statement 7.4 Nested- looping	-introduce the looping structure -explain the use of *while, for, do..while* and *nested looping* statements
16-17	Lecture/ lab	Mdm.Jazu rainifariza Mdm. Rohana	**Function** 8.1 Structural decomposition 8.2 Library function 8.3 User-define function	-introduce the function -explain how to perform structural decomposition in code -explain the use of library function in code -explain how to perform user-define function
18	Lecture/ lab	Mdm.Jazurai nifariza Mdm. Rohana	Discussion	Enrichment on selected topics
19	**STUDY WEEK (26 MAY – 1 JUNE 2024)**			
20	**FINAL EXAMINATION (3 – 13 JUNE 2024)**			

REFERENCES BOOKS

Main references supporting the course (the latest 5 years)

i.   Deitel, P. & Deitel, H. (2021).C How to Program, 9th Edition. Prentice Hall.

Additional references supporting the course

i.   O'eary, T. & O'eary, L. (2021). Computing Essentials 2021. McGraw-Hill.
ii.   Dey, P. & Ghosh, M. (2020). Computer Fundamentals and Programming in C. OxfordUniversity Press.

SUBJECT : THINKING SKILLS

CONTENT 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. At the end of this course, the students will be able to explain the concept of critical and creative thinking and demonstrate the attributes of being critical, creative and innovative in learning and life.

COURSE LEARNING OUTCOMES (CLO):

At the end of this course the students will be able to:-
1.   Explain the concept of critical and creative thinking. (C4, PLO2)
2.   Propose better decisions through critical thinking and creative problem solving in learning and life. (A3, PLO8)

LEARNING ACTIVITIES

a) Lectures
b) Tutorials
c) Group Work/Assignment
d) Classroom activities (games/creative presentation)

ASSESSMENT METHODS

Assessment Methods		Percentage (%)	
Continuous/Formative	Mid Semester Test	20	50
	Assignment/Presentation	30	
Summative	Final examination	50	

OUTLINE OF COURSE CONTENT (LECTURE)

Week	Lecture	Lecturer	Chapter/Topic	Learning Outcomes
1	**Lecture 1** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	**Chapter 1: Introduction to Critical Thinking** 1.1 Definition 1.2 Critical thinking theories 1.3 Importance of critical thinking	1. Understand what critical thinking is 2. Recognize some of the benefits associated with critical thinking skills 3. Recognize the personal qualities associated with critical thinking 4. Recognize barriers to the development of good critical thinking
2	**Lecture 2** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	**Chapter 1: Introduction to Critical Thinking** 1.4 Types of thinking 1.5 Characteristics and skills of a critical thinker	1. Assess their current understanding of critical thinking 2. Identify their priorities for improvement 3. Identify characteristics and skills of a critical thinker
3	**Lecture 3** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	**Chapter 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	1. Define creative thinking 2. List and describe the three basic principles of creative thinking 3. List and identify characteristics of creative thinker

4	**Lecture 4**
	
	(2 hours)
	
	K1, K2, K3
		Mdm. Nurdina Iman	**Chapter 2: Critical Thinking and Creative Thinking**
			
			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. Describe the techniques of Creative Thinking
				2. List out the six thinking hats and describe their benefits
				3. Compare and contrast between critical thinking and creative thinking

5	**Lecture 5**
	
	(2 hours)
	
	K1, K2, K3
		Mdm. Nurdina Iman	**Chapter 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
				1. Identify premises and conclusion
				2. Identify the key component of an argument
				3. Identify simple argument
				4. Identify the validity of an argument
				5. Identify conclusion
				6. Form a conclusion to an argument

6	**Lecture 6** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	**Chapter 3: Argument, Conclusion and Reasoning** 3.6 Definition of reason 3.7 Identify reasons 3.8 Inductive reasoning 3.9 Deductive reasoning	1. Define reason 2. Identify reasons 3. Identify and form inductive and deductive reasoning
7	**Lecture 7** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	**Chapter 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	1. Define flaws 2. Define fallacies 3. Identify the differences between fallacy and logical fallacy 4. List categories of fallacies
8	**Lecture 8** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	**Chapter 4: Flaws, Assumptions and Analogies** 4.5 Fallacies of relevance 4.6 Assumptions 4.7 Analogies	5. Identify fallacies of relevance 6. Identify and construct assumptions 7. Use the correct analogies
9	**MID SEMESTER TEST (10 – 14 MARCH 2024)**			
	MID SEMESTER BREAK (15 – 23 MARCH 2024)			

10	**Lecture 9**
	
	(2 hours)
	
	K1, K2, K3
		Mdm. Nurdina Iman	**Chapter 5: Evidence**
			
			5.1 Introduction of evidence
			5.2 Types of evidence
			   i. Primary source
			   ii.Secondary source
				1. Define evidence
				2. Identify types of evidence
				3. Define primary source of evidence

11	**Lecture 10**
	
	(2 hours)
	
	K1, K2, K3
		Mdm. Nurdina Iman	**Chapter 5: Evidence**
			
			5.2 Types of evidence
			  i. Primary source
			  ii.Secondary source
			5.3 Evaluating evidence
				4. Define secondary source of evidence
				5. Evaluate evidence

12 (	**Lecture 11** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	**Chapter 6: Constructing Arguments** 6.1 Constructing arguments 6.2 Recognising arguments	1. Construct argument 2. Recognize argument
13	**Lecture 12** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	**Chapter 6: Constructing Arguments** 6.3 Arguments are inferences 6.4 Evaluating arguments	1. State arguments as inferences 2. Evaluate argument
14	**Lecture 13** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	**Chapter 7: Thoughts** 7.1 Elements of thought 7.2 Reflective thoughts	1. Identify elements of thought 2. Identify reflective thought
15	**Lecture 14** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	Chapter 7: Thoughts 7.3 Thought awareness 7.4 Evaluating thoughts 7.5 Unhealthy thinking patterns	1. Define awareness of thought 2. Evaluate the thought properly 3. Identify unhealthy of thinking patterns
16	**Lecture 15** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	Chapter 7: Thoughts 7.6 Addressing negative thoughts 7.7 Method to change negative thought patterns	1. Describe the negative thought 2. Discuss negative thought patterns

17	**Lecture 16** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	Students' Presentations	
18	**Lecture 17** (2 hours) K1, K2, K3	Mdm. Nurdina Iman	Students' Presentations	
19	**STUDY WEEK (26 MAY – 1 JUNE 2024)**			
20	**FINAL EXAMINATION (3 – 13 JUNE 2024)**			

TEXT/REFERENCE BOOKS :

i. Cottrell, S. (2017). Critical thinking skills: Developing effective analysis and argument (3rd ed.).MacMillan Education, United Kingdom.

ii. Kallet, M. (2014). Think smarter: Critical thinking to improve problem-solving and decision-making skills. New Jersey: John Wiley & Sons, Inc.

Foundation English PAA20703

SUBJECT : FOUNDATION OF ENGLISH

CONTENT SYNOPSIS:

This course is designed to serve as a foundation for the English language for academic purposes. It will help students to use knowledge, comprehension and practical skills to show their English proficiency levels, which focuses on writing and speaking skills. This course also provides students with opportunities to enhance their soft skills through individual or group tasks. Moreover, it prepares students for their university entrance examination.

COURSE LEARNING OUTCOMES (CLO):

At the end of the semester, students will be able to;

CLO 1 : Write different types of compositions based on linear and non-linear texts. **(A2, PLO8)**

CLO 2 : Present speaking tasks by using basic speaking skills. **(A2, PLO5)**

ASSESSMENT METHODS

Assessment Methods		Percentage (%)
Continuous	Extended Essay Writing (Assignment)	20
	Guided Writing (Assignment)	20
	Group Presentation	30
	Individual Presentation	30
Total		**100**

OUTLINE OF COURSE CONTENT (LECTURE)

Week	Content	Important Date
1	Introduction to the Course	
2	Writing a Good Paragraph Speaking: Outlining an Oral Presentation (Introduction)	
3	Guided Writing: Email Speaking: Oral Presentation vs. Conversation	
4	Guided Writing: Formal and Informal Letter	
5	Extended Writing: Introduction and Thesis Statements Speaking: Speech Preparation	Guided Writing Assignment Submission
6	Developing Ideas: Topic Sentences and Supporting Details Speaking: Organizing ideas and outlines	
7	Writing a Conclusion Speaking : Developing the Body of Presentation	
8	Writing Problem-Solution Essay Speaking: Preparing the Ending of Presentation	
9	**MID SEMESTER TEST (10 – 14 MARCH 2024)**	
	MID SEMESTER BREAK (15 – 23 MARCH 2024)	
10	Writing Discursive Essay Speaking: Stating and Justifying point of view	Individual Presentation
11	Writing Argumentative Essay Speaking: Asking for and giving information	

Week	Content	Important Date
12	Speaking: Asking for and giving opinion	Extended Writing Assignment Submission
13	Speaking: Expressing Agreement and Disagreement	
14	Speaking: Persuasion Skills	
15	Speaking: Managing a Discussion	
16	Speaking: The use of non-verbal language in presentation	Video Submission
17	Video Presentation	
18	Video Presentation	
19	STUDY WEEK (26 MAY – 1 JUNE 2024)	
20 – 21	FINAL EXAMINATION (3 – 13 JUNE 2024)	

REFERENCES:

1. Doss, C. Y., Vethamani, M. E., Neoh. G. K., & Arasoo, V. T. (2022). *Masterclass MUET.* Sasbadi Sdn. Bhd.

2. Koh, A. & Cheok, M. L. *MUET My Way*. (2022). Penerbitan Pelangi Sdn. Bhd.

3. Yat,C,W., Fen,Y,S.,&Tzee,Y.W. (2021). Ace Ahead Text MUET : CEFR-Aligned Test Specifications 2nd Edition. Oxford