

COURSE INFORMATION

1.	Name of Course	Mathematical Techniques 2												
2.	Course Code	DIM5068												
3.	Type of Course (e.g. : Core, major, elective etc.)	Core/Major Diploma in Information Technology												
4.	Synopsis	This subject will disclose students to environment of essential mathematics concepts. Students will have the ability of practising the concepts in formulating and problem solving in ICT related area.												
5.	Version (State the date of the Senate's approval - previous and the current approval date)	Current: Oct 2017 Previous: Senate 176 March 2015												
6.	Name(s) of Academic Staff	Farah Izzati Yussoff, Tan Sin Yin, Nurainiah Abu Hassan, Mar Syazana Maslin, Ikha Fadzila Md Idris, Suraya Suyod, Tan Chun Fui, Nabil Abas, Norizzati Salleh												
7.	Semester and Year Offered	Trimester 2, Year 1												
8.	Credit Value	4												
9.	Pre-Requisite	Mathematical Techniques 1												
10.	Objective of the course in the programme: Tp provide essential mathematics background for students pursuing information technology courses.													
11.	Justification for including the course in the programme: This subject will expose students to environment of essential mathematics concepts. Students will have the ability of applying the concepts in formulating and problem solving in ICT related area.													
12.	Course Learning Outcomes (CLO)	<table border="1"> <thead> <tr> <th></th><th>Domain</th><th>Level</th></tr> </thead> <tbody> <tr> <td>CLO1: Apply the basic knowledge of calculus to solve problems in various real life application.</td><td>Cognitive</td><td>3</td></tr> <tr> <td>CLO2: Demonstrate utility of calculus in differential equation problems.</td><td>Cognitive</td><td>3</td></tr> <tr> <td>CLO3: Discussion among team members in performing group task related to calculus.</td><td>Affective</td><td>2</td></tr> </tbody> </table>		Domain	Level	CLO1: Apply the basic knowledge of calculus to solve problems in various real life application.	Cognitive	3	CLO2: Demonstrate utility of calculus in differential equation problems.	Cognitive	3	CLO3: Discussion among team members in performing group task related to calculus.	Affective	2
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13.	Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:										
	Course Learning Outcomes (CLO) (Must tally with CLOs in item 12)	Programme Learning Outcomes (PLO)								Teaching Methods	Assessment Method
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8		
	CLO1					/				Lecture, Tutorial	Final, Assignment, Quiz, Test
	CLO2	/								Lecture, Tutorial	Final, Quiz
	CLO3					/				Tutorial/Group Activities	Assignment
	Total	1				1	1			Indicate the relevancy between the CLO and PLO by ticking "✓" the appropriate relevant box (This description must be read together with standards 2.1.2, 2.2.1, and 2.2.2 in Area 2 – pages 16 & 18 of COPPA 2.0)	
14.	Transferable Skills: Teamwork, communication skills and problem solving.										
15.	Distribution of Student Learning Time (SLT)										
	Course Content Outline	**CLO	Teaching and Learning Activities				Guided Learning (NF2F)*	Independent Learning (NF2F)*	Total SLT		
			Guided Learning (F2F)*								
			*L	*T	*P	*O					
	1 Complex Numbers Complex numbers and their properties; Complex numbers as vectors; The complex plane; Complex algebra; Functions of a complex variable.	1	4	1				5	10		
	2 Limits Tangent and Velocity; Limit of a function; Continuity; Limits at infinity	1	2	1				3	6		
	3 Derivatives Derivatives; Differentiation formula; Chain Rule; Derivatives of Exponential and Logarithmic Functions; Implicit differentiation; Higher derivatives;	1	7	2				9	18		
	4 Application of Derivatives Rates of change; Maximum and minimum values; Curve sketching;	1	4	1				5	10		
	5 Integration Anti-Derivatives; Indefinite and Definite Integral; Integration by substitution; Integration by parts; Integration by partial fractions.	1	6	2				8	16		
	6 Application of Integration Area under the curve; Volume as an integral of areas.	1	5	1				6	12		
	7 Differential Equations Linear and non-linear equations, Degree and order; Initial-value problems; First order equations: Separable differential equations; Exact differential equation; Integrating factor; Higher-order equations: Second order linear Differential equations; Homogeneous equations with constant coefficients; Non-homogeneous equations.	1 & 2	9	3				12	24		
	8 Vectors Dots and cross products; Equations of a line and a plane; Linear combination of vectors.	1	5	2				7	14		
	Total SLT								110		
	SUMMATIVE ASSESSMENT										
	1. Continuous Assessment		Percentage %					Total SLT			
	Quizzes		10%					6			
	Assignments		20%					12			
	Tests		20%					12			
	Total SLT for Continuous Assessment								30		
	2. Final Assessment		Percentage %					Total SLT			
	Final Exam		50%					F2F	ILT		
								2	18		
	Total SLT for Final Assessment (F2F + NF2F)								20		
	Grand Total								100%	160	
	**Indicate the CLO based on the CLO's numbering in Item 12. *L= Lecture, *T= Tutorial, *P= Practical, *O= Others, F2F*= Face to Face, NF2F*= Non Face to Face										
16.	Identify Special Requirement to Deliver the Course (e.g., software, nursery, computer lab, simulation room): NA										
17.	Main References: 1. Briggs, W.L., Cochran, L., & Gillet, B. (2013). <i>Calculus for scientists and engineers early transcendentals</i> . (1st ed.) Pearson.										
18.	Additional References: 1. Stewart, J. (2012). <i>Calculus</i> (7th ed.). Thomson. 2. Haeussler, E.F., Paul, R.S., Wood, R.J. (2011). <i>Introductory mathematical analysis for business, economics, and the life and social sciences</i> (13th ed.). Pearson.										

Note:

Cells shaded light grey contain formulas / fixed values. Edit these formulas only if needed.