

1.	Name of Course				Mathematics for Computer Scientists			
2.	Course Code				CMTH1543			
3.	Name(s) of academic staff							
4.	Rationale for the inclusion of the course/module in the programme				Faculty A solid mathematical ability at an advanced level is essential for the understanding of the principles and the application of techniques in computer science. The aim of the module is to develop the student's mathematical knowledge and to provide the student with all the necessary techniques and methods for the analysis and solutions of problems in computing.			
5.	Semester and Year offered				2/1			
6.	Total Student Learning Time (SLT)		Face to Face			Total Guided and Independent Learning		
	L = Lecture T = Tutorial P = Practical O= Others		L	T	P	O	Independent = 84 Total =126	
			28	14				
7.	Credit Value				3			
8.	Prerequisite (if any)				none			
9.	Objectives: The objectives of this course are to introduce students to; - the terms and concepts of the derivatives - the rules of differentiation and integration - the differentiation and integration of trigonometric functions - the equation of the tangent and normals and extremum problems in differentiation							
10.	Learning outcomes: By the end of the subject, students should be able to: - explain the terms and concepts of the derivatives - explain the definition of integration, definite integral and indefinite integral - solve the differentiation and integration problems by using basic rules - solve the differentiation and integration of trigonometric functions - solve the equation of the tangent and normals and extremum problems in differentiation							
11.	Transferable Skills: Identify the nature of formal, symbolic representation of systems and processes by learning important rules of functions, differentiation and integration							

12.	Teaching-learning and assessment strategy A variety of teaching and learning strategies are used throughout the course, including: - Classroom lessons. Lectures and Power Point presentations - Tutorial sessions: Practice exercises - brainstorming; - Lecturer-led problem-solving sessions, - Solving assigned problems in groups and singly - Independent study. Assessment strategies include the following: - Ongoing quizzes - Midterm tests - Performance Assessment (Assigned exercises) - Lecturer Observation																																			
13.	Synopsis: This course provides calculus topics such as differentiation and integration. The topics are completely different from those of algebra and geometry because in these topics student will learn important rules for finding derivatives and how to use it to analyze the rate of change of quantity. Integral calculus is concerned with the reverse process of the derivatives. There is one (1) special topic for function; there are logarithmic functions, exponential functions and trigonometric.																																			
14.	Mode of Delivery: Class Lectures / tutorial and practical sessions																																			
15.	Assessment Methods and Types: The assessment for this course will be based on the following: Coursework 50% - Quizzes10% - assignments20% - Mid-Semester Exam20% Final Examination 50% 100%																																			
16.	Mapping of the course/module to the Programme Aims <table><tr><td>A1</td><td>A2</td><td>A3</td><td>A4</td><td>A5</td><td>A6</td><td>A7</td><td>A8</td><td>A9</td></tr><tr><td>4</td><td>0</td><td>0</td><td>0</td><td>3</td><td>1</td><td>1</td><td>2</td><td>0</td></tr></table>												A1	A2	A3	A4	A5	A6	A7	A8	A9	4	0	0	0	3	1	1	2	0						
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17.	Mapping of the course/module to the Programme Learning Outcomes <table><tr><td>LO1</td><td>LO2</td><td>LO3</td><td>LO4</td><td>LO5</td><td>LO6</td><td>LO7</td><td>LO8</td><td>LO9</td><td>LO10</td><td>LO11</td><td>LO12</td></tr><tr><td>5</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>2</td><td>4</td><td>0</td><td>1</td><td>0</td></tr></table>												LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12	5	0	0	0	0	0	1	2	4	0	1	0
LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12																									
5	0	0	0	0	0	1	2	4	0	1	0																									
18.	Content outline of the course/module and the SLT per topic <table><tr><td></td><td></td><td colspan="4">SLT</td></tr><tr><td></td><td>Details</td><td>L</td><td>T</td><td>Indep.</td><td>Total</td></tr><tr><td>Topic 1</td><td>1) FUNCTIONS 1.1 Logarithmic Functions 1.2 Exponential Functions 1.3 Trigonometric</td><td>4</td><td>2</td><td>12</td><td>18</td></tr></table>														SLT					Details	L	T	Indep.	Total	Topic 1	1) FUNCTIONS 1.1 Logarithmic Functions 1.2 Exponential Functions 1.3 Trigonometric	4	2	12	18						
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Topic 1	1) FUNCTIONS 1.1 Logarithmic Functions 1.2 Exponential Functions 1.3 Trigonometric	4	2	12	18																															

19.	Topic 2	2) DIFFERENTIATION 2.1 Rules for differentiation 2.2 Product rule 2.3 Quotient rule 2.4 Chain rule 2.5 Power rule 2.6 Derivatives of logarithmic functions 2.7 Derivatives of exponential functions 2.8 Derivatives of trigonometric functions 2.9 Higher order derivatives 2.10 Applications of differentiation 2.10.1 Equations of tangents and normals 2.10.2 Stationary points: Maxima and minima	16	8	48	72
	Topic 3	3) INTEGRATION 3.1 The indefinite integral 3.2 Integration with initial conditions 3.3 The definite integral 3.4 Integration of simple exponential 3.5 Integration using partial fractions 3.7 Area under the curve	8	4	24	36
	Total		28	14	84	126
20.	Main references supporting the course: 1. Sim O. B., Yong L. K., Siti Eishah Ishak, Fauzi Mohamed Yusof, R. Suzita R. Suleiman, Mathematics for Matriculation Semester 1 ;, 1 st Edition, Penerbit Fajar Bakti Sdn. Bhd. (2009)					
	Additional references supporting the course: 1. Cheryl M. Rose, Leslie Minton, and Carolyn B. Arline , Uncovering Student Thinking in Mathematics: 25 Formative Assessment Probes (2006) 2. Eng T. C., Sim O. B., Hwa K. B., Soon L. M, Mathematics for Matriculation Semester 2 :. , 1 st Edition, Penerbit Fajar Bakti Sdn. Bhd.(2009) 3. G. H. Hardy, A Course Of Pure Mathematics - Illustrated (2006)					
21.	Other additional information All materials will be available to the students online.					