

SUMMARY OF INFORMATION ON EACH COURSE/MODULE

1.	Name of Course/Module/Subject	Calculus							
2.	Course /Subject Code	PMC0075							
3.	Status of Subject	Core							
4.	MQF Level/Stage Note : <i>Certificate – MQF Level 3</i> <i>Diploma – MQF Level 4</i> <i>Bachelor – MQF Level 6</i> <i>Masters – MQF Level 7</i> <i>Doctoral – MQF Level 8</i>	Foundation							
5.	Version (state the date of the last Senate approval)	December 2013							
6.	Pre-Requisite/Requirement for Registration	PMT0075_Algebra							
7.	Name(s) of academic/teaching staff	Mohd Daud Hassan, Heng Chai Yen							
8.	Semester and Year offered	Trimester 2							
9.	Objective of the course/module/subject in the programme : To equip students with understanding of basic calculus in preparation for degree courses.								
10.	Justification for including the subject in the program : To provide students with sound understanding of basic mathematical concepts								
11.	Subject Learning Outcomes :		Domain	Level					
	LO1: Solve the problems related to limits of various functions using variety of methods		Cognitive	3					
	LO2: Calculate the derivative and integration of polynomial functions, logarithmic functions, exponential functions and trigonometry functions using various techniques		Cognitive	4					
	LO3: Solve the problems related to application of differentiation and integration		Cognitive	3					
	LO4: Solve the first and second order differential equations		Cognitive	3					
12.	Mapping of Learning Outcomes to Programme Outcomes :								
	Learning Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
	LO1	X					X		
	LO2	X					X		
	LO3	X					X		
	LO4	X					X		
13.	Assessment Methods and Types :								
	Method and Type	Description/Details					Percentage		
	Quiz	Written exam					20%		
	Test	Written exam					30%		
	Final Exam	Written exam					50%		

14	Details of subject				
	Topic	Content Outline	Mode of Delivery		
			Lecture	Tutorial	Self Study
	1	Limits and Continuity Limits by intuitive and computation approaches, as well as Continuity for the following functions: Polynomials, Rational, Functions Involve Radicals, Piece-wise, Composite, and Trigonometry. One Sided Limits and Limits at Infinity. Infinite Limits and Tangents and Derivatives at a point.	6	4	10
	2	Derivatives Concept of slope of tangent lines. Differentiability. Differentiation rules and techniques, chain rule, power rule, power rule combined with the chain rule. Derivatives of trigonometric, logarithmic, and exponential functions. Logarithmic differentiation. Implicit differentiation. Higher derivatives.	9	6	15
	3	Applications of Differentiation Tangents and Normals. Related rates problems. Maximum and Minimum values: increasing and decreasing functions, critical points, local extrema, absolute extrema, concavity of a function, inflection points. Applied maximum and minimum problems.	6	4	10
	4	Integration The indefinite and definite integrals. Integration techniques and formulas. Integrating polynomial, trigonometric, logarithmic and exponential functions. Integration by substitution, integration by parts, and integration by partial fraction decomposition.	9	6	15
	5	Applications of Integration Area under a curve and between curves. Volumes of solids of revolution.	6	4	10
6	Differential Equations Solutions to first order linear differential equations: Separation of variables and integrating factor methods. Second order linear differential equations with constant coefficients: homogeneous and non-homogeneous.	6	4	10	
		42	28	70	
15	Total Student Learning Time (SLT)		Face to Face		Total Guided and Independent Learning
	Lecture		42		84
	Tutorials		28		56

	Quiz	-	6
	Test	2	10
	Final Exam	2	22
	Sub Total	74	178
	Total SLT	4(178/40=4.45)	
14.	Credit Value	4	
15.	Reading Materials :		
	Textbook	Reference Materials	
		<p>Stewart, J., Redlin, L., & Watson, S. (2012) <i>Calculus</i> (7th ed.), Brooks/Cole, Cengage Learning.</p> <p>Hass, J., Weir, M.D., Thomas, G.B., Fadzilah, S., Goh, W.W., et al. (2009). <i>University calculus</i>. Malaysia: Prentice Hall. 9789833927104</p> <p>Sullivan, M., Fadzilah, S., Goh, W.W., Heng, C.Y., Mohd Daud, H., Ng, L. N., et al. (2011). <i>Algebra & trigonometry</i>. Malaysia: Prentice Hall. 9789673490950</p> <p>Hunt (2010). <i>Calculus</i> (2nd ed.). Addison Wesley. 006043046x</p> <p>Larson, R. & Edwards, B. H. (2010). <i>Calculus</i> (9th ed.). Belmont, Calif. : Brooks/Cole Cengage Learning. 9781439030332</p> <p>Smith, R.T., & Minton, R.B. (2008). <i>Calculus</i> (3rd ed.). Boston, London: McGraw-Hill Higher Education.9780071101998</p> <p>Stewart, J. (2009). <i>Calculus</i> (6th ed.). Belmont, CA: Thomson Brooks/Cole. 9780495383628</p> <p>Stewart, J. (2008). <i>Single variable calculus</i> (6th ed.). Belmont, CA: Thomson Brooks/Cole. 9780495011613</p> <p>Thomas, G. B. (2008). <i>Thomas' calculus</i> (11th ed.). Boston, Mass: Pearson. 9780321498755</p> <p>Trim, D. (2008). <i>Calculus for engineers</i> (4th ed.). Ontario: Pearson Education Canada, Inc. 9780131577138</p>	

16. Appendix (to be compiled when submitting the complete syllabus for the programme) :
1. Mission and Vision of the University and Faculty
 2. Programme Objectives or Programme Educational Objectives
 3. Programme Outcomes (POs)
 4. Mapping of POs to the 8 MQF domain
 5. Mapping of Los to the POs
 6. Summary of the Bloom's Taxonomy's Domain Coverage in all the Los in the format below :

Subject	Learning Outcomes (please state the learning Outcomes)	Bloom's Taxonomy Domain		
		Affective	Cognitive	Psychomotor
ABC1234	Learning Outcome 1			
	Learning Outcome 2			
	Learning Outcome 3			
	Learning Outcome 4			
DEF5678	Learning Outcome 1			
	Learning Outcome 2			
	Learning Outcome 3			
	Learning Outcome 4			

7. Summary of LO to PO measurement
8. Measurement and Tabulation of result for LO achievement
9. Measurement Tabulation of result for PO achievement