



KEMENTERIAN PENDIDIKAN TINGGI

## COURSE OUTLINE



<b>COURSE CODE : DBM 1013</b> <b>COURSE NAME : ENGINEERING MATHEMATICS 1</b>	<b>Date of issue : 25 Nov 2016</b> <b>Page : Page 1 of 7</b>
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<b>COURSE</b>	<b>: DBM 1013 ENGINEERING MATHEMATICS 1</b>
<b>PROGRAMME</b>	<b>: DKM</b>
<b>INSTRUCTIONAL DURATION</b>	<b>: 15 WEEKS</b>
<b>CREDIT(S)</b>	<b>: 3</b>
<b>PREREQUISITE(S)</b>	<b>: NONE</b>

### SYNOPSIS

**ENGINEERING MATHEMATICS 1** expose students to the basic algebra including perform partial fractions. This course also exposes the concept of trigonometry and the method to solve trigonometry problems by using basic identities, compound angle and double angle formulae. Students also will be introduced to the theory of complex number and matrices method to solve simultaneous equation. This course also introduces students to concept of vector and scalar.

Prepared by:	Certified by:
Name :	Name :
Signature :	Signature :
Date :	Date :

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**COURSE LEARNING OUTCOMES (CLO)**

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

CLO	Course Learning Outcome	Programme Learning Outcome(s)	Taxonomies & Soft-Skills	Assessment Methods	Recommended Delivery Methods
CLO1	Identify mathematical methods in solving the mathematical problems.	PLO1	C2	Quiz and Test	Interactive Lectures, Tutorial Exercise
CLO2	Solve the mathematical problems by using appropriate techniques and solutions.	PLO1	C3	Assignment	Interactive Lectures, Tutorial Exercise, Discussion
CLO3	Practice mathematical knowledge and skills in different mathematics problem.	PLO1	C3	Tutorial Exercise	Interactive Lectures, Tutorial Exercise

PLO	Program Learning Outcome
PLO1	Apply knowledge of mathematics, science, engineering fundamentals and social science to well-defined mechanical engineering procedures and practices.



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### DISTRIBUTION OF STUDENT LEARNING TIME

TOPIC	DEPENDENT LEARNING (HOURS)				INDEPENDENT LEARNING (HOURS)							TOTAL SLT	
	Lectures	Tutorial	Quiz	Test	Assignment	Lectures	Tutorial	Preparation for Quiz	Preparation for Test	Preparation for Test	Final Exam		
TOPIC 1	6	6	0.5			6	3	1					
TOPIC 2	6	6		1	1.5	6	3		2	4	2	120	
TOPIC 3	6	6	0.5			6	3	1					
TOPIC 4	6	6			1.5	6	3						
TOPIC 5	6	6				6	3						
<b>TOTAL</b>	<b>30</b>	<b>30</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>30</b>	<b>15</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>120</b>	



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**WEEKLY SCHEDULE**

WEEK	TOPIC	* ASSESSMENT PLAN
<b>1</b> <b>05 – 11 Jun</b> <b>2017</b>	<b>Students Registration</b>	
<b>2 - 3</b> <b>12 Jun</b> <b>2017</b>	<b>1.0 BASIC ALGEBRA</b> This topic introduces basic algebraic concept and its use in solving linear and quadratic equations. This topic also discusses about fraction including partial fraction.	Tutorial Exercise 1 Quiz 1
<b>4</b> <b>26 Jun – 08</b> <b>Jul 2017</b>	<b>SPECIAL HOLIDAY CELEBRATION</b>	
<b>5</b> <b>03 – 09 Jul</b> <b>2017</b>	<b>2.0 BASIC ALGEBRA</b> This topic introduces basic algebraic concept and its use in solving linear and quadratic equations. This topic also discusses about fraction including partial fraction.	Quiz 1
<b>6 - 8</b> <b>02 Jan – 13</b> <b>Jan 2017</b>	<b>2.0 TRIGONOMETRY</b> This topic explains the fundamental concept of trigonometric functions particularly the six trigonometric ratios of special angles and simple trigonometric basic identities. The topic also explains about trigonometric identities, sine and cosine rules. Skills using trigonometric identities, sine and cosine rules to solve simple trigonometric equations are discussed.	Tutorial Exercise 2
<b>9 - 10</b> <b>16 Jan -27</b> <b>Jan 2017</b>	<b>3.0 COMPLEX NUMBER</b> This topic discusses the difference between real numbers and imaginary numbers. Basic operation on complex numbers is also explained. This topic also shows the representations of complex numbers in the form of Argand's diagrams, polar and exponential. Basic operation in polar form is also discussed.	Tutorial Exercise 3



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WEEK	TOPIC	* ASSESSMENT PLAN
<b>11</b> <b>14 – 20</b> <b>Aug 2017</b>	<b>MID-SEMESTER BREAK</b>	
<b>12</b> <b>21 – 27</b> <b>Aug 2017</b>	<b>3.0 COMPLEX NUMBER</b> This topic discusses the difference between real numbers and imaginary numbers. Basic operation on complex numbers is also explained. This topic also shows the representations of complex numbers in the form of Argand's diagrams, polar and exponential. Basic operation in polar form is also discussed.	Quiz 2 Test 1
<b>13 -15</b> 28 Aug – 17 Sept Feb 2017	<b>4.0 MATRICES</b> This topic introduces the type and characteristics of matrices up to 3x3 matrix. This topic also explains the operation involving matrices such as addition, subtraction and multiplication of matrices. The inverse matrix method and Cramer' Rule is also explain to solve simultaneous equation up to three variable.	Assignment
<b>16 – 18</b> 18 Sep – 8 Oct 2017	<b>5.0 VECTOR AND SCALAR</b> This topic explains the basic operations of vector and scalar quantities including their use in solving problems. This topic also explains the method for determining angle between two vectors as well as the characteristics of triple vector and scalar products.	Tutorial Exercise 4
<b>19</b> <b>09 – 15 Oct</b> <b>2017</b>	<b>STUDY WEEK</b>	
<b>20</b> <b>16 – 22 Oct</b> <b>2017</b>	<b>CUTI KHAS SEMESTER 2</b> <b>PEPERIKSAAN AKHIR SEMESTER bermula 21 Okt 2017</b>	
<b>21</b> <b>23 – 29 Oct</b> <b>2017</b>	<b>PEPERIKSAAN AKHIR SEMESTER</b>	
<b>21</b> <b>30 Oct – 5</b> <b>Nov 2017</b>		
<b>23</b> <b>06 Nov- 26</b> <b>Nov 2017</b>	<b>CUTI SEMESTER</b>	

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### ASSESSMENT

Components	Topic	Assessment Method	Quantity of Assessment	Percentage	Total
<b>Continuous Assessment (CA)</b>	<i>Topic 1 and 3</i>	Quiz	2	10%	60%
	<i>Topic 2 and 3</i>	Test	1	15%	
	<i>Topic 1, 2, 3 and 5</i>	Tutorial Exercise	4	20%	
	<i>Topic 2 and 4</i>	Assignment	2	15%	
<b>Final Examination (FE)</b>	Topic 1, 2, 3, 4 and 5				40%
					<b>100%</b>

### ATTENDANCE

The student should adhere to the rules of attendance as stated in the latest version of *Arahan-arahan Peperiksaan Dan Kaedah Penilaian*:-

1. Student must attend not less than 80% of lecture hours as required for the course.
2. The student will be prohibited from attending any lecture and assessment activities upon failure to comply the above requirement. Zero mark will be given to the course.



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### REFERENCES

#### Main:

Bird, J. (2010). *Engineering Mathematics (6<sup>th</sup> Edition)*. UK: Newnes (ISBN : 978-0-08-096562-8)

#### Additional:

Bird, J. (2010). *Engineering Mathematics (6<sup>th</sup> Edition)*. UK: Newnes (ISBN : 978-1-85-617767-2)

Stroud, K. A., & Booth, D. J. (2011). *Advanced Engineering Mathematics (5<sup>th</sup> Edition)*, New York: Industrial Press Inc. (ISBN : 978-0-8311-3449-5)

Stroud, K. A., & Booth, D. J. (2013). *Engineering Mathematics (7<sup>th</sup> Edition)*, New York: Industrial Press Inc. (ISBN : 978-0-8311-3470-9)