

Electrical and Information Mathematics 2

Basic Course Information			
Course Number	0105090	Subject Category	Compulsory IM
Class Format	Lecture	Credit Type and Number of Credits	1.5
Department	Mechatronics	Student Category	Year 2
Period of Study	Semester 2	Classes per Week	3
Required Materials	Provided by the course teacher		
Instructor	Dulson, Preshobhendu		

Course Objective
 This course provides students with an introduction and basic knowledge of Mathematics for electrical and Information Mathematics including: Vectors, differentiation, integration, Mathematics model, etc.

Evaluation/Rubric	Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)	Unacceptable Level of Achievement (Fail)
To be able to understand fundamental vectors and engineering applications.	able to apply and investigate the engineering problem with the vector calculation.	able to apply the vector calculation in the engineering problem.	Lack to apply the vector calculation in the engineering problem.
To be able to understand basic Differentiation and application.	able to apply and investigate the engineering problem with the Differentiation.	able to apply the Differentiation in the engineering problem.	Lack to apply the Differentiation in the engineering problem.
To be able to understand basic Integration and application.	able to apply and investigate the engineering problem with the Integration.	able to apply the Integration in the engineering problem.	Lack to apply the Integration in the engineering problem.
To be able to understand basic Mathematics model.	able to develop the mathematics model for engineering problem.	able to analyse the mathematics model in the engineering problem.	Confuse to analyse the mathematics model in the engineering problem.

Relationship with Learning Outcomes
G(1) Wide knowledge on Science and Engineering and practical ability to apply them to solve problems in the society.
M(1) Ability to design, propose and develop robotic/ mechatronic systems to solve specific problems
M(2) Ability to design, propose and develop mechanical solutions/ systems for robotic/ mechatronic systems

Teaching Method
Outline: The subject focus on the application of basic and advance mathematics in the
Class Format: Lecture
Please Note: If you have any questions, please ask me anytime during the lecture.

Course Plan	Semester 2	Contents and Method of Course	Goals	Related MCC
1st week		Introduction class, explaining to class objective, criteria of score, and expected output.	Understanding class objective, criteria of score, and expected output.	V.D 4
2nd week		Introduction to the coordinate systems, coordinate transformation and vector.	Understanding the coordinate systems and transformation.	
3rd Week		vector operation	Understanding the vector operation	I 1 40
4th week		Methods of adding alternating waveforms	Understanding waveforms and operation.	
5th week		Introduction to the calculus and differentiation	Understanding the concept of the calculus and differentiation	
6th week		Holiday	-	
7th week		Fundamental of differentiation	Understand the fundamental of differentiation	I 1 52 I 1 54 I 1 55
8th week		The application of the differentiation	Understanding the application of derivative	I 1 61 I 1 58
9th week		Midterm examination	Check your understanding	
10th week		Reflection and Feedback	Reflect midterm examination and feedback to foster understanding.	
11th week		Fundamental of Integration	Understanding the concept of Integration	I 1 62 I 1 64
12th week		Techniques of Integration	Understanding the techniques of Integration	I 1 63 I 1 65
13th week		Application of integral part I	able to apply the application of integral as follow: area under the curve, RMS value, Volume.	I 1 66 I 1 67 I 1 68
14th week		Application of integral part II	able to apply the application of integral as follow: Centroid, Theorem Pappus, moment of shape	I 1 69
15th week		The basic concept of the mathematics model in engineering problems I	Understanding the basic concept of the mathematics model in engineering problems, as follow: population model, radioactive, newton's law, series of capacitor.	
16th week		The basic concept of the mathematics model in engineering problems part II	Understanding the basic concept of the mathematics model in engineering problems, as follow: kinetic model, circuit, fluid flow	
17th week		Holiday	-	
18th week		Wrap-up of 2nd half of semester (Review)	Review and summarize learning	
19th week		Final examination	Check your understanding	
20th week		Reflection and Feedback	Reflect final examination and feedback to foster understanding.	

Do not

	Evaluation	Quiz	Midst Evaluation between system	Project	Portfolio	Other
Basic Ability	40	20				
Technical Ability	20	10				
Interdisciplinary Ability	10					