Class Format	01005103	Subject Category	Compulsory M	
Department	Lecture Mechatronics	of Credite Student Category	1 Year 3	
Period of Study	Semester 1	Classes per Week	2	
Required Materiale	The handout will be provide	d in hardcopy and/or electroni	c file format.	
Instructor	Amon Sakonkanapong	Suwun Suwunnarat	Takeshi Toshima	
Course Objective Electromagnetism is a branch of physic	s that involves the study of th	re electromagnetic force and t	he combination of electric and	
magnetic phenomena. A good knowled and it is important for understanding th electric fields, including Gauss's law, div	ze and application of electron se operation of electrical and s ensences multi-conductor sval	nagnetism are required for var mechatronics systems This co tems, capacitance, and stored	ious types of engineering problems, urse provides a review of static energy. It also covers magnetism.	
including magnetic charge and magneti develop knowledge, problem solving ski mathematical treatments in electromag	c field, as well as magnetic m ills, and understanding of the netism are also covered.	aterials. The exercises and ho basics of electromagnetism, B	mework are designed to help students asic Vector Calculus and	
Evaluation(Rubric)	Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good	Unacceptable Level of Achievement (Fail)	
Understanding concepts of Electromagnetism and their relation	Excellent at demonstrating knowledge and understanding of concepts in Electromagnetism. Shows a good ability to connect these concepts with mathematical problems and answer questions.	This demonstrates a good understanding of bysical Electromagnetism concepts with well-connected concepts and mathematical procedures to solve problems, However, there may be occasional minor errors.	This shows a lack of accrocitite knowledge and understanding of concetts in Electromagnetism with weak connections among these concepts	
Mathematical and graphical recresentation	This is an escellent demonstration of the ability to describe Electronagravitism theorems and laws with equations. and to apply the appropriate laws to calculate electromagnetic quantities. The equations show a electromagnetic describe are logical and provide sufficient detail to describe electromagnetic phenomens.	This shows the ability to describe Electromagnetism theorems and laws with equations and apply the appropriate law to calculate electromagnetic quantities. The equations demonstrate a good understanding, and the accompanying anzhis auficient datal to describe electromagnetic phenomena.	This demonstrates an insufficient description of Dectormagnetism theorems and laws with intropore the case of the second second insocurate, and the accompanying arachs are incomplete or absent of information.	
Problem Solving	This provides a clear and logical progression from general connects/ecuations to solving a specific problem with different conditions, All final numerical answers are correct, with additional units and calculations.	This provides a logical progression from general consists/equations to solving secolfic problems, but with minor mistakes in calculation, adjebraic manipulation, or units.	This provides an unclear logical progression or solution, which is difficult to follow, with main algebraic and/or other mathematical mistakes in the solution.	
-				
				1
	l.			
G(1) Wide knowledge on Science an	d Engineering and practice	ability to apply them to sol	ve problems in the society.	
M(1) Ability to design, propose and o M(2) Ability to design, propose and o	sevelop robotio/ mechatron develop electrical and electr	io systems to solve specific ronic systems for robotics/ i	problems mechatronic systems	
Teaching Method Outline:	Students will study the basi of developing an appreciate	c concepts and principles of E on for the fundamental laws a	lectromagnetism with the expectation ind principles and their applications in	
Class Format: Please Note :	All materials will be poste	me topics will be demonstrated lab work. Lecture and exercise of on the Google Classroom, a all schedular	t in class, and/or there will be in-class ind students are requested to keep use further study for theread are	
	D ROOMERS OF THE OF		are rarored story for oreinserves.	
Course Plan Semester 1	Contents and A	Aethod of Course	Goals	Related A
1st week	Review of the electromagn evaluation	retism L course syllabus, and on criteria	Recall the electromagnetism knowledge and concepts and understand the overall contents and evaluation criteria	
2nd week	Electric field observation on conductor plate		To understand electric fields and phenomens in conductor plates and multi-conductor systems,	
3rd week	Energy stored between	a parallel conductor plate	To understand the nature of a capacitor, and be able to describe and calculate the amount of energy stored in a capacitor.	VC 2
4th week	Multi-conductor system and earthing		To understand the various types of conductors, electric field phenomena, and earthing systems,	V-C 2
5th week	Self capacitance and mutual capacitance			
		d mutual capacitance	Capable of differentiating between self-capacitance and mutual capacitance.	V-C 2 V-C 2
6th week	A1 Poster	d mutual capacitance presentation	Capable of differentiating between self-capacitance and mutual capacitance. To summarize the overall content and present it as a group presentation.	V-C 2 V-C 2 V-C 2
6th week 7th week	A1 Poster Review and	d mutual capacitance	Catalake of differentiating between self-catalations and mutual catalogianos.	V-C 2 V-C 2 V-C 2
6th week 7th week 8th week	A1 Poster Parview and McBerm e	d mutual capacitance	Casebe of Afferentiative beneats efficience and model caseberrow. To summarize the owned contact information to service presentation.	V-C 2 V-C 2 V-C 2
011 vorek 711 vorek 811 vorek 911 vorek	A1 Poster Review an Michern e Return Michern Ever	d mutual casacitance presentation d summarize asemination Papers and Feedback.	Cacable of offleenrotistice between electroscotterios and mutual cacabilities of users of the second presentation Perfere and summarize Mettern exemination Perfere besining	V-C 2 V-C 2 V-C 2
Oth week 7th week Dith week Oth week	A1 Poster Fileder an Midtern e Pieturn Midtern Ever	d mutual capacitame presentation d surmative semination Places and Feedback Multirelefectric capacitor	Cacable of offleerotistics between executives consolitations. To summarize the owned content of the executive of the executiv	¥-C         2
Dh week 7th week Bh week Dh week 10th week	A 1 Poster Perview and Meitern Ever Peturn Matern Ever Delectric properties and Delectric properties and	d mutual caesolarine reservation d mutual caesolarine d aurimetice asemination	Cacable of Illementative beneat executions of inclusion consolitions. To exemute the owned control memory of the inclusion memory of the inclusion Preview and summarize Medium exemination Review lawring. Understand the nature and disacter matching of the intervent of disacter matching and a the Disacter for the consolition of allerity fields of disacter is and all the fields of the consolition of allerity fields of the consolition of allerity	A         5           A         5
Eth week Tih week Eth week Italy week Italy week	A 1 Poster Person and Middennie Petrum Middennie Exer Deletectric anoonties and Deletectric anoonties and Bounder	d mutual capacitance preventiation d summaritie d summaritie weenination Norma and Preditack Nutri delectric capacitor to magnation to magnation	Cacable of Alflerentiation benear executions. To exemute the owned context internetiation of the owned context internetiation. Network and summarize Medium exemination Provide land and and and and Development of the owned and owned and Development of the owned and owned and Development of the owned owned and owned and Development of the owned owned and owned and Development of the owned own	VC         2
611 veek 711 veek 811 veek 011 veek 1001 veek 1101 veek 1201 veek	A 1 Poster Periters an Matern Matern Even Delectric properties and Delectric properties and Boundari Introduction Magne	d mutual consistence presentation d summarize exemination Number of Peedback Number of Peedback in consisten in magnetism its force its force	Cacable of offlower/solve become self-case-solve on the solution consolveroe. To summarize the control control memory of the solution memory of the solution memory of the solution Review and summarize Medium examination Review teamination Device teamination Understand the units of disection manufacture the control of the solution of the solution Device team of the solution of the solution Cacable of society for an of devicement solution of the solution of the solution of the control of the solution of the solution of the solution of the control of the solution of the solu	VC         2         VC         2           VC         2         2         2         2
От чинк     Тт чинк     Тт чинк     От чинк     От чинк     От чинк     Тот чинк	A 1 Poster Preview en Meitern Even Delectric creperties and Bounder Bounder Hetoskuttern Mane	d mutual consistence presentation d summarize d summarize exemination d summarize recordion to magnetise to magnetise consecution to magnetise to ma	Cacable of differentiation between casacitance. To extend the second control of the presentation of the second control presentation. Review and summarize Mattern exemination Review and summarize Mattern exemination Review and summarize Understand the nature and distancemental of the nature of the nature base of distance of the constant of allocity contents.	
6/1 vook 7/1 vook 8/1 vook 9/1 vook 10/1 vook 11/01 vook 11/01 vook 11/01 vook 11/01 vook 11/01 vook 11/01 vook	A 1 Poster Perview and Meterne Beer Defectio properties and Defectio properties and Boundar Retrockation Means Al Poster	d mutual capacitance creaentation d summative executation Nutri effective capacitor ( Nutri effective capacitor ) Nutri effective capacitor ( ) o magnetism ( ) creaentation creaentation ( ) creaentation ( )	Cacable of afflerentiation beneating executions of means of means executions of the execution presentation of the execution of the execution of the execution of the execution of the execution of the execution of the execution of the execution of the execution of the execution of the execution of the execution of the execution of the execution of the execution o	YG 2 2 YG 2 YG 2 YG 2 YG 2 YG 2 YG 2 YG
Ch' week     T/h week     T/h week     D/h week     D/h week     10/h week     12/h week     12/h week     13/h week     15/h week     15/h week     10/h week	A 1 Poster Flexion and Return Matern Ever Delectric properties and Delectric properties and Extraduction Mapre Coldstron A 1 Poster Preview and	d mutual capacitance presentation d summarize meanination Pagene and Peedback Pagene and Peedback NUM-delectric capacitor ( NUM-delectric capacitor ( NUM-delectric capacitor ( ) ormanution ) ormanution ) d summarize	Cacable of influenciations benearing cacable and end of the scalar costaliance of the scalar Review and summarize Review and summarize Review and summarize Review and summarize Review learning Understand the scalar Scalar devices and scalar Cacable of scalar and scalar Review learning Understand the scalar Review and summarize Cacable of scalar and scalar Review learning Understand the scalar Review and summarize Review and summarize Scalar devices and scalar Review and scala	
61' минк           71' минк           81' минк           01' минк           101' минк           121' минк           121' минк           131' минк           151' минк	A1 Poster Perieve an Return Mattern Exer Return Mattern Exer Dielectric properties and Dielectric properties and Dielectric properties and Cocidation A1 Poster Perieve an Final exe Final exe	d mutual capacitance presentation d mutual capacitance membration d mutual capacitance d mutual capacitance capaci	Casebe of efforts the behavior of the sector	

nta Recort Perilete Other 20 20

Basic Ability Technical / Interdisciple