

Electrical Circuit 2

Basic Course Information			
Course Number	01005992	Subject Category	Compulsory IM
Class Format	Lecture	Credit Type and Number of Credits	1
Department	Mechatronics	Student Category	Year 3
Period of Study	Semester 1	Classes per Week	2
Required Materials			
Instructor	Warachai Pattanasaboon		

Course Objective
 This semester describe AC circuit analysis consists of basic calculation, design, and math topics. These are very important as background knowledge for mechatronics and other engineering fields. AC circuits have become main circuits to the power driver, power transmission, AC motor, and so on. After this class student able to understand and analyse the AC circuit for real world applications.

Evaluation/Rubric	Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)	Unacceptable Level of Achievement (Fail)
	Demonstrates very good knowledge of Sinusoid and Phasor Converting.	Demonstrates good knowledge of Sinusoid and Phasor Converting.	Lacks the appropriate knowledge of Sinusoid and Phasor Converting.
AC Circuit analysis	Demonstrates very good knowledge of AC Circuit analysis	Demonstrates good knowledge of AC Circuit analysis	Lacks the appropriate knowledge of AC Circuit analysis
AC Circuit Theorem	Demonstrates very good knowledge of AC Circuit Theorem	Demonstrates good knowledge of AC Circuit Theorem	Lacks the appropriate knowledge of AC Circuit Theorem

Relationship with Learning Outcomes

MI(2) Ability to design, process and develop electrical and electronic systems for robotics/ mechatronic systems

Please change

Please change

Teaching Method

Outline:	Repeat of Explanation-Drill
Class Format:	Lecture and Drill
Please Note :	Students are required to ask any questions after sufficient self-learning

Course Plan	Semester 1	Contents and Method of Course	Goals	Related MCO
1st week	Sinusoid and Phasor Converting		able to convert between sinusoid and phasor	V-C 1 7
				V-C 1 9
				V-C 1 10
2nd week	Lead and Lag Phasor		able to define which lead or lag waveforms	V-C 1 10
				V-C 1 11
				V-C 1 12
3rd week	Phasor for Impedance combination and Kirchhoff's Laws KVL and KCL		understand converting lump element RLC into complex number for circuit analysis	V-C 1 13
				V-C 1 14
				V-C 1 15
4th week	Phasor for Impedance combination and Kirchhoff's Laws KVL and KCL		understand converting lump element RLC into complex number for circuit analysis	V-C 1 13
				V-C 1 14
				V-C 1 15
5th week	National holiday			
6th week	Basic AC Circuit analysis by Ohm's law, KVL, KCL		able to analysis and convert voltage and current phasors into time domain	V-C 1 14
				V-C 1 15
7th week	Basic AC Circuit analysis by Ohm's law, KVL, KCL		able to analysis and convert voltage and current phasors into time domain	V-C 1 14
				V-C 1 15
8th week	Test a trial of midterm exam		check student understanding	
9th week	Midterm Examination		Test student understanding	
10th week	Midterm Examination		Test student understanding	
11th week	Return Exam Papers and Feedback		Review and summarize learning	
12th week	Mesh Current analysis		able to apply mesh current analysis for particular cases	V-C 1 15
				V-C 1 17
13th week	Node voltage analysis		able to apply node voltage analysis for particular cases	V-C 1 15
				V-C 1 16
14th week	Super Node and Super Mesh analysis		able to apply supernode and supermesh for complexly circuits	V-C 1 15
				V-C 1 17
				V-C 1 18
15th week	National holiday			
16th week	Superposition Theorem		able to apply superposition to analysis a circuit in case of different frequencies of sources	V-C 1 15
				V-C 1 16
17th week	Ho-Thevenin Equivalent Circuits		understand converting the complexly circuit into a simplest circuit	V-C 1 15
				V-C 1 19
18th week	Norton Equivalent Circuits		understand converting the complexly circuit into a simplest circuit	V-C 1 15
				V-C 1 19
19th week	Test a trial of Final exam		check student understanding	
20th week	Final Examination		Test student understanding	
21st week	Return Final exam		let student to check their scores	

Do not

	Examination	Quiz	Midterm/Exams between students	Report	Particip	Other
Basic Ability	0	0	0			
Technical Ability	0	0	0			
Interdisciplinary Ability	0	0	0			