

No	Course Information	
1	Unit name:	Electromechanics
2	Code:	EP 21021
3	Classification:	Engineering subject
4	Credit value:	2.5
5	Semester/ Year Offered:	1/2
6	Pre-requisite:	Electrical Machine and Operation I&II
7	Mode of delivery:	Lecture, Practical
8	Assessment system and breakdown of marks:	
	Test	20%
	Mid-term Examination	30%
9	Academic staff teaching unit:	
10	Course outcome of unit: In this course students will	<ul style="list-style-type: none"> ➤ To relate magnetic circuit with various magnetic materials for detailed study of electric machinery. ➤ To perform the various conditions for single-phase and three-phase transformer. ➤ To calculate the rating of single-phase and three-phase transformer circuit during test .
11	Synopsis of unit:	The course covers the fundamental of electromechanics. The course introduces students to the device used in the interconversion of electric and mechanical energy, magnetic circuit, magnetic material, the power transformer, the electromechanical-energy-conversion principle and rotating machines.

	<p>Topic:</p> <p>Chapter Title</p>
	<p>1. Magnetic Circuit and Magnetic Materials</p> <ul style="list-style-type: none"> -Introduction to Magnetic Circuits -Flux Linkage, Inductance, and Energy -Properties of Magnetic Materials -AC Excitation -Permanent magnets -Application of Permanent Magnet Materials -Summary -Problem <p>2.Transformers</p> <ul style="list-style-type: none"> - Introduction to Transformer -No-Load Conditions -Effect of Secondary Current; Ideal Transformer -Transformer Reactances and Equivalent Circuit -Engineering Aspects of Transformer Analysis -Autotransformer; Multiwinding Transformer -Transformer in Three-Phase Circuit -Voltage and Current transformer -The Per-Unit System -Summary -Problem
14	<p>Main references:</p> <p>1. Electric Machinery: Sixth Edition, A.E.Fitzgerald, Charles Kingsley,Jr. Stephen D. Umans</p>
15	<p>Additional references:</p> <p>http://mysite.du.edu> tech>elmotors</p> <p>http://www.explainthatstuff.com>how-regener....</p>

Information on Lab Practical

Lab	Activity
1	<p>JOB-(1) JOB-1 TO CONDUCT OPEN CIRCUIT TEST ON SINGLE PHASE TRANSFORMER</p> <p>Objective:</p> <p>Upon the completion of this activity, the student must be able to</p> <p>- To find the parameters of equivalent circuit diagram of a single phase transformer using open circuit tests</p> <p>Requirement Materials</p> <ul style="list-style-type: none"> • Variac – 0-270V, 6A, 50HZ , 1ph • Single phase transformer – 1KVA, 220/110V, 50HZ • Open-circuit test – Voltmeter: AC 0-150V 1No Ammeter: AC 0- 1A 1No Wattmeter: 1A, 150V, Low P.f meter 1No

<p style="text-align: center;">2</p>	<p>JOB-2 TO CONDUCT SHORT CIRCUIT TEST ON SINGLE PHASE TRANSFORMER</p> <p>Objective:</p> <p>Upon the completion of this activity, the student must be able to</p> <ul style="list-style-type: none"> - To find the parameters of equivalent circuit diagram of a single phase transformer using short circuit tests <p>Requirement Materials</p> <ul style="list-style-type: none"> • Variac – 0-270V, 6A, 50HZ , 1ph • Single phase transformer – 1KVA, 220/110V, 50HZ • Short-circuit test – Voltmeter: AC 0-30V 1No Ammeter: AC 0- 5A 1No
<p style="text-align: center;">3</p>	<p>JOB (3) 3Ø Transformer Connection (Y- Y)</p> <p>Objective : To Learn and recognize the behavior of Y- Y connection</p> <p>Equipment : 1. A.C power supply unit 380V, 50Hz 2 . Transformer Trainer 3. 3Ø Transformer</p>
<p style="text-align: center;">4</p>	<p>JOB(4) 3Ø, Transformer Connection (Y –Δ)</p> <p>Objective : To Learn and recognize the behavior of Y-Δ connection.</p> <p>Equipment : 1. A.C power supply unit 380V, 50Hz 2 . Transformer Trainer 3. 3Ø Transformer</p>

5	<p>JOB (5) 3Ø Transformer Connection (Δ-Δ)</p> <p>Objective : To Learn and recognize the behavior of Δ - Δ connection</p> <p>Equipment : 1. A.C power supply unit 280V, 50Hz</p> <ul style="list-style-type: none">2 . Transformer Trainer3. 3Ø Transformer
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