Sault College of Applied Arts and Technology
Sault Ste. Marie, Ontario
Course Outline

Course Title: AC Circuit Analysis and Machines
Code No.: ELR 109
Program: Electrical/Electronic Engineering Technology
Author: A. Gooderham
Date: Jan. , 1996 Previous Outline Date: Dec., 1991

Approved: Co-ordinator_____ Date_____

Dean L C Augustin Date 96-01-20

AC CIRCUITS and MACHINES — ELR 109
COURSE NAME — CODE NO.

PREREQUISITES: ELR 100

PHILOSOPHY & GOALS:

An analytical study of series and parallel, and series-parallel circuits, impedance networks, network theorems and polyphase circuits. Fundamentals of DC circuit analysis is followed by AC analysis techniques. An overview of the basic construction and operation of DC and AC machines completes the course content.

STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of the course the student will be able to:

1. Analyse fundamental dc circuits
2. Analyse fundamental ac circuits
3. Describe basic parts and operation of dc machines
4. Describe basic parts and operation of ac machines

TOPICS TO BE COVERED:

1. Dc networks
2. Magnetism
3. Inductance
4. Capacitance
5. LR & CR DC Circuits
6. AC fundamentals review
7. Phasors & Complex Numbers
8. LR & CR AC Circuits
9. Series-Parallel AC Circuits
10. Power in AC Circuits
11. AC Networks
12. Three-Phase AC Systems
13. Transformers
14. DC Motor/Generators
15. Three-Phase AC Motors

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LEARNING ACTIVITIES	REQUIRED RESOURCES
1. Dc networks Voltage & Current Sources Superposition Theory Thevenin's Theorem Maximum Power Transfer	Chpt 8 Chpt 9
2. Magnetism	Chpt 11
3. Inductance	Chpt 14
4. Capacitance	Chpt 15
---------- Test #1	
5. LR & CR DC Circuits Instantaneous values Charge & Discharge curves	Chpt 16
6. AC fundamentals review	Chpt 17
7. Phasors & Complex Numbers Polar & Rectangular Forms Complex Math	Chpt 18
8. LR & CR AC Circuits	Chpt 19
---------- Test #2	
9. Series-Parallel AC Circuits Series-parallel impedances AC Voltage Divider	Chpt 20
10. Power in AC Circuits	Chpt 21
11. AC Networks Superposition Theorem Thevenin's Theorem	Chpt 22
12. Three-Phase AC Systems Delta & Wye Charactoristics (Only)	Chpt 26
---------- Test #3	
13. Transformers Principles Types (Only)	Chpt 24
14. DC Motor/Generators	Instructor Notes
15. Three-Phase AC Motors	
---------- Test #4	

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Evaluation Methods
Grading System:
A+ = 90 - 100% A = 80 - 89% B = 70 - 79% C = 55 - 69%
R = REPEAT
Tests 4 x 25% each

Total 100%

Notes: If a student misses a test He/She must have a valid reason (ie. medical or family emergency). In addition the school must be notified before the scheduled test sitting. The student should contact the instructor involved. If the instructor cannot be reached a message must be left on the instructor's voice mail, or with the Dean's office, or the college switchboard. If this procedure is not followed the **student will receive a mark of zero on the test with no rewrite option.**

Students will be given advance notice of test dates (1 week minimum) but quizzes worth a maximum of 5% may be given without notice. **There will be no rewrites for** students missing quizzes without prior notice and valid **reasons as outlined above.**

Required Student Resources

Text: ELECTRIC CIRCUITS, PRINCIPLES, APPLICATIONS AND COMPUTER ANALYSIS by DAVID A. BELL, PRENTICE HALL PUBLISHERS

Additional Resource Materials Available In The College or Public Libraries:

Special Needs

Students requiring special assistance due to special needs should contact the specific instructor in private to make **arrangements.**