#332

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: AC CIRCUITS & MACHINES

Code No.: ELR 200

Program: MECHANICAL

Semester: THREE

Date: OCTOBER, 1987

Author: J. HAMILTON

New: XX Revision: _____

APPROVED: L.P. Arazietti
Chairperson

87/6/10
Date

CALENDAR DESCRIPTION

AC CIRCUITS & MACHINES I	ELR 200
Course Name	Course Number

PHILOSOPHY/GOALS:

When the student has completed this course he will have a good understanding of single phase and three phase AC circuits. He will also have the basic fundamentals of DC and AC generation, types of DC and AC motors and control equipment.

METHOD OF ASSESSMENT (GRADING METHOD):

Students will be assessed by periodic quizzes, a mid-term and a final exam.

GRADING POLICY:

Semester-End Reporting:

A+ (Numerical Equivalent 4.0) - Consistently Outstanding (> 90%)
A (Numerical Equivalent 3.75)- Outstanding Achievement (80-90%)
B (Numerical Equivalent 3.0) - Consistently Above Average (65-79%)
C (Numerical Equivalent 2.0) - Satisfactory or Acceptable (55-64%)
R (Numerical Equivalent 0.0) - Repeat - Objectives of course not achieved and course must be repeated

The following grades are also approved end-of-term grades but are not assigned numerical equivalence for computing the grade point average.

S - Satisfactory (assigned to non-graded courses or field placement
U - Unsatisfactory (assigned to non-graded courses or field placements when course objectives not achieved)
X - Temporary grade assigned to student for additional time to complete course requirements used ONLY because of extenuating circumstances. "X" grade contract form must be completed and submitted for each X grade assigned.

Mid-Term Reporting:

Student progress will be reported as follows for mid-term reports:

S - Satisfactory Progress
U - Unsatisfactory Progress
R - Repeat (objectives have not been met)
NR- Grade not reported to Registrar's Office. This grade is used to facilitate transcript production when faculty, because of extenuating circumstances, find it impossible to report grades by due dates.

TEXTBOOK(S):

Fundamentals of Electric Circuits - David A. Bell
Electrical Machines DC and AC - Siskind
AC Circuits - David A. Bell

REFERENCE TEXTS:

Industrial Electricity - W. H. Timble
Direct and Alternating Current Machinery - Rosenblatt & Friedman
Maintenance Hints - Westinghouse Corporation

TOPIC	THEORY	LAB	TOPIC DESCRIPTION
1	8		AC CIRCUIT ANALYSIS 1. Series Impedance 2. AC Voltage Divider 3. Parallel Impedance 4. AC Current Divider 5. Series-Parallel Impedance
2	6		NETWORK ANAYSIS 1. Superposition 2. Loop Equations 3. Thevemim 4. Delta-Wye/Wye-Delta Impedance Conversions
3	6	6	THREE PHASE AC CIRCUITS 1. Three Phase Source 2. Phase Sequence 3. Wye and Delta Source Connections 4. Voltage, Current and Power Relationships in Three Phase Cts. 5. Three Phase Power
4	8	10	TRANSFORMERS 1. Construction 2. Types 3. Ideal Transformers and Transformation Ratio 4. Practical Transformers 5. Regulation, Unity, Lagging and Leading Power Loads 6. Open and Short Circuit Tests 7. Efficiency 8. Single and Three Phase Winding Connection 9. Polarity and Voltage Test 10. Autotransformers 11. Instrument Transformers 12. Parallel Operation of Transforme

5	7	6	POLYPHASE INDUCTION MOTORS 1. Construction, Squirrel Cage and Wound Rotor 2. Polyphase Rotating Magnetic Fiel 3. Rotor Speed and Slip 4. Wound Rotor Characteristics 5. Generated Voltage and Frequency in a Rotor 6. Rotor Torque 7. Starting Induction Motors 8. Speed Control 9. Efficiency
6	6	4	ALTERNATORS 1. Construction 2. Types of Winding, Pitch Factor and Distribution Factor 3. Regulation 4. Voltage Drops in Alternators
7	4	4	SYNCHRONOUS MOTORS 1. Construction 2. Starting 3. Power Factor Control