

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: ELECTRICAL MACHINES

Code No.: ELR 232-6 Semester: THREE

Program: ELECTRICAL ENGINEERING TECHNICIAN/TECHNOLOGY

Author: JIM HAMILTON

Date: SEPT. 1989 Previous Outline Dated: MAY 1978

APPROVED: _____
Chairperson Date

ELECTRICAL MACHINES

ELR 232-6

Course Name

Course Number

Total Credit Hours 96

Prerequisite(s):

ELR 109 -- AC CIRCUIT ANALYSIS & MACHINES

I. PHILOSOPHY/GOALS:

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

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COURSE NAME

COURSE CODE

TOPIC	PERIODS		TOPIC DESCRIPTION
	THEORY	LAB	
1	3	4	ARMATURE WINDINGS a) multi-plex windings b) coil pitch c) commutator pitch d) equalizer connections e) frog leg windings f) winding calculations
2	3	4	GENERATOR CHARACTERISTICS a) armature reaction b) interpoles c) compensating windings d) commutation e) generation in parallel f) generator problems
3	4	4	MOTOR CHARACTERISTICS a) automatic starters b) loading effect c) torque characteristics d) speed characteristics e) speed control f) armature reaction g) motor problems
4	3	4	EFFICIENCY RATING & APPLICATION OF DYNAMOS a) special dynamos and applications b) dynamotors c) series boosters d) electric braking e) problems

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TOPIC	PERIODS		TOPIC DESCRIPTION
	THEORY	LAB	
5	3	4	TOPIC INFORMATION COMMUTATORS & BRUSHES a) construction b) surfacing c) undercutting d) film contaminants e) brush sparking f) problems
6	4	4	ALTERNATING CURRENT GENERATORS a) alternator construction b) generated voltage in an alternator c) armature windings for alternator d) coil pitch and pitch factor e) voltage drop f) phasor diagram g) synchronous reactance and synchronous impedance h) alternators in parallel i) alternator problems
7	9	16	TRANSFORMERS a) leakage reactance b) equivalent resistance reactance and impedance c) equivalent circuit of transformer d) maximum efficient e) autotransformers f) phasing and polarity g) parallel operation h) induction voltage regulator i) problems

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TOPIC	PERIODS		TOPIC DESCRIPTION
	THEORY	LAB	
8	6	12	POLYPHASE INDUCTION MOTORS a) rotor current and power b) rotor torque c) starting induction motors d) operating characteristics e) speed control f) electric braking g) problems
9	7	8	TOPIC INFORMATION SYNCHRONOUS MOTORS a) construction b) starting synchronous motors c) operation d) loading e) P.F. adjustment f) synchronous induction motor g) hunting and damping h) problems