

EE 2683
Electric Circuits & Machines (for non-electricals)

Dr. A.M. Sharaf Rm GC117
sharaf@unb.ca

MWF 9:30-10:20 am – HC11

Tutorial TH 11:30 am-12:20pm – HC10

Labs: (1) M 2:30-5:30 (2) W 2:30-5:30 pm (3) F 2:30-5:30

CEAB		Approval Date: Oct. 19th, 2005	
Lectures/weeks	3 hours	Math	5%
Tutorials/week	1 hour	Basic Science	5%
Labs/week	3 hours	Complementary Studies	0%
Weeks/term	12 4	Engineering Science	70%
		Engineering Design	20%

Calendar Description

Network analysis including ac Introduction to transformers, dc machines and ac machines.
 Prerequisites: EE 1813 or EE 1013 or equivalent, Math 1013

Course Content

1.	Basic Electric Circuits and Electromagnetics: Basic electric circuit laws; sinusoidal waveforms, RMS, and phasor representation; elements of electric circuits; basic electromagnetics	4
2.	AC Single Phase: Active, reactive and apparent power; power factor and power factor correction.	2
3.	AC Polyphase Circuit: Two phase system; three phase system, Wye & Delta; balanced load Wye & Delta; power measurement (meter connections) (Wattmeter & Watt Hr. Meters); three phase circuit analysis.	6
4.	Transformers: Theory (polarity, etc); equivalent circuit; open & short circuit tests; three phase connections; voltage regulation and efficiency; special transformers.	8
5.	DC Machines: Basic windings (Lap & Wave); excitation methods; commutation & armature reaction; external characteristics; equivalent circuit and speed & torque equations; motor starters and controllers.	8
6.	AC Machines: Rotating magnetic field; induction motor; alternators; synchronous motor (power factor control); single phase motors	9
7.	Midterm test	2
	Total hours	39

TEXTBOOK

“Electrical Machines, Drives and Power Systems”, by T. Wild, Prentice Hall Publisher - 6th Edition

Labs

1.	Phase relationships in AC circuits	3.	Direct current machines
2.	Transformers	4.	Alternating AC current motors

Course Evaluation

Assignments/Quizzes*	10% (5% each)	Labs/Lab Test***	10% (5% each)
** Tests	20%	Final	50%
One Project (PBL)	10%		

* = Tutorial quizzes will be weighted as 5%.

** = Two tests will be given -- one February 23, 2007 and one March 23, 2007. The best mark of the two will be counted.

*** = Oral Lab Test will be weighted 5%.

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