

Carleton University
Department of Electronics
ELEC 3105 Basic EM and Power Engineering
Course Outline
Fall 2020

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Course Description: In this course you will learn the fundamentals of electromagnetics (EM) and its application to motors, generators and electric power distribution. Topics covered include: electrostatics and magnetostatics; solution of Poisson's and Laplace's equations; the Lorenz equation and force; time varying fields; magnetic circuits and transformers; DC motor and generator; induction motor; synchronous motor and generator; three-phase power. The course precludes additional credit for ELEC 2601 or ELEC 3504. Prerequisites are: MATH 2004 and (PHYS 1004 or PHYS 1002).

Textbooks:

- M. Sadiku, "Elements of Electromagnetics", 6th edition.
- F. Ulaby, "Fundamentals of Applied Electromagnetics", 6th edition.
- J. R. Cogdell, "Foundations of Electric Power", Prentice- Hall.
- M. Sadiku, "Fundamentals of Electric Circuits", 4th Edition.
- S. Chapman, "Electric Machinery Fundamentals", 5th Edition.

Course Grading and Evaluation Procedures:

- Labs 20%
- Quizzes 30%
- Exam 50%

- Laboratories
 - Attend each lab punctually. **Absence** (without permission) **means zero for that lab**. If you have a valid reason for missing a scheduled lab, the lab must be completed as soon as possible after the scheduled lab period (usually within a week of your missed lab).
 - Be prepared for the lab experiment by reading the lab instruction sheets before entering the lab. You will be part of a lab group, but each student must submit his/her own lab report. This report should include the measurement setup, a clear description of the measurement performed, data, sample calculations, discussion of results and conclusions. It is NOT a formal lab report with purpose, apparatus, and observations. The lab report is due one week from the lab period. **Late labs are worth zero**.
 - Some labs have a pre-lab exercise that must be completed before the start of your lab period. You are not permitted to do the lab unless the prelab is completed. The TA will sign your lab book prior to starting the lab and verify that the pre-lab is completed. **Even**

if you work and write a report in a group, each student must submit on culearn his/her own lab report.

- Lab and PA sessions are 3 hours in duration. Labs and PA sessions “alternate” from week to week and will be held according to the schedule shown on the course website. You must attend your lab and your PA session in the session you are assigned. **Changing session is not allowed.**

Plagiarism Policy: When you use (for example, quote or even summarize or paraphrase) someone else’s media, words, data, ideas, or other works, you must cite your source. You should be especially careful to avoid plagiarizing Internet sources (for example, e-mail, chat rooms, Web sites, or discussion groups). It does not matter whether you borrow material from print sources, from the Internet, from on-line data bases, or from interviews. Failure to cite your source is plagiarism. Students who plagiarize may receive an “F” or a “0” for the assignment, or an “F” for the course. Plagiarism is a serious instructional offense that can not be tolerated. Please refer to the section on instructional offenses in the Undergraduate Calendar for additional information.

Attendance Policy: When you miss a class, it is your responsibility to obtain the missed information.

Student Email Policy: The University sends official communications to Carleton email addresses. This address will receive notices about schedules, grade results, billing information, emergency alerts, important deadlines, newsletter, and all other official university information. It is your responsibility to read and manage this email. Make sure you receive any correspondence in regards to this course. Please note the instructor of this course is not responsible for missed email communication directed to your spam folder.

Examination Policy: The use of communication or recording/playback devices, with the exception of devices explicitly permitted by the course instructor, is prohibited during quizzes and examinations. This includes, but is not limited to, cell phones, PDAs, iPods and MP3 players, tablets, computers, cameras, and headphones or in-ear earphones. All such devices must be turned off and put away in an inaccessible location such as a backpack. Accessing a prohibited device will result in the immediate termination of the quiz or examination and may result in a charge of academic misconduct.

Academic Accommodation: You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://carleton.ca/equity/accommodation/student_guide.htm

Religious obligation: Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://carleton.ca/equity/accommodation/student_guide.htm

Students with disabilities requiring academic accommodations: In this course you must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities could include but are not limited to mobility/physical impairments,

specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the last official day to withdraw from classes in each term. For more details visit the PMC website: http://www.carleton.ca/pmc/students/acad_accom.html