MEMORIAL UNIVERSITY

Department of Electrical and Computer Engineering
Faculty of Engineering and Applied Science

Course Outline

ECE 4800

Spring 2021

ECE 4800: Electromechanical Devices

Instructor	**Mohsin Jamil**	**Teaching Assistants:**	**1. Rasool Kahani** **2. Nushen Senevirathna**
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Phone	**864-2751**	**Phone :**	
Office Location	**EN-3031**	**Office Location :**	**TBA**
Office Hours	**Monday: 9:00– 10:10 am** **Wednesday: 9:00 – 10:10 am**	**Office Hours**	**TBD**
Communication	**Email: mjamil@mun.ca**		
Website	**http://online.mun.ca (D2L)**		

CALENDAR ENTRY:

ECE 4800 Electromechanical Devices includes an introduction to fundamental principles of energy conversion; review of three-phase systems; magnetic fields and circuits; transformer models, performance and applications; basic concepts of rotating machines; performance and control of dc machines.

PR: ENGI 3424, ECE 3300
LH: four 3-hour sessions per semester

LAB EXPERIENCE: Simulation

Five mandatory lab exercises are to be completed by individual student. Students perform analysis and design related to AC circuits, Three-Phase Circuits, Magnetic Circuits, Transformers and DC motors. Written report is submitted by each student after as per due deadline.

CREDIT VALUE: 3 credit hours

COURSE TYPE: Compulsory
ACCREDITATION UNITS: 3/1/1

CONTENT CATEGORIES:

Math	Natural Science	Complementary Studies	Engineering Science	Engineering Design
			100%	

SCHEDULE: LECTURE: Monday, Wednesday, Friday 3:00-03:50 pm, Room: Online
TUTORIAL: Thursday 2:00-2:50pm, Room: Online
LABS: Thursday and Friday 9:00am-12:00pm, Room: Online

RESOURCES:

TEXTBOOK

1. Electric Circuits, Nilsson and Riedel, 10th Edition.
2. Electrical Machines with Matlab, T. Gonen, 2nd Edition.

Matlab:

Students are encouraged to purchase Matlab and Simulink Student version. Student Version includes MATLAB, Simulink and 10 add-on products:

MAJOR TOPICS:

- AC Circuit Analysis & Power Calculations
- Three-Phase Circuits: Analysis & Power Calculations
- Magnetic Circuits
- Transformers
- DC Motors

LEARNING OUTCOMES:

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

1. Study steady state analysis of single-phase A.C circuits,
2. Calculate voltage, current and power in three phase circuits,
3. Understand the parameters that describe magnetic fields,
4. Conceptualize magnetic circuits,
5. Calculate magnetic field intensity, magnetic flux density in linear and non-linear magnetic circuits,
6. Describe the construction and operating principles of transformers,
7. Solve transformer problems and determine transformer characteristics by measurement,
8. Understand the basic principles of operation, and characteristics, of a DC motor,
9. Analyse the performance of DC motors,
10. Effectively communicate technical information in laboratory reports.

ASSESSMENT:

		Approximate Due Dates
Assignments (4)	**10%**	
Assignment 1		May 24
Assignment 2		Jun 07
Assignment 3		Jul 05
Assignment 4		Jul 19
Quizzes (4)	**20%**	
Quiz 1		May 24
Quiz 2		Jun 07
Quiz 3		Jul 05
Quiz 4		Jul 19

Midterm Test	**20%**	**Friday, Jun 25**
Lab Work (5)	**15%**	
Lab 1		Week 2 (17-21 May)
Lab 2		Week 4 (31-04 Jun)
Lab 3		Week 6 (14-18 Jun)
Lab 4		Week 10(12-16 Jul)
Lab 5		Week 12 (26-30 Jul)
Final Exam	**35%**	**TBD (August 09-August 14)**

ACADEMIC INTEGRITY AND PROFESSIONAL CONDUCT:
Students are expected to conduct themselves in all aspects of the course at the highest level of academic integrity. Any student found to commit academic misconduct will be dealt with according to the Faculty and University practices. More information is available at www.engr.mun.ca/undergrad/academicintegrity.
Students are encouraged to consult the Faculty of Engineering and Applied Science Student Code of Conduct at http://www.engr.mun.ca/policies/codeofconduct.php and Memorial University's Code of Student Conduct at http://www.mun.ca/student/home/conduct.php.
Individual work is expected of each student. Even if students work in groups, or discuss with others, assignments and reports should be independently prepared.

INCLUSION AND EQUITY:
Students who require physical or academic accommodations are encouraged to speak privately to the instructor so that appropriate arrangements can be made to ensure your full participation in the course. All conversations will remain confidential.
The university experience is enriched by the diversity of viewpoints, values, and backgrounds that each class participant possesses. In order for this course to encourage as much insightful and comprehensive discussion among class participants as possible, there is an expectation that dialogue will be collegial and respectful across disciplinary, cultural, and personal boundaries.

STUDENT ASSISTANCE: Student Affairs and Services offers help and support in a variety of areas, both academic and personal. More information can be found at www.mun.ca/student.