



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

Course Outline

ENGI 9862

Spring 2022

ENGINEERING 9862: Power System Protection

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| Instructor | Mohsin Jamil | Teaching Assistants: Ali Husnain |
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| Phone | 864-2751 | Phone : |
| Office Location | EN-3031 | Office Location : TBA |
| Office Hours | Mondays, 12:00 – 1:00 pm Tuesday, 12:00 – 1:00 pm | Office Hours TBD |

Communication Email: mjamil@mun.ca

Website <http://online.mun.ca> (D2L)

CALENDAR ENTRY:

Protective relaying and protection concepts, relay operating principles, current and voltage transformers, apparatus protection, power system phenomena and relaying considerations, relaying for system performance, and monitoring performance of power systems with wide area measurements (WAMS).

COURSE DESCRIPTION:

The objective of the course is Introduction to protective relaying and protection concepts, relay operating principles, current and voltage transformers, apparatus protection for transmission lines, rotating machinery, transformers, buses, reactors, and capacitors, power system phenomena and relaying considerations, relaying for system performance, and monitoring performance of power systems with wide area measurements (WAMS) technology.

SCHEDULE: Monday and Tuesday (2:00-3:15 PM)

CREDIT VALUE: 3 credit hours

RESOURCES:

TEXT BOOK

- Power System Relaying 4th Edition by Stanley H. Horowitz, Arun G. Phadke and James K. Niemira

REFERENCES

- Fundamentals of Power System Protection by Y.G. Paithankar and S.R. Bhide



MAJOR TOPICS:

- Introduction to Protective Relaying
- Relay Operating Principles
- Current and Voltage Transformers
- Transmission Lines Protection
 - Non-pilot Overcurrent Protection of Transmission Lines
 - Non-pilot Distance Protection of Transmission Lines
 - Pilot Protection of Transmission Lines
- Rotating Machinery Protection
- Transformer Protection
- Bus, Reactor, and Capacitor Protection
- Power System Phenomena and Relaying Considerations
- Relaying for System Performance
- Switching Schemes and Procedures
- Improved Protection with Wide Area Measurements (WAMS)
- Case Studies
- Design Project

ASSESSMENTS:

Approximate Due Dates

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|-----------------|-----|--|
| Assignments (4) | 20% | May 23, Jun 13, Jul 04, Jul 18 |
| Quizzes (4) | 20% | May 24, Jun 14, Jul 05, Jul 19 |
| Midterm Exam I | 10% | Tuesday, June 28 |
| Midterm Exam II | 10% | Tuesday, July 19 |
| Design Project | 40% | Stepwise Deadlines (Proposal, Mid Report, Final Report, Final Presentation) |

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 <http://www.mun.ca/engineering/undergrad/academicintegrity.php>

Students are encouraged to consult the Faculty of Engineering and Applied Science Student Code of Conduct at <http://www.mun.ca/engineering/undergrad/academicintegrity.php> and Memorial University's Code of Student Conduct at <http://www.mun.ca/student/conduct/>.



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INCLUSION AND EQUITY:

Students who require accommodations are encouraged to contact the Glenn Roy Blundon Centre, <http://www.mun.ca/blundon/about/index.php>. The mission of the Blundon Centre is to provide and coordinate programs and services that enable students with disabilities to maximize their educational potential and to increase awareness of inclusive values among all members of the university community.

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