



THE UNIVERSITY OF WINNIPEG

PHYSICS 2201/6-001 – Electricity & Magnetism

Course Outline 2015-2016

Calendar Description

Electrostatics, DC circuits, magnetic effects of a current, electromagnetic induction, properties of dielectric and magnetic materials, elements of AC circuit theory.

PREREQUISITE: PHYS-1101(6), MATH-1101(6).

COREQUISITE: The Mathematical Physics Courses PHYS-2105(3) and PHYS-2106(3) to be taken concurrently.

Instructor Information

Instructor: Dr. Blair Jamieson

Office: Room 3L24

E-mail: bl.jamieson@uwinnipeg.ca

Phone: 204-786-9216

Office Hours: Monday and Thursday 10:20am – 11:20 am, or by appointment

Important Dates

Class meeting times: Tuesday and Thursday 11:30am – 12:45pm Room No: 2C14

First day of class: September 9, 2015

Midterm Tests (75 minutes each):

Oct. 23, 2015 (11:30 am 2C14);

Dec. 16, 2015 (9:00 am 2C14);

Feb. 24, 2016 (11:30 am 2C14)

Final Exam: (3 hours): Apr. 18, 2016 (9:00 am 2C14)

Final withdraw date w/o academic penalty: January 20, 2016

Assignments: Weekly assignments will be given, and can be handed in the drop box outside 3L24.

Evaluation Criteria

1. Weekly problem assignments (10%)

- Will be handed out, and posted at:

<http://t2kwinnipeg.uwinnipeg.ca/~jamieson/courses/EandM/assignments/>

- Due on the week following being handed out, at 3pm
- First assignment due September 22, to drop-box outside 3L24
- Solutions will be posted in hallway outside 2C21
- Late assignments will not be accepted

2. Midterm tests (3 tests, each worth 15%)

- October and February midterms are in class at regular class time
- December midterm is during December final exam time
- Missed midterms will be given 0% unless a doctor's note is provided, in which case the missed percentage will be added to the final exam (ie. make the final worth 45%).

3. Laboratory (worth 15%)

- Special Department Regulation: All laboratory experiments must be completed.

4. Final Exam (worth 30%)

Course Topics

The following topic list is used as a guide to show a tentative plan for the course. Topics may be added or dropped from this schedule, and the order may be changed. In general the first term will cover electrostatics, DC circuits and magnetostatics, while the second term will cover changing magnetic fields, AC circuits, Maxwell's equations, and optics:

- Electric fields
- Gauss' Law
- Electric potential
- Capacitance and resistance
- Current and resistance
- DC Circuits
- Magnetic fields
- Sources of magnetic fields
- Faraday's Law
- Inductance
- AC Circuits
- Maxwell's equations, electromagnetic waves, and the electromagnetic spectrum
- Wave motion

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- Propagation of Light below this line, as time permits
 - Geometrical optics
 - Polarization
 - Diffraction
 - Fourier Optics, coherence, lasers, holography

Text Book and Reading List:

Physics for Scientists and Engineers – any edition with volume 2, Serway and Jewett (required).

Library call no: QC 23 S458 2004 (6th edition).

Electricity and Magnetism Lab Manual, Burley and Klassen (required).

Library call no. QC 534 E44 2004.

Useful mathematical references for vector calculus and multiple integrals:

Mathematical methods in the Physical Sciences, M. Boas, ISBN: 0-471-04409-1 (Chapters 2,5,6).

Schaum Outline: Advanced Mathematics for Engineers and Scientists,

ISBN: 0-07-060216-6 (Ch. 1, 5, 6)

Schaum Outline: Mathematical Handbook of Formulae and Tables, ISBN: 0-07-038203-4

Supplementary reading:

Electricity and Magnetism, 2nd edition, Edward Purcell. (ebook available from U Winnipeg library).

Optics, 4th edition, Eugene Hecht, A.R. Ganesan. (older version Library call no. QC 355.2 H42).

Miscellaneous

Communication: Only your University of Winnipeg email address (Name@webmail.uwinnipeg.ca) will be used for course related correspondence.

Appeals & Misconduct: See the Academic Regulations and Policies section of the Course Calendar regarding appeals and academic misconduct. For more information please refer to Section 8 in the following link:
<https://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf>

Students facing a charge of academic or non-academic misconduct may choose to contact the University of Winnipeg Students' Association (UWSA) where a student advocate will be available to answer any questions about the process, help with building a case, and ensuring students have access to support. For more information or to schedule an appointment, visit our website at www.theuwsa.ca/academic-advocacy or call 204-786-9780.

Service for students with Disabilities: Students with documented disabilities, temporary or chronic medical conditions requiring academic accommodations for tests/exams (ie. Private space) or during lecture/laboratories (ie. Access to volunteer note-takers) are encouraged to contact Accessibility Services (AS) at 786-9771 or email accessibilityservices@uwinnipeg.ca to discuss appropriate options. Specific information about AS is available online at <http://www.uwinnipeg.ca/accessibility>. All information about a student's disability or medical condition remains confidential.

Scent-Free: We ask that you please be respectful of the needs of classmates and instructors/professors by avoiding the use of unnecessary scented products while attending lectures. Exposure to scented products can trigger serious health reactions in persons with asthma, allergies, migraines or chemical sensitivities. Please consider using unscented necessary products and avoiding unnecessary products that are scented (e.g. perfume).

Respectful learning: All students, faculty and staff have the right to participate, learn, and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found online at www.uwinnipeg.ca/respect

Religious holidays: Students may choose not to attend classes or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work examinations without penalty. A list of religious holidays can be found at <http://uwinnipeg.ca/academics/calendar/docs/important-notes.pdf>

Grading System: Below are the guidelines for conversion from numerical (percentage) grades to letter grades.

Letter Grade	Percentage
A+	95-100
A	87-94
A-	80-86
B+	74-79
B	67-73
C+	61-66
C	53-60
D	50-52
F	0-49

Note that the above are guidelines and that Final grades shall be approved by the Department Review Committee and may be subject to change.

Course Drop Schedule: The 2015 Fall course drop date is October 29, 2015. The 2015 Fall/Winter course drop date is January 20, 2016. Please refer to <http://uwinnipeg.ca/registration/withdrawal-schedules.html> for more information concerning prorated tuition refund schedules.

Make up lectures: Classes will be held on **December 2, 2015** in place of classes on Monday, October 12, 2015 and will be scheduled in accordance with a Monday schedule.

Classes will be held on **December 3, 2015** in place of classes on Wednesday, November 11, 2015 and will be scheduled in accordance with a Wednesday schedule.

Classes will be held **April 5, 2016** in place of classes on Friday, March 25, 2016 and will be scheduled in accordance with a Friday schedule.