

COURSE OUTLINE 2000/2001
Engineering 2C03
 "Electricity, Thermophysics and Energy"

PREREQUISITE: Physics 1E03 and registration in Math 2M06

LECTURER: Dr. Wm. J. Garland, Nuclear Reactor Bldg., room 117, ext. 24925
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 Course url: <http://epic.mcmaster.ca/~garlandw/eng2c3/eng2c3index.htm>

TEACHING ASSISTANT: George Schwartz, ext 24939
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LECTURES: 3 hours per week, term II
 Monday and Thursday 09:30 -10:20
 Tuesday 10:30 -11:20
 Life Sciences B130E

TEXT: R.A. Serway, *Physics for Scientists and Engineers*, 4th Edition, Saunders Collage Publishing, 1996.

COURSE OBJECTIVES:

To aid the civil engineering student in acquiring an understanding of practical electricity, thermodynamics and heat transfer so that he or she may better interact with the other engineering disciplines.

COURSE DESCRIPTION:

An exposure to electrical and thermophysics fundamentals having civil engineering applications. Topics: electrostatics, electric currents, circuits and transients, electrical power engineering, energy efficiency, heat transfer mechanisms.

OUTLINE:

Introductory chapters:

- 1 Towards Effective Learning
- 2 The Evolution of the Concept of a Field

Serway, chapters:

- 27 Electric Current and Resistance
- 28 Direct Current Circuits
- 33 Alternating Current Circuits
- 19 Temperature
- 20 Heat and the 1st Law of Thermodynamics
- 22 Heat Engines and the 2nd Law of Thermodynamics

PROBLEM ASSIGNMENTS:

- (a) Normally problem assignments will be handed out at intervals of two weeks. They will be assigned after the appropriate material has been covered in the lectures.
- (b) Problem sets are due by 5:00 P.M. one week after being assigned, unless otherwise specified. **If the problem set is not turned in by the dead-line, a penalty of 10% per day will be levied for up to 2 days, after which, the mark given will be zero.** If you expect to miss an assignment for any reason or if you miss for reasons of ill health, you must inform the lecturer as soon as possible to avoid penalty.
- (c) Marked sets will normally be returned within one week of submission. Assignments will be reviewed in class if necessary.
- (d) Format: If your solutions are not legible they will not be marked; please use one side of a page only. Draw a solid line at the end of each problem solution. Order the problems in the same way they are assigned. Remember if the marker has to spend five to ten minutes deciphering what you have submitted, he has that much less time to assist you by indicating your errors.
- (e) Adjustments: We are not infallible. If an error has been made in marking, consult the marker or lecturer for an adjustment.
- (f) Solutions: Solutions to problem sets will be posted on the web soon after the assignment is due. For obvious reasons, no late assignments will be accepted once the solutions are posted.

ASSISTANCE WITH COURSE WORK AND PROBLEMS:

The instructor and a teaching assistant will be available to assist you with the lecture material or problems. Times will be arranged in class.

TERM TESTS AND QUIZZES:

During the term there will be one midterm test (50 minutes). There may also be two short quizzes (~15 minutes). These will be conducted in regular lecture periods. Solutions will be posted on the web after the test/quiz lecture period.

FINAL EXAM:

There will be a 3 hour final examination for the entire course during the April examination session. It will be based on material covered by the lectures, assignments, test and quizzes. The final exam will be closed book with up to 3 double sided 8 ½ " x 11" crib sheets permitted. There is no restriction on the use of a calculator. Check the web site for past exams and sample questions.

FINAL COURSE MARK:

- (a) The final mark will be based on three components:

- (i) problem assignments during the term;
 - (ii) term tests and quizzes;
 - (iii) final test or examination.
- (b) The three components are weighted so as to maximize the student's mark based on his performance. The following table lists all possible weighting combinations (in percent):

Assignments	Test & Quizzes	Examination
30	10	60
20	10	70
30	30	40
20	30	50

- (c) The weighting scheme was developed with the following criteria in mind:
- (i) The final mark will consist of no less than 40% examination mark.
 - (ii) It is possible to pass the course based on the term work alone. Up to 60% of the final mark can be from the term work.
 - (iii) The assignment component is obtained by simply averaging the number of assignments involved. If an assignment is not received, a zero is included when calculating the average. The weight ratio of one test to one quiz is 3:1.

FORECAST OF THE FINAL MARK:

Soon after the mid-term, a projection of final marks will be made based on performance to that time and assuming an exam mark identical to the mid-term. This will be updated periodically as more marks become available. If a student has a forecast final mark of less than 50%, it is suggested that he/she seek advice as quickly as possible from the lecturer.

COLLUSION:

In the past, groups of students have tended to collaborate and discuss assignments. This is acceptable in moderation. However, the final submitted assignments must be a student's individual work, not a copy of someone else's solution. The course marker is instructed to watch carefully for any evidence of copying. If the marker suspects copying, he/she will mark the relevant papers normally, but will make a special notation on the paper and the marking sheet. **The marks of these students will not be entered until they have discussed the assignments with the lecturer.** If copying has taken place, all students involved will receive zero for that assignment.

POLICY REMINDERS:

Attention is drawn to the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registration and available in the Senate Office. Any student who infringes one of these resolutions will be treated according to the published policy.

The Faculty of Engineering is concerned with ensuring an environment that is free of all discrimination. If there is a problem, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as the problem occurs.