

# Physics 1E03 Course Outline

January 2015

## Instructors:

C01, C05: Dr. Neil McKay                      ABB-261                      [mckay@physics.mcmaster.ca](mailto:mckay@physics.mcmaster.ca)  
C02, C03, C04: Dr. Waldemar Okon              ABB-150                      [okon@physics.mcmaster.ca](mailto:okon@physics.mcmaster.ca)

Course Home Page: <http://www.physics.mcmaster.ca/phys1e03/>

Physics 1E3 is an introduction to electromagnetism and waves for students in Year I Engineering. Lectures focus on a few of the ideas and concepts, with frequent demonstrations and discussions in class. Short quizzes during the lecture, using the “i>clicker” system, are integrated with discussion of concepts.

Lab and tutorials are every other week, alternating. Tutorial sessions develop skills for solving physics problems, and test students on the LON-CAPA assignments they have completed. Labs develop measurement and data analysis skills related to the course. During the three-hour lab period, students complete the measurements and write the report, handing it in before leaving.

**Prerequisites:** Registration in Engineering I and completion of Physics 1D03.

Text (required):                      **Physics for Scientists and Engineers, ninth edition,**  
by Serway and Jewett, published by Brooks/Cole Cengage Learning

Courseware (required):              **Physics 1D3/1E3 September 2014 Lab Manual.**

Calculator (required):              Only the McMaster prescribed calculator (Casio *fx-991*) is permitted in tests.

“i>clicker” (required)              The “i>clicker” response unit is on sale at the bookstore.

**Marks:** Grade weightings are given below. Averaging and combining of marks is done on a 100-point scale.

Final examination	51% to 56%*	For <b>each</b> lab not completed before the end of term, your final grade will be reduced by 3 percentage points, in addition to a mark of zero on the lab. A make-up week is provided if a lab is missed.
Two midterm tests	20% (10% each)	
Tutorials	6%	<b>Clicker Quizzes:</b> . Full marks will be given for answering all of the quizzes, with a sufficient number of correct answers, in at least 85% of the lectures. Details may differ between lecture sections.
LON-CAPA problems	3%	
Clicker Quizzes (in lectures)	0 to 5%*	
Labs	15%	

*\*The exam will be worth 56% if your clicker mark is zero. Otherwise, your clicker mark out of 5 will be added to your grade out of 100, and the weight of your exam will be reduced by that number of percentage points. For example, if your clicker mark is 4/5, your exam will count for 52%, and 4 marks will be added to this to get a mark out of 56. **This will always be higher than, or at least equal to, your exam mark out of 56.***

**Midterm Tests:** Two tests of 80 minutes each, in the evenings of Monday, Feb. 2 and Tue., March 10.

**Laboratory:** Students complete four labs during the term. **Refer to the lab schedule handed out in class** to know which week you have a lab, and which week you have a tutorial.

**The instructor and university reserve the right to modify elements of the course during the term.** Any necessary changes to dates, deadlines, marks weightings, etc. will be communicated to you through the course website and/or [avenue.mcmaster.ca](http://avenue.mcmaster.ca).

Physics 1E03 2014–15 Approximate Timetable			
Week		Topics	Text Sections
begins	Number		
Jan 5	1	Electric Forces and Fields	Chapter 23
Jan 12	2	Gauss's Law	Chapter 24
Jan 19	3	Electric Potential	Chapter 25
Jan 26	4	Capacitance	Sections 26.1–26.5
Feb 2	5	Current and Resistance; <b>Test Monday</b>	27.1–27.3; 27.6
Feb 9	6	DC circuits	28.1–28.4
Feb 16		<b>Study Week</b>	No classes
Feb 23	7	Magnetic Fields	Chapter 29
Mar 2	8	Ampère and Biot-Savart Laws	30.1–30.5
Mar 9	9	Induction and Inductance; <b>Test Tuesday</b>	31.1–31.3, 31.6; 32.1–32.3
Mar 16	10	Continue Inductance; begin Waves	16.1–16.5
Mar 23	11	Waves, Interference	18.1–18.4, 18.7
Mar 30	12	Interference and Diffraction of Light	37.1–37.3, 38.1–38.4
April 6	13	Diffraction; last class Wed., April 8	38.1–38.4

**Help:** The Physics Drop-in Centre in the basement of Thode Library, room B108, will be open at specified times to provide help with physics for first-year students. Student volunteers organise the Physics Help Initiative (PHI) to provide additional help in BSB-B119 at several times during the week.

**Lab exemptions:** If you are repeating the course, and have completed all the labs, you can **apply at the Physics Office (ABB-241)** to be exempt from the lab portion of the course. You should do this before the first lab. All students must attend the tutorials; **there is no tutorial exemption.**

**Missed work:** For **one brief absence due to minor illness**, you may use the MSAF self-reporting system at <http://mcmaster.ca/msaf>. You may use this **only once per term**, and only for a brief absence due to medical reasons. **In all other cases**, you must take appropriate documentation to the Engineering student advisors in JHE/A214. Put your own instructor's e-mail address (found at the beginning of this outline) in the MSAF form. Missed labs must be made up by the end of term. For missed tutorials or midterms weight is added to the final exam. See the Physics 1E03 Avenue to Learn page for more detail (<http://avenue.mcmaster.ca>).

**Academic Dishonesty:** Academic dishonesty consists of misrepresentation by deception or other fraudulent means and can result in serious consequences, *e.g.*, a grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty, please refer to <http://www.mcmaster.ca/academicintegrity/>. As well, read the specific rules in the Physics 1D3/1E3 Lab Manual, and on the course Avenue to Learn page.

The following illustrates only three forms of academic dishonesty:

1. Having in the lab room, or referring to in the lab, a previously-written lab report.
2. Communicating or collaborating during a test, or allowing another student to see your work.
3. Using a friend's clicker to submit answers on his behalf.