

Grande Prairie Regional College

Department of Science

PC2300 ELECTRICITY AND MAGNETISM 3.0 (3-0-3/2) UT(3)

Lectures	T R	11:30 - 12:50 p.m.	J202
Laboratory	TBA	2:30 - 5:20 p.m.	J103

INSTRUCTOR:	Dr. Robert Hunt, P.Eng., FEC
OFFICE:	C414
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TEXT:	Fundamentals of Physics. Halliday, Resnick, and Walker (4th or 5th Edition).
COURSE CONTENT:	Electrostatics, electric fields, Gauss' Law, electric potential, capacitance, Ohm's Law, DC circuits, Kirchoff's Laws, magnetic fields, Ampère's Law, electromagnetic induction, Faraday's Law, electric generators, magnetism, Maxwell's Equations and em waves.
PRE-REQUISITE:	PC 1240/1260, or PC 1300/1310 and MA 1130/1140 or MA 1000/1010, since students are expected to be able to handle simple differentiation and integration.
MARK DISTRIBUTION:	Assignments 15% Laboratories 15% Mid-Term Examination 20% (Feb 18/2010) Final Examination 50% (TBA)

Formula sheet provided

COURSE OUTLINE

- Chapter 23 Electric charge, conductors, insulators, induction, and Coulomb's Law.
Chapter 24 Electric fields.
Chapter 25 Gauss' Law.
Chapter 26 Electric potentials.
Chapter 27 Capacitance, parallel and series, energy and dielectrics.

(Midterm)

- Chapter 28 Current, resistance, Ohm's Law, energy and power.
Chapter 29 Emf, current, DC circuits, and Kirchoff's Laws.
Chapter 30 Magnetic Field, Hall Effect, moving charge/motion and torque/forces in current carrying wires.
Chapter 31 Magnetic field and force, Ampère's Law and solenoids.
Chapter 32 Faraday's Law, Lenz's Law, and induction.
Chapter 33 Inductance, energy of a magnetic field and mutual induction.
Chapter 34 Magnetism and matter.
Chap. 37/38 Maxwell's equations and em waves.

LABORATORY COMPONENT

Lab #	Content	Week of
1	Electric potential	Jan. 4
2	Capacitance	Jan 18
3	e/m	Feb 1
4	Ohm's Law/Resistance	Feb 22
5	Electromagnetism	Mar 15