

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.	J229
Laboratory	T	2:30 - 5:20 p.m.	J103

INSTRUCTOR: Dr. Robert Hunt, P.Eng.

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 17/2005)
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. 3
2	Capacitance	Jan 17
3	e/m	Jan 31
4	Ohm's Law/Resistance	Feb 28
5	Electromagnetism	Mar. 14