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.

OFFICE: C414

PHONE: 539-2008/532-1338 (GPRC/HOME)

E-MAIL: hunt@gprc.ab.ca

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 14/2008)
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. 7
2	Capacitance	Jan 21
3	e/m	Feb 4
4	Ohm’s Law/Resistance	Feb 25
5	Electromagnetism	Mar 10