The University of Southern Queensland

Course Specification

Description: Electromagnetics						
Subject	Cat-Nbr	Class	Term	Mode	Units	Campus
PHY	2201	20402	1, 2003	ONC	1.00	TWMBA

Academic Group: FOSCI
Academic Org: FOS002
HECS Band: 2
ASCED Code: 010301

STAFFING

Examiner: Jeff Sabburg
Moderator: Brad Carter

PRE-REQUISITES

Pre-requisite: MAT 1100 or MAT 1102 and PHY 1103

RATIONALE

With a wide range of D.C. and A.C. electrical and electronic equipment used in the workplace a knowledge of the fundamentals of electricity and magnetism is important for today's scientist. This course introduces students to electromagnetic theory, electrical measurement and sensors.

SYNOPSIS

This course builds upon a previous knowledge of both physics and mathematics to consolidate a rigorous understanding of both circuit and electromagnetic theory. Some of the topics covered include Electrostatics, Current Electricity, Magnetism, A.C. Circuits and Maxwell's equations.

OBJECTIVES

On completion of this course students will be able to:

- analyse D.C. and A.C. circuits using the laws applicable to such analysis;
- demonstrate skills and knowledge required to perform laboratory experiments safely with appropriate equipment;
- understand basic electromagnetic theory.

TOPICS

Description	Weighting (%)
1. Electrostatics: charges, fields, potential, capacitance, dielectrics.	28.00
2. Current Electricity: current, resistance, power, d.c. circuits, Kirchhoff's Rules, instruments and measurements.	28.00
3. Magnetism: moving charge in a field, force on current carrying conductor.	16.00
4. Electromagnetic Induction & AC Circuits: induced EMF, transformers, inductance, R-L-C circuits, Renonance, frequency response.	21.00
5. Electromagnetic Theory: Maxwell's equations	7.00

TEXT and MATERIALS required to be PURCHASED or ACCESSED:

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at http://bookshop.usq.edu.au by entering the author or title of the text.

Giancoli, D.C. 1998, *Physics - Principles with Applications*, 5th edition, Prentice Hall, New Jersey.

Sabburg, J. 2003, *Laboratory Manual for Electromagnetics*, USQ Publication, Toowoomba.

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

College Physics 5th edition (Technology version) kit: consisting of: Saunders Core Concepts in College Physics, CD-ROM 3 discs and Interactive Physics Software CD-ROM 1 disc, Serway, R.A. and Faughn, J.S., 2000, College Physics, Saunders College Publishing, Workbook to accompany the, Saunders Core Concepts in College Physics, CD-ROM.

Dugdale, D.E. 1993, *Essentials of Electromagnetism*, MacMillan, N.Y., (537 DUG).

Kraus, J.D. 1992, *Electromagnetics*, 4th edition, McGraw-Hill, N.Y., (621.3 KRA).

Popovic, Z. and Popovic, B. 2000, *Introductory Electromagnetics*, Prentice Hall. New Jersey.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Examinations	3
Laboratory or Practical Classes	20
Lectures	24
Private Study	91
Report Writing	20
Tutorial	12

ASSESSMENT DETAILS

Description	Marks Out of	Wtg(%)	Required	Due Date
LABORATORY REPORTS	10.00	30.00	Y	04 Mar 2003 (see note)
TUTORIAL ASSIGNMENT	10.00	10.00	Y	04 Mar 2003 (see note)
3 HR RESTRICTED EXAM	60.00	60.00	Y	END S1 (see note)

NOTES:

. Examiner to advise due dates for the Laboratory Reports
. Examiner to advise details for the Tutorial Assignment
. Examination dates will be available during the Semester. Please refer to the examination timetable when published.

IMPORTANT ASSESSMENT INFORMATION

1 Attendance requirements:
It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration. To maximize their chances of satisfying the objectives of the practical component of the course, students should attend and actively participate in the laboratory sessions in the course.

2 Requirements for students to complete each assessment item satisfactorily:
To complete each of the assignments satisfactorily, students must obtain at least 50% of the marks available for each assignment. To complete the examination satisfactorily, students must obtain at least 50% of the marks available for the examination.

3 Penalties for late submission of required work:

If students submit assignments after the due date without prior approval then a penalty of 20% of the total marks available for the assignment will apply for each working day late.

4 Requirements for student to be awarded a passing grade in the course:
To be assured of receiving a passing grade a student must attempt all of the summative assessment items, achieve at least 50% in the examination, achieve an aggregated mark of at least 50% in the total marks allocated for the assignments.

5 Method used to combine assessment results to attain final grade:
The final grades for students will be assigned on the basis of the weighted aggregate of the marks obtained for each of the summative assessment items in the course.

6 Examination information:
In a Restricted Examination, candidates are allowed access to specific materials during the examination. The only materials that candidates may use in the restricted examination for this course are: writing materials (non-electronic and free from material which could give the student an unfair advantage in the examination); calculators which cannot hold textual information (students must indicate on their examination paper the make and model of any calculator(s) they use during the examination. With the Examiner's approval, candidates may, take an appropriate non- electronic translation dictionary (but not technical dictionaries) into the examination. This will be subject to perusal and, if it is found to contain annotations or markings that could give the candidate an unfair advantage, it may be removed from the candidate's possession until the appropriate disciplinary action is completed.

7 Examination period when Deferred/Supplementary examinations will be held:
Any Deferred or Supplementary examinations for this course will be held during the examination period at the end of the semester of the next offering of this course.

8 University Regulations:
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL http://www.usq.edu.au/SECARIAT/calendar/Part5/ or in the printed version of the current USQ Handbook.

ASSESSMENT NOTES

9 Students who obtain an overall passing mark, but who do not perform satisfactorily in an examination, may, at the discretion of the examiner, be granted a supplementary examination. Students will be granted a deferred examination oly if they perform satisfactorily in all other assessment items.

10 The due date for assignments is the date by which a student must despatch an assignment to the USQ. The onus is on the sutdents to provide proof of the despatch date, if requested by the Examiner. Students must retain a copy of each item submitted for assessment. this must be produced within 48 hours if required by the Examiner.