



The University of Southern Queensland

## Course Specification

### Description: Physics for Surveyors

Subject	Cat-Nbr	Class	Term	Mode	Units	Campus
PHY	1912	10403	1, 2002	EXT	1.00	TWMBA

<b>Academic Group:</b>	FOSCI
<b>Academic Org:</b>	FOS002
<b>HECS Band:</b>	2
<b>ASCED Code:</b>	010301

### STAFFING

Examiner: Jeff Sabburg  
Moderator: Frank Young

### RATIONALE

Modern surveyors have a variety of high technological distance measuring equipment at their disposal. It is important that a surveyor has a basic knowledge of how this equipment operates. This course provides essential practical examples to assist in understanding the operation of distance measuring equipment.

### SYNOPSIS

This introductory course provides students with a basic knowledge of physics with emphasis on optics and electromagnetics. This knowledge will be developed in later courses. Emphasis is also placed on the practical applications of the physical principles embodied in these fields and the theoretical basis is developed, only to the extent that it is sufficient for the student to comprehend the practical application.

### OBJECTIVES

Upon successful completion of this course students will be able to:

- Demonstrate sufficient knowledge of the physics of light to explain the principles of operation and limitations of simple optical instruments.
- Indicate a sound, basic knowledge of the physics of mechanics and the properties of matter.
- Demonstrate a basic knowledge of the nature and properties of electro-magnetic radiation.
- Indicate an awareness of the basic concepts and components of electronic circuits and measurement systems in sufficient depth to appreciate the operation of distance measuring equipment.

## TOPICS

Description	Weighting (%)
1. Introduction to Measurement Systems	10.00
2. Electrical Theory	10.00
3. Stress and Strain	10.00
4. Fluids	10.00
5. Temperature Measurements	10.00
6. Physical Optics, Interference and Diffraction	20.00
7. Principles of Electromagnetic Distance Measurement (EDM)	30.00

### **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.

Saunders Core Concepts in College Physics CDROM 3 discs.

Workbook to accompany the Saunders, Core Concepts in College Physics CDROM.

Serway, R.A. and Faughn, J.S., 2000 *College Physics Technology version*, 5th edn, Saunders College Publishing, Fort Worth.

### **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.

Beutler, G. et al, 1996 *GPS trends in precise terrestrial, airborne and spaceborne applications*, Springer-Verlag, New York, [526.1028 GPS].

Giancoli, D.C. 1998 *Physics - Principles with Applications*, 5th edn, Prentice Hall, Upper Saddle River, NJ.

### **STUDENT WORKLOAD REQUIREMENTS**

ACTIVITY	HOURS
Directed Study	90
Examinations	3
Private Study	77

## ASSESSMENT DETAILS

Description	Marks Out of	Wtg(%)	Required	Due Date
ASSIGNMENT 1	24.00	12.00	Y	22 Apr 2002
ASSIGNMENT 2	24.00	14.00	Y	06 May 2002
ASSIGNMENT 3	24.00	14.00	Y	10 Jun 2002
3 HR RESTRICTED EXAM	30.00	60.00	Y	END S1 (see note 4)

### NOTES:

4. Examination dates will be available during the Semester. Please refer to the examination timetable when published.

## OTHER REQUIREMENTS

- 1 Attendance Requirements It is the students' responsibility to actively participate in all classes 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.
- 2 Minimum Requirements to Pass the Course To be certain of gaining a passing grade in this course, students must gain at least 50% of the marks available for each assessment item.
- 3 Grading Final grades for students will be determined by the addition of the marks obtained in each assessment item, weighted as in the Assessment Details and by considering the students' level of achievement of the objectives of the course.
- 4 Assignments The due date for assessments is the date by which a student must despatch an assignment to the USQ. The onus is on the students 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. In accordance with University's Policy on assignments (Regulation 5.6.1), the Examiner of a unit may grant an extension of the due date of an assignment in extenuating circumstances. This policy may be found in the USQ Handbook, the Distance Education Study Guide and the Faculty of Sciences' Orientation Handbook for new on-campus students. All students are advised to study and follow the guidelines associated with this policy. An assignment submitted after the due date without an extension approved by the Examiner, will attract a penalty of 10% for each day (or part thereof) that the assignment is late.
- 5 Examinations Candidates should be aware that the University has policies and regulations (Regulation 5.6.2.2) about the use of unfair means and electronic devices in an examination and they should refer to them to determine whether or not actions they intend to take are acceptable to the University. Restricted Examination: Candidates will be allowed access only to specific materials in a restricted examination. The only materials that candidates may use in the restricted examination room for this course are: (a) writing materials (non-electronic and free from materials which could give the student an unfair advantage in the examination); (b) 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 approval of the Examiner, candidates may take an appropriate non-electronic translation dictionary into the examination. This will be subject to perusal and may be removed from the candidate's possession until appropriate disciplinary action is completed if found to contain material that could give the candidate an unfair advantage. A list of materials candidates may access in the restricted examination will be in the frontispiece of the examination paper.

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