

PHYSICS
Science
Physics for Technology II (Chem Tech)
203-922-DW
Fall 2014

COURSE OBJECTIVES

This is the second course for students in Chemical Technology program. The primary aim of the course is to acquaint the students with the basic concepts of mechanical and electromagnetic waves, their properties and applications. It deals with many properties of waves including reflection, refraction, interference, polarization, diffraction, Color and optical filters.

Methods: The course takes a hand on approach to teaching these topics and a lot of emphasis will be made on practical use of the learned concepts and their applications in science and technology.

The experiments are designed to familiarize the students with experimental procedures and techniques used in science and technology and to reinforce the concepts discussed in the lectures.

The material presented will make use of lectures, demonstrations, the internet and lab work.

For detailed information regarding the objectives of this course and the specific performance criteria see the Science Program Description folder on FirstClass.

Labs: The lab work is an integral part of the course. 10 Labs will be performed and will be taken from the following topics: Oscillations and Simple Harmonic Motion, Types and characteristics of waves, variation of intensity with distance, Reflection and refraction, Prisms, Mirrors and Lenses, Polarization, Electromagnetic waves, Interference, filters and diffraction . Students might also be asked to work on group projects to be completed by the end of the semester.

COURSE COMPETENCIES

This course will allow the student to fully achieve the following competencies:

Code: 01DR:

First Competency: To explain the operation of the optical components of instruments used in chemical technology in order to understand how equipment operates.

The performance criteria involves:

1. Proper identification of the following optical components: mirrors, prisms, lenses, polarizers, filters.
2. To describe radiation sources used in spectroscopic and fluorescence including: Black body radiation, arc lamps, cathode lamps, and lasers.

Second Competency: To understand the links between the operation of the equipment and the detectors used in the equipment.

The performance criteria involves:

Understanding and explanation of radiation detection, ion detection and electronic detection principles.

3. To identify electronic components of equipment

This course also contributes to the partial achievement of the competency:

OOUU: To apply what the students have learned to one or more subjects in the sciences.

1. To transfer what they have learned to situations requiring the contribution of more than one discipline
2. To apply systematically an experimental method
3. To solve problems dealing with basic electric circuits
4. To work as members of a team
5. To make connections between physics, chemistry and technology
6. To apply acquired knowledge and skills to new situations

COMPREHENSIVE EXAMINATION

N/A

PRE-REQUISITE

Physics for Technology I (203-921-DW)

CO-REQUISITE

N/A

PONDERATION

2-3-3 (2 hours of lecture, 3 hours of labs and 3 hours of work outside of class)

EVALUATION SCHEME AND SCHEDULE

The Institutional Student Evaluation Policy (ISEP) is designed to promote equitable and effective evaluation of student learning and is therefore a crucial policy to read and understand. The policy describes the rights and obligations of students, faculty, departments, programs, and the College administration with regard to evaluation in all your courses, including grade reviews and resolution of academic grievance. ISEP is available on the Dawson website.

Labs and project	30%
3 Tests & assignments	70%

To pass the student must obtain an overall mark of 60%

Student questions:

Students are encouraged to ask questions and participate in class discussions to get clarification and better understanding of the material discussed. The Instructor is available to the students during posted office hours or by appointment.

Your teacher will provide a tentative test schedule during the first week of class. **To help you prepare for tests and the exam, old exam questions and solutions will be provided by your instructor.**

The passing grade for this course is 60.

SUBMISSION OF MATERIAL FOR EVALUATION

Students must show a basic understanding at the level covered in the lectures and laboratory in order to pass the course. This is achieved by attaining at least an average grade of 60%, calculated according to the evaluation scheme above.

REQUIRED TEXT AND MATERIALS

Textbooks: College Physics by Serway
Basic Physics Express, Optics and Waves, Amazon
College Physics by Paul Urone, Thomson Publishing
Online notes & PDF files supplied by instructor

TEACHING METHODS

The material will be presented using a mix of active learning using lectures, in-class problem solving, laboratory experiments and demonstrations. Laboratory periods will be used for experiments as well as class tests and lectures.

ATTENDANCE AND COURSE PARTICIPATION REQUIREMENTS

Although class attendance is not compulsory, students should make every effort to attend all classes. In the event that a class is missed, the student is responsible for all material covered or assigned during that class. Attendance at laboratory experiments and tests is compulsory. Students must write the tests at the scheduled times except for unforeseen emergencies confirmed by proper documents. For additional information students should refer to the Institutional Student Evaluation Policy (ISEP section III-C) regarding attendance.

LITERACY STANDARDS:

It is expected that students will be able to comprehend the course material and express themselves appropriately as a normal part of their academic performance in the course. Marks may be deducted for inadequate communication skills.

LABORATORY SAFETY REGULATIONS

Experimentation is an essential part of science. Students will be expected to perform experiments and report on their results. Your teacher will provide you with instructions for lab experiments and activities (there is no manual to purchase). Information about lab report formats will be explained by the instructor and is also available in the Science Student Handbook which is available on FirstClass (see folder in “student info” conference). **Students must be present during the entire lab activity to receive credit.**

STUDENT OBLIGATIONS

Everyone has the right to a safe and non-violent environment. Students are obliged to conduct themselves as stated in the Student Code of Conduct and in the ISEP section on the roles and responsibilities of students. (ISEP section II-D). Disruptions or excessive noise will not be tolerated. Students who do not comply with these rules will be asked to leave the class and may be referred to Student’s Services for disciplinary action. **Mutual respect is the key to a harmonious learning environment.**

ACADEMIC INTEGRITY

Cheating, copying, or any other form of academic dishonesty will not be tolerated. Students should acquaint themselves with the policy of the College on plagiarism and cheating. According to ISEP, the teacher is required to report to the Sector Dean all cases of cheating and plagiarism affecting a student's grade. (see ISEP section IV-C.) The usual penalty for the first instance of cheating will be a grade of zero for the piece of work in question to all parties involved (under certain circumstances, even a first offence may be penalized by failure in the course). A second offence may result in the failure of the course. Students should note that using someone else's laboratory data without authorization from the student and the teacher is cheating.

INTENSIVE COURSE CONFLICTS STATEMENT:

If a student is attending an intensive course, the student must inform the teacher, within the first two weeks of class, of the specific dates of any anticipated absences.

POLICY ON RELIGIOUS OBSERVANCE:

Students who intend to observe religious holidays must inform their teachers in writing as prescribed in the ISEP Policy on Religious Observance (ISEP Section III-D), within the first two weeks of the semester. Forms for this purpose are available from your teacher. Your teacher will inform you of any modifications to planned course activities resulting from the teacher's own religious commitments.

A form for this purpose is available at the end of this document.

COURSE CONTENT & SCHEDULE

- Oscillations and Simple Harmonic Motion
- Waves
- Electromagnetic Waves, Generation and Detection, The Electromagnetic Spectrum
- Test # 1
- Geometric Optics, Reflection, mirrors.
- Prisms, Refraction, Lenses
- Polarization
- Test # 2
- Color and Filters
- Optical Instruments
- Interference and Diffraction
- Modern Physics
- Test # 3

When you have questions outside of class:

1. All teachers will be available in their respective offices to their students during posted **office hours**. Your teacher will tell you the schedule of his/her weekly office hours and it will be posted outside their office.
2. Room 7A.1 is a **physics study room**. At scheduled times a teacher or peer tutor will be on duty there to answer your questions. The schedule of teachers and peer tutors will be posted outside of 7A.1 in the 2nd or 3rd week of term.

3. Many teachers in the Science Program – including the Physics Department - may communicate with their students by computer using a program called ***First Class***. This software allows teachers and students to share information, use email and much more. You can download the necessary (free) software by going to the following website:

<http://www.place.dawsoncollege.qc.ca>

There is also an instruction manual available at this website that shows you how to install and use the software.

Instructor: Basim Assaf

Office: 7A.14

Tel: 5149318731 ext. 1756

RELIGIOUS OBSERVANCE/ INTENSIVE COURSES FORM

Students who intend to observe religious holidays or who take intensive courses must inform their teachers in writing as prescribed in the ISEP Policy on Religious Observance. (ISEP Section III-D)

The following form must be submitted within the first two weeks of classes.

Name: _____

Student Number: _____

Course: _____

Teacher: _____

Date of Holiday

Description of Holiday:
