Physics 2800
Introduction to Material Sciences
Course Information for Part 2: Winter Term 2010

1. Course Description

Physics 2800 - Introduction to Materials Science The structure and properties of materials are described in terms of their crystal structures and interatomic bonding. The basic physical principles underlying mechanical, thermal, electrical, magnetic, and optical properties are discussed in the context of modern materials including polymers and semiconductors.

Antirequisites:
Prerequisites: Calculus 1000A/B or 1100A/B, and Calculus 1301A/B or 1501A/B, or Applied Mathematics 1413; Chemistry 1050, or the former Chemistry 1020, 023; Physics 1020, 1024, 1026, or Physics 1028A/B and 1029A/B

Lecture hours: Tuesdays 11:30 - 1:30, Thursdays 11:30 - 12:30, 3 lecture hours per week.
The 1st half was taught by Silvia Mittler in the Fall Term 2009.
The 2nd half of the course is taught by Mike Cottam in the Winter Term 2010.

Note: Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

2. Timetable

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<tr>
<th>Physics 2800</th>
<th>Section 001</th>
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<tbody>
<tr>
<td><strong>Lecture Times:</strong></td>
<td>Tuesday (2 hours), Thursday (1 hour) starting at 11:30 am in PAB 137</td>
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<tr>
<td><strong>Instructor:</strong></td>
<td>Prof. Mike Cottam</td>
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<tr>
<td><strong>E-mail:</strong></td>
<td><a href="mailto:cottam@uwo.ca">cottam@uwo.ca</a></td>
</tr>
<tr>
<td><strong>Phone:</strong></td>
<td>(519) 661–2111 x86289</td>
</tr>
<tr>
<td><strong>Office:</strong></td>
<td>PAB 239</td>
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<tr>
<td><strong>Web Site:</strong></td>
<td>Public web site: <a href="http://www.physics.uwo.ca/~cottam">http://www.physics.uwo.ca/~cottam</a> and then follow links for “Teaching”</td>
</tr>
<tr>
<td><strong>Graduate TA</strong></td>
<td>Tushar Das (office PAB 236A)</td>
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3. Course Materials

The following course materials can be purchased at the UWO Bookstore:


This book is recommended but is not essential. Outline lecture notes will be posted on the web site (but students should also take their own notes in class).

4. Course Content

The course content for Part 2 is outlined here. It will be divided into 6 topics as outlined below (along with the corresponding sections from the textbook):

1. Basics of Quantum Physics (supplemental)
2. Electrical Properties (chapter 14, most sections)
3. Thermal Properties (supplemental)
4. Magnetic Properties (chapter 16, most sections)
5. Superconductors (chapter 15, section 15.8)
6. Optical Properties (chapter 15, sections 15.1 – 15.7)

5. Evaluation

The overall grade in this course will be derived according to:

<table>
<thead>
<tr>
<th>Evaluation Item</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Midterm I (1st half of course, Mittler)</td>
<td>30%</td>
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<tr>
<td>Assignments (1st half of course, Mittler)</td>
<td>20%</td>
</tr>
<tr>
<td>Final Examination (2nd half of course, Cottam)</td>
<td>30%</td>
</tr>
<tr>
<td>Assignments (2nd half of course, Cottam)</td>
<td>20%</td>
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6. Assignments

Assignments (4 of them) will be posted on the website in advance and will have the approximate deadline dates as posted for handing in to the instructor.

7. Examination Arrangements: Final Exam

The exam time is set by the Registrar’s Office, which will also post the date and time. The same information will be made available on the course web site and announced in class (but the Registrar’s announcement is the official announcement, so check for any late changes). Students needing to make travel arrangements are advised to book a travel date after the end of the examination period. No makeup exams will be given to accommodate travel!

Exam format and rules
It is a 3 hour written exam with a mixture of descriptive and problem parts. It is a closed book exam (no text
book or notes allowed), but a formula sheet will be provided. Further information about the exam format will be provided later.

Calculators
Any calculator without text and formula storage option is allowed.

Accommodations for Religious Holidays
When scheduling unavoidably conflicts with religious holidays which a) require an absence from the University or b) prohibit or require certain activities (i.e., activities that would make it impossible for the student to satisfy the academic requirements scheduled on the day(s) involved), no student will be penalized for absence because of religious reasons, and alternative means will be sought for satisfying the academic requirements involved. If a suitable arrangement cannot be worked out between the student and instructor involved, they should consult the appropriate department chair and, if necessary, the student's Dean.

It is the responsibility of such students to inform themselves concerning the work done in classes from which they are absent and to take appropriate action.

A student who, for either of the situations outlined in paragraph one above (a or b), is unable to write examinations and term tests on a Sabbath or Holy Day in a particular term shall give notice of this fact in writing to his or her Dean as early as possible, but not later than November 15 for mid-year examinations and March 1 for final examinations, i.e., approximately two weeks after the posting of the mid-year and final examination schedule respectively. In the case of mid-term tests, such notification is to be given in writing to the instructor within 48 hours of the announcement of the date of the mid-term test. If a Special Examination is offered as an alternative means to satisfy the academic requirements, the instructor(s) in the case of mid-term tests and the dean in the case of mid-year and Spring final examinations will arrange for special examination(s) to be written at another time. In the case of mid-year and Spring final examinations, the accommodation must occur no later than one month after the end of the examination period involved. It is mandatory that students seeking accommodations under this policy give notification before the deadlines and that the Faculty accommodate these requests.

For purposes of this policy the University has approved a list of dates which are recognized religious holidays which require members of those religions to be absent from the University; this list is updated annually and is available at Departmental, Deans' and Faculty advising offices.

8. Make-up Policy

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information please see: http://www.uwo.ca/univsec/handbook/appeals/medical.pdf

A student requiring academic accommodation due to illness, should use the Student Medical Certificate when visiting an off-campus medical facility or request a Records Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found here: https://studentservices.uwo.ca/secure/medical_document.pdf

Special Examination
In accordance with Senate Policy, a Special Examination will be held within thirty days of the regular final examination for students who are unable to write the regular examination for medical or other documented reasons. Requests for such a Special Examination must be made to the Associate Dean, Faculty of Science.
In addition, you must make a clearly state the policy on medical excuses for all work worth <10%, as well as for non-medical excuses.

9. Class Web Site

http://www.physics.uwo.ca/~cottam/; then
click on Teaching; then
click on Introduction into Material Sciences [Physics 2800].

10. Cheating (Scholastic Offenses)

Cheating
Scholastic offenses are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offense, at the following Web site:
http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf

Plagiarism
Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar).

11. Classroom Conduct

Disruptive behaviour will not be tolerated in class. Please respect the rights of your classmates to benefit from the lecture by limiting your conversations to those essential to the class. Students who persist in loud or rude behaviour will be asked to leave and may have their clicker codes disabled for an extended period.

12. Complaints and Suggestions

If you have a concern about something, please let us know. We rely on your feedback. Please contact initially the person most directly concerned; this will usually be your instructor. If that is not satisfactory, or if there is something more general bothering you, talk it over with the Physics & Astronomy Department Chair or the Associate Chair of Undergraduate Studies (for contact information see http://www.physics.uwo.ca).

13. Contacting Us

The simplest way to contact us outside of lectures is via your UWO e-mail account. Please allow 2–3 working days for a response. We will not read or respond to emails from addresses that do not end in "@uwo.ca".