

| CAPILANO UNIVERSITY COURSE OUTLINE | |
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| Term: SPRING 2012 | Course No. ASTR 107 |
| Course: INTRODUCTORY ASTRONOMY | Credits: 4.0 Section: 01 |
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COURSE FORMAT: Three hours of class time, two lab hours plus an additional hour of supplemental activity delivered through on-line or other activities for a 15 week semester, which includes two weeks for final exams.

PRE-REQUISITES: Math 12, or Principles of Math 11 with a minimum “B” grade, or BMTN 053/054, or MATH 105. MATH 105 may be taken concurrently.

COURSE OBJECTIVES:

General:

The student will:

- learn about the evolution and composition of the universe
- study the techniques used by astronomers in studying the universe including some hands-on experience in the laboratory
- realize that modern astronomy is not a collection of facts, but rather is a physical science based upon the principles of physics
- learn about the relationships between observations and theories from an historical perspective

Instructional:

Upon successful completion of this course, the student should be able to:

- appreciate and understand the laws and principles of physics that underlie both the behaviour of celestial bodies and the means by which they are observed;
- apply the laws and principles of physics in solving appropriate problems;
- observe and have some familiarity with the night sky and be able to work with “virtual astronomy” software packages; and
- understand the significance of media reports on new astronomical discoveries and hypotheses.

REQUIRED COURSE MATERIALS:

Textbook: Bennett, Jeffrey, et al. The Cosmic Perspective. 6th ed. San Francisco: Pearson/Addison-Wesley, 2010 (including Mastering Astronomy).
Capilano University Physics Lab Notebook

i>clicker remote: Available from the Capilano University Bookstore
(Rebate coupon enclosed with textbook)

COURSE CONTENT: (Tentative)

| Topic | Weeks (approx) | Chapter(s) |
|---|----------------|-------------------|
| Introduction, overview, Big Bang, our place in the universe, the night sky | 2.5 | 1, 2, parts of S1 |
| Scientific method and the science of astronomy, Historical development, Kepler's laws | 0.5 | 3 |
| Motion, Newton's laws, momentum, angular momentum, energy, gravitation, Kepler's laws revisited | 2.0 | 4 |
| Light, photons, electromagnetic waves, properties of matter, spectra, Doppler effect | 2.0 | 5 |
| Observing the universe: telescopes and spacecraft | 0.5 | 6 |
| Our Sun and Solar System, extrasolar planets | 2.5 | 7, 8, 13, 14 |
| Stars: luminosity, Hertzsprung-Russell Diagrams, star clusters, stellar evolution, origin of elements, white dwarfs, neutron stars, black holes | 2.5 | 15, 16, 17, 18 |
| Mid-Term Exams (2) | 1.0 | |

EVALUATION PROFILE:

Final grades for the course will be computed based on the following schedule:

| | |
|-----------------------------------|------|
| Midterms (2) | 25% |
| Assignments and Homework | 10% |
| In-class work | 5% |
| Labs (all labs must be completed) | 15% |
| Final Exam | 35% |
| Performance Evaluation | 10% |
| TOTAL | 100% |

A student may be required to produce a medical certificate in order to be given a make-up lab.

In order to pass the course, students must both pass the lab portion **and** receive a minimum total of 27/60 for the midterm and final exam components of the evaluation.

PERFORMANCE EVALUATION:

In the absence of exceptional circumstances, which are at the instructor's discretion, the performance evaluation component of the final grade will be prorated to the rest of the grade. For example, a 10% performance evaluation component would be determined by dividing the remaining mark out of 90 by 9. The most common circumstance justifying an increased performance evaluation mark is a student's improved performance in the final examination relative to the midterm exam(s), which the instructor feels justifies an elevated letter grade.

SUPPLEMENTAL 4th HOUR ACTIVITY:

The supplemental 4th hour activity may include tutorials, on-line activities, a group meeting, lab-like work or some other activity as indicated by your instructor. Participation in the activity is essential.

GRADING PROFILE:

Letter grades will normally be assigned according to the following guidelines:

| | | | |
|--------------|-------------|-------------|------------|
| A+ 90 - 100% | B+ 77 - 79% | C+ 67 - 69% | D 50 - 58% |
| A 83 - 89% | B 73 - 76% | C 62 - 66% | F 0 - 49% |
| A- 80 - 82% | B- 70 - 72% | C- 59 - 61% | |

Students should refer to the University Calendar for the effect of the above grades on grade point average.

OPERATIONAL DETAILS:***University Policies:***

Capilano University has policies on Academic Appeals (including appeal of final grades), Student Conduct, Cheating and Plagiarism, Academic Probation and other educational issues. Copies of these and other policies are published each term as part of the Registration Guide, and they are always available on the University website.

Attendance:

Strongly recommended, as class work and examination success require regular attendance, as does consideration for special arrangements due to missed exams, etc. (see section below).

Missed Exams and Labs:

Normally, a score of zero will be given for a missed exam, test, quiz, lab, etc. In some exceptional situations, the student will be permitted to write a make-up test, defer the lab to a later date or to replace the score by other marks.

The situations in which a score of zero may be avoided are those for which the student meets **all** of the following conditions:

1. Circumstances are beyond the control of the student which resulted in the exam, test, quiz, lab, etc. to be missed. Such circumstances include serious illness or injury, or death of close family member. They do **NOT** include forgetting about the test, lack of preparation for the test, work-related or social obligations.
2. The student has notified the instructor (or the Pure and Applied Science office staff, if the instructor is not available) about the missed exam, test, quiz, lab, etc. Such notification **MUST** occur in advance, if possible, or at the latest, on the day of the exam, test, quiz, lab, etc.
3. Proof of the circumstances must be provided. Proof of illness or injury requires a note from a doctor, who may also be consulted.
4. The student has been fully participating in the course up until the circumstances that prevented the writing of the exam, test, quiz, lab, etc. **Fully participating means attending almost all classes and turning in almost all assignments in the course.**

The options offered to the student who meets the four conditions are decided by the instructor. They will not necessarily meet the convenience of the student.

Final Exam Period:

Students should note that the final exam period is from **April 16th to 27th** (*includes Saturday, April 21st*), and that they can expect to write exams at any time during this period. Individual exam times will not normally be rescheduled because of holidays, work, or other commitments. While efforts are made to spread exams throughout the exam period, an individual's particular course combination may result in exams being scheduled close together, or spread widely through the entire exam period.

Cheating/Plagiarism:

Students caught cheating on a test will normally receive a grade of "F" on the course and may be expelled from the University. Plagiarism (including the copying of any part of assignments, laboratory reports, and essays) is a serious offence and is a form of cheating.

Incomplete Grades:

Incomplete grades ("I") are given only when special arrangements have been agreed upon with the instructor prior to the end of the semester. Since "I" grades are granted only in exceptional circumstances (usually health problems), their occurrence is rare. A student receiving an "I" grade should see the instructor.

- Final Letter Grade:*** All registered students will receive a final letter grade unless they have officially withdrawn (see the University Calendar for the withdrawal date).
- English Usage:*** Students are expected to use correct standard English in their written and oral assignments, exams, presentations and discussions. Failure to do so may result in reduced grades in any part of the Evaluation Profile. Please refer to the guidelines provided in the Capilano University Guide to written Assignments (available from the University Bookstore).
- Emergency Procedures:*** Please read the emergency procedures posted on the wall of the classroom.