



School of Arts & Science
DEPARTMENT OF PHYSICS & ASTRONOMY
Astronomy 101: Night Sky and Solar System
Winter Semester 2009

ASTRONOMY 101 COURSE OUTLINE

1. Instructor Information

- (a) Instructor: Dr. James Nemec
- (b) Office Hours: M-Th 2:00-2:30 pm; T,Th 4:30-6:20 pm
- (c) Office location: Fisher 346d
- (d) Office phone: 370-3460
- (e) E-mail: nemec@camosun.bc.ca

2. Course Description and Prerequisites

Astronomy 101 is one of two Introductory Astronomy courses offered at Camosun College. Astr101 concerns the Night Sky and the Solar System, while Astr102 deals with Stars, Galaxies and Cosmology. They can be taken in any order, and students that take both courses obtain transfer credit for Astronomy 120 at the University of Victoria. Either course satisfies the University of Victoria Education requirement for a science lab course.

The topics that are studied in Astr101 include: the first discoveries about the Earth and sky, the Copernican revolution, matter and energy in the Universe, the Earth-Moon system, the small inner 'rocky' planets, the giant outer gaseous planets and their moons, interplanetary bodies, and how planetary systems form.

The only prerequisite is English 11.

3. Required Materials

- (a) Course textbook: THE COSMIC PERSPECTIVE by Bennett, Donahue, Schneider and Voit, 5th Edition; if you have THE UNIVERSE REVEALED by Chris Impey and W.K.Hartmann (the previously used textbook) it also will suffice;
- (b) Astr 101 Lab Notes (available from the Lansdowne Campus bookstore)
- (c) Scientific calculator (any pocket calculator is acceptable)

4. Course Content

1. Our Place in the Universe

- 1.1 Modern View of the Universe
- 1.2 Scale of the Universe
- 1.3 Spaceship Earth
- 1.4 Human Adventure of Astronomy

2. Discovering the Universe for Yourself

- 2.1 Patterns in the night Sky: Bright Stars, Constellations, catalogs, Magnitudes
- 2.2 Seasons
- 2.3 The Moon
- 2.4 Motions of the Planets

- 3 **The Science of Astronomy**
 - 3.1 Ancient Roots of Science
 - 3.2 Ancient Greek Science
 - 3.3 The Nature of Science
 - 3.4 Astrology

- S **Celestial Timekeeping and Navigation**
 - S1.1 Astronomical Time Periods
 - S1.2 Celestial Coordinates and Motion in the Sky
 - S1.3 Principles of Celestial Navigation

- 4 **Motion, Energy and Gravity**
 - 4.1 Describing Motion
 - 4.2 Newton's Laws of Motion
 - 4.3 Conservation Laws in Astronomy
 - 4.4 Universal Law of Gravitation
 - 4.5 Orbits, Tides and Acceleration due to Gravity

5. **Light and Matter and Energy in the Universe**
 - 5.1 Light in Everyday Life
 - 5.2 Properties of Light
 - 5.3 Properties of Matter
 - 5.4 Learning from Light
 - 5.5 Doppler Shift

6. **Telescopes**
 - 6.1 Eyes and Cameras
 - 6.2 Telescopes: Giant Eyes
 - 6.3 Telescopes and the Atmosphere
 - 6.4 Telescopes and Technology

7. **Our Planetary System**
 - 7.1 Studying the Solar System
 - 7.2 Patterns in the Solar System
 - 7.3 Spacecraft Exploration of the Solar System

8. **Formation of the Solar System**
 - 8.1 The Search for Origins
 - 8.2 Birth of the Solar System
 - 8.3 Formation of Planets
 - 8.4 Aftermath of Planet Formation
 - 8.5 Age of the Solar System

9. **Planetary Geology: Terrestrial Planets**
 - 9.1 Connecting Planetary Interiors and Surfaces
 - 9.2 Shaping Planetary Surfaces
 - 9.3 Geology of the Moon and Mercury
 - 9.4 Geology of Mars
 - 9.5 Geology of Venus
 - 9.6 Unique Geology of the Earth

10. **Planetary Atmospheres**
 - 10.1 Atmospheric basics
 - 10.2 Weather and Climate
 - 10.3 Atmospheres of the Moon and Mercury
 - 10.4 Atmospheric History of Mars
 - 10.5 Atmospheric History of Venus
 - 10.6 Earth's Unique Atmosphere

11. **Giant Planets and their Moons**
 - 11.1 A Different Kind of Planet
 - 11.2 A Wealth of Worlds: Satellites of Ice and Rock
 - 11.3 Jovian Planet Rings

12. **Asteroids, Comets and Dwarf Planets**
 - 12.1 Asteroids and Meteorites
 - 12.2 Comets
 - 12.3 Pluto: Lone Dog No More
 - 12.4 Cosmic Collisions

13. **Planets around other Stars**
 - 13.1 Detecting Extra-solar Planets
 - 13.2 The Nature of Extra-solar planets
 - 13.3 Formation of Other Solar Systems
 - 13.4 Finding More New Worlds

5. Department Policies Regarding Testing and Labs

- (a) Students must write review-quizzes, the midterm test, etc. on the date and time assigned by the instructor. Instructors are not required to provide make-up tests. At their discretion, instructors may waive a test or provide a make-up test only in the event of documented illness or other extenuating circumstances.
- (b) All assigned laboratory exercises and reports must be completed with an overall grade of 60% or better to obtain credit for this course. A lab may be waived or made up at a later time only in the case of documented illness or other extenuating circumstances.
- (c) A student who is repeating an Astronomy course does not have to complete the laboratory exercises a second time if an average lab grade of 70% or better was obtained.

6. Study time and Basis of Student Assessment

It is recommended that between five and 10 hours per week (or more for students with a weak background) be spent studying for this course outside of class time.

- (a) **Labs**, Assignments and Homework. **[30%]**
- (b) **Review Quizzes** will be given at the beginning of most classes. These will be closed-book tests consisting of several questions/problems that can be done with work-groups of any size. They will be marked immediately after doing the test and a score assigned. You will then have one week to correct any mistakes you may have made and hand in the review quiz for an up-graded score. **[10%]**
- (c) **Midterm Exams** - there will be two midterm exams, the first in early February, and the second in early March. **[2 x 15% = 30%]**
- (d) **Final Exam** – a comprehensive final exam will take place in the Examination period in April. The date of the Final Exam is set by the Registration Office and will not be known until sometime in February. **[30%]**

7. Grading System

The following percentage conversion to letter grade will be used:

A+ = 90 - 100%	B = 73 - 76%	D = 50 - 59%
A = 85 - 89%	B- = 70 - 72%	F = 0 - 49%
A- = 80 - 84%	C+ = 65 - 69%	
B+ = 77 - 79%	C = 60 - 64%	

8. Recommended Materials or Services to Assist Students to Succeed Throughout the Course

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Registrar's Office or the College web site at <http://www.camosun.bc.ca>

ACADEMIC CONDUCT POLICY

There is an Academic Conduct Policy **which includes plagiarism**. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.

www.camosun.bc.ca/divisions/pres/policy/2-education/2-5.html