



School of Arts & Science
PHYSICS DEPARTMENT
ASTR 101-01
Astronomy: Night Sky and Planets
2007F

COURSE OUTLINE

The Approved Course Description is available on the web @ _____

- Please note: this outline will be electronically stored for five (5) years only.
It is strongly recommended students keep this outline for your records.

1. Instructor Information

(a)	Instructor:	Dr. James Nemec		
(b)	Office Hours:	M, T, W, Th 2:00-2:30 pm and 4:30-6:20 pm		
(c)	Location:	Fisher 346d		
(d)	Phone:	370-3460		
(e)	Email:	nemec@camosun.bc.ca		

2. Intended Learning Outcomes

Upon completion of this course the student will be able to:

1. Identify constellations and famous bright stars.
2. Describe the daily, monthly and yearly motions of the Sun, Moon, planets and stars.
3. Explain the scientific method, as illustrated by the development of the geocentric and heliocentric models of the universe, and describe how the Greeks deduced that the Earth and Moon are spheres and estimated their relative sizes, distances, etc.
4. Outline how our modern knowledge of the four forces of nature (gravity, electricity and magnetism, the strong force and the weak force) and the over 100 elements in the Periodic Table, evolved from the ancient idea that there are two forces (gravity and levity) and four elements (earth, water, air and fire).
5. Summarize Kepler's Laws describing the motion of the Moon and planets, Newton's Laws of motion and gravity, Maxwell's Laws concerning electricity and magnetism, and the basic laws of light and matter.
6. Describe how optical, radio and other telescopes work.
7. Summarize the composition and structures of the planets, and explain why the inner planets all have solid surfaces while the outer planets do not. Also, explain why Venus and Earth have atmospheres but Mercury and Mars do not.
8. Describe the giant planets Jupiter, Saturn, Uranus and Neptune and their many satellites.
9. Describe and draw logical conclusions about the history of the debris in the solar system: meteorites (stony and iron) and asteroids, the asteroid belt, objects (such as Pluto) in the Kuiper belt, and comets (for example, Halley's comet).
10. Describe a scientific model for the formation and evolution of the solar system that successfully accounts for the many observed properties and systematic

features, such as why all the planets revolve around the Sun in the same direction, and why all the major planets orbit in a flat plane.

3. Required Materials

(a)	Texts	THE UNIVERSE REVEALED by Chris Impey and W.K.Hartmann Astr 101 Lab Notes (available from the Lansdowne Campus bookstore)
(b)	Other	Scientific calculator (any pocket calculator is acceptable)

4. Course Content and Schedule

1. First Discoveries about the Earth and Sky

- 1.1 Bright Stars, Constellations, Star Catalogs and the Magnitude System
- 1.2 Cycles in the Sky
- 1.3 Retrograde motions of the planets
- 1.4 The Birth of Science

2. The Copernican Revolution

- 2.1 Copernicus and the Heliocentric Model
- 2.2 Tycho Brahe
- 2.3 Kepler and Elliptical Orbits
- 2.4 Galileo, his telescopic observations, his telescope, and Physics

3. Matter and Energy in the Universe

- 3.1 Sir Isaac Newton: Mechanics and Optiks
- 3.2 Radiation and the Universe
- 3.3 The Electromagnetic Spectrum
- 3.4 Bunsen & Kirchhoff: Spectral Lines and the Structure of the Atom
- 3.5 Telescopes and Detectors
- 3.6 Light and Energy

4. The Earth-Moon System

- 4.1 How Old is the Earth-Moon System
- 4.2 Internal Structure of the Earth and Moon
- 4.3 Influences that Shape a Planet
- 4.4 Geological Time Scale
- 4.5 Earth's Atmosphere, Oceans and Environment
- 4.6 Explorations of the Earth-Moon System: ocean tides

5. The Terrestrial Planets

- 5.1 Mercury
- 5.2 Venus
- 5.3 Mars and its moons
- 5.4 Comparative Planetology: Rules of Planetary Evolution

6. Giant Planets and their Moons

- 6.1 Jupiter, Saturn, Uranus and Neptune
- 6.2 Ring Systems of the Giant Planets
- 6.3 Satellite Systems of the Giant planets
- 6.4 Pluto: Ninth Planet or Interplanetary Body?

7. Interplanetary Bodies

- 7.1 Comets
- 7.2 Meteors and Meteor Showers
- 7.3 Asteroids
- 7.4 Meteorites

8. How Planetary Systems Form

- 8.1 The Protosun

5. Basis of Student Assessment (Weighting)

(a)	Assignments	Labs, Assignments and Homework [30%]
(b)	Quizzes	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 Quiz for an up-graded score. After one week no up-grading will be done. [10%]
(c)	Exams	1) Midterm Exam will be given (towards the end of October). Your study notes will be handed in and will count for 5% of your midterm score. [30%] 2) Final Exam – held in April [30%]

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.

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. Grading System

(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)

Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D	Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite.	1
0-49	F	Minimum level has not been achieved.	0

Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy E-1.5 at camosun.ca for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. <i>(For these courses a final grade will be assigned to either the 3^d course attempt or at the point of course completion.)</i>
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

7. 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, at Student Services or the College web site at camosun.ca.

STUDENT CONDUCT POLICY

There is a Student 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, at Student Services and on the College web site in the Policy Section.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED