

# PHYSICS DEPARTMENT

## COURSE OUTLINE

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### **ASTR 101 - INTRODUCTORY ASTRONOMY I.**

An introduction to Astronomy. Various topics including the first discoveries about the Universe, the Copernican Revolution from an Earth-centered to a Sun-centered universe, Matter and Energy in the Universe, the Earth-Moon System, the Terrestrial Planets, the Giant Planets and Their Moons, Interplanetary Bodies and How the Solar System and other Planetary Systems Form.

OFFERED:	Fall, Winter
CREDIT:	4
IN-CLASS WORKLOAD:	4 lecture, 2 lab (semester)
PRE-/CO-REQUISITES:	Math11

#### REQUIRED MATERIALS:

Astronomy 101 course material developed at Camosun College

Astronomy 101 lab manual

Scientific calculator (any calculator is acceptable with the exception of personal computers)

#### DEPARTMENT POLICIES REGARDING TESTING:

1. Students must write quizzes, tests, midterm tests, 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.
2. Midterm tests may be dropped if: (a) a first-class mark is obtained on the comprehensive final exam, and (b) all term work has been completed and is judged to be satisfactory. In this case, the final grade for the course may be based on a combination of the final exam and the lab mark.

#### DEPARTMENT POLICIES REGARDING LABS:

1. All assigned laboratory exercises and reports must be completed with an overall grade of 60% in order 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.
2. 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.

## STUDY TIME

It is recommended that between 5 and 10 hours per week (or more for students with a weak background) be spent studying for this course outside of class time.

## GRADING

The standard mark distribution for this course is as follows:

Final Exam	30%
Midterms (2)	30%
Quizzes	10%
<u>Lab Reports, Homework</u>	<u>30%</u>
	100%

This distribution may be amended by the instructor (see your Instructor's Information sheet).

## GRADE SCALE

Final letter grades are normally assigned as follows (subject to above conditions):

Percentage	Letter Grade
95 to 100	A+
90 to 94	A
85 to 89	A-
80 to 84	B+
75 to 79	B
70 to 74	B-
65 to 69	C+
60 to 64	C
50 to 59	D
below 50	F

## OUTLINE:

### 1. **First Discoveries about the Earth and Sky**

- 1.1 Night Sky – stellar magnitudes and catalogs
- 1.2 Celestial Sphere
- 1.3 Diurnal Motion
- 1.4 Annual Motions
- 1.5 Monthly Motions and the Calendar

### 2. **Copernican Revolution**

- 2.1 Copernicus and the Heliocentric Model of the Universe
- 2.2 Tycho Brahe
- 2.3 Johannes Kepler and his Three Laws
- 2.4 Galileo, his telescope discoveries and Physics
- 2.5 Sir Isaac Newton, his telescope and Newton's Laws

### 3. **Matter and Energy in the Universe**

- 3.1 Basic Structure of Matter
- 3.2 Nature of Energy
- 3.3 States of Matter in the Universe
- 3.4 Heat Transfer and the Concept of Equilibrium
- 3.5 Radiation

### 4. **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 Earth's Atmosphere
- 4.5 Ocean Tides

### 5. **The Inner (Terrestrial) Planets**

- 5.1 Mercury
- 5.2 Venus
- 5.3 Earth and Moon
- 5.4 Mars

### 6. **The Giant (Jovian) Planets and their Moons**

- 6.1 Jupiter
- 6.2 Saturn
- 6.3 Uranus
- 6.4 Neptune

**7. Interplanetary Bodies and How Planets Form**

- 7.1 Comets
- 7.2 Meteors and Meteor Showers
- 7.3 Asteroids
- 7.4 Meteorites
- 7.5 Formation of the Solar System