



UNIVERSITY OF CALGARY  
FACULTY OF SCIENCE  
DEPARTMENT OF PHYSICS AND ASTRONOMY  
COURSE OUTLINE

1. **Course:** ASTR 207 Introduction To Astronomy I - The Solar System                      FALL 2016

**Instructor:** Dr. Denis Leahy | SB 529 | (403) 220-7192 | leahy@ucalgary.ca | office hours MW 15:00-16:00

**Lecture Sections:** LEC 1 | TR 3:30-4:45 | ST 140

**Course Website:** [d2l.ucalgary.ca](http://d2l.ucalgary.ca)

**Departmental Office:** SB 605, 403-220-5385, [phasugrd@ucalgary.ca](mailto:phasugrd@ucalgary.ca)

2. **Prerequisites:** None. Not open to students with credit in ASTR 205 or ASTR 213, or ASPH 213. Not recommended for physical science majors.

Note: The Faculty of Science policy on pre- and co-requisite checking is outlined in the 2016-2017 Calendar. A student may not register in a course unless a grade at least "C-" has been obtained in each pre-requisite course; it is the responsibility of students to ensure that their registrations are in order. See <http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html> for details.

3. **Grading:** The University policy on grading and related matters is described sections [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Homework (Mastering Astronomy): 30% (See instructions below)

Midterm 1 (Oct.13): 17.5% (During regular lecture time in ST 140)

Midterm 2 (Nov.15): 17.5% (During regular lecture time in ST 140)

Final Examination: 35% (To be scheduled by the Registrar)

The midterm exams and the final exam will cover **every component of the course**, including sections of the textbook, lectures and notes posted on D2L. This also includes topical lectures that explore subjects in more detail than the textbook. Refer to notes posted on D2L. Exams are not cumulative.

**Grading:**

The midterm exams will be written during regular class time in the regular lecture theatre, ST 140. They will be multiple-choice tests with a writing time of 60 minutes. The percentage score is calculated as the number of correct answers, divided by the number of questions on the test, expressed as a percentage. The scores for the tests are used in the calculation of the final course grade according to the weights listed above. University of Calgary exam regulations apply during the in-class tests. **The tests are closed-book.** Use of a calculator is recommended.

The **Final Exam** will be scheduled by the registrar. The final exam will be a 2-hour multiple-choice exam. The score for the final exam will be the calculated as the number of correct answers divided by the number of questions on the exam, expressed as a percentage. The percentage grade for the final exam will be used in the calculation of the course grade with the weight given above. **The exam is closed-book.** Use of a calculator is recommended.

**Homework.** There will be seven web-based homework assignments in **Mastering Astronomy**. Students can obtain access to the Mastering Astronomy system in one of three ways:

1. **Normal access.** Purchase a new textbook at the Campus Bookstore. An Access code for Mastering Astronomy will be included. You will have access to the full Mastering Astronomy website including assignments, E-text and study centre.
2. **Electronic Text.** Purchase an electronic version of the text plus access to Mastering Astronomy. You will have access to the full Mastering Astronomy website including assignments, E-text and study centre.
3. **Assignment only access.** Access only the Mastering Astronomy homework assignments, free of charge. You will not have access to the E-text or to the study centre. The instructions for this option will be given in class and posted on the ASTR207 D2L website.

**Late Assignments will be awarded a zero grade. There will be a 24 hour period after the due date over which the maximum obtainable grade will decrease to zero. Extensions of the due date require justification in the form of a doctor's note or equivalent.**

**Students are responsible for accurately and completely entering their personal information in the Mastering Astronomy system. Failure to do so may result in a delay of posting the course grade or a zero grade for the assignments.**

**In-class participation.** We will use the TopHat system during class time for in-class questions that will only be open to submit answers during the lecture in which they are presented. In-class participation is not marked.

**Conversion of percentage grade to letter grade for the course.**

A Conversion table to convert final percentage grade into a letter grade for the course is provided below. Important: the conversion table lists the minimum percentage grade you must obtain in order to receive the listed letter grade. For example, if your percentage grade for the course, calculated from the different course components with the weights posted above, is 79%, your letter grade will be B, because the minimum percentage score to obtain a B+ is 80%.

**Use of mathematics in ASTR 207**

Some math will be used in this course. Most questions on the tests and the final exam will focus on knowledge and understanding of concepts. A few questions will require math, but remember that all questions will be multiple-choice. We will spend time in the lectures to explain mathematics that may appear on the exam.

Percentage to letter grade conversion scale:

> = 95 %	A +	> = 80%	B +	> = 64 %	C +	> = 46 %	D +
> = 90%	A	> = 75 %	B	> = 58 %	C	> = 40 %	D
> = 85 %	A -	> = 70 %	B -	> = 52 %	C -	< 40 %	F

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.6](#) of the University Calendar.
5. **Scheduled out-of-class activities:** There are no scheduled out-of-class activities associated with this course.

**REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.** If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you.

6. **Course Materials:**

*The Cosmic Perspective - The Solar System, 8<sup>th</sup> edition*, Bennett, Donahue, Schneider & Voit, Addison-Wesley.

**WARNING:** Be sure to buy the Solar System edition of this book, or the complete edition that includes all chapters. You may notice some missing chapter numbers in the Solar System edition. This is normal, because it is just a part of a complete, more expensive, text. We do not cover chapters outside the Solar System edition in ASTR 207.

**Calculators:** A pocket calculator is recommended for the in-class tests and the final exam. Scientific calculators with advanced mathematical functions are not required, but they may be helpful to those who know how to use them. Use of calculator applications on mobile communication devices or other devices with data storage or access to the internet on the tests and the final exam is strictly prohibited. When in doubt, students should check with the instructor well before the first in-class test. Graph capabilities of calculators are not used in ASTR 207.

### Online Course Components:

**TopHat:** ASTR 207 will make use of the TopHat system under a campus site license. This means that there will be no fee to students, but students are required to register at the TopHat website in order to obtain access to the course questions. **Instructions for use of TopHat will be given in class.**

**Homework Assignments in Mastering Astronomy:** Students who buy a new copy of the textbook through the Campus Bookstore may receive an enclosed access code to the MasteringAstronomy.com website. In ASTR 207 we will use Mastering Astronomy for assignments, and it is available as a study aid for those who choose to use it. Purchase of access to MasteringAstronomy.com is not required for ASTR 207 (see section 3-Homework above).

7. **Examination Policy:** Use of books is not allowed during in-class tests and during the final exam. Use of a pocket calculator during in-class tests and the final exam is recommended. Some may find the use of a ruler helpful in case a graph must be interpreted. Students should also read the Calendar, [Section G](#), on Examinations.
8. **Approved Mandatory and Optional Course Supplemental Fees:** None. Please note that TopHat is used under a campus license. You should NOT purchase a subscription for TopHat.
9. **Writing across the curriculum statement:** In this course, the quality of writing is not evaluated. See also [Section E.2](#) of the University Calendar.
10. **Human studies statement:** Not applicable. See also [Section E.5](#) of the University Calendar.

### 11. OTHER IMPORTANT INFORMATION FOR STUDENTS:

**(a) Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offense that will be dealt with rigorously in all cases. A single offense may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties.

**(b) Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).

**(c) Student Accommodations:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at [http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities\\_0.pdf](http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf). Students needing an Accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of the Department of Physics and Astronomy, Dr. David Feder, by email (dfeder@ucalgary.ca) or by phone (403.220.3638).

**(d) Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

**(e) Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>.

**(f) Student Union Information:** [VP Academic](#) Phone: 220-3911 Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca).  
SU Faculty Rep: Phone: 220-3913 Email: [science1@su.ucalgary.ca](mailto:science1@su.ucalgary.ca), [science2@su.ucalgary.ca](mailto:science2@su.ucalgary.ca) and [science3@su.ucalgary.ca](mailto:science3@su.ucalgary.ca)

Student Ombuds Office: 403 220-6420 Email: [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca); <http://ucalgary.ca/provost/students/ombuds>

**(g) Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

**(h) U.S.R.I.:** At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses ([www.ucalgary.ca/usri](http://www.ucalgary.ca/usri)). Your responses make a difference - please participate in USRI Surveys.

## 12. OTHER COURSE RELATED INFORMATION:

### **(a) Course Description**

(Introduction to Astronomy – the solar system) gives an overview of the solar system that includes history of astronomy, observational aspects such as time keeping, eclipses, motion of the moon and planets, planetary geology, and the formation of the solar system. ASTR 207 contains some mathematics in the formulation of concepts such as angular size, time keeping and Kepler's Third Law. Science literacy and the process of science will be discussed in the context of solar system science and planetary geology.

We discuss the Earth's place in the universe, and the Sun as the star of the solar system. The apparent and orbital motion of the moon and planets are discussed, along with basic celestial coordinates, and eclipses and tides. The history of astronomy from antiquity to the modern age will be discussed. The nebular hypothesis for the formation of the solar system and the origin of terrestrial planets and gas giants will be presented. Planetary geology will discuss similarities and differences between the terrestrial planets, including different forms of tectonics, impact craters and geological age of a surface, erosion, volcanism, chemical differentiation, planetary atmospheres and magnetism. Composition, weather and magnetism of gas giants are discussed, as well as the composition and geology of the moons of the Jovian planets. Small solar system objects including dwarf planets, asteroids, and comets (time permitting) are discussed.

### **(b) Course Learning Outcomes**

At the end of this course, students should be able to:

1. Explain the size scales of the universe and its contents: galaxies, clusters, the Milky Way, the sun, the solar system, planets and moons.
2. Describe the timescales of the universe, and the “cosmic calendar”.
3. Explain the motions of the sun, moon and stars as seen from the surface of the Earth, and the cause of Earth’s seasons.
4. Explain the basic properties of light and what light tells us about astronomical objects.
5. Describe how modern science is rooted in ancient astronomy, and the Copernican revolution.
6. Use the nebular formation hypothesis to explain the main properties of the solar system.
7. Describe the main properties of the interiors, surfaces and atmospheres of the planets.

**(c) Syllabus**

The Scale and History of the Universe  
The Sun, Earth's Seasons and the Moon  
The Copernican Revolution  
Newton's Laws  
The Solar System  
Properties of Light and Matter; Telescopes  
Explaining Features of the Solar System  
Planetary Interiors and Surfaces  
Planetary Atmospheres  
Jovian Planets  
Asteroids, Meteorites and Comets

Assignment Due Dates:

Assignment 1 Sunday, 25 September 23:59  
Assignment 2 Sunday, 2 October 23:59  
Assignment 3 Sunday, 9 October 23:59  
Assignment 4 Sunday, 23 October 23:59  
Assignment 5 Sunday, 6 November 23:59  
Assignment 6 Sunday, 20 November 23:59  
Assignment 7 Sunday, 4 December 23:59

Department Approval \_\_\_\_\_ Date \_\_\_\_\_