



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

1. **Course:** ASTR 209, Introduction to Astronomy II: The Cosmos Winter 2016

Instructor: Dr. Mahin Afshari | SB 130 | afsharim@ucalgary.ca | Office Hours: T 16:30-18:30

Lecture Sections: L 01: T & TR | 14:00-15:15 | ST 140

Course website: Desire 2 Learn (D2L)

Departmental Office: SB 605, 403-220-5385, phasugrd@ucalgary.ca

2. **Prerequisites:** Not open to students with credit in Astronomy 205, 213 or Astrophysics 213. Not recommended for physical science majors.
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:

Assignments (~5): 20%

Midterm Test 1: 15% (In Class: Feb 23)

Midterm Test 2: 15% (In Class: Mar 24)

Final Examination: 50% (3 hours: To be scheduled by the Registrar)

A grade of 50% or greater on the final exam is necessary to obtain a passing grade in the course.

Percentage to letter grade conversion scale:

> = 95 %	A +	> = 80 %	B +	> = 65 %	C +	> = 50 %	D +
> = 90 %	A	> = 75 %	B	> = 60 %	C	> = 45 %	D
> = 85 %	A -	> = 70 %	B -	> = 55 %	C -	< 45 %	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:** None
6. **Course Materials:** "Astronomy Today", 7th or 8th ed. Volume II : Stars & Galaxies by Chaisson & McMillan

Online Course Components: Course note and materials will be available on the course website. All Homework will be done on the online assessment system called "Master Astronomy". See course website on how to sign into the system.

7. **Examination Policy** All exams will be closed book exams. Formulae sheets will be provided as part of the exam material. Any kind of calculator is allowed (even programmable ones). However, calculator apps on cell phones are not allowed (since all cell phones should be turned off and put away). Students should also read the Calendar, [Section G](#), on Examinations.
8. **Other Important Information for Students:**
- (a) **Academic Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence 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. Students needing an Accommodation in relation to their coursework or to fulfil 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. Michael Wieser, by email (mwieser@ucalgary.ca) or by phone (403.220.3641).
 - (d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 2205333 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.
SU Faculty Rep: Phone: 220-3913
Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca
Student Ombuds Office: 403 220-6420
Email: 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). Your responses make a difference - please participate in USRI Surveys.

COURSE SYLLABUS

Part 1 - Fundamentals of Astronomy & Physics (History, Parallax, Kepler's Laws, Newton's laws, Orbital Motion)

Part 2 - Light, the Electromagnetic Spectrum, & Telescopes (Wavelength vs Frequency, Black Body Radiation, Hydrogen Atom, Spectral Lines, Kirchoff's Laws, Doppler Shift, Telescopes, Radio Astronomy, Interferometry)

Part 3 – Stars (the Sun, Proton-Proton Chain, Stellar Classification & the HR Diagram, Distance Determination Methods, Binary Stars)

Part 4 – The Interstellar Medium and Star Formation (the Atomic & Molecular ISM, Reflection & Emission Nebulae, Star Formation, Planet Formation, Extrasolar Planets)

Part 5 – Stellar Evolution (Post Main Sequence Evolution, Giant stars, Planetary Nebulae, White Dwarfs, Novae, Supernovae,

Part 6 – The Deaths of Stars and General Relativity (Neutron Stars, Pulsars, Black Holes, General Relativity and Spacetime)

Department Approval _____ Date _____