

DEPARTMENT OF PHYSICS, ENGINEERING AND ASTRONOMY

COURSE OUTLINE

**ASTR 111
INTRODUCTORY ASTRONOMY:
The Solar System**

INSTRUCTOR: Greg Arkos
OFFICE: Building 315, Room 209
OFFICE HOURS: TR 1:00 pm - 2:30 pm *or by appointment*
PHONE: (250) 753-3245 Local 2207
EMAIL: gregory.arkos@viu.ca
WEBSITE: <https://wordpress.viu.ca/arkosg/>
VIULEARN: <https://learn.viu.ca>

LECTURE: TR 2:30 pm – 4:00 pm Bldg 315, Rm 216
LAB: R (bi-weekly) 6:30 pm – 8:30 pm Bldg 315, Rm 216/113

TEXT: Universe: The Solar System by R. Freedman & W.J. Kaufmann (5th Ed, WH Freeman & Co.) is *optional*. Planetarium software is *required*.

CALENDAR DESCRIPTION: Introduction to fundamental principles in astronomy. Topics include geocentric vs. heliocentric astronomy, the celestial sphere, navigating the night sky, tides and eclipses, and a detailed examination of the planets and other solar system objects. Includes a bi-weekly lab and observing sessions, weather permitting. (3:0:1)

OBJECTIVES & LEARNING OUTCOMES: Astronomy 111 covers topics such as the nature of science, astronomical coordinates, navigating the night sky and the formation & properties of the Earth and other solar system objects, including the planets, asteroids and comets. The course aims to provide students with an appreciation of the universe and our place within it, stressing conceptual understanding with minimal mathematical derivation. Quizzes and exams emphasize descriptive material and an understanding of (and connections between) course concepts. By the end of the course students should understand the fundamental nature of scientific investigation, be able to identify & differentiate between various classes of solar system objects, recognize & predict the appearance and occurrence of lunar phases, understand the underlying mechanics and nature of the various types of eclipses, discuss conditions leading to the development of Earth-like planets, and be able to compare & contrast characteristics of major solar system objects. Completing the observing project and outdoor observing sessions should enable students to identify asterisms, constellations & other significant celestial objects and navigate the night sky.

PREREQUISITES: *Principles of Physics 12 or min "C+" in Principles of Physics 11 or Applications of Physics 12; min "C+" in Principles of Math 12 or Math 152.*

**** Please read ALL of the important course details & policies which follow. ****

CLASSES & OFFICE HOURS: During the formal office hours listed above I will be available in my office for face-to-face meetings on a drop-in or by-appointment basis. You may also reach me via the provided email and phone number both during and outside of my office hours. It is also possible to arrange individual or small-group meetings via MS TEAMS (see the link on the course website).

LABS & OBSERVING SESSIONS: The science of astronomy has grown as a result of theoretical reasoning constantly tested by the results of observations performed in the real world. Students in astronomy will be expected to perform several laboratory experiments over the course of the term; some of these will be computer based. Observing sessions take place (weather permitting) during the semester. Dates and time for observing sessions are TBD.

OBSERVING PROJECT: The observing project is done individually and utilizes computer simulations & TBD VIU rooftop observation sessions. Details are available on the course website. **** Late projects will NOT be accepted. ****

EVALUATION: Term Test #1 (in class)30%
 Term Test #2 (exam period)30%
 Quizzes (best 5 of 6)10%
 Laboratory (5)20%
 Observing Project10%

GRADES: Final grades are assigned using the *VIU Institutional Grade Scale*:

<i>A+</i>	90-100%	<i>B+</i>	76-79%	<i>C+</i>	64-67%	<i>D</i>	50-54%
<i>A</i>	85-89%	<i>B</i>	72-75%	<i>C</i>	60-63%	<i>F</i>	0-49%
<i>A-</i>	80-84%	<i>B-</i>	68-71%	<i>C-</i>	55-59%		

FAILING GRADES: Students worried about poor grades should see me as soon as possible. Do not drop the class before speaking with me! Please see the online Vancouver Island University Calendar regarding policies on registration. **** The last day for academic penalty-free withdrawal from courses is listed below. ****

ACADEMIC INTEGRITY & POLICIES Academic misconduct can have **significant** repercussions on your academic career and is taken **very seriously** at VIU. Details of VIU's General Regulations, Policy 96.01 and Procedure 96.01.001 are available from: <https://learningmatters.viu.ca/ready-set-go/academic-integrity>, <https://www.viu.ca/registration/general-regulations>, <https://www.viu.ca/registration/general-regulations#codeofconduct>

STUDENT RESPONSIBILITIES: Read the course outline *carefully*; it is assumed that you are **fully aware** of its contents with regards to dates & deadlines, evaluation and policies. You are responsible for keeping up with material presented in lecture and monitoring your progress in the course. *Please speak with me immediately if you are having difficulties which might impact your grade in the course.*

EDI & CODE OF CONDUCT: VIU values human diversity in all its dimensions and is committed to achieving and ensuring learning and working environments that are equitable, diverse and inclusive. *It is expected that students will treat one another and the instructor with respect and dignity at all times, without exception.*

ACCESSIBILITY SERVICES: VIU's Accessibility Services provides information, support services and reasonable accommodation to students with documented permanent and temporary disabilities, such as mental health conditions, ADHD, learning disabilities, chronic health issues, hearing and visual impairments, physical disabilities and temporary impairments due to accident, illness or injury.

If you have a disability requiring academic accommodations for this course please contact Accessibility Services at AccessibilityServices@viu.ca or visit them in BLDG 255. *If you are already registered with AS please provide me with your accommodation letter, either in person or by email.*

TENTATIVE QUIZ, EXAM & OBSERVING PROJECT DATES:

Quiz 1	Intro, History	Sept 12
Quiz 2	Coords, Sky, Star Motions Navigating the Sky	Sept 26
Quiz 3	Seasons, Moon Phases, Eclipses	Oct 10
Term Test #1	Intro – Solar System	Oct 17
Quiz 4	Earth, Earth-Moon system	Oct 31
Observing Project	due	Nov 8
Quiz 5	Moon, Mercury, Venus, Mars	Nov 21
Quiz 6	Jupiter, Saturn, Uranus, Neptune, Pluto, TNOs	Dec 5
Term Test #2	Earth – Asteroids/Meteors/Comets	Final Exam period

TENTATIVE LAB DATES:

Lab 1: Skycharts	Sept 12
Lab 2: Gravitation & planetary motion	Sept 26
Lab 3: Moon Phases & eclipses	Oct 10
Lab 4: Mars Lander	Oct 31
Lab 5: Moons of Jupiter	Nov 21

TOPICS: The following is a *tentative* list of topics that will be covered in this course.
**** NOTE: Circumstances may require modifications to the topics in this outline. ****

<u>Subject</u>	<u>Chapter(s) in text</u>
Introduction	1
History	2, 4
Kepler, Newton & gravitation	4
The Sky, constellations, star motions, navigating the sky, seasons	2
Moon phases, eclipses	3
Solar system formation	7, 8
Earth, Earth-Moon system, Moon	9, 10
Mercury, Venus & Mars	11
Jupiter & Saturn	12, 13
Uranus, Neptune & Pluto	14
Asteroids, Meteors & Comets	15

IMPORTANT DATES:

FIRST DAY OF CLASSES: September 3, 2024
MONDAY SCHED ON TUESDAY: October 15, 2024
WITHDRAWAL DEADLINE: November 25, 2024
LAST DAY OF CLASSES: December 6, 2024
FINAL EXAMINATIONS: December 9 – 18, 2024

HOLIDAYS: (No classes, labs or exams)

TRUTH & RECONCILIATION: September 30, 2024
THANKSGIVING: October 14, 2024
REMEMBRANCE DAY: November 11, 2024
STUDY DAYS: November 12 – 15, 2024

**** IMPORTANT course policies – READ CAREFULLY ****

- 1 Concerns regarding graded material **MUST** be raised within a week of its return.
- 2 Late submissions will **NOT** be accepted for grading **WITHOUT** prior approval.
- 3 There are **NO** deferred or make-up quizzes for this course.
- 4 There will be **NO** “extra” or “make-up” work for this course.
- 5 Requests for exam deferrals **REQUIRE** official supporting documentation.
- 6 Students **MUST** be available for the entire term, eg. the **ENTIRE** final exam period.
- 7 There will be **NO** accommodation of non-university related travel, eg. vacations.
- 8 There is **ZERO** tolerance for academic dishonesty, including plagiarism.