OntarioTech
UNIVERSITY

PHY 2900U Astronomy I
Faculty of Science
Course outline for Fall 2020

Lecture	Room	Professor
Thursday 6:40-9:30pm	https://meet.google.com/ber-bjbr-iru or through Canvas Kaltura Classroom	Dr. Rupinder Brar

Instructor Contact Information

Instructor Name	Office	Email
Dr. Rupinder Brar	https://smart.newrow.com/room/nr2/?room_id=fkv-207&fr=lti	please use Canvas email

Course Description

An introduction to the origin, evolution and structure of the solar system and its constituents, as well as extra-solar planets. At the same time, the course develops a basic observational, theoretical and quantitative understanding of the science of astronomy. This course is appropriate for all students with some science background.

In this course students will begin by gaining an understanding of the basics of Astronomy, our place in the Universe, and the development of the discipline from ancient Astronomy to modern technology. Students will then begin a detailed exploration of the Solar System gaining an understanding of its constituents and origin and evolution as a whole. The course will end with an examination of extra-solar planets.

Learning Outcomes

On the successful completion of the course, students will be able to:

1. Identify and describe important science concepts in the discipline of Astronomy pertaining to our Solar System.
2. Gain a perspective for our place in the Universe.
3. Differentiate between legitimate possibilities in the future of space exploration and fiction.
4. Assess the role and impact of Astronomy in the history of science and civilization, and its influence on progress in technology.

Course Design

There will be one 3-hour lecture weekly starting on September 10th. The majority of the time will be spent lecturing and introducing new material that will be testable.

The remainder of the time will be used for quizzes, astronomy group activities, discussions on astronomy, telescope observing, and virtual observing.

Office hours are available to obtain extra help and shore up your understanding of the concepts introduced in lecture and in the text. Office hours will be held in the online room above and the times can be found on the front page of Canvas.

Outline of Topics in the Course

- The Universe: The Big Picture
- Development of Astronomy as a Science
- Celestial Timekeeping and Navigation
- Time, Space and Gravity
- Light and Matter
- Telescopes and Technology
- Formation of the Solar System
- Terrestrial Planets
- Jovian Planets
- Asteroids, Comets and Dwarf Planets
- Extra-Solar Planets

Supplementary Material

Required Text

Astronomy: OpenStax by Fraknoi, Morrison, and Wolff. This is a free textbook that is available online as a pdf, website, downloadable for iBook or Kindle, and printable by you or through an external printer. More details and links will be available through Canvas.

Evaluation Method

Quizzes

There will be online closed-book quizzes given approximately every week for credit. The quizzes will always cover material from the previous week's lecture and corresponding readings. The quizzes will be conducted on Canvas in class time. You must work on your own.

Assignments

There will be 3 assignments from LON-CAPA, given before each midterm and exam, which will be graded for credit. The answers to the assignments can be found from your text and the knowledge you gain in lecture. This homework system is free to students and log in information will be available on Canvas.

Observing Project

An observing project that lasts much of the semester will be conducted. Students will study the motion of the Moon, Jupiter, Venus, and Saturn. A written report will be submitted towards the end of term.

Midterm and Final Exam

There will be two term tests, and a final exam. The exam will cover material from the entire course with an emphasis on that following the second midterm. Dates for the midterm will be posted on the calendar in Canvas shortly.

Marking Scheme

- Assignments: 10%
- Quizzes: 15%
- Project   10%
- Active Learning Participation: 5%
- Mid-terms (2x15):   30%
- Final exam: 30%

Missed Work - Any missed work will receive a mark of zero unless reweighing has been agreed to by the instructor in charge of the evaluation. For missed tests and exam please submit academic consideration to your academic advisor. No doctor's notes needed.

University-wide Policies and Notices

1. Technology Requirements
To support online learning, the university recommends certain technology requirements for laptops, software and internet connectivity which are available at: https://itsc.ontariotechu.ca/remote-learning.php.

Students experiencing technical difficulties such that they are unable to meet the technology requirements may contact the IT Service Help Desk at: servicedesk@dc-uoit.ca
Students experiencing financial difficulties such that they are unable to meet the technology requirements may contact Student Awards and Financial Aid Office at: connect@ontariotehu.ca

By remaining enrolled in this course, you acknowledge that you have read, understand and agree to observe the Recommended Technology Requirements for accessing university online learning resources, including those minimum requirements that are specific to your faculty and program.

2. Student Support
Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact studentlife@ontariotechu.ca for support. Furthermore, please notify your professor if you are comfortable in doing so. This will enable them to provide any resources and help that they can.

3. Sexual Violence Support and Education
Ontario Tech is committed to the prevention of sexual violence in all is forms. For any student who has experienced Sexual Violence, Ontario Tech can help. We will make accommodations to cater to the diverse backgrounds, cultures, and identities of students when dealing with individual cases.

If you think you have been subjected to or witnessed sexual violence:
- Reach out to a Support Worker, a specially trained individual authorized to receive confidential disclosures about incidents of sexual violence. Support Workers can offer help and resolution options which can include safety plans, accommodations, mental health support, and more. To make an appointment with a Support Worker, call 905.721.3392 or email studentlife@ontariotechu.ca
- Learn more about your options at: https://studentlife.ontariotechu.ca/sexualviolence/

4. Students with Disabilities
Accommodating students with disabilities at Ontario Tech is a responsibility shared among various partners: the students themselves, SAS staff and faculty members. To ensure that disability-related concerns are properly addressed during this course, students with documented disabilities and who may require assistance to participate in this class are encouraged to speak with me as soon as possible. **Students who suspect they have a**

disability that may affect their participation in this course are advised to go to Student Accessibility Services (SAS) as soon as possible. Maintaining communication and working collaboratively with SAS and faculty members will ensure you have the greatest chance of academic success.

When on campus access is allowed, students taking courses on north Oshawa campus can visit Student Accessibility Services in the Student Life Building, U5, East HUB (located in the Founders North parking lot). Students taking courses on the **downtown Oshawa campus** can visit Student Accessibility Services in the 61 Charles St. Building, 2nd Floor, Room DTA 225 in the Student Life Suite.

Disability-related and accommodation support is available for students with mental health, physical, mobility, sensory, medical, cognitive, or learning challenges. Office hours are 8:30am-4:30pm, Monday to Friday, closed Wednesday's 8:30am – 10:00am. For more information on services provided, you can visit the SAS website at https://studentlife.ontariotechu.ca/services/accessibility/index.php. Students may contact Student Accessibility Services by calling 905-721-3266, or email studentaccessibility@ontariotechu.ca.

When on campus access is allowed, students who require the use of the Test Centre to write tests, midterms, or quizzes MUST register online using the SAS test/exam sign-up module, found here https://disabilityservices.ontariotechu.ca/uoitclockwork/custom/misc/home.aspx. Students must sign up for tests, midterms, or quizzes AT LEAST seven (7) days before the date of the test.

Students must register for final exams by the registration deadline, which is typically two (2) weeks prior to the start of the final examination period. SAS will notify students of the registration deadline date.

5. Academic Integrity

Students and faculty at Ontario Tech University share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with and abide by Ontario Tech University's regulations on Academic Conduct which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, among other academic offences. The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a resubmission of work to a failing grade to permanent expulsion from the university. A lack of familiarity with these regulations on academic conduct does not constitute a defense against its application. This information can be found at http://calendar.uoit.ca/content.php?catoid=22&navoid=879#Academic_conduct

Extra support services are available to all Ontario Tech University students in academic development, study skills, counseling, and peer mentorship. More information on student support services can be found at https://studentlife.ontariotechu.ca/services/academic-support/index.php

6. Online Test and Exam Proctoring (Virtual Proctoring)

Ontario Tech University will conduct virtual monitoring of examinations in accordance with Ontario privacy legislation and all approved policy instruments.

7. Final Examinations

Final examinations are held during the final examination period at the end of the semester and **when on campus access is allowed,** may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are required to show their Student ID card (campus ID) when **in-person examinations are allowed.** Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. More information on ID cards can be found at https://registrar.ontariotechu.ca/campus-id/index.php.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three weeks prior to the first day of the final examination period.

Further information on final examinations can be found at https://usgc.ontariotechu.ca/policy/policy-library/policies/academic/procedures-for-final-examination-administration.php

8. Freedom of Information and Protection of Privacy Act

The following is an important notice regarding the process for submitting course assignments, quizzes, and other evaluative material in your courses in the Faculty of [Insert Faculty name]

Ontario Tech University is governed by the Freedom of Information and Protection of Privacy Act ("FIPPA"). In addition to providing a mechanism for requesting records held by the university, this legislation also requires that the University not disclose the personal information of its students without their consent.

FIPPA's definition of "personal information" includes, among other things, documents that contain both your name and your Banner (student) ID. For example, this could include graded test papers or assignments. To ensure that your rights to privacy are protected, the Faculty of [Insert Faculty name] encourages you to use only your Banner ID on assignments or test papers being submitted for grading. This policy is intended to prevent the inadvertent disclosure of your information where graded papers are returned to groups of students at the same time. If you still wish to write both your name and your Banner ID on your tests and assignments, please be advised that Ontario Tech University will interpret this as an implied

consent to the disclosure of your personal information in the normal course of returning graded materials to students.

If you have any questions or concerns relating to the new policy or the issue of implied consent addressed above, please contact accessandprivacy@ontariotechu.ca

Notice of Collection and Use of Personal Information
Throughout this course, personal information may be collected through the use of certain technologies under the authority of the *University of Ontario Institute of Technology Act, SO 2002, c. 8, Sch. O.* and will be collected, protected, used, disclosed and retained in compliance with Ontario's *Freedom of Information and Protection of Privacy Act R.S.O. 1990, c. F.31.*

This course will use the following technologies that may collect, use, disclose and retain personal information (including images) for the purposes described below: [Instructors should edit this section according to the systems and technologies to be used in this specific course (e.g. If using Proctortrack, remove any reference to Respondus)]
- Respondus Monitor and Proctortrack to maintain academic integrity for examinations;
- Google Meet and Kaltura Virtual Classroom to facilitate remote instruction and interactive learning;
- Peer-shared applications, services or technologies that may be reviewed, assessed, or used as part of coursework.
- Other applications, services, or technologies that support or enhance online learning that include, but are not limited to, the following: [Instructor to list all relevant components].

For more information relating to these technologies, we encourage you to visit: https://tlc.ontariotechu.ca/learning-technology/index.php Questions regarding personal information may be directed to: Ontario Tech University Access and Privacy Office, 2000 Simcoe Street North, Oshawa, ON L1G 0C5, email: accessandprivacy@ontariotechu.ca.

By remaining enrolled in this course, you acknowledge that you have read, understand, and agree to the terms and conditions under which the technology provider(s) may collect, use, disclose and retain your personal information. You agree to the university using the technologies and using your personal information for the purposes described in this course outline.

9. Freedom of Expression
Pursuant to Ontario Tech's Freedom of Expression Policy all students are encouraged to express ideas and perspectives freely and respectfully in university space and in the online university environment, subject to certain limitations. Students are reminded that the limits on Freedom of Expression include speech or behaviour that: is illegal or interferes with the university's legal obligations; defames an individual or group; constitutes a threat, harassment or discrimination; is a breach of fiduciary, contractual, privacy or confidentiality obligations or commitments; and unduly disrupts and interferes with the functioning of the university. In the context of working online, different forms of communication are used. Where permitted, students using "chat" functions or other online forms of communication are encouraged to ensure that their communication complies with the Freedom of Expression Policy.

10. Student Course Feedback Surveys

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of Ontario Tech University's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates. Notifications about course evaluations will be sent via e-mail, and posted on Canvas, Weekly News, and signage around the campus.