



## PHYS-1510H-A: Introductory Astronomy I 2019FA - Peterborough Campus

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### Instructor:

Instructor: Rayf Shiell

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Phone Number: 705-748-1011 x7023

Office: SC213

Office Hours: Thursdays, 1-2

### Meeting Times:

Weekly classes: SC137, Thursdays, 7 - 8:50 pm.

Optional observing sessions (see below): meet outside Physics and Astronomy Department Office, SC327, Thursdays, 9 - 9:50 pm.

Please check <http://www.trentu.ca/timetable/> to confirm times and locations

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### Co-instructors and Teaching Assistants:

TBD

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### Department:

Academic Administrative Assistant: Patricia Smith

Email Address: [physics@trentu.ca](mailto:physics@trentu.ca)

Phone Number: 7715

Office: SC327

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### Description:

A general science course accessible to all students. Topics include sky phenomena, the history of astronomy, telescopes and detectors, and an exploration of the Solar System. No prerequisite. As a general science course it is not a countable 'PHYS' credit towards a major or minor in Physics.

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### Learning Outcomes:

By the end of the course a successful student should have:

- developed an understanding of the various phenomena which are visible in the night sky with the unaided eye
  - appreciated key principles of the scientific method, including its acceptance of uncertainties, of analyzing numerical data, and how this method led to a dramatic improvement in our understanding of the universe over the past 400 years
  - developed a physical understanding of the basic properties and nature of radiation
  - learned how astronomical telescopes and detectors work at a basic level
  - acquired a conceptual understanding of how our solar system formed
  - learned how recent discoveries of exoplanets are rapidly improving our understanding of the ubiquity and nature of planetary systems in the universe
  - developed an appreciation of the Earth as a planet, and how it compares to other planets and moons in our solar system
  - become familiar with the smaller bodies in our solar system (e.g., comets and asteroids), including the implications of direct collisions between such objects and the Earth.
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## Texts:

**Textbook:** Comins, *Discovering the Universe*, 11th edition. The textbook is available in the bookstore in both the regular bound format and in a cheaper loose-leaf format, and can also be purchased as only an e-book with the online Sapling tool (see below). The book explains the concepts we cover in this course, and contains high-quality illustrations and photos that will be repeatedly referred to in class. Both physical textbook formats come packaged with a Sapling online access code.

**Sapling and Blackboard online resources:** This is an online learning tool containing two-thirds of the weekly coursework (weekly LearningCurve activities and assignments). The remaining one-third of weekly coursework (the quizzes) are hosted by Blackboard. An introduction to both Sapling and Blackboard will be provided during the first class. All assigned coursework will take place online. You must access Sapling through the course's online Blackboard Learning System. The access code comes with the textbook or it may be purchased stand-alone from the bookstore without the print-version of the textbook. Your access code will be valid until the summer of 2020, and can therefore be used also for PHYS 1520H Introductory Astronomy II. If you encounter technical difficulties when using Sapling, contact Technical Support either from within a Sapling webpage or by calling toll-free 1-800-936-6899. This is the best way to get your issue resolved quickly.

**Observing session resource:** There will be periodic optional observing sessions after class on Thursday evenings from 9:00 – 9:50 pm, meeting outside the Physics and Astronomy Department Office, SC327. The purpose of these is to provide hands-on experience identifying constellations and using telescopes to view celestial objects such as planets and star clusters. These will be held only when the sky is clear and the moon is not excessively bright. Students are strongly encouraged to attend at least one observing session during the semester. Online signup for these will be available on Blackboard during the 24 hours preceding each observing session.

## Readings:

Sep. 5 No pre-class reading required

Sep. 12, Chapter 1, *Discovering the Night Sky*

Sep. 19, Chapter 2, *Gravitation and the Motion of the Planets*

Sep. 26, Chapter 3, *Light and Telescopes*

Oct. 3, Chapter 4, *Atomic Physics and Spectra*

Oct. 10, Chapter 5, *Exoplanets and the Formation of Planetary Systems*; and Chapter 6, *Formation of The Solar System*

Oct. 17, Chapter 7, *Earth and the Moon*

Oct. 31, Chapter 8, *The Other Terrestrial Planets: (Mercury, Venus)*

Nov. 7, Chapter 8, *The Other Terrestrial Planets: (Mars)*

Nov. 14: Chapter 9, *The Outer Planets*

Nov. 21: Chapter 10, *Vagabonds of the Solar System*

Nov. 28: Review for Exam

## Assessments, Assignments and Tests:

Note that all online deadlines are strict deadlines, so to avoid any issues, technical or otherwise, you are advised to start all assignments sufficiently in advance of the posted deadline. You are permitted up to two "no-submissions" in case issues arise despite your best efforts to avoid them, and beyond this any of the remaining (relatively small fraction of the total) marks will be lost if an online assignment or assessment deadline is not met.

**Sapling LearningCurve activities:** LearningCurve is an adaptive quizzing facility within Sapling, and is designed to help you solidify your understanding of the required reading material from the textbook. You are required to read each chapter and complete the associated LearningCurve activities before the material is covered in class, with the normal deadline being Thursdays at 6 pm. LearningCurve activities are completed and submitted online. There are **nine sets** of three LearningCurve activities in total, with your **best seven sets** counting towards your grade to accommodate technical/other issues.

**Sapling homework:** There will be a weekly online set of questions and interactive exercises. These are designed to help you understand concepts covered in the preceding class and the corresponding chapter of the textbook. They are to be completed and submitted online with the normal deadline being Mondays at 6 pm. There are **nine** homeworks in total, with your **best seven** counting towards your grade to accommodate technical/other issues.

**Blackboard quizzes:** There will also be a weekly online multiple choice quiz on Blackboard. These test your understanding of the material covered during the previous class and the corresponding chapter of the textbook. To encourage you to master this material you will be allowed several attempts on each quiz (although each quiz will contain a different set of randomly-selected questions), with only your highest mark counting towards your grade on that quiz. Quizzes are to be completed and submitted online with the normal deadline being Mondays at 6 pm. There are **nine** quizzes in total, with your **best seven** quizzes counting towards your grade to accommodate technical/other issues.

**The final exam** will be held during the December exam period. This exam will count for 45% of your final grade, and will consist of multiple choice questions. In common with the requirement of many physics courses here and at other universities, a minimum of 35% must be obtained on the final exam in order to pass this course. If this is not met, then a course grade of no more than 45% will be assigned. This grade will be the lesser of (i) the value calculated using the course evaluation scheme described herein, and (ii) 45%.

## Grading:

Sapling LearningCurve activities, worth 10%, due most Thursdays before 6 pm, i.e. one hour before class

Sapling homework assignments, worth 15%, due most Mondays before 6 pm

Blackboard quizzes, worth 30%, due most Mondays before 6 pm

Final exam (mandatory; must get >35% on this exam to pass the course) worth 45%, held during the December exam period

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## Course Guidelines:

Guidelines to help you to enjoy the course, develop a greater appreciation and understanding of astronomy, and achieve a good grade:

- Attend classes regularly. I will do my best to explain the material clearly, often using colorful images, animations, and videos. I am always happy to answer questions in class. Several concepts are more difficult (and more time consuming) to figure out entirely on your own.
  - Make a weekly study plan, setting aside time to read the textbook, and complete all online activities before the posted deadlines.
  - If you have questions about material we have covered in class or online, or if you are having difficulty in the course, please contact me for help
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## University Policies:

### Academic Integrity

Academic dishonesty, which includes plagiarism and cheating, is an extremely serious academic offence and carries penalties varying from failure on an assignment to expulsion from the University. Definitions, penalties, and procedures for dealing with plagiarism and cheating are set out in Trent University's *Academic Integrity Policy*. You have a responsibility to educate yourself – unfamiliarity with the policy is not an excuse. You are strongly encouraged to visit Trent's Academic Integrity website to learn more: [www.trentu.ca/academicintegrity](http://www.trentu.ca/academicintegrity).

### Access to Instruction

It is Trent University's intent to create an inclusive learning environment. If a student has a disability and documentation from a regulated health care practitioner and feels that they may need accommodations to succeed in a course, the student should contact the Student Accessibility Services Office (SAS) at the respective campus as soon as possible.

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