

# Astronomy ASTA01

## Introduction to Astronomy and Astrophysics I: The Sun and Planets

**Fall 2018**

**Instructor:** *Prof. Kristen Menou*

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**Office Hours:** Tuesday, 11am-12noon and by appointment

### **LECTURES - TIME & PLACE:**

Tuesdays, 10am - 11am, SY110

Thursdays, 10am - 11am, SY110

### **DESCRIPTION:**

The solar system has been thoroughly explored by astronomical instruments on Earth and in space. In addition, fundamental and exciting discoveries of the last two decades provide us with the basic knowledge about the existence and the orbital architecture of a large variety of planets in extrasolar planetary systems (i.e., around stars other than our Sun). This course will introduce you to both solar and extrasolar systems. This course considers astronomical bodies and their origin and evolution, as well as basic parts of physics, some chemistry, etc., required to observe them and understand their structure. As part of the history of the subject, we give an overview of the development of astronomy from ancient times to the age of modern Newtonian science. The course is suitable for both science and non-science students.

### **CONTACTING THE TEACHERS:**

Head Teaching Assistant: Nathan Winsor, email: [winsor\\_AT\\_astro.utoronto.ca](mailto:winsor_AT_astro.utoronto.ca) [change \_/AT\\_]

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Obtain the contact information from your section's TA, and send him/her email about the course or tutorial materials.

Email the head TA with questions that your section's TA cannot answer, and Prof. Menou as a last resort.

Prof. Menou Office Hours: Tuesday, 11am-12noon and by appointment

### **TUTORIALS:**

Tutorials start on September 13.

The 7 sections are as follows:

TUT0001	TH	12:00	13:00	BV 361
TUT0002	TH	13:00	14:00	AA 209
TUT0003	TH	14:00	15:00	AA 206
TUT0004	TH	15:00	16:00	AA 207
TUT0005	TH	09:00	10:00	AA 204
TUT0006	TH	13:00	14:00	BV 361
TUT0007	TH	16:00	17:00	AA 206

Your attendance at all lectures and tutorials is expected. The lectures slides complement the textbook, by including additional information, comments and perspectives and they will be posted on Quercus.

### **TEXTBOOK (REQUIRED):**

Solar System and Planetary science are developing very quickly. We are fortunate to have an up-to-date, fresh textbook taking into account some of the most recent discoveries:

**"Discovering the Universe"** 10th Edition, by Neil F Comins and William J. Kaufmann.

The corresponding package is available at our UTSC bookstore is:

LooseLeaf Discovering the Universe 10E & CM LaunchPad Discovering the Universe 10E  
(Twelve Month Access) & Starry Night Access Card  
Package ISBN: 9781319152703

It includes access to electronic resource and online learning material called LaunchPad. We will use LaunchPad for regular online quizzes.

If you want to buy the book somewhere else that's fine, please talk to the bookstore staff and they can help you purchase the access to LaunchPad (which is necessary for the class) separately. It may be much more expensive than buying the package though.

## **LAUNCHPAD**

Information to access the system will be sent through a general class email (Quercus). Upon logging in, **you will be asked to include your student number as your id/registration together with your full last name or else we may not recognize you & may not be able to give you proper credit.**

## **QUIZZES WITH "LEARNING CURVE"**

Online quizzes will be available from the second or third week of the course, and will together earn a 12% contribution to the final course score. There will be something like one quiz per week (details will depend on progress we make going through chapter topics in the lectures).

You will be notified by email when a quiz is due. We will be using the LearningCurve automated learning system for quizzes, which selects questions based on your previous answers and allows you to consult the ebook before answering.

## **ABOUT THE EXAMS**

Exams (midterm and final) will take place on dates to be determined.

The Final Exam will be 3 hours long. Remember to take a calculator and a student ID with you to each exam. The following UTSC rules apply. Cellphones must be off and in a bag that you will put away from your desk. You may leave the exam room (except in the final minutes of the exam) to be escorted to the washroom or for religious practices - but no extra exam time will be granted because of this.

The exams will consist of quiz (multiple choice) questions, and written problems. The quizzes on LaunchPad will give you a good notion of the types of questions you may expect on exams. As for the problems, they will sometimes require calculations of a simple, algebraic type (high school algebra, trigonometry, no calculus or university math required). Tutorials and written assignments will introduce you to the type of problems you will see in the exams.

Exams are closed-book (no books or notebooks allowed). During an exam you will be able to use note sheets of your own making, either typewritten, handwritten or copied. Two sheets of paper (up to 4 pages normal size) of notes are allowed. This way, you won't have to memorize formulae or data. Also, the text of each exam will have a final section listing the physical and astronomical constants that may (or may not) be helpful in solving the problems. (Most will not be used as part of the solutions.)

What material is required knowledge for the exam? In general - the textbook and the lecture notes (slides), plus the skills developed in tutorials and written assignments. The midterm covers everything up to the midterm. Lecture slides will be distributed through Quercus.

Marking scheme of the course

Max. score = 100%, midterm = 20%, final exam = 44% (20% problems, 24% quiz), 4 sets of homework assignments = 24% (6% each), quizzes 12%.

Grading is standard: minimum percentage marks for letter grades (for orientation only, since grades are reported as percentages) A+ 90%, A 85%, A- 80%, B+ 77%, B 73%, B- 70%, C+ 67%, C 63%, C- 60%, D+ 57%, D 53%, D- 50%, F 49% or less.

## **TUTORIALS**

Tutorials and the Teaching Assistants (TAs) are your friends! Use this resource to the fullest extent possible. The TAs are graduate and undergraduate students familiar with both UTSC, its programs, and this course. They are your primary contact during the tutorials, and by email between tutorials. TAs will distribute any materials needed for the homeworks, gather and grade them. They'll also share their emails for contact with you. It is recommended to take a calculator to the tutorial.

## **POLICIES ON PROBLEM SETS:**

Due about one week later.

**Policy on collaboration:** See detailed policy to be distributed via Quercus.

**Policy on late problem set returns:** See detailed policy to be distributed via Quercus.

## **APPROXIMATE SCHEDULE:**

- Week 1: Introduction & Organization - Discovering the Night Sky (Chapter 1)
- Week 2: Discovering the Night Sky (Chapter 1)
- Week 3: Discovering the Night Sky (Chapter 1)
- Week 4: Gravitation and the Motion of Planets (Chapter 2)
- Week 5: Gravitation and the Motion of Planets (Chapter 2)
- Week 6: Formation of the Solar System and Other Planetary Systems (Chapter 5 + 9)
- Week 7: Formation of the Solar System and Other Planetary Systems (Chapter 5 + 9)
- Week 8: Formation of the Solar System and Other Planetary Systems (Chapter 5 + 9)
- Week 9: Extrasolar Systems (Chapter 19)
- Week 10: Comparative Planetology of the Terrestrial Planets (Chapter 6 + 7)
- Week 11: The Outer Solar System (Chapter 8)
- Week 12: Outer Solar System and Life on Other Worlds (Chapter 19)