

Course Syllabus for ASTC25H3 S: Astrophysics of Planetary Systems

Course: ASTC25H3 S Astrophysics of Planetary Systems

Tutorial: Thursdays 12:00 PM - 1:00 PM Location: MW 262 (TUT0001)

Lecture: Thursdays 1:00 PM - 3:00 PM Location: BV 361 (LEC01)

Website: <https://q.utoronto.ca/courses/68944> (QUERCUS site for this course)

Instructor: Dr. Meghan McGill

Email: m.mcgill@utoronto.ca

Office: SW504E

Office hours: Tuesday 11:00 AM - 1:00PM and Thursday 3:30 PM - 5:30 PM

Teaching Assistant: Fergus Horrobin

Email: fergus.horrobin@mail.utoronto.ca

Please note that our TA assigned to marking duties ONLY. Please only contact them about grade questions. Any other inquiries should go to the Instructor.

Course Description:

A 13-week comprehensive planetary science course at a level appropriate for senior science students. Planetary science is a broad field connecting physics, chemistry, geology, and even biology. Students will get an overview of the objects studied and issues in planetary astrophysics: The Solar system, extrasolar planetary systems, the giant planets, terrestrial planets, dwarf planets, and minor bodies. Planets will be presented as a result of the star formation process

Topics will include

Gravitation and other physical processes.

Planet formation - Accretion/Protoplanetary Disks, Planetesimals/Planet Formation and constraints on planet formation from known objects

Internal Structures and Atmospheres of Planets.

Orbital Evolution and Impacts.

Detection/Measurement Methods for Disk systems and Extrasolar Planets

Habitability

Prerequisite: MATB41H3 and PHYA21H3

Corequisite: MATB42H3

Exclusion: (ASTB21H3), (ASTC22H3), [AST221H and AST222H]

Breadth Requirements: Natural Sciences

Course Materials

Required Textbook: The textbook is Fundamental Planetary Science: Physics, Chemistry and Habitability by Jack J. Lissauer and Imke de Pater, 2013 (Paperback ISBN: 9780521618557). It is available in the bookstore. It is also available from Amazon, Indigo or from Cambridge University Press directly (links found on course webpage)

Recommended book: Astrophysics of Planet Formation by Philip J. Armitage, 2009, ISBN: 9780511802225. This is an excellent graduate level planet formation book and the course notes this book was built from are available free online (link found on course webpage).

Computer access: Some questions in our problem sets will require light programming or running simulation software packages, you will either need to work in the computer lab, or you will need to install these programs (Python) on your own computer. SW505B has time available for student.

Grading:

	Weight
Problem Sets (5 in total)	35 % (7 % each)
Term project	10 %
Midterm Exam	22 %
Final Exam	33 %
Total	100 %

Please note that all work, including tests, must be neatly written and easily readable in order to receive a grade.

Problem Sets (35 %)

Assignments will involve calculations, algebra, and light programming. We will have 5 Problem sets assigned, spaced by approximately two weeks. Each of the 5 problem sets will be worth 7%, for a total of 35%. Some questions will come from the textbook. It will be necessary for one assignment to be due during Reading Week and will be designed such that it can be submitted electronically. Late homework assignments will be accepted for 75% credit until solution sets have been posted on the course website (about a half a week after the due date). After solution sets are posted, no credit will be given for late work. The date the solutions will be posted will be known in advance. To help us keep the homework papers organized and make sure you get full credit for your work, please make sure to put your name on every page and staple the pages of

your assignment. You may discuss the problems with your fellow students, but you must write your own solutions individually.

Term Project: Science Communication (10 %)

The ability to Communication scientific concepts in and interesting and clear manner to the public is a highly desirable, even a necessary, skill for a scientist. There are grants that REQUIRE outreach time by the applicant! Choose current research paper (or series of papers) in planetary science write an article on it aimed and the interested laymen. The project will be in two phases

- (1) Topic proposal - VERY BRIEF statement of the paper(s) you plan on writing about. Due after reading week (Final due date TBA to allow for the midterm). You may (and are encouraged to) submit your topic proposals early and I will take I look as soon as I can. 5% of your mark will be awarded for creating a proposal.

- (2) The article itself. Should be between 1000-1500 words. You may need to explain some background before going into the specific topic you have chosen. The works and words must be your own, however, I will allow you to include pictures/figures from other authors, either the paper or elsewhere if you chose as long as you remain within fair use and the source is credited. 95% of your mark on the project will come from the article itself.

Grading of Term Project	Weight
Topic Proposal: Reasonable and On-time	5 %
Article: Meets format requirements (TBA)	5 %
Article Organization	20 %
Article: Level of Content	20 %
Article: Development of Content	20 %
Article: Readability	20 %
Article: Style	10 %
Total (8% of final grade)	100 %

Midterm Exam (22 %)

The midterm exam will be out of class. It will be 2 hours long, consisting of problems and short answer questions. We have yet to receive a date or location for the midterm exam (as of writing this draft). It will be sometime in the 3 weeks after reading week. When we receive the date you will be informed in an Announcement on the course webpage, in the next lecture and in the next tutorial and it will be added to the course calendar.

Final Exam (33 %)

We have yet to receive a date or location for the final exam (as of writing this draft). It will be sometime during exam week April 10-27th. It will be 3 hours long, consisting of problems and short answer questions. When we receive the date you will be informed in an Announcement on the course webpage, in the next lecture and in the next tutorial and it will be added to the course calendar.

Technicalities:

Verification of Student Illness or Injury

"The Verification of Student Illness or Injury" is the new official University of Toronto form for all students who are requesting special academic consideration based on illness or injury. This new form replaces the "Student Medical Certificate".

Please provide the form below to your Dentist, Nurse/Nurse Practitioner, Physician/Surgeon, Psychologist, Psychotherapist or Social Worker registered and licensed in the Province of Ontario for completion.

<http://www.utsc.utoronto.ca/ctl/sites/utsc.utoronto.ca.ctl/files/resource-files/Verification-of-Illness-or-Injury-form-Jan-22-2013.pdf>

AccessAbility

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible.

AccessAbility Services staff (located in Rm SW302, Science Wing) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations 416-287-7560 or email ability@utsc.utoronto.ca. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Academic Integrity

The University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences.

Potential offences in papers and assignments include using someone else's ideas or words without appropriate acknowledgement, submitting your own work in more than one course without the permission of the instructor, making up sources or facts, obtaining or providing unauthorized assistance on any assignment.

On tests and exams cheating includes using or possessing unauthorized aids, looking at someone else's answers during an exam or test, misrepresenting your identity, or falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

Turnitin

Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com website.

Laptops

I do not ban laptops, tablets or phones. However, your neighbors may find them distracting. I may ask you to sit in the back of the class or keep your screen brightness low to prevent problems.

Email

Please e-mail us from your university email account if you want us to receive your message. The university spam filters may block your yahoo, hotmail or aol email. Please treat email as professional correspondence and use proper punctuation and capitalization. We cannot assist you with what we cannot understand.

Privacy

The University of Toronto is committed to the protection of privacy. Ontario universities are covered by the Freedom of Information and Protection of Privacy Act (the Act) which supports access to University records and protection of privacy. The University upholds these principles.

Copyright

University of Toronto Copyright policy.

<http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/ppmay302007.pdf>