CONTACT INFORMATION:

- Instructor James Taylor, office PHY256, x38115, taylor@uwaterloo.ca
- Office hours: Friday 11:00 a.m - noon, depending on need, or by appointment
- Please contact me first, not the TA. Please email me rather than phoning. I will normally respond to email during work hours; I may not respond outside of work hours.

COURSE DESCRIPTION:


LEARNING OBJECTIVES:

- To understand the physics of planet formation and evolution, including mechanics, gravity, radiation, elementary solid state physics, and other relevant topics in astrophysics
- To know and have placed in context the properties and dynamics of the planets of our solar system
- To understand the basic sequence of star formation, planet formation, and the evolution of planetary systems
- To place in context the recent discoveries of extra-solar planets

RESOURCES:

- Textbook: *Foundations of Astrophysics* (First Edition) by Ryden & Peterson; available at the bookstore; a copy will also be available at the Davis Library
- Lecture slides posted on-line, on the LEARN site: https://learn.uwaterloo.ca/d2l/
- Links and URLs posted on the LEARN site

TOPICS:

1. The Astronomical Basis for Astrophysics: The historical development of planetary astronomy and the birth of Physics [4 lectures]
2. Orbital Dynamics: gravity & celestial mechanics, the geometry and scale of planetary orbits, tidal forces [4 lectures]
3. The Physics of Matter and Radiation: the states of matter, hydrostatic equilibrium, radiation, heat and other forms of energy, observational methods [2 lectures]
4. Our Solar System: The Sun, the rocky and gaseous planets, planetary surfaces, planetary interiors, planetary atmospheres, minor planets, impacts and dynamics, the formation of the Solar System [6 lectures]

5. Other Stars and other Planetary Systems: Basic properties of other stars, the discovery and properties of extra-solar planets, forms and history of life on Earth, prospects for life elsewhere [6-7 lectures]

ASSESSMENT:

- Participation, evaluated with unannounced in-class tests: 5%
- In-class weekly assignments: 35%
- In-class Midterm: 20% (October 23rd)
- Final Exam: 40%

Assignments are due in class on the due date (Friday), but I will accept them until the end of that day. Late assignments (those received the next day or later) will be accepted with a penalty of -10% until I post/discuss the solutions, and get no marks once I have posted or discussed the solutions.

- Students may discuss work together, but are expected to submit their own work on assignments; copies are not acceptable. If you are working with others please indicate this on your work.

- Graded assignments will be handed back in class. Uncollected assignments will generally be kept for 1-2 months after the end of the course, but no longer (exams are kept for longer, as per faculty requirements.)

- Midterm date is Friday, October 23rd; I will provide some practice problems before this
- Remember to check appropriate uWaterloo websites for details concerning various dates (e.g., final examination, drop deadlines, etc.)

COMMITMENT EXPECTATIONS:

- Students are expected to devote 8-9 hrs/week to the course; 3 hours for class time and the balance for reading and completing assignments, or reviewing material for tests and the exam

- Class attendance is mandatory; students who miss class or tutorials are responsible for catching up the material they have missed.

- Attendance at examinations is also mandatory, and exams will not generally be rescheduled, except in cases of severe illness or personal trauma. Any medical exceptions must be documented by a signed medical note from campus Health Services (note this is a change from previous policy), indicating the date and severity of the illness, and will only be accepted at the instructor’s discretion. Exams will not be excused for minor complaints. Students with chronic health problems should consult with the Office of Disabilities for alternate exam arrangements.
ACADEMIC INTEGRITY:

• Office of Academic Integrity provides relevant information for students, faculty and staff.
  
  o Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.
  
  o Grievance: Students, who believe that a decision affecting some aspect of their university life has been unfair or unreasonable, may have grounds for initiating a grievance. Students should read Policy #70, Student Petitions and Grievances, Section 4. When in doubt, students must contact the department’s/school’s administrative assistant who will provide further assistance.
  
  o Discipline: Students are expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about ‘rules’ for group work/collaboration should seek guidance from the course instructor, academic advisor, or the Associate Dean of Science for Undergraduate Studies. For information on categories of offenses and types of penalties, students should refer to Policy #71, Student Discipline. For information on typical penalties, students should check Guidelines for the Assessment of Penalties.
  
  o Appeals: A decision or penalty imposed under Policy 33 (Ethical Behavior), Policy #70 (Student Petitions and Grievances) or Policy #71 (Student Discipline) may be appealed, if there is a ground. Students, who believe they have a ground for an appeal, should refer to Policy #72 (Student Appeals).

COURSE RULES/CONSIDERATIONS:

• Exam Period Travel:
  
  o The final exam will be scheduled during the normal F15 exam period; the exact date will be released by the faculty toward the end of October.
  
  o Student travel plans are not considered acceptable grounds for granting an alternative examination time.
  
• Students with Disabilities:
  
  o AccessAbility Services, located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If students require academic accommodations to lessen the impact of their disability, they should register with AccessAbility Services at the beginning of each academic term.

• Grade Revision/Requests for Remarkining:
  
  o Midterm solutions will be provided after the midterm and any make-ups have taken place. Any queries, complaints or requests for remarking of the midterm must specific and detailed, and must be submitted in writing (e.g. by email is ok) during a specified period after this, normally a week. I will consider these requests and make a decision, which may include no action, an adjustment to the mark on a single question, or a full remarking of the entire test. In either of the latter two cases, the grade may go up or down. My decisions on remarking are final; I will not discuss them further with students.
Once the period for adjustments is over, I may adjust the overall average for the entire class if it was unusually high or low; after this I will not consider any other changes to midterm marks.

- Solutions will also be provided for assignments, and a similar policy about adjustments will apply.
- Solutions will **not** be provided for the final exam; students have the right to see their exam under supervision, and may request a remark, but once again must do so by making a specific request in writing. I will not discuss final exam material or marking with students after the exam, and any remarking may cause the final exam mark to go up or down.

**Changes to Course Outlines**
- Revised course outlines will be posted/provided, if course details change (e.g., topics covered, emphasis on certain topics, etc.)
- Course elements that will **not** change are the:
  - Grading scheme*
  - Course elements related to evaluation

* Note the grading scheme will not change in such a way as to lower the mark any student. Elements may be dropped or reweighted to reflect technical problems such as service disruption, but final mark will always be the minimum of the grade under the old scheme and the grade under any new scheme.)