PHYS 320: *Introductory Astrophysics*

Professor: Daryl Haggard – MSI 040
daryl.haggard@mcgill.ca

Office Hour: Wednesdays at 1:00-2:00pm or by appointment

TAs: *To Be Announced September 2020!*

Where: Online via **MyCourses**, **Zoom**, and more!

When: Q&A Tuesday & Thursday, 1:05–2:25pm

Course Description: Astronomy is the oldest science and yet is among the fastest growing areas of physics today. This course will cover a broad range of astrophysical topics ranging from stars and planets, to compact objects, galaxies, and the large-scale evolution of the Universe. This is a calculus-based course that focuses on simple mathematical derivations that capture the essential physics. During the Fall 2020 term, we will also highlight current research areas in astrophysics.

Prerequisites: MATH 222; PHYS 230 or PHYS 260; or permission of the instructor. This course is not open to students who have taken PHYS 214.

Online Format: For the Fall 2020 term, PHYS 320 will be conducted online using a variety of interactive tools. Each week I will post short lectures that can be watched by students at any time that is convenient. We will use these as the basis for "live" online Q&A sessions that will include problem solving, discussing the broader conceptual context, and responses to student inquiries. Q&A sessions will be recorded and made available to all members of the class. Student participation will be required (synchronous or asynchronous) and will occur via discussion boards, Q&A sessions, office hours, interactive assignments, etc.

Assessment
25% Homework (6 total; graded by TAs)
25% Term Paper (10% first draft, 15% final paper, details below)
25% Midterm (graded by TAs and Prof)
25% Final (graded by TAs and Prof)

Homework: There will be six problem sets, each posted to MyCourses, which will be due via PDF upload ~1.5 weeks later (see course calendar).

- You are encouraged to collaborate with other students on the problem sets. Nevertheless, the solutions that you hand in ***must reflect your own work***[1].

[1]In other words, we want you to discuss ideas and mathematical techniques with your colleagues; it is fine to sketch out strategies for attacking the problem, it's even OK compare results at the end to help each other find errors. But your solution should reflect your own work and demonstrate what you understand about the problem.

- Use of solution sets in graded homework is plagiarism and will be treated accordingly. This includes consulting previous years' solution sets, instructor solution manuals, or similar documents (e.g. solutions obtained from the internet).
- Late problem sets ***will not be accepted*** unless an extension has been approved prior to the due date. Extensions will be granted only for a serious, documented illness or emergency.

Term Paper: You will scour the press pages of NASA's three Great Observatories (*Chandra, Hubble,* and *Spitzer*) in search of timely and exciting term paper topics:

http://www.chandra.harvard.edu/press/
http://hubblesite.org/news
http://www.spitzer.caltech.edu/news

Your term paper will be 1500–2000 words long and will be based on your chosen press release and the associated peer reviewed journal article. The term paper must include at least two references and one figure with a caption (these count toward the word limit).

Your first draft will be evaluated by your peers using *Peergrade*. Your grade on the draft will be based on the quality of your draft (5%) and the quality of the feedback you give your peers (5%). The final version of the term paper will include a half-page reflection on the feedback received and how it was implemented (this appendix will not count toward the word limit). The final version of the project, worth 15%, will be graded using the same rubric as the draft.

Course Content: We will primarily follow ***Astrophysics in a Nutshell***, by Dan Maoz. This textbook is ***required***. Several chapters are freely available on the publisher's website (link below, scroll down to "Resources") and I have posted the first two on our MyCourses webpage to allow you time to acquire the full text.

Astrophysics in a Nutshell (Second Edition)
Author: Dan Maoz
ISBN: 9780691164793
https://press.princeton.edu/titles/10772.html

Academic Integrity & Charter of Student's Rights: McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see https://www.mcgill.ca/students/srr/honest for more information).

In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

Additional policies governing academic issues which affect students can be found in the McGill Charter of Students' Rights (see https://www.mcgill.ca/students/srr/academicrights).

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

I look forward to a great term working with you! -Prof Haggard