

UNIVERSITY OF KANSAS
DEPARTMENT OF PHYSICS AND ASTRONOMY
EXOPLANETS! – HNRS 190 – FALL 2024
INSTRUCTOR: PROF. IAN CROSSFIELD

COURSE SYLLABUS AS OF AUGUST 27, 2024

Astronomers have discovered thousands of planets beyond our solar system, and we are on a path to discovering and exploring worlds resembling Earth and answering the question: “Are we alone?” The task is immense, and consists of finding new planets, studying them in detail, and (for the most Earth-like) searching for signatures of life. In this class you will learn about modern astrometry & the hunt for other worlds, and examine real data to find new exoplanets.

Office hours will be in MAL 2058D on Mondays (1430-1530) and Tuesdays (1400-1500).

Grade Breakdown:

- **30%:** Final Project. You will prepare a project to present at the end-of-term Honors Seminar Symposium. This project is an opportunity to apply and communicate what you have learned in seminar in order to share this information and experience with others. You will work on your own or in a pair. This could include presenting a research paper or poster on your exoplanet research, an exoplanet-focused story or movie, a “full-dome” video suitable for showing in the KU Planetarium, an exoplanet-themed game, or other innovative ways to convey relevant aspects of the world of Exoplanets to the broader public. **If you have questions: ask Prof. Crossfield!**

Key checkpoints for the final project are:

- Week 9 (Oct 23, 2024): submit your proposed project topic and medium (poster, video, etc.) for review. Submitting more than one proposal is also OK. (10% of course grade)
 - Week 12 (Nov 13, 2024): submit some form of proof-of-concept demonstrating that your project is on-track and your plan is feasible. (10% of course grade)
 - Week 16 (Dec 9, 2024): present your final project at the end-of-semester Honors Seminar Symposium. (10% of course grade)
- **30%:** Exoplanet Research! Students must create a <https://www.zooniverse.org/> user account and classify the specified number of astronomical objects on a relevant citizen-science research project at that site. Examples of relevant projects include Planet Hunters-TESS, Backyard Worlds: Planet 9, Planet Hunters-NGTS, and The Daily Minor Planet.
 - **30%:** Class Participation. You are expected to actively participate in class discussions. This includes but is not limited to asking questions about classroom or reading topics, attending office hours, reading assigned material before the relevant class, and being a full participant in our discussions.
 - **5%:** Observing Report. You will complete a 500-word summary of a night-sky telescope viewing and/or planetarium show, describing what tools you used, what you saw, and what you learned. Opportunities may be found through the Astronomy Associates of Lawrence, KU Astronomy Outreach activities, or other opportunities in the region. Report due on or before the last day of class.
 - **5%:** Participate in the “Planning Your Honors Path” event: Sep. 12, 2024 from 1630-1800 or 1800-2000, in the Kansas Union Ballroom.
 - **50%:** A comprehensive final exam worth 50% of the total grade, held on 17 December from 0730-1000. Just kidding. Seminars don’t have final exams.
 - **BONUS:** An additional 10% of course grade (i.e., a full letter grade) is available to any student who writes a quality, submittable essay for the Griffith Observatory Science Writing Contest, ideally on Exoplanets or a related topic. A draft of the essay must be submitted to Prof. Crossfield no later than Thanksgiving (so he can give you feedback to help improve it), and then a revised draft must also be submitted before the last day of class. (No joke - this one is for real).

Textbook and Readings

There is no single, ideal textbook for this seminar. We will therefore make use of an array of reading selections that will be made available to you online and/or by email. It is your responsibility to read the associated readings *before* we discuss those topics in class.

Contacting the Professor

The best way to contact Prof. Crossfield is always by visiting his office hours in MAL 2058D (hours above), and/or by email at ianc@ku.edu (he has still not set up Instagram or TikTok). Emails should contain “HNRS 190” in the subject line so that I know to respond promptly to them. Note that “Hey” is not an appropriate salutation in formal communication.

General Advice for HNRS 190

- Take notes.
- Stay engaged.
- Questions? Contact the instructor.
- Let's have fun and learn about planets in other solar systems!