Syllabus – Spring 2022

Astronomy 111

Section DL3, 7:20 pm – 10:00 pm, Wednesdays - Online

Instructor: Dr. Joseph Pesce
Office: 203 Planetary Hall
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Office hours: By appointment only (send an email)
Email: jpesce(at)gmu(dot)edu
Website: http://physics.gmu.edu/~pesce/astro111-spring22 (and Blackboard)

Overview: The course provides an introduction to our current understanding of the universe. Focusing on the solar system, it is designed to be thought provoking. Since Astronomy is one of the few sciences for which we cannot *directly* access the subject of our studies, we will attempt to get an idea of how Astronomers try to understand the universe through indirect means. We will see that Astronomy is far from an arcane subject and is constantly changing as new observations allow us to understand the universe better, a universe of which we are an integral part.

Lectures: LECTURES WILL BE ON BLACKBOARD OR ZOOM – TBD. The lectures are designed to supplement the course text, to explain difficult concepts, and to stimulate interest/discussion. They will follow the book **but material not in the book may be covered during the lectures** and **material not in lectures, may be in the book**; you will be responsible for material in the lectures **and** text.

Copies of my notes *are available on the website*. In addition to Blackboard, the course website is:

http://physics.gmu.edu/~pesce/astro111-spring22

Readings: Readings for the course are from the primary class text, *Universe. The Solar System, 6th Edition*, by Freedman, Geller, and Kaufmann (similar: *Universe Eleventh Edition*). The schedule for specific chapters is given below. It is recommended that you read the material **BEFORE** the lecture in which the material is discussed so you can ask questions on material you don't understand. Problems at the end of the chapters are not required but they will help you prepare for exams.

Structure of Class:

- **Lectures**: Are all on the course website: http://physics.gmu.edu/~pesce/astro111-spring22
- **Journal**: You will create a journal or log of your journey through the material. After viewing the lectures and reading the relevant chapters, write your reflections of the material, what you enjoyed, questions you have, items that aren't clear, etc. **The Journal is due to me, electronically (send to my email), on 04 May 2022 at 5pm ET.**
- **Participation**: There will be two "interaction" sessions for you to interact with me and ask to questions & discuss the material we have covered (this is where you journal comes handy). These will be on **23 Feb and 13 Apr at 7pm ET** on the course Blackboard site (or Zoom, TBD).
- **Paper**: A 2–3-page essay (double spaced) on an astronomical topic we covered is due on **04 May 2022 at 5pm ET**. Send to me in email. **The journal and paper can be in any format you prefer**.

Grading:

- Journal: **40%**
- Paper: **40%**
- Participation: **20%**

Policy notes:

- ***Webcams***: When we are in live, interactive sessions, please turn on your webcam at all times.
- ***Electronic Devices (such as laptops, cell phones, etc.):*** Please be respectful of your peers and your instructor and do not engage in activities that are unrelated to class. Such disruptions show a lack of professionalism.
- ***Academic Integrity****:* GMU is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously, and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.
- ***Disability Accommodations*****:** If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474, http://ods.gmu.edu. All academic accommodations must be arranged through the ODS.
- **Privacy*:*** In order to comply with student privacy laws, faculty and students need to use their GMU email accounts when corresponding with each other.

The Mason Core: This is a Mason Core course. As such, it is designed to complement work in a student's chosen area of study. It will serve as a means of discovery for students, providing a foundation for learning, connecting to potential new areas of interest and building tools for success in whatever field a student pursues. Learning outcomes are guided by the qualities every student should develop as they move toward graduating with a George Mason degree. Through a combination of courses, the Mason Core program helps students to become:

> ***Critical and Creative Scholars*** - Students who have a love of and capacity for learning. Their understanding of fundamental principles in a variety of disciplines, and their mastery of quantitative and communication tools, enables them to think creatively and productively. They are inquisitive, open-minded, capable, informed, and able to integrate diverse bodies of knowledge and perspectives.
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> ***Self-Reflective Learners*** - Students who develop the capacity to think well. They can identify and articulate individual beliefs, strengths and weaknesses, critically reflect on these beliefs and integrate this understanding into their daily living.
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> ***Ethical, Inquiry-Based Citizens*** - Students who are tolerant and understanding. They can conceptualize and communicate about problems of local, national and global significance, using research and evaluative perspectives to contribute to the common good.
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> ***Thinkers and Problem-Solvers*** - Students who are able to discover and understand natural, physical, and social phenomena; who can articulate their application to real world challenges; and who approach problem-solving from various vantage points. They can demonstrate capability for inquiry, reason, and imagination and see connections in historical, literary and artistic fields.
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> ***Natural Science*** - The Mason Core natural sciences courses engage student in scientific exploration; foster their curiosity; enhance their enthusiasm for science; and enable them to apply scientific knowledge and reasoning to personal, professional and public decision-making.

Lecture & Exam Schedule

Week	Date	Lecture	Text Reading
1	W, 01/26	Class Intro; Astronomy	Chap 1, 2
2	W, 02/02	Eclipses & the Motion of the Moon Gravitation and the Waltz of the Planets	Chap 3 Chap 4
3	W, 02/09	Gravitation and the Waltz of the Planets The Nature of Light	Chap 4 Chap 5
4	W, 02/16	Our Solar System and its Origins	Chap 7 & 8
5	W, 02/23	**Interaction session: Blackboard @ 7pm ET**	
6	W, 03/02	The Living Earth	Chap 9
7	W, 03/09	Our Barren Moon	Chap 10
***** Spring Recess *****			
9	W, 03/23	Cloud-covered Venus Red Planet Mars	Chap 11
10	W, 03/30	Red Planet Mars Jupiter	Chap 11 Chap 12
11	W, 04/06	Saturn Satellites of Jupiter & Saturn: Fire & Ice	Chap 12 Chap 13
12	W, 04/13	**Interaction session: Blackboard @ 7pm ET**	
13	W, 04/20	The Outer Worlds (Uranus, Neptune, & Pluto)	Chap 14
14	W, 04/27	Vagabonds of the Solar System Other Planetary Systems	Chap 15 Chap 8, 27
	W, 05/04	**Journal Due & Paper Due – 5pm ET (via email)**	