



Syllabus for Astronomy 112

Introduction to the Solar System

Summer session A 2020, June 1 - July 2

Instructor: Dr. Ania Wyczalkowska

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Contact information for instructor:

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By far the best way to contact me is by e-mail. However, also teach other courses (and have a life) so please keep in mind that my response may not be instantaneous. I will be checking my e-mail as often as I can and try to get back with you as soon as I can. If the question does not involve anything personal, a better place for it is our discussion board: if you are unsure about something, your classmates may be too and this way they can get the information faster. **Please make sure to state the course (ASTR112) in the mail.**

Office Hours: I will be scheduling on-line sessions. The exact time will be announced on Blackboard.

Textbook: none; course materials will be delivered via Blackboard.

Meeting times:

As an asynchronous online course, we do not have a “fixed” meeting time, lab exercises can be completed anytime before the due date which are typically, with the exception if the introductory unit “Twinkle, twinkle little star...” (see schedule at the end of this document), set at 11:59 PM on Wednesdays and on Saturdays. Our first week starts on Monday, June 1st the last lab will be due on July 1st. We need to do 10 experiments (including the observing activity) to meet GMU requirements, so we'll have to schedule two labs a week and do observing activity on top of that.

I will hold a weekly office hours. I can also meet with you via collaborate at a mutually convenient time upon request.

Nature of course delivery:

The format of this online course is asynchronous and is structured around 10 learning units (labs) consisting of a variety of exercises. The course is delivered through Blackboard. Please be sure you have adequate technology to access the site and do the required work. Go to My Mason, sign in and select the Courses tab, then look for the Astronomy 112 course. If you need help there is a section of the courses page of My Mason called “Courses 9.1 Resources for Faculty and Students” with helpful links. Other sources of help with Blackboard:

- Contact courses@gmu.edu and include your Mason email and G#
- Contact the ITU Support Center at (703) 993-8870 for general help, including login or network issues

Technology requirements:

1. You will need reliable computer to with broadband Web access to participate in this course. You must be able to download executable files, as well as to upload and download documents and spreadsheets, and may need to install programs or upgrades. A smartphone or iPad will not be sufficient for the course, be sure you have access to a fully featured computer.
2. A computer with an operating system and web browser certified or at least compatible to support the new Blackboard 9.1: <http://www.edugarage.com/pages/viewpage.action?pageId=51414180>
3. You must have a GMU email account. I will not answer any emails sent from a private email account. You will need to check email and Blackboard regularly and will be required to submit materials. You will also need: **Word and Excel (MS Office 2013)** and **Adobe Flash player** (you’ll need to use simulations that are in .swf format). Some browsers work better with Flash than others, so if you have issues try a different browser. I’ll post the instructions when needed, but in the meantime download and install Adobe flash Player from: <https://get.adobe.com/flashplayer/>

Collaborate: On-line office hours will be conducted using Collaborate Ultra, which you can access on Blackboard. To participate, you will need headphones and a mic. Instructions for using Collaborate are here:

<https://its.gmu.edu/knowledge-base/introduction-to-blackboard-collaborate-ultra/>

You can get a full student guide from the site linked above including the instructions for troubleshooting audio and connections. Office hours are not mandatory: your participation is welcomed, but not required. Office hours are for you: to ask me questions, get help, or discuss with me anything you want.

Other supplies:

- Notebook or paper for taking notes
- Pencils and/or pens
- Ruler or tape measure
- Digital camera (can be you phone camera)
- Other supplies will be listed in the manuals for specific labs.

Expected skills: All lab assignments require basic algebra and geometry skills. In addition students should be familiar with word processing and spreadsheet programs (Excel, to be specific – I’ll supply you with a tutorial).

Lab procedures: You will be expected to prepare for each lab by reading/watching the posted introductory material. Reports, containing data, graphs and short writings, are due before the end of the assignment period. Due dates are listed in the schedule. Late submissions are not accepted and will count as a zero, unless extension is granted (and those only will be granted sparingly for a good reason and in advance – not at the last moment before the due date).

Group work: In the in-class lab students typically work in groups. This is not possible in an on-line course, but you are encouraged to communicate, discuss, and consult with your classmates. To facilitate that, we'll use Discussion Board and Collaborate. I have often found that, especially for technical questions, your classmates may be the best resources, since they may have encountered the same problems and know how to fix them, better than I do.

POLICIES:

Work Ethic: Distance education courses require more organization and self-discipline than do traditional courses. You are responsible for keeping up what is going on in the course, with any announcements and changes. Most importantly, you are responsible for keeping up with assignments. There is no time for makeups. Bottom line: you must do the learning - I can only assist and provide guidance and clarity. But you need to give me a chance and time.

Withdrawal: If you need to withdraw from this course you must do it within the University established time frame.

Students with Disabilities: Please contact The Office of Disability Services (SUB I, Room 222, Phone 703-993-2474) if you have a learning or physical disability that will require accommodation in the astronomy laboratory. You must obtain the proper paperwork and notify your instructor in advance to be accommodated.

Honor Code: You are expected to adhere to the George Mason University student honor code:

"George Mason University shares in the tradition of an honor system that has existed in Virginia since 1842. The Honor Code is an integral part of university life. On the application for admission, students sign a statement agreeing to conform to and uphold the Honor Code. Therefore, students are responsible for understanding the provisions of the code. In the spirit of the code, a student's word is a declaration of good faith acceptable as truth in all academic matters. Therefore, cheating and attempted cheating, plagiarism, lying, and stealing of academic work and related materials constitute Honor Code violations. To maintain an academic community according to these standards, students and faculty must report all alleged violations of the Honor Code to the Honor Committee. Any student who has knowledge of, but does not report, an Honor Code violation may be accused of lying under the Honor Code."

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. When in doubt (of any kind) please ask for guidance and clarification. Cut and paste from web sources is considered plagiarism, and submitting work of another student as your work is considered cheating. If you received help from a classmate, acknowledge it.

Classroom courtesy:

It is important that students participate in all activities, contribute actively to groups and class discussions. Discussions should be conducted with respect for each other and at a high level of discourse. Disruptive behavior will not be tolerated and may result in a student being temporarily barred from participating in activities.

Student resources:

Academic Advising Center – 703-993-2470
Office of Disability Services – 703-993-2474
Math Tutoring Center – 703-993-1460
Campus Counseling Center – 703-993-2380
Writing Center – 703-993-1200

Computer support: Computer and/or Web support is not my responsibility.

Learning Goals and Objectives

Purpose: Astronomy 112 is part of the general education program at GMU. According to the GMU catalogue the purpose of general education courses is:

“...to educate, liberate, and broaden the mind, and to instill a lifelong love of learning. In conjunction with each student’s major program of study and other electives, minors, or certificates, this program seeks to produce graduates with intellectual vision, creative abilities, and moral sensibility as well as skills to ensure a well-rounded and usable education.

General Education courses will ensure that all undergraduates develop skills in information gathering, written and oral communication, and analytical and quantitative reasoning; expose students to the development of knowledge by emphasizing major domains of thought and methods of inquiry; enable students to attain a breadth of knowledge that supports their specializations and contributes to their education in personal and professional ways; and encourage students to make important connections across boundaries—for example, among disciplines, between the university and the external world, and between the United States and other countries.”

Course overview: Astronomy 112 is a general education natural science course designed to familiarize you with the universe in which we live and with the principles of scientific inquiry that have enabled us to explore and understand that universe. We are part of the universe and thus can learn about our origins by studying it. The study of the universe is possible through evidence based scientific inquiry that anyone can understand. Astronomy 112 has for its subject matter our solar system.

- ✚ Understand how scientific inquiry is based on investigation of evidence from the natural world, and that scientific knowledge and understanding:
 - is not a body of facts but rather a process through which we seek to understand the world around us and so it continuously evolves based on new evidence
 - differs from personal and cultural beliefs
- ✚ Recognize the scope and limits of science
- ✚ Recognize and articulate the relationship between the natural sciences and society and the application of science to societal challenges (e.g., health, conversation, sustainability, energy, natural disasters, etc.)
- ✚ Evaluate scientific information (e.g. assess credibility and validity of information)
- ✚ Participate in scientific inquiry and communicate the elements of the process, including:
 - Making careful and systematic observations
 - Developing and testing a hypothesis
 - Analyzing evidence
 - Interpreting results

Perhaps most importantly, in line with the general education goals, this class should stimulate your curiosity about the universe, and encourage you to continue to read and think about astronomy and other areas of

science long after your college education is complete.

Grading:

Each lab will be graded on the basis of the material I ask you to submit. Most labs have answer sheets that you will fill out and submit via blackboard. Most of the labs will have a required conclusion or discussion question as well. The total maximum point value for the lab write-up is 10 points.

Lab reports grades will be averaged and percentage of total points calculated to arrive at your grade. Percentages translate to letter grades according to the table below

There are no make-up labs, but I will drop the lowest score.

Letter Grade	Percentage
A+	97-100
A	93-96.9
A-	90-92.9
B+	87-89.9
B	83-86.9
B-	80-82.9
C+	75-79.9
C	70-74.9
C-	67-69.9
D	60-66.9
F	below 60

Class Schedule.

(subject to verification by real life)

Lab	Due date	Lab exercise
1	June 8 st	Observing activity (weather permitting)
2	June 3 rd	Solar System Walk
3	June 6 th	Properties of solar system objects- hypothesis building
4	June 10 th	Navigating the sky
5	June 13 th	Kepler's laws of planetary motion
6	June 17 th	What sinks?
7	June 20 th	Exploring Mars
8	June 24 th	Atmospheres
9	June 27 th	Discovering exoplanets
10	July 1 st	Habitable zone