



### General info:

This is the distance education version of Astronomy 113. Lecture material will be presented entirely on-line, with strict deadlines. **This will be a fast-paced course! It will be very important to keep up with chapter readings and assignments.**

First day of summer session A: Monday, July 6<sup>th</sup>

Last day of summer session A: Thursday, August 6<sup>th</sup>

### Contact information for instructor:

Room 327, Planetary Hall

Phone: (703) 993-4166 (sorry, I'm not there)

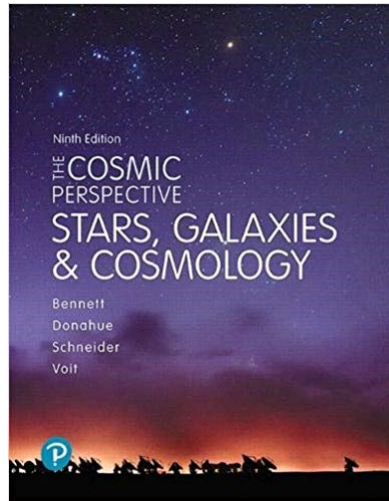
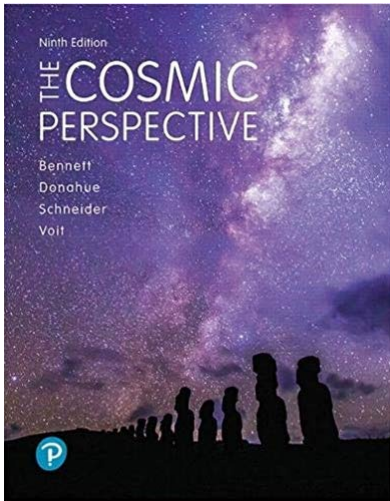
e-mail: [awyczalk@gmu.edu](mailto:awyczalk@gmu.edu)

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 (ASTR113) and the section number in the mail.**

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

**Blackboard address:** The course is available on Blackboard with your GMU log-in name and password. Select ASTR 113.

## Textbook:



We will use **Bennett, Donahue, Schneider, and Voit**: *“The Cosmic Perspective: Stars, Galaxies and Cosmology”* (9<sup>th</sup> edition). The publisher is Addison-Wesley.

You can purchase the book in GMU bookstore or elsewhere, but be aware that there are many, many different versions of this textbook and some do not contain all of the material we’ll study. Particularly, **avoid anything with the word “essential” or “fundamentals” in the title**. Make sure you get the “Stars, Galaxies & Cosmology” part.

And be aware that this textbook often comes bundled with an online homework system called Mastering Astronomy, with tutorials, with stargazing software or with iclickers. You won’t need those. Just get the book.

The 9<sup>th</sup> edition full text. The 9<sup>th</sup> edition split text.

**ISBN-13:** 978-0134874364

**ISBN-13:** 978-0134990781

**or ISBN-10:** 0134874366

**or ISBN-10:** 0134990781

For our class, you’ll need the split book, but some options described below only offer the full text, so I listed both. Many retailers, including amazon, offer rentals, so check those. Other good options, and substantially less expensive than a paper copy, is e-text. You can either get an access card from GMU bookstore, the publisher, or any retailer, or directly from the publisher. Here is the link: <https://www.pearson.com/store/p/cosmic-perspective-the/P100001120237/9780135161753>

(ISBN-13: 9780135161753)

## Deadlines:

New materials will be released several times a week so check Blackboard daily for new course materials and assignments.

## Meeting times:

As online courses do not have a “fixed” meeting date, homework, quizzes and tests can be completed anytime before the due date. Our first week starts on Monday, July 6<sup>th</sup>. During the first week, you will have the opportunity to get to know your instructor and your fellow students, but you’ll also going to have to do a lot of studying: this is a very fast paced course since summer session is so short. The course schedule is not synchronized with the schedule of the equivalent face-to-face course. A few times during the summer session we’ll hold a discussion facilitated by the Blackboard’s Discussion board. You will have a few days to post and respond to the posts of your classmates.

## Nature of course delivery:

The course is delivered through Blackboard. Please be sure you have adequate technology to access the site and do the required work. Go to MyMason, sign in and select the Courses tab, then look for the Astronomy 113 course. If you need help there is a section of the courses page of MyMason called “Courses 9.1 Resources for Faculty and Students” with helpful links. Other sources of help with Blackboard:

- Contact [courses@gmu.edu](mailto:courses@gmu.edu) and include your Mason email and G#
- Walk in and Phone support at the Collaborative Learning Hub, Johnson Center 311, (703) 993-3141
- 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.
4. You will need Respondus Lockdown Browser (can be downloaded from Blackboard)
5. You'll need a working microphone and a webcam.

**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.

## Policies:

**Work Ethic:** Distance education courses require more organization and self-discipline than traditional courses. You are responsible for keeping up with 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 and there won't be any. Bottom line: you must do the learning - I can only assist and provide guidance and clarity.

**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. You must obtain the proper paperwork and notify your instructor within the 1<sup>st</sup> week of classes 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 any 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.

Exams are to be done completely individually and I expect full adherence to the honor code with no collaboration, no outside notes, no textbook, etc. Your responses should come exclusively from your well-prepared and thoughtful brain. You will need to use a webcam to take the test and show yourself and your surroundings.

### Classroom courtesy:

It is important that students participate in all activities and contribute actively to group and class discussions. Discussions, whether face to face or electronic, 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 being temporarily or permanently barred from participating in on-line 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 113 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 113 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 113 has for its subject matter stars, galaxies and cosmology. The first part of the course will concentrate on the history and fundamentals of astronomy, including the night sky as seen from the Earth, the apparent motions of celestial objects, the historical development of astronomy, and the nature of light and matter and how they interact. The remainder of the course will discuss what astronomers discovered about the stars, galaxies and the universe a whole by studying the light that reaches us, and how these objects evolve.

To achieve these goals you will:

- ✚ 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.

As the instructor in this course, I am your guide through the territory of astronomy. I will not be pouring facts into your head. You must do the learning: I can only assist and provide guidance and clarity. Part of your task as a participant in this course is to help me identify the most difficult material, and to help interpret that material for your classmates.

### Course components:

**Homework:** Homework assignments for each chapter will be delivered via Blackboard. The due dates for the assignments will also be posted on Blackboard. Expect a number of assignment per each chapter and 3-4 chapters per week: we need to move fast to cover all the material in the short time we have during the summer session. Exams are based on questions similar to homework, so understanding these is crucial to do well on tests. **No late homework will be accepted.**

**Activities:** There will be a few activities assigned through the session. These activities will mostly involve going outside, observing the sky, and then reporting your observations. **No late activities will be accepted.**

**Discussions:** There will be 2-3 discussion sessions. Discussions give you an opportunity to think about issues in science and astronomy and to try out your ideas by discussing them with your peers. Discussion posts will be due between Tuesday and Sunday. You should post the first time at the beginning of the week to allow time for others in your group to respond. **There are no make-up discussions.**

**Exams:** There will be two Blackboard timed tests. You will need Respondus Lockdown Browser (can be downloaded from Blackboard) and a webcam.

#### **Exam Schedule:**

**Test 1:** July 21<sup>st</sup>, 2019.

**Test 2:** August 6<sup>th</sup>, 2019.

**There are no make-up exams.**

## Grading System

In this course, you will get exactly the grade you deserve by mathematically weighted average. It is **YOUR** responsibility, not mine, to make sure you study hard and get the grade you want. If you have problems come to me **EARLY**. I will help you. Join a study group. Get a tutor. Do not wait until the last minute.

I will **NOT** answer questions about grading at any time in class. If you have a question about your grades, you will need to come to my office hours individually.

Final grade will be assigned by me at the end of the session. Your final grade in this class will not be changed under any circumstances at any time.

| Type of Assignment         | Percentage | Method of calculating  |
|----------------------------|------------|--|
| Homework                   | 30%        | <i>Divide points earned by points possible and multiply by 30.</i> |
| Activities and discussions | 10%        | <i>Divide points earned by points possible and multiply by 10.</i> |
| Tests (30% each)           | 50%        | <i>Divide points earned by points possible and multiply by 60.</i> |

**There will be no last minute "miraculously save me" extra credit project.**

### Letter grade based on percentage score

| Letter Grade | Percentage |
|--------------|------------|
| A+           | 97-100     |
| A            | 93-96.99   |
| A-           | 90-92.99   |
| B+           | 87-89.99   |
| B            | 83-86.99   |
| B-           | 80-82.99   |
| C+           | 75-79.99   |
| C            | 70-74.99   |
| C-           | 67-69.99   |
| D            | 60-66.99   |
| F            | below 60   |

## Class schedule:

| Date                                   | Major topics   | Reading assignment from<br><b>The Cosmic Perspective</b><br>Note: other reading will also be assigned:<br>see the Modules/lessons in Weekly<br>assignments on Blackboard |
|--|--|--|
| <b>Week 1</b><br><b>July 6-11</b>      | <ul style="list-style-type: none"> <li>★ A Modern View of the Universe</li> <li>★ Discovering the Universe for Yourself</li> <li>★ The Science of Astronomy</li> </ul>                   | Chapters 1, 2, and 3   |
| <b>Week 2</b><br><b>July 12-18</b>     | <ul style="list-style-type: none"> <li>★ Motion, Energy, and Gravity</li> <li>★ Light and Matter</li> <li>★ Telescopes</li> </ul>  | Chapters 4, 5 and 6  |
| <b>Week 3</b><br><b>July 19-25</b>     | <ul style="list-style-type: none"> <li>★ Our Star</li> <li>★ Surveying the Stars</li> <li>★ Star Birth</li> </ul>  | Chapters 14, 15 and 16<br><b>Test 1: Tuesday, July 21<sup>st</sup></b>   |
| <b>Week 4</b><br><b>July 26-Aug. 1</b> | <ul style="list-style-type: none"> <li>★ Star Stuff</li> <li>★ The Bizarre Stellar Graveyard</li> <li>★ Our Galaxy</li> <li>★ Galaxies and the Foundation of Modern Cosmology</li> </ul> | Chapters 17, 18, 19, and 20  |
| <b>Week 5</b><br><b>Aug. 2-Aug. 6</b>  | <ul style="list-style-type: none"> <li>★ Galaxy Evolution</li> <li>★ The Birth of the Universe</li> <li>★ Dark Matter, Dark Energy and the Fate of the Universe</li> </ul>               | Chapters 21, 22 and 23<br><b>Test 2: Thursday, August 6<sup>th</sup></b>   |