

# ASTR 1020 Syllabus

## *Stellar and Galactic Astronomy*

Dr. Loris Magnani, Fall 2021

CRN 50294

*The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary during the course of the semester and will supersede anything written here.*

### **Instructor Information**

Dr. Loris Magnani

Office: 238 Physics

Email: [loris@uga.edu](mailto:loris@uga.edu)

Class Website: [https://www.physast.uga.edu/~loris/astr1020/prob1020\\_fa21.html](https://www.physast.uga.edu/~loris/astr1020/prob1020_fa21.html)  
You should monitor this website regularly; at minimum, once per week.

Office Hours: Mondays: 4 – 5:30 PM, or by appointment (in person or via Zoom)

Class time: MWF 03:00 – 03:50 PM (Period 7): Room 202 Physics Building

### **Introduction**

Welcome to ASTR 1020. This course is a general introduction to astronomy for non-science majors. The principal goals of the course are to give you an idea of how a physical science like astronomy works and to introduce you to some of the latest discoveries about stars, galaxies, and the Universe. Some of the topics we will cover are: our place in the Universe, astronomical instruments, the Sun, types of stars, types of galaxies, hierarchical structures in the Universe, and cosmology. We will examine these subjects at an introductory level, but in enough detail to give you an understanding of each topic at a level that a well-educated person in the 21<sup>st</sup> century should have.

Note: Astronomy is a quantitative science. As such, we will treat many of the topics quantitatively using mathematics at the level of high-school algebra. We will also use a

little bit of trigonometry but no calculus. I will expect you to be able to handle numerical problems involving simple algebraic equations and scientific notation, both on the homework and on the exams. Thus, you will need a scientific calculator for this course.

## Required Course Materials

Textbook: The official textbook for the course is: *21<sup>st</sup> Century Astronomy: 6<sup>th</sup> Edition* by Kay, Palen, and Blumenthal (Norton, 2019). It can be purchased as an entire volume, but the material we will cover during the semester is entirely covered in the second volume. You can use the e-text version.

Homework will be assigned every week or every other week based on problems at the end of the relevant chapters of *21<sup>st</sup> Century Astronomy*. The homework problems (and, eventually, the solutions) will be posted on my webpage.

A simple scientific calculator is needed for homework and for exams.

## Structure of the Class

Class meets at the scheduled time in room 202 in the Physics Building. I will lecture on the relevant material, do sample problems, and discuss any material relevant to the class. Attendance is not compulsory, but strongly encouraged. Whether you attend class or not, you are responsible for all announcements and material discussed and/or covered in class. This includes revision to this syllabus. By the end of each class day, I will post, on my webpage, a summary of what was discussed during that day's class. This summary is not a set of class notes. I do not use notes in this class, I lecture extemporaneously. If you miss class and wish to have a set of class notes for that day, I advise you to contact classmates who took notes that day.

Homework will be assigned each week based on questions at the end of the chapters of the *21<sup>st</sup> Century Astronomy* book, *but the homework will not be collected or graded*. Your incentive for doing the homework is that it allows you to more thoroughly understand the material and be better prepared for the exams.

## Online Course Resources

The eLearning Common ( <https://uga.view.usg.edu/d2l/login> ) will serve as a repository for general information and some lecture materials. You are responsible for checking the eLC site for this course on a daily basis.

## Other Resources

*Tutoring:* Department of Physics and Astronomy has a list of tutors available (<http://www.physast.uga.edu/tutors/>), otherwise visit the UGA Tutorial Program in Milledge Hall or the tutoring options through the Division of Academic Enhancement (<https://dae.uga.edu/>).

If you cannot come to my regular office hours, or need additional help, please set up an in-person or Zoom appointment (by email, by phone (706-5422876), or in person) to talk to me outside of class or office hours. For email correspondence (*include ASTR 1020* in the subject line) use this address:

[loris@uga.edu](mailto:loris@uga.edu)

## Grading Policy

Your overall grade will be weighted as follows:

60% based on four in-class exam grades (4 exams will be given during the course of the semester)

15% Packback grade (see below for explanation)

25% Final exam grade

Your numerical score will be determined from the weights given above and a letter grade will be assigned using the following criteria:

**A**      91.0 – 100.0

**A-**     87.0 – 90.99

**B+**     84.0 – 86.99

**B**      80.0 – 83.99

**B-**     75.0 – 79.99

**C+**     70.0 – 74.99

**C**      65.0 – 69.99

**C-**     60.0 – 64.99

**D** 50.0 – 59.99

**F** less than 49.99

### **Extra Credit Option:**

There is one – and only one – mechanism for extra credit in this course. One – and only one – of the four exams given during the course of the semester can be replaced by a 5-10 page essay on a topic that I will assign to the student requesting this option. The grade on the essay will replace the exam (out of four) with the lowest score. You must request this option and I will assign you the essay topic. All essays are due by Wednesday, December 8, 2021 (but can be turned in earlier). No essay will be accepted after Wednesday, Dec. 8, 2021.

### **Packback Questions**

Participation is a requirement for this course, and the Packback Questions platform ([www.packback.co](http://www.packback.co)) will be used for online discussion about class topics. Packback Questions is an online community where you can be fearlessly curious and ask questions about how what we're studying relates to life and the real world.

My goals for using Packback for ASTR 1020 are to provide a mechanism for the students to engage with the course material in a timely fashion.

### **Grading Requirements:**

Your participation on Packback will count toward **15** percent of your final grade. In order to receive your points per week, you must post **1 Question with a minimum Curiosity Score of at least 50 and 2 Answers with a minimum Curiosity Score of 50 per**. Curiosity scores are explained in the video linked below. Each grading period there will be a **Tuesday 11:59 PM deadline** for submissions. The first deadline is August 31, 2021.

### **How to Register on Packback:**

An email invitation will be sent to you from [holla@packback.co](mailto:holla@packback.co) prompting you to finish registration. If you don't receive an email (be sure to check your spam), you may register by following the instructions below:

1. Create an account by navigating to <https://questions.packback.co/login> and clicking "Sign up for an Account"

Note: If you already have an account on Packback you can login with your

credentials.

2. Then enter our class community's lookup key into the "Join a Community" module in Packback.

Note: Community Lookup Code for this course:

**92738e1a-c341-43aa-a3a2-63a84ec22a6e**

3. Follow the instructions on your screen to finish your registration.

Packback may require a paid subscription. Refer to [www.packback.co/product/pricing](http://www.packback.co/product/pricing) for more information.

### **How to Get Help from the Packback Team:**

**If you have ANY questions or concerns regarding Packback throughout the semester, please contact the customer support team at [help@packback.co](mailto:help@packback.co)**

For a brief introduction to Packback Questions and why we are using it in class, watch this video: [vimeo.com/packback/Welcome-to-Packback-Questions](https://vimeo.com/packback/Welcome-to-Packback-Questions)

## **Withdrawal and Incomplete**

The Undergraduate Bulletin and the Registrar's Office website describe the University policies regarding withdrawals and incomplete (<http://reg.uga.edu/policies/withdrawals>).

If you are considering withdrawing from the course, you should discuss your choice with me beforehand. In many cases, students are doing better in the course than they think. A grade of Incomplete is not appropriate for a student who has missed a large portion of the course assessments, for whatever reason. An incomplete is intended for a student who has completed a substantial part of the course, but, for non-academic reasons beyond their control was unable to finish the course.

The *Withdrawal Deadline* is October 25, 2021.

## **Exam Policy**

There will be four in-class exams. The best three out of four scores will be used towards your final grade. Exams will be open-book and open-notes and will be available on eLC during the allotted class time (see schedule below). The format for exams will be multiple-choice, true-false, and may include a few short answer questions. Occasionally,

exam questions will require a quantitative answer and so an algebraic calculation means simple, scientific calculators will be allowed (as documented in the required course materials section).

### **Make-up Exams:**

If you must miss an exam for a serious, documentable reason, then you must notify me in advance either in person or via email. In case that is not possible, you must inform me of the reason for missing the exam within two weeks of the exam date. These rules *do not* apply to the Final Exam. If you have *not* notified me in advance or within two weeks of missing the exam, then your score for the missed exam will be a zero. Remember that one of the four exams given during the course of the semester can be replaced by the extra credit option (see above).

### **Classroom Policy**

We would like to have a constructive learning environment and so the atmosphere must be free from distractions and disruptive behavior. If you are attending class in person, please make a reasonable attempt to arrive on time and refrain from packing up your things and leaving early. If you must leave before class ends, please use the exits at the top/back of the lecture hall. Laptops, cell phones, and tablets may be useful for taking notes, however, they can be distracting when used for social media sites, shopping, checking email, or playing games. Be mindful and respectful of those around you.

### **Student Responsibilities**

Arrive on time to class and do not distract your fellow classmates. You are responsible for all announcements made during class – whether or not you are attending in person.

You are responsible for all topics covered in class, in the assigned book chapters, and on the homework problems.

You are strongly encouraged to read the material that is to be covered in class ahead of time. If the schedule changes, then those changes will be announced in class.

Know the rules concerning withdrawals and incompletes, published in the UGA undergraduate Bulletin.

Maintain “A Culture of Honesty” (see below).

Ask me if you don't understand **anything** about the course materials. There are no dumb questions as far as astronomy is concerned. Be curious!

## Academic Honesty

The University of Georgia has a comprehensive policy on academic honesty, described in a document entitled A Culture of Honesty. This document is available through the Office of the Vice President for Instruction or online at <https://ovpi.uga.edu/academic-honesty>. This policy covers all academic work.

As a UGA student, you are responsible for knowing and understanding this policy. If you have any question about the appropriateness of your actions or your work, you are obligated to ask me for clarification.

## CORONAVIRUS INFORMATION FOR STUDENTS FOR FALL 2021 CLASSES

Face coverings:

Following guidance from the University System of Georgia, face coverings are recommended for all individuals while inside campus facilities.

How can I obtain the COVID-19 vaccine?

University Health Center is scheduling appointments for students through the UHC Patient Portal ([https://patientportal.uhs.uga.edu/login\\_dualauthentication.aspx](https://patientportal.uhs.uga.edu/login_dualauthentication.aspx)). Learn more here – <https://www.uhs.uga.edu/healthtopics/covid-vaccine>.

The Georgia Department of Health, pharmacy chains and local providers also offer the COVID-19 vaccine at no cost to you. To find a COVID-19 vaccination location near you, please go to: <https://georgia.gov/covid-vaccine>.

In addition, the University System of Georgia has made COVID-19 vaccines available at 15 campuses statewide and you can locate one here: <https://www.usg.edu/vaccination>

What do I do if I have COVID-19 symptoms?

Students showing COVID-19 symptoms should self-isolate and schedule an appointment with the University Health Center by calling 706-542-1162 (Monday-Friday, 8 a.m.-5p.m.). Please DO NOT walk-in. For emergencies and after-hours care, see, <https://www.uhs.uga.edu/info/emergencies>.

What do I do if I test positive for COVID-19?

If you test positive for COVID-19 at any time, you are required to report it through the [DawgCheck Test Reporting Survey](#). We encourage you to stay at home if you become ill or until you have excluded COVID-19 as the cause of your symptoms. UGA adheres to current Georgia Department of Public Health (DPH) quarantine and isolation [guidance](#)

and requires that it be followed. Follow the instructions provided to you when you report your positive test result in DawgCheck.

Guidelines for COVID-19 Quarantine Period (As of 8/1/21; follow DawgCheck or see DPH website for most up-to-date recommendations)

Students who are fully vaccinated do not need to quarantine upon exposure unless they have symptoms of COVID-19 themselves. All others should follow the Georgia Department of Public Health (DPH) recommendations:

Students who are not fully vaccinated and have been directly exposed to COVID-19 but are not showing symptoms should self-quarantine for 10 days. Those quarantining for 10 days must have been symptom-free throughout the monitoring period and continue self-monitoring for COVID-19 symptoms for a total of 14 days. You should report the need to quarantine on DawgCheck (<https://dawgcheck.uga.edu/>), and communicate directly with your faculty to coordinate your coursework while in quarantine. If you need additional help, reach out to Student Care and Outreach ([sco@uga.edu](mailto:sco@uga.edu)) for assistance.

Students, faculty and staff who have been in close contact with someone who has COVID-19 are no longer required to quarantine if they have been fully vaccinated against the disease and show no symptoms.

#### Well-being, Mental Health, and Student Support

If you or someone you know needs assistance, you are encouraged to contact Student Care & Outreach in the Division of Student Affairs at 706-542-7774 or visit <https://sco.uga.edu/>. They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.

UGA has several resources to support your well-being and mental health: <https://well-being.uga.edu/>

Counseling and Psychiatric Services (CAPS) is your go-to, on-campus resource for emotional, social and behavioral-health support: <https://caps.uga.edu/>, TAO Online Support (<https://caps.uga.edu/tao/>), 24/7 support at 706-542-2273. For crisis support: <https://healthcenter.uga.edu/emergencies/>.

The University Health Center offers FREE workshops, classes, mentoring and health coaching led by licensed clinicians or health educators:

<https://healthcenter.uga.edu/bewelluga/>

#### Monitoring conditions:

Note that the guidance referenced in this syllabus is subject to change based on recommendations from the Georgia Department of Public Health, the University System of Georgia, or the Governor's Office or. For the latest on UGA policy, you can visit [coronavirus.uga.edu](https://coronavirus.uga.edu).



## Tentative Class Schedule

Any modifications to this schedule will be announced during class. Be prepared for class by reading the assigned chapter before class. Exam dates below are tentative (except for the final). Any changes will be announced well ahead of time during classes.

Week	Date	Topics
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- |    |                    |   |
|----|--------------------|---|
| 1) | Aug. 18, 20        | Syllabus; Introduction to Astronomy in general  |
| 2) | Aug. 23, 25, 27    | Ch. 5 – Light, Properties and Spectra   |
| 3) | Aug. 30; Sep. 1, 3 | Ch. 5,6 – Light, Multi-messenger astronomy  |
| 4) | Sep. 8, 10         | Ch.13 – Stellar data, how it has been obtained – <b>Sep. 6 – Labor Day (no class)</b> |
| 5) | Sep. 13, 15, 17    | Ch. 14 – The Sun, physical properties and how it works                                |

### **Exam 1, Friday, September 17, 2021 – covers Ch. 5, 6, 13**

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|----|---------------------|---|
| 6) | Sep. 20, 22, 24     | Ch. 15 – The Interstellar Medium, the stuff between the stars |
| 7) | Sep. 27, 29; Oct. 1 | Ch.16 – Low Mass Stars, their life cycle and demise           |
| 8) | Oct. 4, 6, 8        | Ch. 17 – High Mass Stars, their life cycle and demise         |
| 9) | Oct. 11, 13, 15     | Ch. 18 – Relativity and Black Holes                           |

### **Exam 2, Monday, October 11, 2021 – covers Ch. 14, 15, 16**

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|-----|-----------------|---|
| 10) | Oct. 18, 20, 22 | Ch. 18 – Relativity and Black Holes                                     |
| 11) | Oct. 25, 27     | Ch. 19 – Galaxies of all kinds – <b>Oct. 29 – Fall Break (no class)</b> |

### **Monday, October 25 – Withdrawal Deadline**

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|-----|--------------|---|
| 12) | Nov. 1, 3, 5 | Ch. 20 – The Milky Way, our home galaxy |
|-----|--------------|---|

### **Exam 3, Friday, November 5, 2021 – covers Ch. 17, 18, 19**

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|-----|--------------------|--|
| 13) | Nov. 8, 10, 12     | Ch. 21 – The Expanding Universe  |
| 14) | Nov. 15, 17, 19    | Ch. 22 – Cosmology, the science of the Universe  |
| 15) | Nov. 22            | Ch. 22, 23 – Cosmology, Large Scale Structure – <b>Nov. 24, 26 Thanksgiving Break (no class)</b> |
| 16) | Nov. 29; Dec. 1, 3 | Ch. 23 – Large Scale Structure   |

### **Exam 4, Monday, November 29, 2021 – covers Ch. 20, 21, 22**

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|-----|-----------------------------|----------------|
| 17) | Dec. 6, 7 (Friday schedule) | Final Thoughts |
|-----|-----------------------------|----------------|

### **December 8<sup>th</sup> – Reading Day**

### **Final Exam – Wednesday, December 15<sup>th</sup>, 3:30 – 6:30 PM - cumulative**