

# **ASTRONOMY 1020-100**

Stellar and Galactic Astronomy  
TR 10:00 am – 11:15 pm, Room CD - 1170

<b>Instructor</b>	<b>Bill Lahaise</b> Office: C Bldg. 1129 (enter through C1120) <u>email</u> : <a href="mailto:wlahaise@gpc.edu">wlahaise@gpc.edu</a> <u>Web page</u> : <a href="http://facstaff.gpc.edu/~wlahaise/index.htm">http://facstaff.gpc.edu/~wlahaise/index.htm</a> <u>phone</u> : 678-891-3756, (Dept. Office: 678-891-3750); <u>fax</u> : 678-891-3747
<b>Textbook</b>	<b><u>Astronomy Today - Vol II, Stars and Galaxies</u></b> , Chaisson and McMillan, 6 <sup>th</sup> Edition, Pearson Addison-Wesley.
<b>Prerequisite</b>	Exit or exemption from Learning Support mathematics and exit or exemption from Learning Support reading or ENSL 0090 with a C or better
<b>Lab</b>	<b>ASTR 1020 Lab</b> (1 credit) <u>may or may not</u> be taken with this class depending on your specific degree requirements. Note: Lab schedule may not be coordinated with the lecture schedule.
<b>Other Materials</b>	Scantron Sheets (882-ES, green)
<b>Course #</b>	23255

## Office Hours

Mon	Tue	Wed	Thu	Fri
11:15 – 1:00	12:45 – 3:00	11:15 – 3:15	-	10:00 – 12:00

## Course Purpose and Goals

The course includes the study of the Sun and stars, their physical properties and evolution, interstellar matter, star clusters, our galaxy and other galaxies, and the origin of the universe.

Astronomy is a science of origins: the origins of planets, stars, of galaxies, and of the universe at large. By extension, astronomy is also a science of the origins of the human race itself. The goal of this course is to demonstrate that the universe is comprehensible and to do so by introducing you to modern concepts of our universe and our place within it. What are the sun and the stars? What is the nature of the universe? How old is it? How did it form? How do astronomers study the sky? No prior knowledge of astronomy is needed. Although the course is descriptive, the use of mathematical expressions is sometimes necessary.

## Course Structure

A **tentative schedule** for the course material can be found in the following pages. The schedule of topics is subject to change depending on the pace of the class.

- All changes to this schedule will be announced in class.
- Important dates, test dates and reading assignments are included. These dates are subject to change in the event of unexpected circumstances.
- Lectures are intended to complement the textbook; it is important to read the assigned material *BEFORE* coming to class.
- Tests will cover the material presented in class and represented in homework assignments up to the time of the test. If the pace of the class is slower than the schedule, students need only be responsible for the material covered in class.

**Attendance:** Attendance is not mandatory in this class, however it is very strongly recommended. It is very difficult to succeed if you miss classes or fall behind. See College Policy below.

- If you miss a class, YOU are responsible for ALL the material and assignments associated with that particular lecture. Check with the instructor or a classmate about the class material.
- Students who are disruptive, talkative or disturbing others may be asked to leave class.
- Participation in class is encouraged, just raise your hand. Please feel free to ask questions if you are confused or having difficulty.

**Homework** will be assigned in lecture.

- Assignments will typically consist of review questions taken from the end of each chapter, supplemented by outside material.
- Homework will be not be collected or graded. However, doing the homework is an important part of preparing for quizzes and tests

### Examinations, Quizzes and Grading

There will be **two** tests and **four** thirty minute quizzes given in lecture periods during the semester (see the lecture schedule) and a two hour **comprehensive** Final exam.

- These tests and quizzes will test your familiarity with lecture material, lecture demonstrations, assigned reading and assigned homework.
- If a test is missed in the event of a valid and verifiable excuse, the missed score will be replaced by the average of your other scores. Valid excuses generally will require some sort of written supporting evidence (in advance if possible).
- You may only be excused from ONE test with a valid excuse. If additional tests are missed, then a score of 0 points will be given.
- Tests and quizzes may consist of multiple choice questions, short answer questions, matching questions, true or false questions or essays.
- Students may NOT bring a calculator to tests, or the final.
- Cell Phones, PDA's or any other electronic device will NOT be allowed.
- The Final Exam will cover all of the material presented throughout all of the semester. The Final will contain questions similar (not exact) to those on the tests.
- Students who miss the final without a valid and verifiable excuse will receive a course grade of "F".

The final course grade will be determined in the following manner:

2 Tests (125 pts each)	250
3 Best Quizzes (50 points each)	150
Final Exam	200
<b>Course Total</b>	<b>600</b>

The grading system used at Georgia Perimeter College is: **A** = Excellent (90%-100% or 540 - 600 pts) ; **B** = Good (80% - 89% or 480 - 539 pts); **C** = Average (70% - 79% or 420 - 479 pts); **D** = Poor (60% - 69% or 360 - 419 pts); **F** = Failure (<60% or < 360 pts).

**NOTE:** Grades will no longer be mailed to students' home addresses at the end of the semester. Reports of student grades are available via Web ([http://www.gpc.edu/Banner\\_Web/](http://www.gpc.edu/Banner_Web/)).

Students may turn in a **Course Portfolio**. The portfolio should be folder containing a collection of materials that demonstrates the student's effort of learning the course topics.

- Portfolios are optional and are due on the day of the Final Exam. Portfolios are worth up to an additional **30** points toward your course total.
- Portfolios must be organized and structured, not just a collection of papers stuffed into a folder. Each item must be identified. Label what each item is and why it was included.
- Portfolios will not be returned. You are encouraged to make copies of any materials that you wish to keep for yourself.
- Portfolios may include: detailed homework solutions, extra solved questions and problems, corrected tests and quizzes. Students may include additional material to demonstrate attempts of learning course material
- The following are not allowed: another student's work, photocopies of other student's materials, instructor solutions or handouts, lecture notes

### Notes and Policies

The **withdrawal** policy:

- Any student who withdraws from the lecture does NOT have to withdraw from the lab. Likewise, any student who withdraws from the lab may remain in the lecture.
- The instructor will **NOT** initiate the withdrawal of any student for the reason of excessive absence. The only exception is any student who has never attended class.
- Students that do not meet the prerequisite for this course will be withdrawn.
- A student who withdraws or is withdrawn officially from the course by the mid-point of the semester (see schedule below) will receive a grade of "W". A student who withdraws after the mid-point of the total grading period (including final exams) will receive a "WF" unless approval as a hardship withdrawal is received from the appropriate department head, division chairperson or associate dean.
- A grade of "Incomplete" or an "I" will only be given for documented emergencies that occur near the end of the semester. The student must be passing to receive an "I" grade and must fill out the proper form and attach the documentation (such as a hospital record).

An **evaluation** of a student's performance to date may be requested at any time. The corresponding grade at that point will only be approximate. You are always welcome to discuss standings, grades, material, difficulties etc. during my office hours or arrange an appointment. If you want to discuss a grade, please be sure to bring the appropriate assignments, tests, or notes.

### Academic Honesty Policy

**Cheating** includes any attempt to defraud, deceive, or mislead the instructor in arriving at an honest grade assessment. Plagiarism is a form of cheating that involves presenting as one's own the ideas or work of another. Academic Dishonesty Procedures have been established by Georgia Perimeter College to insure due process in cases of cheating or plagiarism. A copy of these Procedures can be found in the Student Handbook.

Cheating of any kind may result in a penalty of a grade of F in the course AND may be referred to the College Court for assignment of penalty which may include suspension from the College.

Unless specifically authorized by the instructor, the following are examples of cheating or plagiarism. This is not an exhaustive list.

A. On a test or quiz:

1. Looking at or copying from another student's work.
2. Allowing another student to look at or copy your work.
3. Exchanging information with another student.
4. Speaking or whispering. (You may speak to the instructor at any time.)
5. Opening a textbook or notebook.
6. Looking at notes.

B. On homework or other out-of-class assignments:

1. Copying work or answers from another student.
  2. Copying work or answers from a book.
  3. Having another person do work for you.
  4. Allowing another student to use your work as his or her own.
- C. For late work or tests:  
 Providing false information or documents in order to be allowed to make up a missed test, quiz, or homework.

### **College Policy on Attendance**

Student's academic success is the major priority of the College. Because regular participation enhances the learning process, students are expected to adhere to the attendance policy set forth by the College and individual faculty members. Differences in content and teaching styles exist among courses, which can impact students' learning. Therefore, students are strongly encouraged to attend all classes to better prepare them for assignments, tests, and other course-related activities. Students are accountable for assignments and material covered during an absence.

### **Statement Of Non-Discrimination**

Georgia Perimeter College supports the Civil Rights Act of 1964, Executive Order #11246, Title IX of the Educational Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act. No person shall, on the basis of age, race, religion, color, gender, sexual orientation, national origin or disability, be excluded from participation in, or be denied the benefits of, or be subjected to discrimination under any program or activity of the college.

If you are a student who is disabled as defined under the Americans with Disabilities Act and require assistance of support services, please seek assistance through the Center for Disability Services. A CDS Counselor will coordinate those services.

### **General Education Outcomes**

I. This course addresses the general education outcome relating to communications as follows:

1. Students develop their reading comprehension skills by reading the text and additional materials as appropriate. Students are required to communicate their understanding of subject matter by responding in a literate fashion to questions on exams.
2. Students develop their listening skills through lecture and small group discussions. Lecture material is presented that may not be included in the text or handout material and is included as part of the exams or tests.
3. Students develop their reading, writing skills, and critical analysis skills through activities developed specifically to enhance their understanding of astronomical principles. Students must respond appropriately to short-answer or essay type questions in assignments or on course exams.

II. This course addresses the general education outcomes of recognition and application of scientific inquiry as follows:

1. Students must apply physical principles to explain various observed phenomena in the sky and as well as for our planet Earth.
2. Students will develop the skills of inquiry by use of the scientific method to measure, evaluate, and synthesize data as applied to various astronomical problems.

III. This course addresses the general education outcome relating to identifying and evaluating global economic, political, historical, and geographical forces and analyzing how these forces shape the past, present, and future as follows:

1. This course examines how historical forces have affected the emergence of modern astronomy, and how astronomy, in turn, has affected our understanding of our world and our place in the universe.

### **Expected Educational Results**

#### **A student who completes this course will be able:**

To understand

- How observations of celestial objects are used to formulate theories
- The "universality of physics"- that a few principles that govern matter, energy, and light can help understand everyday phenomena and the mysteries of the cosmos.

To demonstrate the knowledge and understanding of:

- The nature of gravity and light.
- The principles underlying the use of different types of telescopes for observing celestial objects.
- The formation of the solar system.
- The similarities and differences among planets and their satellites
- The motions of Earth in space.
- What is known about the nature of asteroids and comets

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## Schedule of Topics

<u>Main Topic</u>	<u>Reading Assignment</u>
Scientific Method, Sense of Scale	Ch 1: Sec 1-2
The Architecture of the Universe	Extra
Forces	Extra and Ch 2 pp 53-54 (gravity)
Nature of Light	Ch 3: 1, 2, 3, 5
Light and Matter	Ch 3: 4 and Ch 4: 1, 2, 3, 5
Our Tools: Telescopes	Ch 5: Sec 1, 2, 5, 7, 8
Our Sun as a Star	Ch 16: Sec 1, 2, 6, 7
Nature of Stars	Ch 17: Sec 1-8
Between the Stars	Ch 18: Sec 1-5
A Star is Born	Ch 19: Sec 1-3
Stellar Evolution: Old Age for the Sun	Ch 19: Sec 6 and Ch 20: Sec 1-5
Stellar Evolution: Exploding Stars	Ch 21: Sec 1-4
Neutron Stars, Black Holes	Ch 22: Sec 1, 2, 4*, 5, 6, 7, 8
The Milky Way	Ch 23: Sec 1, 2, 3, 5, 6, 7*
Galaxies: Island Universes	Ch 24: Sec 1-3 and Ch 25: Sec 1
The Cosmos: Past and Future	Ch 26: Sec 1-7

\* if time permits

TUESDAY		THURSDAY	
8/18	Introduction, Review of Syllabus	8/20	Lecture
8/25	Lecture	8/27	Lecture
9/01	Lecture	9/03	* <b>Quiz 1</b> *, Lecture
9/08	Lecture	9/10	Lecture
9/15	Lecture	9/17	Lecture
9/22	Lecture	9/24	*** <b>Test 1</b> ***
9/29	Lecture	10/01	Lecture
10/06	- <i>No Class</i>	10/08	Lecture
10/13	Lecture	10/15	* <b>Quiz 2</b> *, Lecture
10/20	Lecture	10/22	Lecture
10/27	Lecture	10/29	Lecture
11/03	* <b>Quiz 3</b> *, Lecture	11/05	Lecture
11/10	Lecture	11/12	*** <b>Test 2</b> ***
11/17	Lecture	11/19	Lecture
11/24	Lecture	11/26	- <i>No Class</i>
12/01	Lecture	12/03	* <b>Quiz 4</b> *, Lecture

Midpoint of Semester: Monday, October 12, 2009

**FINAL EXAM: Tuesday, December 8, 10:00am – 12:00n**  
(Portfolios are due on the day of the Final Exam.)

Note: All dates are tentative. Any changes will be announced in class.