Astronomy 100/190Y – Exploring the Universe
Hasbrouck Lab 20
Tu, Th – 9:30-10:45am (Section A) and 2:30-3:45pm (Section C)

Instructor Contact Information and Course Resources:
Prof. Grant Wilson, 622 Lederle Tower, 545-0460 (email: wilson@astro.umass.edu)
Prof. Min S. Yun, 522 Lederle Tower, 545-2215 (email: myun@astro.umass.edu)
Course website: http://www.astro.umass.edu/~myun/a100
Textbook: Pathways to Astronomy by Schneider & Arny

COURSE OVERVIEW

This course will lead you on the longest and farthest journey possible. You will travel through the known Universe - exploring its myriad of wonders - and back in time to only moments after the Big Bang. There are three principal course goals that will be addressed throughout the semester:

- You will become familiar with (and conversant about) the fundamental constituents of the Universe (Galaxies, Stars, Gas, Dust, Particles, and Radiation)
- You will acquire tools that will allow you to better understand the world (universe) around you.
- You will develop an understanding (and, hopefully, an appreciation) of how science works and how we know what we know.

Along the way, you'll learn about the Four Forces of Physics that describe virtually everything in the physical Universe, and you'll also come to appreciate the tremendous beauty of the natural world.

The course is organized into four sections:
Naked-Eye Astronomy: You probably know more than you think
Tools of Astronomy: The Physics of Light; Spectra; Telescopes
Stars: Their birth, life, and death
Galaxies and Cosmology: The Origin and Fate of the Universe

WORK EXPECTATIONS

Since this is a science course for non-scientists, you can expect the workload for this course to be somewhat high. There will be readings from the textbook assigned for each lecture that will take anywhere between 1.5 and 3 hours to complete – adding up to 3-6 hours per week of reading. Homework and Quizzes on the readings will add up to approximately another 2-3 hours per week. Add to this the time required to study for exams and doing the creative project and the total comes to between 6 and 10 hours per week that you should expect to spend on this course.

PREREQUISITES

High-school Algebra is a prerequisite for this course.
In many courses you have had before, the professor’s responsibility was to lecture and your responsibility was to take notes and memorize the material. Not so with this course! In this course, my responsibility is to find ways to help you learn astronomy and your responsibility is to actively engage in your own learning of astronomy.

This is not a course on the memorization of facts and recipes. We have Google for that. This course will be an interactive exploration of the concepts that govern our understanding of our home - the Universe. Through course readings, homework, projects, and three lively and active discussions each week (see Course Requirements below for more details) you will build, with the help of your classmates, a foundation of knowledge of astronomy and science as a discipline.

This class will not be a passive experience.

It is my belief that you can only learn so much from a lecture, no matter how clear or entertaining. Consequently, class time will be made up of a series of mini-lectures wrapped around active discussions where we explore the concepts and techniques from the pre-class readings. As a result, both participating in class and doing the readings are mandatory for this course. As an active student, I also expect you to ask questions both in class and during office hours; to visit the telescope on Orchard Hill and the planetarium at Amherst College; and in general to be limited only by your imagination and curiosity.

You are encouraged to bring your text with you to class as a guide for the lecture and a framework for any additional notes you may wish to take. Be advised that you will be accountable for all material assigned in the text whether or not it is covered in class.

COURSE REQUIREMENTS

Attendance is not required but is the single most important way to ensure success in this course. It will be difficult to pass this course without attending the discussions. 3% extra credit can be earned from in-class participation.

Readings: Assignments in the text will be given at the end of the preceding class and are required. Reading the assigned materials before each discussion is critical for having productive class time. You are not expected to master the material before class. However, you are expected to know the vocabulary introduced in the reading and to come to class prepared to discuss the material.

Daily quizzes on the readings, administered through the OWL system, will be given throughout the semester. These quizzes will be worth a total of 10% of your final grade. Reading quizzes become available on the class web site very shortly after the preceding class. Quizzes must be completed thirty minutes before class to be accepted.

Internet Access: You will need internet access to have access to some of the homework assignments and some of the quizzes. Homework assignments will be administered via the OWL system. You can find out more about OWL by going to http://owl.oit.umass.edu.

Exams: There will be three one-hour exams and a final exam. The best three of the four exam scores will each be worth 20% of the course grade, for a total of 60%. Exam questions will be drawn from both class material and reading assignments.

Be sure to bring your ID and a #2 pencil to all exams, since we will be using machine-graded forms. No calculators allowed. The exams will test concepts and some basic math ideas; they are designed to test your understanding, not your ability to push buttons.

Makeup exam policy: Makeup exams will be given only for documented medical or family emergencies or by prior arrangement. Make-ups may be essay-style or oral.
Homework: There will be homework assignments, worth 20% of the final grade. An extension will only be granted for documented medical or family emergencies or by prior arrangement.

Creative Project: This free-format assignment is worth 10% of the final grade. It is described below and at http://www.astro.umass.edu/~myun/teaching/a100/creative_project.htm

Academic Honesty is expected of all scientists, and also of all students of science. Cheating on an exam will result in a grade of zero for that exam. This zero will not be dropped as one of your low exam grades! Cheating on homework or in-class exercises will result in the reduction of one letter grade in your final grade.

Summary of Components of Final Grade:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>3 best of 4 exams</td>
<td>60%</td>
</tr>
<tr>
<td>quizzes on readings</td>
<td>10%</td>
</tr>
<tr>
<td>homework</td>
<td>20%</td>
</tr>
<tr>
<td>creative project</td>
<td>10%</td>
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</tbody>
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Letter grades will be assigned based on the scale given on the class web site.

CREATIVE PROJECT
Due: April 26th, in class

Astronomy is a ubiquitous subject that touches all of us on a daily basis. The idea of this project is for you to use your creativity to relate something you've learned in Astronomy 100 to another aspect of your life: your hobbies and interests, your passions, your ideas for a career, etc.

The projects will be judged on the basis of creativity and relevance to Astronomy and will be worth 10% of your course grade.

This project is free-form. The only rule is that the entire project must fit on two sheets or less of standard 8.5"x11" paper. Other than that, you get to choose what to do. You can work alone or with one other person. Check out http://www.astro.umass.edu/~myun/teaching/a100/creative_project.htm for more information and some ideas to get you going.

WHERE TO GO FOR HELP!

2) Come to my office hours for a review or to ask questions.
   - G. Wilson: by appointment, Graduate Research Tower - Room 622
   - M. Yun: Tuesdays 1:30-2:30 pm, Graduate Research Tower – Room 522
     or email and make an appointment.

3) Come to TAs’ offices to ask questions.
   - Zhon Butcher: Mondays 1-2 pm, Graduate Research Tower - Room 519
   - Neil Patel: Thursdays 11 am-noon, Graduate Research Tower – Room 619O
   - Yuping Tang: Wednesdays 3-4 pm, Graduate Research Tower – Room 531