

PRELIMINARY SYLLABUS FOR
ASTRONOMY 100 – SPRING 2020 – SECTION 50800
TUESDAYS AND THURSDAYS 12:00 – 1:50PM

***** Please make sure to see me ASAP if you were not present on the first day of class *****

Prof. Vahé Perroomian

Email address: peroomia@usc.edu

Office: SHS 360

Phone: (213) 740-2386

Office hours: Mondays 12:00pm – 1:30pm, Tuesdays 2:00pm – 4:00pm,
Wednesdays 12:00pm – 1:30pm, *and by appointment*

Welcome to ASTR 100Lg: The Universe! The marvelous ballet of the starry sky has fascinated mankind since prehistoric times. The questions, for instance, “Where are we?” and “What is the universe?” have spurred the development of astronomy. Since I am both a physicist and an astronomer, the course will also include discussions of the physics underlying the astronomical phenomena we will discuss. I will show how the quest for the nature of the universe has tremendously helped the development of physics. Physics, in turn, has paid back generously, by delivering the very concepts that allow us to understand the seemingly weirdest things in the universe. This course is designed specifically for those non-science majors who have very little, if any, background in the sciences and mathematics. The course is non-mathematical by prerequisite, but you will have to learn to do some calculations. However, these calculations will be very simple and will employ formulae that are easy to remember. You will have the opportunity to note that formulae represent ideas. Mathematics is the language of science.

1. TEXTBOOK AND OTHER RESOURCES

Seeds, Michael A., and Dana Bachman, *Foundations of Astronomy*, 14th Edition.

We will be using the WebAssign online homework system for this course. Your best options for purchasing WebAssign and an electronic version of the textbook are:

- A WebAssign + eBook package can be purchased from the USC Bookstore or directly from Cengage.com for \$80.
- If you are taking other courses that use Cengage textbooks this semester, then you may want to consider Cengage Unlimited, which gives you access to all of Cengage’s textbook offerings for \$119.99 for the semester (\$179.99 for the entire year).

Astronomy on the Internet

There is a vast amount of information (and lots of pretty pictures) on the internet. I’ve listed some of these sites on a separate list published on Blackboard. You can also find many more sites by simply Googling the specific topic you’re looking for. Also, Wikipedia is considered a (mostly) reliable source for astronomy, so don’t shy away from using Wikipedia in your web searches.

2. GUIDELINES

2.1 Registration and administration

Your registration for this course consists of three separate parts: the lectures, a “quiz section,” and the laboratory. You must register for each of them. The “quiz section” is the time slot allocated to the midterms and **will not be used** for this course.

The Undergraduate Physics Office in ACB 439 deals with all administrative aspects of this class. Additional help regarding administrative issues is available from Kimberly Burger in ACB 439 with phone number (213) 740-7728 and email address burgerk@usc.edu.

2.2 Disabilities

Students who need to request accommodation based on disability are required to register each semester with the Office of Disability Services and Programs (DSP). This office can be found at STU 301 with phone number 231-740-0776. A letter of verification to the instructor from the DSP is needed for the semester you are enrolled in. If you have any further questions please contact the DSP or the instructor.

2.3 Grading

Your grade will be determined according to the following key:

80% lectures:

10% Homework

40% Midterms (best two out of three, 20% each)

30% Final exam

20% laboratory

Broadly speaking, grading is done by the distribution curve of the combined scores of exams, homeworks and lab. No rigid percentage marks (such as, e.g., a rule that 90% corresponds to an A-, or similar) are used. Further details about the grading procedure are given in class. **You cannot pass the course if you do not earn a passing grade (14/20 or 70%) on the lab portion of the course.**

Students taking the course Pass / No Pass must reach a minimum overall score of 70% to pass the course, regardless of the manner in which letter grades are assigned to students taking the class for a letter grade.

2.4 Attendance

Attendance will be taken daily. Although attendance is not mandatory, students that regularly attend class will receive extra credit toward their final grade: attendance at 50% of class meetings will result in 1% extra credit, and attendance at 80% or more of class meetings will result in 2% extra credit, on a sliding scale. *A medical or other excuse can't be used to "make up" class attendance for the purpose of earning extra credit points.*

2.5 Exams

There will be three one-hour midterm exams and one two-hour final exam. The midterms will be given during class on the day they are scheduled. Of the three midterms, only the scores of the two highest will be counted, and the score of the lowest of the three will be dropped. The midterms will cover the course material incrementally throughout the semester, and the final exam will cover the whole course. **All exams are closed book.**

Please note that the third midterm exam can serve as a make-up exam for either of the first two exams. There will not be any other make-up exams. Any student missing two of the three midterms will only have recorded the points scored on the one exam taken. Please inform me ASAP if you intend to miss the first or second midterm exams.

2.6 Homework

We will be using the WebAssign online homework system for this course. To access the assignments for this class, please go to <http://webassign.net>, click on the gray "Enter Class Key" button on the upper right, and enter **USC 7328 1154** for the class key. You will then be required to enter the WebAssign access code you purchased.

Homework assignments will be due approximately every other week, at midnight on Thursdays. Homework can be turned in up to 24 hours late for 50% credit. You can set up reminders for assignments that are due through WebAssign. Please note that exceptions will not be made to homework deadlines.

Homework will count for 10% of your total score. Each of the 7 assignments listed below will be worth 100 points, and a cumulative score of 500 out of the maximum 700 points will equate to a 100% homework grade (this

is equivalent to, but better than, dropping two homeworks as you can use all 7 assignments to reach the 500 points).

Homework Schedule

| | |
|-------------|----------------------------------|
| Homework #1 | Due: Thursday, January 30, 2020 |
| Homework #2 | Due: Thursday, February 13, 2020 |
| Homework #3 | Due: Thursday, February 27, 2020 |
| Homework #4 | Due: Thursday, March 5, 2020 |
| Homework #5 | Due: Thursday, March 26, 2020 |
| Homework #6 | Due: Thursday, April 9, 2020 |
| Homework #7 | Due: Thursday, April 23, 2020 |

2.7 Laboratory

The course Astronomy 100 has a **mandatory** laboratory component, and you should already be signed up for one of the laboratory sessions. The purpose of the laboratory is to give you some feeling for making and interpreting observations, thereby reinforcing some of the course material by direct experience. Indeed, without such experience, some of the theoretical material could appear a little too abstract. Another purpose is that you can get some hands-on experience in using a telescope: Often one can see spectacular pictures taken from large telescopes around the world or from the Hubble Space Telescope (HST) and you might be curious about what is possible from a small, but good “amateur” telescope.

Note that late registration in the course will NOT excuse you from any labs you’ve missed, and you must contact the Lab Director, Joseph Vandiver (SGM 309; Phone: (213) 740-8889; Email: vandiver@usc.edu) IMMEDIATELY if you’ve signed up late for the course.

I hope that our laboratory will enhance your experience and enjoyment of this course. Please appreciate the great logistical complexity of arranging laboratories for so many people with such a broad variety of backgrounds: I therefore kindly request your good will and patience in this enterprise.

Questions concerning the laboratory should be referred to the Lab Director, Joseph Vandiver (SGM 309; Phone: (213) 740-8889; Email: vandiver@usc.edu).

The final syllabus will be updated with lab meeting times

3. SUPPORT

You have a variety of opportunities for support available to you.

3.1 Lecture

Do not underestimate the value of questions during the lecture period. In large lectures, many students are reluctant to pose questions that they fear might seem silly to their instructor or to their peers. Almost always, if one student asks a question, there are several other students who were wondering about the same issue. Often such questions tell the instructor what material might benefit from a more detailed discussion.

3.2 Instructor office hours

I will have five hours of office hours each week, but these office hours will be open to all of the courses that I teach. Office hours will be held in SHS 360. Most of my time is filled by teaching or office hours, but if I’m in my office during other times, you’re welcome to stop by for a quick question (less than five minutes). You can also make an appointment to see me if you cannot make it to any of the office hours listed on the first page of the syllabus. In this case, it is best to contact me by email at least one day before you’d like to meet, or see me immediately after class.

3.3 Electronic assistance

Everyone registered in this course should find a link to the course in their *Blackboard* account. All information about the course will be posted on *Blackboard* at <http://blackboard.usc.edu>.

At this address, you will find this Syllabus, important announcements, homework sets, etc. Solutions to your homework sets (after the due date) will be placed on *Blackboard*.

4. OBTAINING YOUR GRADES

You will be able to access your grades via *Blackboard* at <http://blackboard.usc.edu>.

5. STUDENT OMBUDSMAN

All courses in the Department of Physics & Astronomy have an assigned Student Ombudsman to serve students as a confidential, neutral, informal, and independent resource when they wish to discuss issues concerning their course without directly confronting their instructor. The Student Ombudsman for this course is Prof. Chris Gould, gould@usc.edu, 213-740-1101, SSC 204.

6. FEEDBACK

Feedback regarding all aspects of these lectures is very much appreciated and welcome at any time. Please get in touch with your instructor via email, after lectures, or during office hours.

7. STATEMENT ON ACADEMIC CONDUCT AND SUPPORT SYSTEMS

7.1 ACADEMIC CONDUCT:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

7.2 SUPPORT SYSTEMS:

Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. engemannshc.usc.edu/counseling

National Suicide Prevention Lifeline – 1 (800) 273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. engemannshc.usc.edu/rsvp

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: sarc.usc.edu

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class. equity.usc.edu

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. studentaffairs.usc.edu/bias-assessment-response-support

The Office of Disability Services and Programs

Provides certification for students with disabilities and helps arrange relevant accommodations. dsp.usc.edu

Student Support and Advocacy – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. studentaffairs.usc.edu/ssa

Diversity at USC

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. diversity.usc.edu

USC Emergency Information

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. emergency.usc.edu

USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.

Provides overall safety to USC community. dps.usc.edu

8. SOME USEFUL DATES

| | |
|---------------|---|
| January 13 | Spring semester classes begin |
| January 20 | Martin Luther King Day (University Holiday) |
| January 31 | Last day to drop class without a mark of "W," and last day to change enrolment option |
| February 13 | Midterm 1 |
| February 17 | Presidents Day (University Holiday) |
| March 12 | Midterm 2 |
| March 15 – 22 | Spring Recess |
| April 3 | Last day to drop class with mark of "W" |
| April 16 | Midterm 3 |
| May 1 | Spring semester classes end |
| May 13 | Final exam (2:00 pm – 4:00 pm) |

9. COURSE SCHEDULE

You should read through the relevant chapters prior to coming to the lectures each week, and review them again after each lecture before attempting the homework problems.

| Week | Start date | Required reading |
|---|------------|--|
| 1 | 1/13 | Chapter 1: Here and Now Chapter 2: A User's guide to the Sky |
| 2 | 1/20 | Chapter 3: Moon Phases and Eclipses Chapter 4: Origins of Modern Astronomy |
| 3 | 1/27 | Chapter 5: Gravity Chapter 6: Light and Telescopes |
| 4 | 2/3 | Chapter 7: Atoms and Spectra Chapter 18: Origin of the Solar System and Extrasolar Planets |
| 5 | 2/10 | Chapter 19: Earth: the Active Planet Chapter 20: The Moon and Mercury: Comparing Airless Worlds Chapter 21: Venus and Mars |
| Midterm 1 on 2/13 During class time, Room: TBA | | |
| 6 | 2/17 | Chapter 22: Jupiter and Saturn Chapter 23: Uranus, Neptune, and the Kuiper Belt |
| 7 | 2/24 | Chapter 24: Meteorites, Asteroids, and Comets Chapter 8: The Sun |
| 8 | 3/2 | Chapter 9: The Family of Stars Chapter 10: The Interstellar Medium |
| 9 | 3/9 | Chapter 11: The Formation and Structure of Stars Chapter 12: Stellar Evolution |
| Midterm 2 on 3/12 during class time, Room: TBA | | |
| March 15 – 22 Spring Recess | | |
| 10 | 3/23 | Chapter 13: The Deaths of Stars Chapter 14: Neutron Stars and Black Holes |
| 11 | 3/30 | Chapter 15: The Milky Way Galaxy |
| 12 | 4/6 | Chapter 16: Galaxies: Normal and Active |
| 13 | 4/13 | Chapter 17: Modern Cosmology |

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| Midterm 3 on 4/16 during class time, Room: TBA | | |
|---|------|--|
| 14 | 4/20 | Chapter 25: Astrobiology: Life on Other Worlds |
| 15 | 4/27 | <i>Review</i> |
| Final exam on Wednesday 5/13 (2:00pm – 4:00pm); Room TBA | | |