ASTR 101: PRINCIPLES OF ASTRONOMY
Spring 2018
3 Units; Section 4; Schedule #20311

COURSE INFORMATION

Class Days: Monday-Wednesday-Friday
Class Times: 10:00-10:50 am
Class Location: EBA-347
Course Email: wwelsh@mail.sdsu.edu
Office Hours: MWF 12:00–12:30; Tues 10:00–11:00 am; or by appointment

Professor: William F. Welsh
Contact Information:
Office: Physics P-235
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Course Overview

Official Course Catalog Description: Discover the universe: planets, stars, galaxies, and our place in the cosmos; the Big Bang; how stars shine; comets, meteors, nebulae, the Milky Way; black holes and other exotic objects.

Purpose and Course Content: The goal of this course is to help students understand and appreciate the wonders of the Universe. Students will be able to answer such questions as: What makes the Sun shine? Why do stars twinkle? How do telescopes work? What makes Mars such an interesting planet? What is a planet and what is a galaxy? What is a black hole? How old is the Universe? Students will not only learn the answers to these questions, but will also learn how we know the answers. Thus students will learn about telescopes, atoms, nuclear fusion, electromagnetic radiation, spectroscopy, gravity, and other relevant physical processes and laws. As a science class, emphasis will be placed on the importance of data and the testing of hypotheses, as opposed to belief and/or doctrine.

Student Learning Outcomes: Upon successful completion of this course, the student will be able to:
• apply physical laws of atoms and light to understand celestial phenomena
• cite the content and large-scale structure of the Universe
• explain the phases of the Moon and the cause of the seasons
• compare and contrast the different types of planets
• summarize how stars shine through the process of thermonuclear fusion
• identify/recall the stages of stellar evolution
• describe characteristics of our Milky Way and other galaxies
• synthesize the evidence for the Big Bang cosmology

Relation to Other Courses: This course is not open to students with credit in Astronomy 201. This course satisfies the General Education requirement outlined in Part A (Natural Sciences and Quantitative Reasoning), Section 1 (Physical Sciences). A related class is ASTR 109 (Astronomy Laboratory). Although concurrent enrollment is encouraged, ASTR 101 can be taken without taking ASTR 109.

Enrollment Information

Prerequisites: There are no formal prerequisites for this course. Proficiency with basic mathematical skills is necessary, for example:
• The use of the metric system.
• The use of scientific notation, as in \(M = 2 \times 10^{33}\) grams.
• The use of simple formula such as \(F = -GMm/r^2\).
In most cases a mathematical treatment of the topic is not needed to understanding the concept. However, in some cases a quantitative understanding is as important as a qualitative understanding, and in those cases a mathematical treatment is required.
Adding/Dropping Procedures: Add codes and “crashing” have been replaced with the Wait List. Students can enroll in any open seats through the fifth day of classes. From the sixth day onwards, the instructor will need to generate an add code. The last day to add or drop the class or change the grading basis is 2018 January 30.

Statement for Students with Disabilities: If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that I cannot provide accommodations based upon disability until I have received an accommodation letter from Student Disability Services. Your cooperation is appreciated.

Course Materials


The on-line companion web site “MasteringAstronomy” at [http://www.MasteringAstronomy.com](http://www.MasteringAstronomy.com) is also required. You will need to purchase access to MasteringAstronomy for the homework. It comes with your textbook, or e-textbook, or you can purchase access separately.

The Course ID for this Astronomy 101 course is MA2018WELSH.

Students are required to read a small number of on-line web sites such as spaceweather.com and NASA’s Mars Exploration Program.

The class website at [http://wwelsh.sdsu.edu/~wwelsh/CLASSES/ASTR101/astr101.html](http://wwelsh.sdsu.edu/~wwelsh/CLASSES/ASTR101/astr101.html) is an important resource. It contains the syllabus, homework assignments, course policies, safety procedures, class news, class notes, and links to various supplementary learning resources.

∞ Please note that the Blackboard website is not used for this course. ∞

Recommended Materials: The Astronomy Department provides a free Astronomy Help Room for assistance and tutoring for this course. The schedule is posted on the class website.

Links for additional information to help learn the course material and to explore beyond what is covered in the lectures and in the textbook are provided on the class webpage.

Options for Accessing Course Materials: The publisher has options to obtain electronic access to the textbook.

Course Structure and Conduct

Style of the Course: This course will be a traditional lecture course. The subjects covered include:

- The Rules and Tools of astronomy/astrophysics
- The celestial sphere and the motions of bodies in the Solar System
- Planets and other objects in our Solar System and beyond
- The structure, activity, and evolution of the Sun and other stars
- Galaxies, the large-scale structure of the Universe, and cosmology

Individual and Group Activities Required: Astronomy is an observational science, so there will be a component of the homework assignments that requires students to look at the sky and report what they observe. Students may work and study together, but exams and homework assignments must be completed individually.
Technology Utilized in the Course: A subset of the class notes will be made available on the class website (in .pdf format) with the following important restriction: The lecture notes will be available only for a limited time prior to the lecture. The notes will be posted on the class website a few days before the lecture, and will expire after the lecture on that topic is given. Students should download and bring the notes to the lectures, and add content and updates to the notes in class. After the lecture is given, the corresponding notes will no longer be available.

Course Assessment and Grading

Exam Dates:
Exam #1: Friday February 16
Exam #2: Friday March 9
Exam #3: Friday April 13
Final Exam: Friday May 4 at 10:30–12:00

The exams will be closed-book. Calculators are allowed, but not smartphones, ipads/tablets, laptops, etc. The exams will be multiple-choice format and require a ParScore Enrollment scantron form. Study guides will be posted on the class website.

Exam dates (except the Final Exam) are subject to change. As per University regulations, the time of the final exam cannot be changed under any circumstances. Please review the rules regarding final exams at http://registrar.sdsu.edu/calendars/final_exam_schedule/spring_2018_final_exam_schedule and the 2017-2018 General Catalog (page 471).

Scored Activities and Weighting by Percentage of Total Score:
20% Homework Assignments
20% Exam #1 (multiple choice format)
20% Exam #2 (multiple choice format)
20% Exam #3 (multiple choice format)
20% Final Exam (comprehensive; multiple choice format)

Exams will be graded on a mild curve.

No individual extra credit projects will be accepted. However, extra credit projects that benefit the whole class may be offered on an ad hoc basis.

If you are taking the course with the “credit/no-credit” option, you need a C or above to earn the credit (see page 470 of the 2017-2018 General Catalog). An incomplete grade (“T”) for the course will only be given in cases involving serious medical or legal issues that prevent the student from completing the course. The student is responsible for arranging whatever is necessary to complete the course. Please review the definitions of letter grades and the SDSU policies regarding grades on page 469-471 of the 2017-2018 General Catalog.

Excused Absence Make-up Policies: No make-up exams will be allowed unless there is a serious, legitimate reason (e.g. medical emergency) and full documentation. If a make-up exam is deemed appropriate, an oral or essay exam may be administered instead of, or in combination with, multiple-choice questions.

Other Course Policies

The lectures and all material contained therein, including the course web pages and on-line lecture notes, are copyrighted – no material can be reused or reproduced in any fashion without written permission.

Attendance Policy: Attendance is not mandatory, but be aware that much of the course material is not contained in the textbook. It will be much easier to earn a good grade if you come to class. It is expected that you will attend all the lectures, read all the material assigned for homework – including the web pages assigned, and participate in class (e.g. ask questions, contribute to discussions, etc.). I expect you to come to office hours for help or for addition discussion.
Classroom Etiquette: I expect that the students will maintain a professional atmosphere and show respect to their fellow students. In particular, the following is prohibited in the classroom:

- Cell phones and similar devices (please turn them off!)
- Texting, tweeting, emailing, etc.
- The reading of newspapers, magazines, etc.
- Talking above a whisper
- Eating or drinking anything noisy
- Doing homework for this or any other course
- Disrupting class by handing in homework after the class lecture has started.

Use of laptops/tablets/iPads for taking notes is acceptable, however, if you wish to use such a device in the classroom, you may be asked to sit in a special section reserved for laptop users.

*Any form of behavior deemed to be inappropriate by the instructor will not be tolerated. A student will be advised once by the instructor that his/her behavior is inappropriate. If this inappropriate behavior occurs again, the matter will be turned over to the University’s Judicial Procedures Office for appropriate disciplinary action.*

Statement of Cheating and Plagiarism: *Cheating in any form, which includes plagiarism (see page 480 of the University’s 2017-2018 General Catalog for a definition), is a grave offense. Cheating will not be tolerated, and evidence of cheating by a student will result in an automatic “F” for that assignment. Any evidence of cheating will be promptly reported to the Judicial Procedures Office. Executive Order 1006 mandates faculty to report all incidents to the Center for Student Rights and Responsibilities.*

See the class webpage for additional details about homework, grading, incompletes, and plagiarism policies.

**Safety Issues**

The CSU takes the issue of classroom and campus safety very seriously. The office of Business and Financial Affairs has set up a web site where SDSU staff, faculty, and students can find information about San Diego State University’s emergency preparedness plan and opportunities for training on many aspects of the classroom/workplace. See [http://bfa.sdsu.edu/emergency/](http://bfa.sdsu.edu/emergency/). In particular, please note the following:

**Campus Safety:**
+ Be aware of your surroundings.
+ If you see something suspicious, report it!
+ If you have an emergency, call 911 from any phone on campus.
+ Other incidents, call Campus Dispatch at 4-1911.
+ In the evening, call Campus Escort if you would like an escort to your vehicle or campus dorm.

**Classroom Safety**

- If there is an emergency, stay calm, and follow the procedure in the flip book.
- Follow the Evacuation Route if you need to evacuate. *We evacuate to Centennial Mall*, and a roll call will occur there. Please show up at the evacuation area since your absence from roll call could cause resources to be used that could be used to help others who may actually be in trouble.
- “Shelter in place” is usually called when a person that is carrying a weapon on campus has become violent and has injured others, or is threatening to injure others. Lock the door from outsiders, only open to the Department Safety Officer, PDS, or other officials of the University.

Note that during any emergency, *students should not use their cell phones.* The lines of communication are critical to keep open for emergency information. Only Staff and Faculty should keep their cell phones on, and only receive calls if the situation calls for it.