San José State University
College of Science/Physics and Astronomy
Astro 10, Descriptive Astronomy, Section 1, Fall, 2018

Course and Contact Information

Instructor: Dr. Olenka Hubickyj
Office Location: SCI 310
Telephone: (408) 924 – 5256
Email: olenka.hubickyj@sjsu.edu
Office Hours: M, T, W, Th 11:00 – 12:00 or by appt.
Class Days/Time: MWF 10:00 – 10:50 am
Classroom: SCI 258
Prerequisites: None
GE/SJSU Studies Category: B1

Faculty Web Page and MYSJSU Messaging

Copies of the course materials such as the syllabus, lecture power points, and major assignment handouts, etc. will be found in our course link in Canvas. You are responsible for regularly checking with the messaging system in Canvas to learn of any updates. Grades will not be posted in Canvas; please contact me for information about your grades.

Course Description

This course is a general introduction to our present understanding of the origin and evolution of our solar system, the planets, and the other objects that orbit the Sun. How did the Solar System form and eventually evolve to one containing planets, including at least one that harbors life. We will spend some time discussing the process of the scientific method and how it has been used to form our present understanding. We will also review the physical laws that are at work throughout the Universe. Although many facts will be presented, the course objectives will be to understand concepts rather than to memorize facts. We will focus on these topics:
1. Brief historical background, the scientific method, and basic physical laws.
2. The techniques used in modern astronomy, including the use of spectroscopy, telescopes, CCDs, and computers.
3. The formation process of stars, the Sun in particular, and their planetary systems.
4. The formation process and evolution of planets in our solar system and planetary systems around other stars.
5. The possibility of past, present, and future life on other worlds, such as Mars and Europa.
6. Current events in astronomy will be included when coinciding with topics being covered, including details of my own research in planetary science. The news is full of the latest astronomical results, and we will discuss new discoveries as they arise. I encourage you to read the news and bring articles of interest.
Course Learning Outcomes (CLO)

During this course:

• Students will learn to distinguish science from pseudo-science;
  1. criticizing a pseudo-scientific proposal and identifying the classes of errors involved;
  2. appraising the claims of causal relationships between sunspot activity and human behavior;
  3. comparing scientific vs. nonscientific arguments, i.e. Big Bang and “Young Earth” Creation.

• Students will demonstrate an understanding of the methods of science;
  1. predicting the properties of stars in various evolutionary stages and then testing those predictions against observations;
  2. making a statistical sampling of stars in the night sky and generalizing those results to estimate the number of stars visible in the whole sky;
  3. discussing the observation and classification of various astronomical objects, e.g., stellar spectra, galaxy morphology, etc.
  4. examining the experimental basis for radiation laws and atomic spectra.

• Students will demonstrate an understanding of the limits of scientific investigation;
  1. discussing the inability to accurately predict solar activity and its implications for manned spaceflight missions;
  2. examining the limitations placed on predictions of advanced stellar evolutionary states by the use of idealized models;
  3. considering the merit in claims regarding the cause of the Big Bang.

• Students will apply a scientific approach to questions about the Universe;
  1. identifying the origins of the chemical elements and using that information to infer when the universe was “ready” for the development of life;
  2. discussing the future of the Sun and Earth in light of stellar evolutionary theory;
  3. combining various independent lines of evidence (stellar evolution models, the Hubble Law, radioactive decay of elements) to reach conclusions about the age of the universe and the beginning of Time.

• Students will appreciate the interrelationship of science and human beings by:
  1. examining the impact of human light pollution on observational astronomy (based on their own observational estimates of the number of stars visible from different locations);
  2. discussing how political pressures impact funding for “abstract” research proposals (e.g., the solar neutrino experiment, SETI (Search for Extraterrestrial Intelligence)).

Required Texts/Readings

Textbook

The required textbook is Understanding Our Universe 2nd edition, by Palen, Kay, Smith, and Blumenthal. This textbook is accompanied by an online program, Smartwork5, which is required. The publisher provides access to a free study help site, StudySpace, which I strongly encourage all students to use regularly. The URL is wwnpag.es/uou2 for the 2nd edition.

This text can be purchased at the Spartan Bookstore. The textbook has been around long enough that you can probably get the book on the internet for less money. In this case, you will have to purchase SmartWork5 online from the website; it’s purchase price is about $29.00.

Course Requirements and Assignments

Students will be expected to attend the lectures regularly and participate in class discussions. Attendance per se shall not be used as a criterion for grading according to Academic Policy F-69-24, but it is strongly encouraged! Laptops are to be used for note taking, only. It is ill advised to pay attention to your social media contacts during lecture. Paying attention in class will greatly increase your chances of earning a good grade.
Assignments will consist of online homework: **SmartWork5**, occasional worksheet/handouts, and a semester project, which will be described and assigned in class. This semester project will fulfill the SJSU Studies courses requirement of a minimum of 3000 words of writing for which you will receive prompt feedback on content and writing proficiency. *The semester project will count as one exam.*

The online homework is very instructive. We will go over the basics of this software in class within the first week of the semester. Please keep in mind that the homework is 15% of your final grade! The URL to login for SmartWork5 is:  
https://digital.wwnorton.com/8300

The **class enrollment code** is **107713**. The **student enrollment code** is provided to you when you purchase the software.

**Classroom Protocol**

**Attendance**

As mentioned previously, class participation and attendance is more for your benefit to be able to do a lot of learning in the moment. Keep in mind that you are paying to get the information you need to fulfill your college degree requirement. Don’t waste your time and money. Don’t think I don’t notice.

Please arrive on time to class. If an illness or emergency causes you to miss an exam, please notify me ASAP. The class will consist of lectures and occasional in-class group discussions with work sheets. It is not possible to make-up this kind of interaction. I understand that occasionally it may be difficult to attend a class meeting, so please be sure to let me know. You are responsible for the material that was covered in class. Either get that information from a fellow classmate or check with me. The lecture ppts and other files will be posted in the Files link in Canvas. If you find that you have a situation that causes you to miss more than one or two classes, please contact me ASAP to figure out how this may affect your success/grade in this course.

**Electronic devices**

Using a laptop or your cell phone to connect with shopping, social activities, and any other links during class is distracting to other students. Don’t waste your time and money by not being fully engaged. And as mentioned before, don’t think I don’t notice. If you are having any problems with the course material please see me. Most of the time I know we can clear up any misunderstanding. I am very happy to help you!!!

**Office Hours**

The best way to get in touch with me outside of class or office hours is via email (olenka.hubickyj@sjsu.edu). Please come by during office hours or make an appointment with me if you can’t make it to my posted office hours. Please email me to let me know when you would like to meet. Make sure to have your questions ready when you come to office hours. When other students are waiting, either join into our discussion or wait your turn. Please keep in mind that whatever is shared in office hours may also be discussed with the department chair and/or other relevant university staff concerned with your education.

**Additional Help**

The Physics Tutoring Center will start up again this semester. Room and time schedule will be announced as soon as the physics department has it set. The Tutoring Center is an informal setting where you can get help
from your fellow SJSU physics majors. The schedule of tutoring hours will be posted at http://www.physics.sjsu.edu/index.php?q=node/3.

Also, there are Academic Excellence Workshops for your core courses, including this one. These workshops are open to all students, but you have to register for them. Students who participate in these workshops typically earn almost a whole letter grade higher than those who do not. Contact Dr. Singmaster in DH16 or singmast@aol.com for more information.

Dropping and Adding
Friday, August 31 is the last day to drop without penalty. Monday, September 10 is the last day to add a class. Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. This information can be accessed at http://www.sjsu.edu/aars.

Exams and Grading Policy

Exams and Quizzes
Astro 10 covers a wide range of material and it can be divided into natural units. Therefore, there will be 3 tests during the semester rather than one midterm and a final. These exams will be multiple choice and will be given after we have completed a unit in astronomy. There will be no quizzes.

Final exam
The exam will not be a cumulative one but a regular chapter-type exam as we have had all semester long. You must take the final exam during the time specified by Academic Scheduling, which is Friday, Dec 14, from 7:15 to 9:30 am in our usual classroom, SCI 258.

Final grade determination for the course
The final grades will be determined as follows:
- Exams and semester project = 85%
- Homework = 15%

Determination of Grades
The final grades will be determined as follows:
- A: 90 - 100%  A-: 90 - 92%  A: 93 - 96%  A+: 97-100% (note: for GPA purposes, A=A+)
- B: 80 - 89%  B-: 80 - 82%  B: 83 - 86%  B+: 87-89%
- C: 70 - 79%  C-: 70 - 72%  C: 73 - 76%  C+: 77-79%
- D: 60 - 69%  D-: 60 - 62%  D: 63 - 66%  D+: 67-69%
- F: 0 - 59%

University Policies
Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/"
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics, Readings, Assignments, Deadlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug 22, 24</td>
<td>General Introduction to Class/Course Requirements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chap 1: General intro to Astronomy</td>
</tr>
<tr>
<td>2</td>
<td>Aug 27, 29, 31</td>
<td>Chap 1: continued</td>
</tr>
<tr>
<td>3</td>
<td>Sept 5, 7</td>
<td>Chap 2: Patterns in the Sky</td>
</tr>
<tr>
<td></td>
<td>Labor Day</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Sept 10, 12, 14</td>
<td>Chap 2: continued</td>
</tr>
<tr>
<td>5</td>
<td>Sept 17, 19, 21</td>
<td>Chap 2: finish</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chap 3: Laws of Motion</td>
</tr>
<tr>
<td>6</td>
<td>Sept 24, 26, 28</td>
<td>Chap 3: continued</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exam #1: Chap 1 &amp; 2</td>
</tr>
<tr>
<td>7</td>
<td>Oct 1, 3, 5</td>
<td>Chap 4: Light and Telescopes</td>
</tr>
<tr>
<td>8</td>
<td>Oct 8, 10, 12</td>
<td>Chap 4: continued</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chap 10.2 (the structure of the atom)</td>
</tr>
<tr>
<td>9</td>
<td>Oct 15, 17, 19</td>
<td>Chap 5: The Formation of Stars and Planets and Exoplanets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exam #2: Chaps 3, 4, 10.2</td>
</tr>
<tr>
<td>10</td>
<td>Oct 22, 24, 26</td>
<td>Chap 5: continued</td>
</tr>
<tr>
<td>11</td>
<td>Oct 29, 31</td>
<td>Chap 11: The Sun</td>
</tr>
<tr>
<td></td>
<td>Nov 2</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Nov 5, 7, 9</td>
<td>Chap 6/7: terrestrial planets</td>
</tr>
<tr>
<td>13</td>
<td>Nov 14, 16</td>
<td>Chap 6/7: continued</td>
</tr>
<tr>
<td></td>
<td>Veteran's Day</td>
<td>Exam #3: Chaps 5, 11</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Nov 19</td>
<td>Chap 8: The Giant Planets</td>
</tr>
<tr>
<td></td>
<td>Thanksgiving break</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Nov 26, 28, 30</td>
<td>Chap 8: continued</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chap9: Small Bodies</td>
</tr>
<tr>
<td>16</td>
<td>Dec 3, 5, 7</td>
<td>Chap 9: continued</td>
</tr>
<tr>
<td>17</td>
<td>Dec 10</td>
<td>Review; report presentations</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Dec 14</td>
<td>Final Exam (#4: Chaps 6, 7, 8, 9): Fri Dec 14 7:15 – 9:30 am</td>
</tr>
</tbody>
</table>