Astronomy 115-01: Introduction to Astronomy
Spring 2013 Syllabus

Instructor: Jessica Fielder
Email: jfielder@sfsu.edu (Include “Astro 115-01” in subject line)
Office: Science 356
Website: http://www.physics.sfsu.edu/~jfielder/11501S13.html
Class Meets: MWF, 11:10AM-12:00PM in Science 201
Office Hours: MWF 9-10AM, M 1-3PM, or by appointment

Required Materials:
1. The Essential Cosmic Perspective 6th Edition, by Bennett Donahue, Schneider, and Voit
2. Lecture-Tutorials in Astronomy 3rd Edition, by Prather, Slater, Adams, and Brissenden
3. You will also need to purchase access to MasteringAstronomy, the online homework system we will be using this semester. To login, you will need a reliable internet connection:
   a. Go to www.MasteringAstronomy.com
   b. Under Register, click the “Students” button. If you purchased an access card bundled with your textbook, enter the code in the card. If you bought a used book or a book that did not come with an access card, you can also purchase access directly from the registration page.
   c. To join the course, you will need to enter your SFSU Student ID number and the course ID: FIELDERASTRS13

A note about our textbook: there are several textbooks with the phrase “Cosmic Perspective” in the title, and they are NOT interchangeable! If you’re unsure as to which textbook you’ll need for this course, please feel free to double-check with me before you make a purchase.

Course Objectives

This class is an overview of astronomy for non-science majors. We will cover most of the material in the Bennett textbook, following roughly the same order of topics. In addition to lecture, we will have in-class activities and short writing assignments, which are designed to help you learn collaboratively. We will use some basic algebra to solve problems, and a calculator is allowed on all exams. The overreaching goals are for you to understand the nature of science through astronomy, understand the big ideas in astronomy, and develop a lifelong interest in astronomy and current events surrounding astronomy.

Important Dates

Feb 8: Last day to drop without a W
Feb 22: Last day to add by exception
Mar 8: FIRST MIDTERM (in class)
Mar 22: Last day to select CR/NC grading option
Mar 25-29: Spring Break (No class)
Apr 1: Cesar Chavez Day (No class)
Apr 8: SECOND MIDTERM (in class)
Apr 26: Last day to withdraw* without documentation
May 3: THIRD MIDTERM (in class)
May 17: Last class meeting
May 20: FINAL EXAM 10:45 AM – 1:15 PM

Student Learning Outcomes

After successfully completing this course, students will be able to:

1. Explain the steps in the scientific method of inquiry, which involves gathering observable, empirical and measurable evidence subject to specific principles of reasoning, and recognizing that reproducible observation of a result is necessary for a theory to be accepted as valid by the scientific community.

2. Analyze specific examples of how the scientific method has been used in the past to collect data through observation and experimentation, and to formulate, test and reformulate hypotheses about the physical universe; evaluate scientific information from a variety of sources and use that information to articulate well-reasoned responses to scientific concerns.

3. Evaluate scientific information from a variety of sources and use that information to articulate well-reasoned responses to scientific concerns.

4. Recognize the utility of alternative scientific hypotheses in the development of scientific theories, research and applications and understand how scientific evidence is used to develop hypotheses and theories.

5. Describe ethical dilemmas arising out of contemporary scientific research and applications, which may include those related to social justice, and may have implications for local and/or global communities.

6. Use scientific theories to explain phenomena observed in laboratory or field settings, and

7. Discuss the relevance of major scientific theories and research to their lives.

Course Structure

Your grade will be determined based on your performance on in-class activities, homework assignments, and exams as described below in the grade policy.

In-class Activities: We will have weekly in-class activities out of the Lecture Tutorials workbook and short written responses to questions. These are designed to help you learn collaboratively and gauge your own level of understanding of the material. You MUST bring your Lecture Tutorials book to EVERY CLASS and be present in class in order to complete these activities. Written responses will be collected spontaneously once a week for participation credit. Each response is worth 1% of your total grade.

Homework: We will have homework assignments (about 1 per week) throughout the semester, and homework will contribute 30% of your overall grade. These will contain thought questions designed to help you synthesize information from the readings and lectures, and a few math-based problems. Every homework assignment has a firm due date, and homework handed in late will be marked down 10% per day. Homework more than 10 days late will receive no credit. All problem sets must be done using the Mastering Astronomy system (see registration details above). In addition to the problem sets, there will be assigned reading from the textbook. It is recommended that you read the assigned sections at least once before lecture, as this will help the information presented in class make more sense.
Exams: There will be three in-class exams during the semester, each covering about one-third of the material. The lowest of these three exam scores will be dropped, and the remaining two exams will be worth 15% of your overall grade. There will also be one cumulative final exam during finals week worth 25%, covering material from the entire semester (note that the final exam cannot be dropped, only one of the midterms). All exams will be closed book and closed notes, and primarily multiple-choice questions. You will need a #2 pencil and an 882-E Scantron form for each exam, and you are allowed a calculator. Exam dates are listed above in the “Important Dates” section, please take note and arrive on time. If you arrive after someone else has finished the exam, you may not take that exam. The final exam date is set by the University and is inflexible, but you may schedule to take a lecture exam earlier, with sufficient advance warning (at least two weeks). There will be no make-up exams without prior arrangement.

Grade Policy

Grades are based on a combination of homework assignments, in-class participation, and exams with the weights shown below. Plus and minus grades are in the top or bottom 1% of the grade bracket (for example, a D+ ranges from 58.9% to 59.9% and a B- ranges from 75% to 76%).

<table>
<thead>
<tr>
<th></th>
<th>Homework:</th>
<th>Participation:</th>
<th>Midterms (best 2):</th>
<th>Final Exam:</th>
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<tbody>
<tr>
<td></td>
<td>30%</td>
<td>15%</td>
<td>30%</td>
<td>25%</td>
</tr>
<tr>
<td>A = 90-100%</td>
<td>CR = 60-100%</td>
<td>B = 75-89.9%</td>
<td>C = 60-74.9%</td>
<td>D = 45-59.9%</td>
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<tr>
<td>CR &lt; 59.9%</td>
<td></td>
<td>NC &lt; 59.9%</td>
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<td>F &lt; 44.9%</td>
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</table>

Contacting Me

If you have questions about the anything related to this class (or even astronomy in general), please don’t hesitate to ask me. The best way to do this is in person, during office hours. Office hours are your chance to get one-on-one help from me, so use them as often as you can! If your question is short, I might have time to answer it outside office hours, or right before or after class, but I may ask you to come back if I am busy. If you would like to meet in person and are not free during the regular office hours, let me know so we can make an appointment. You can also contact me via email (see the first page for my email address). When emailing me, please include the words “Astro 115-01” somewhere in the subject line so my spam filter doesn’t eat your message, and so I know which section you are in. I will try my best to reply before the next class, but this is not always possible.

Contacting MasteringAstronomy

If you have technical issues with the online homework system, see the MasteringAstronomy support page. They maintain FAQ pages, how-to videos, a searchable help database, and can provide assistance via phone, email, and online chat.

Academic Integrity

SFSU maintains a firm policy on plagiarism and cheating, which can be found in the SFSU Bulletin. The Physics and Astronomy department also maintains a set of guidelines stating specific practices that are prohibited and the procedures for handling cases of academic cheating or plagiarism. This policy can be viewed online at:

Disability Policy

Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/TTY 415-338-2472) or by email (dprc@sfsu.edu).

Schedule (Subject to change)

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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Lecture Tutorials</th>
<th>Reading</th>
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<tbody>
<tr>
<td>1/28-2/1</td>
<td>Intro &amp; Units, Night Sky</td>
<td>Position &amp; Motion</td>
<td>Chapter 1</td>
</tr>
<tr>
<td>2/4-2/8</td>
<td>Motion and Seasons</td>
<td>Seasonal Stars</td>
<td>Chapter 2</td>
</tr>
<tr>
<td>2/11-2/15</td>
<td>Seasons and Moon Phases</td>
<td>Seasons &amp; Cause of Moon Phases</td>
<td>Chapter 3</td>
</tr>
<tr>
<td>2/18-2/22</td>
<td>History of Astronomy, Kepler’s Laws</td>
<td>Kepler’s 3rd Law</td>
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<tr>
<td>3/4-3/8</td>
<td>Light, Atoms, and Thermal Radiation, <strong>EXAM 1</strong></td>
<td>Light and Atoms &amp; Blackbody Radiation</td>
<td>Chapter 5</td>
</tr>
<tr>
<td>3/11-3/15</td>
<td>Spectra, Doppler Shift, and Telescopes</td>
<td>Types of Spectra &amp; Telescopes and Earth’s Atmosphere</td>
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<tr>
<td>4/3-4/5</td>
<td>The Sun’s Activity Cycle, Fusion in the Sun</td>
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<td>Chapter 10</td>
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<tr>
<td>4/8-4/12</td>
<td><strong>EXAM 2</strong>, Parallax and Distances</td>
<td>The Parsec &amp; Luminosity, Temperature, and Size</td>
<td>Chapter 11</td>
</tr>
<tr>
<td>4/15-4/19</td>
<td>Star Properties, Star Formation</td>
<td>The HR Diagram, Star Formation and Lifetimes</td>
<td>Chapter 12</td>
</tr>
<tr>
<td>4/22-4/26</td>
<td>Stellar Evolution and Stellar Death</td>
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<td>Chapters 13 and 14</td>
</tr>
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<td>4/29-5/3</td>
<td>Neutron Stars, and Black Holes, <strong>EXAM 3</strong></td>
<td>Stellar Evolution</td>
<td>Chapters 14 and 15</td>
</tr>
<tr>
<td>5/6-5/10</td>
<td>The Milky Way and other Galaxies</td>
<td>Milky Way Scales and Galaxy Classification</td>
<td>Chapters 15 and 16</td>
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<tr>
<td>5/13-5/17</td>
<td>Cosmology and Life in the Universe</td>
<td>Expansion of the Universe, Looking at Distant Objects</td>
<td>Chapter 18 and 6.5</td>
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<tr>
<td><strong>Mon. 5/20</strong></td>
<td><strong>Final Exam, 10:45AM-1:15PM</strong></td>
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Astronomy 115 Student Contract

I understand that by enrolling in Professor Fielder’s Astronomy 115 section I agree to the following:

1. **Show up.** I promise to attend every lecture (except in case of a dire emergency) and realize that my chances of obtaining a good grade are significantly lower if I miss lectures.

2. **Respect other students.** I understand that questions are welcome at any time throughout the course, and time will be provided for discussion of the subject materials among students. However, off-topic discussions between students are disruptive, and students who repeatedly engage in off-topic discussions will be asked to leave the lecture hall.

3. **Keep it distraction-free.** I understand that phones, media players, laptop computers, and other electronic devices must not be used during the lecture, unless required to support a disability. Students who use such devices without permission will be asked to put them away. Simple pocket calculators are exempt from this requirement, and may be used at all times.

4. **Homework is online only.** I understand that an internet connection is required to do the homework assignments. It is my responsibility to make sure that I have sufficient internet access to complete the homework assignments. If I plan to use SF State’s public computer rooms, I understand that waiting times to use the public computers can be very long during peak hours, and that this cannot be used as an excuse for late homework.

5. **Have a good Internet browser.** If I plan to use my personal computer to do the homework assignments, I understand that a relatively up-to-date, flash-enabled browser (Internet Explorer 7 or later, Mozilla Firefox 3 or later, or Apple Safari 3 or later) is required.

6. **Personal computers need care.** I understand that viruses, malware, dropped internet connections, and certain browser add-ons (such as AdBlock or Flashblock) may interfere with my access to the online component of this course. These and similar errors are not the responsibility of Professor Fielder and may be resolved by contacting the SFSU computer help desk, or the MasteringAstronomy support team. Unless the errors affect everyone in the course, they do not constitute a valid excuse for late homework or other missed assignments.

7. **Email needs to be checked.** I have a functioning email address and will check my email at least weekly for course updates from Professor Fielder. When writing to Professor Fielder, I will put “Astro 115-01” in the subject of my email, and include my full name in the email. I realize that certain email providers, such as AOL, can block emails with attachments, or have overly aggressive spam filters (such as whitelists). It is my responsibility to configure these unreasonable spam prevention features so that I do not miss critical emails from Professor Fielder or other SFSU faculty and staff.