Course Syllabus
Astronomy 20 Online, Sections 4840, 4841 Fall 2008

Instructor: Dave Pierce

On-Campus Office Hrs: Fri. 4:00-5:00pm, in Planetarium on Exam Review days. Or by appointment.

Contact: da_pierce@sbcglobal.net, Subject: 4840 or 4841

Tutor: Jessica Asbell, jlasbell@yahoo.com Library Learning Center. Tu, Th noon – 2:30.

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Text: Chaisson & McMillan, Astronomy Today, 5th or 6th ed. or

Resources for the course include: The Internet, reading from the text, journals, newspapers, other science books. Films, TV science programs, extra credit projects.

Software and Hardware: You will need
Screen resolution set to 1024 x 768.
Regular access to a computer, not a friend’s that you use once in a while.
PCs should be running Windows XP or later.
Macs should have OS X or later.
System should have at least 512 Ram. More is better.
An reliable Internet Service Provider, like America Online (aol), or Yahoo, for example.
A Modem at least 56K; high-speed is much better.
An e-mail address.
World Wide Web browser, like Microsoft Internet Explorer 6.0 SP2 or Mozilla Firefox 2.0.
A recent version of the word processing program Microsoft Word is required. Microsoft Excel and Powerpoint will be useful.

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The Grade you earn for Astronomy 20 is based on your achievements on four exams (100 each), seven online assignments (15 each), one observing project (100), plus your extra credit (40 max).

Grade scale is: For each exam For the course
89 - 100 A 545 - 605 A
78 - 89 B 472 - 544 B
65 - 77 C 393 - 471 C
56 - 64 D 339 - 392 D

A liberal education will not tell you how to solve all the problems of the universe. But it will make you wiser about the mysteries of the universe. Kingman Brewster, Jr. 1976
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>26 Aug</td>
<td>1</td>
<td><strong>Orientations</strong> 4:30 - 6pm, or 7 - 8:30pm, MCS 8</td>
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<tr>
<td>26 Aug – 7 Sep</td>
<td>1</td>
<td>Charting the Heavens</td>
</tr>
<tr>
<td>1 Sep</td>
<td>1,2</td>
<td><strong>Assignment 1 Due</strong></td>
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<tr>
<td>8-14 Sep</td>
<td>2</td>
<td>The Copernican Revolution</td>
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<tr>
<td>12 Sep</td>
<td>1,2</td>
<td><strong>Review</strong> for First Exam, Planetarium, 5:00 - 7:00pm.</td>
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<tr>
<td>13 Sep, 6pm – 14 Sep, 8pm</td>
<td></td>
<td><strong>First Exam</strong>, Chapters 1, 2</td>
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<tr>
<td>15-21 Sep</td>
<td>3</td>
<td>Radiation</td>
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<tr>
<td>15 Sep</td>
<td></td>
<td><strong>Assignment 2 Due</strong></td>
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<tr>
<td>19 Sep</td>
<td></td>
<td>**** Last day to withdraw w/o mark on record ****</td>
</tr>
<tr>
<td>22-28 Sep</td>
<td>4</td>
<td>Spectroscopy</td>
</tr>
<tr>
<td>29 Sep – 5 Oct</td>
<td>5,6</td>
<td>Telescopes, The Solar System.</td>
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<tr>
<td>29 Sep</td>
<td></td>
<td><strong>Assignment 3 Due</strong></td>
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<tr>
<td>3 Oct</td>
<td>3-6</td>
<td><strong>Review</strong> for Second Exam, Physics-101, 5:00 - 7:00pm.</td>
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<tr>
<td>4 Oct, 6pm – 5 Oct, 8pm</td>
<td></td>
<td><strong>Second Exam</strong>, Chapters 3 – 6</td>
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<tr>
<td>6 – 12 Oct</td>
<td>7</td>
<td>Earth</td>
</tr>
<tr>
<td>13 – 19 Oct</td>
<td>8</td>
<td>The Moon and Mercury</td>
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<tr>
<td>13 Oct</td>
<td></td>
<td><strong>Assignment 4 Due</strong></td>
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<tr>
<td>20 – 26 Oct</td>
<td>9</td>
<td>Venus</td>
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<td>27 Oct</td>
<td>10</td>
<td>Mars</td>
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<tr>
<td>3 Oct</td>
<td></td>
<td><strong>Assignment 5 Due</strong></td>
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<tr>
<td>1 Nov, 6pm – 2 Nov, 8pm</td>
<td></td>
<td><strong>Third Exam</strong>, Chapters 6 – 10</td>
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<tr>
<td>3 – 9 Nov</td>
<td>11</td>
<td>Jupiter</td>
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<tr>
<td>8 Nov, 6pm – 9 Nov, 8pm</td>
<td></td>
<td><strong>Make-Up Exam</strong>, Chapters 1 – 10</td>
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<tr>
<td>10 – 16 Nov</td>
<td>12</td>
<td>Saturn</td>
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<tr>
<td>14 Nov</td>
<td></td>
<td>**** Last day to withdraw with grade of W ****</td>
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<tr>
<td>17 – 23 Nov</td>
<td>13</td>
<td>Uranus, Neptune, and Pluto</td>
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<td>17 Nov</td>
<td></td>
<td><strong>Assignment 6 Due</strong></td>
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<tr>
<td>24 – 30 Nov</td>
<td>14</td>
<td>Solar System Debris</td>
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<tr>
<td>1 – 6 Dec</td>
<td>15</td>
<td>Formation of the Solar System</td>
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<tr>
<td>1 Dec</td>
<td></td>
<td><strong>Observing/Research Project Due</strong></td>
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<tr>
<td>5 Dec</td>
<td>11-15</td>
<td>(Late projects accepted with 10% penalty each day)</td>
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<tr>
<td>6 Dec, 6pm – 7 Dec, 8pm</td>
<td></td>
<td><strong>Review</strong> for Final Exam, Planetarium, 5:00 - 7:00pm.</td>
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<tr>
<td>8 Dec</td>
<td></td>
<td><strong>Final Exam</strong>, Chapters 11 - 15</td>
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<td>9 Dec</td>
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<td><strong>Assignment 7 Due</strong></td>
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<td></td>
<td>All Extra Credit Due (none accepted after this date)</td>
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Required Work
You are required to submit a total of seven Assignments, worth 15 points each. Work is due before midnight of the due dates shown on the Schedule (previous page). Late Assignments are not accepted. It is your responsibility to notify the instructor if you miss an Assignment but wish to remain in the class. Failure to notify may result in your being dropped from the class. Assignments are located in the Modules link.

One Observing Project is required. It’s worth 100 points, 17% of your grade. Several options are offered in the Modules link, or you may propose an interesting project of your own design with the instructor’s approval.

You are required to complete four online Exams, each worth 100 points. Exams comprise 66% of your point total for the course. Exams are found in the Test Center.

Optional Work
You may do up to 40 points worth of Extra Credit work to improve your grade. Options are offered in the Modules link, or you may propose something interesting of your own design with the instructor’s approval. It has been my experience that nearly half the students in my Astronomy classes can improve their course letter grade by doing up to 40 points of extra credit.

You may test yourself to see if you are learning and understanding the material by answering the Questions and Self-Tests found at the end of each chapter in the text. Some of the questions may be taken electronically as Self Quizzes in the Test Center link. Take these as often as you need to. The scores do not count toward your course grade, but they do show how well you understand the material, and some questions appear on Exams.

You may take the Make-Up Exam (A) if you miss one of Exams 1-3 or (B) to replace a low score on Exam 1-3.

Attendance and Participation
Attendance in the course is based on your participation in required events like Exams and Assignments. If you fail to submit an Assignment by the due date or fail to take an Exam without notifying me, I will assume you wish to drop the course. And you may be dropped. If you plan to miss a required event and you wish to remain in the course, you must send me an e-mail requesting to stay enrolled. Otherwise you may be dropped.

Submitting someone else's work as your own is plagiarism, and will result in a grade of 0 on the work. Two students who submit identical work will both earn zero.

There are two prerequisites for this class. 1. A willingness and ability to do college level work. 2. The ability to frequently access the Internet and send and receive e-mail with attachments. If you are unable to meet these two requirements, you should drop the class and take it when you are better prepared.

A sense of curiosity regarding the universe in which we live is an essential asset in any science course. Develop the habit of questioning and wondering about the many things you experience and observe around you. Your course grade and, more important, the quality and enjoyment of your life will be immensely enriched.
Exams
Four Exams will be given online, three mid-terms and a final, each worth 100 points. Exams will be available online, at the Test Center, for a total of 26 hours on the Saturday-Sunday dates shown below and in the course Schedule. You have 80 minutes complete an exam. During the 26-hour period you may repeat an exam once. The best score you attain is recorded for you. Exam questions are randomly selected from a test bank, so you will not see the same questions on a second try. Note: As soon as you begin an Exam, it counts as a try. The Exam Format is mostly multiple choice, some essay, photo recognition, short answer, or simple calculation.

One Make-Up Exam will be offered, covering Cpts. 1-10. This Make-Up Exam may be taken for a previous mid-term exam that was missed, or it may be taken to improve your score on one of the three mid-terms. It cannot replace the final.

<table>
<thead>
<tr>
<th>First Exam (80 min.)</th>
<th>Second Exam (80 min.)</th>
<th>Third Exam (80 min.)</th>
<th>Make-Up Exam (80 min.)</th>
<th>Final Exam (80 min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sat. 13 Sep 6pm through Sun. 14 Sep. 8pm</td>
<td>Sat. 4 Oct. 6pm through Sun. 5 Oct. 8pm</td>
<td>Sat. 1 Nov. 6pm through Sun. 2 Nov. 8pm</td>
<td>Sat. 8 Nov. 6pm through Sun. 9 Nov. 8pm</td>
<td>Sat. 6 Dec. 6pm through Sun. 7 Dec. 8pm</td>
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Exam Preparation is best done by
1. Reading the chapters in the text.
2. Reading the Chapter Summaries in the 15 Lessons section, and visiting the links.
3. Reviewing the Study Notes in the Modules link. That is what you are tested on.
4. Taking the Self-Quiz for each chapter in the Test Center link.
5. Reviewing the Assignments. You may be tested on their contents.
6. Using any additional resources (PowerPoint, video clips, etc.) provided in the 15 Lessons link.

Etudes Online
Once you login to the Etudes Site, go to the tab (across the top) labeled ECC ASTR 20 DP... That is your Astronomy 20 course. Along the left side of the page the following menu items will be of interest:
Announcements: Check this each time you log in.
Syllabus: The Syllabus and the Course Schedule live here.
Modules: Most of the course material is here, including Fifteen Lessons (summaries of each chapter), Study Notes (what you’ll be tested on), Assignments (seven assignments plus guidelines for preparation and submission), Extra Credit options, Observing Project options, Heavenly Hints (letters from former successful students), and References (for the 15 lessons). Click the hourglass symbol at the upper left of the page to minimize.
Test Center: Self Quizzes and Exams.
Discussion & Private Messages: Student online interaction. The Instructor does not use this.
Gradebook: Points earned on required work.

Twinkle, twinkle little star.
I wonder just how dense you are.
So I take Astronomy,
And now they ask the same of me.
Wendy Williams, 1974
If you are preenrolled in Astronomy 20 online, then you should already be in the system. Do the following:

1. Log On to the Etudes server at [http://etudes-ng.fhda.edu/portal](http://etudes-ng.fhda.edu/portal)
   
   **user id:** first name, underscore, last name  [all lower case, no spaces]
   **password:** month and day of your birth  [four digits, no spaces]
   
   Example: Joe Star, born 25 May 1990 → joe_star, 0525

   If this combination doesn’t work, visit the following site:  

2. Click on: **ECC ASTR 20 4840 DP ...**

3. Check out the items in the left-hand menu. Most of the course is contained under the Modules link.

4. Go to My Workspace > Account > Modify Details.  
   Change the email address to the one you regularly use.  
   Change the password to something you will remember, and write it down.

If you are adding Astronomy 20 online, follow the guidelines provided by the instructor at the Orientation.

**Warning.** Etudes is a rather dysfunctional course management system, adopted by ECC in order to save money. Don’t expect too much from it. Those of you accustomed to a more robust CMS like Blackboard or WebCT will be disappointed. Do the best you can, or complain to the College president who forced the adoption.

The highest happiness of man as a thinking being is to probe what is knowable and to quietly revere what is unknowable.

Johann Wolfgang von Goethe
1. At the beginning of the semester go to My Workspace > Preferences > Announcements. Check: "Send me each notification separately" in order to receive each announcement via email.

2. Frequently check your email for messages regarding the course. We will communicate via personal email since Etudes does not have provisions for class-wide email.

3. Check the Heavenly Hints link for great advice from successful students and a tutor.

4. Go to the Modules link. Click on the Fifteen Lessons for the chapter you are beginning. These may take a while to load because of the images if you’re using a dial-up connection. Be patient. Check out the links to external sites. Astronomy is rich in interesting Web Sites. Check the Study Notes found in the Modules link. This is what you will be tested on.

5. Read the Chapter in the text.

6. Click on Test Center link. Take the Self-Quiz for the chapter. They are mostly from the text, and are generally more detailed than the questions you’ll see on exams. They may be taken as often as needed to review the material. The scores do not count toward your grade, but some of the questions will (not “might”) appear on Exams. When you are satisfied that you know the material, go to the next chapter. Utilize any additional resources (PowerPoint, video clips, etc.) offered in the Fifteen Lessons link.

7. Complete the Assignments as they come due. If you submit Assignments more than a day early, you may get them back with feedback in time for you to correct and resubmit (once) for a higher score.

8. Be sure to take all Exams. Even if you’re not prepared it’s good practice and review. Successful students never pass up an exam opportunity.

9. Be sure to complete the Project. It’s 17% of your grade, or about one letter grade. It is best to start early on this one, since work tends to pile up near the end of the semester. The Lunar Phase Cycle project takes about a month, and can be started a day or two after the new Moon. The Observation of the Setting (Rising) Sun project takes 11 weeks to complete the observations.

10. Be sure to do some Extra Credit, preferably early in the semester when your academic load is not so great.

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Leave the beaten track occasionally and dive into the woods. You will be certain to find something you have never seen before.

Alexander Graham Bell
Preparation and Submission
Astronomy 20 online

Work must be submitted by midnight of the due date. **Due dates** are given in the Course Schedule and Syllabus. Work must be **typed**, except for observing records. **References** consulted, including web sites, must be cited. Be sure to give the complete web address, not just “Wikipedia.”

Please include your **name & date** on each Assignment, Project, and Extra Credit. Also, be sure to **include your name in the body of any e-mail you send**. Due to the proliferation of spam and spyware, **I do not open unsigned e-mails**.

Assignments are worth 15 points each; projects are worth 100 points. Extra Credit values are given in the EXTRA CREDIT link. 40 points may be earned this way.

**Submission**

There are three ways to safely submit work for the online Astronomy 20 class.

1. **E-Mail**. Your work may be e-mailed as attachments. Send to da_pierce@sbcglobal.net, subject Astro. 20. In order for the work to earn credit, your e-mail must be dated **before** the deadline, and I must receive it. It is strongly recommended that you copy yourself with anything you submit via e-mail. Then check to see what you actually sent. Work must be done in **Microsoft Word, Excel, or Powerpoint**. Unfortunately, my computer can’t interpret other formats.

2. **Personal Delivery**. You may submit material to the Natural Science Div. office at the northeast end of campus, Mon-Fri, 8am – 4:30pm. Ask the office person to date-stamp your work and put it in my campus mail box. Then e-mail me that you have left it in the office. Do not leave work with someone else and expect that it will get to me. It is **your** responsibility to submit work to me; ECC abounds with absent-minded profs.

3. **US Mail**. Be sure the envelope is postmarked no later than the date the work is due. You should go to the post office to ensure this; dropping something in a mailbox does not guarantee a postmark the same day. If there is no legible postmark it will be dated the day I get it out of my campus mail box. Please mail to

Dr. Dave Pierce  
Astronomy Dept.  
El Camino College  
Torrance 90506

Then send me an e-mail stating that you have surface-mailed your work.
Notes:

1. Include your given name and date on everything you submit. The role book does not show anyone named Astro_Princess@extraterrestrials.com.

2. Email is not 100% reliable. Emails get lost in the ether, sent to the wrong recipient, or sent without attachments. Or work is done in some unintelligible word processing system. This is another reason to submit work early. Be sure to copy yourself on all email; then look at the copy to see what you sent.

3. It is strongly recommended that you submit work early. I will be happy to offer feedback on any material that is submitted at least one day early. Such early work may be corrected and resubmitted once.

Every job is a self portrait of the person who did it. Autograph your work with excellence.
COURSE OBJECTIVES -- At the successful completion of the course the student shall be able to:

1. Judge whether a particular study is a science or a “pseudo-science” using the scientific method.
2. Diagram the positions of the Sun, the Earth, and the Moon during solar and lunar eclipses.
3. Predict the phase of the Moon that would be seen in the sky, given the positions of the Earth, the Sun, the Moon, and the observer.
4. Explain the causes of seasonal variations in the length of the day, the direction of sunrise and sunset, and the amount of solar heating.
5. Illustrate the apparent motions in the sky of inferior and superior planets.
6. Explain how electromagnetic radiation and astronomical instruments are used to reveal the properties of stars and planets.
7. Compare the characteristics of the eight planets and major moons of the Solar System.
8. Discuss the basic principles of spaceflight. Evaluate the impact of the major manned and unmanned space missions on planetary astronomy.
9. Estimate the age of the solar system, given data on the isotopic composition of meteorites.
10. Construct a history of a planet in terms of the processes of impact, volcanism, tectonics, and erosion.
11. Describe the composition, structure, and properties of planetary atmospheres. Contrast the conditions on planets with atmospheres with the conditions on airless worlds.
12. Explain the climatic conditions of the inner planets.
13. Compare and contrast the terrestrial, jovian, and uranian planets.
14. Evaluate the possibilities for life on a given planet.
15. Sketch how the planets were formed.

There is one gift above all others that makes man unique among all the animals, and it is the gift displayed everywhere here: his immense pleasure in exercising and pushing forward his own skill
Jacob Bronowski, 1973