ASTRONOMY 125 – Stars, Galaxies, and Cosmology

**Spring 2014**

**Instructor:** Darryl Stanford

**Lecture**: Monday, Wednesday and Friday from 12:10 PM to 1:00 PM in 36-100.

**Office Hours**: Tuesday and Wednesday from 1:00 to 3:00 PM, Thursday from 6:00 to 7:00 PM and Friday from 2:00 - 3:00 PM in my office **36-105E**, except Tuesday from 2 :00 – 3:00 PM is in the **ISC, 36-110.**

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**My Website address**: http://www.smccd.net/accounts/stanfordd

**Astronomy Department website address**: http://collegeofsanmateo.edu/astronomy

**Text: Stars, Galaxies and Cosmology - Bennett, Donohue, Schneider, Voit, 7th edition.**

**DESCRIPTION:** This is an introductory astronomy class on stars and galaxies for students who know nothing about astronomy. We will cover the sun, star formation, galaxies, black holes, dark matter and cosmology. We will also dabble in string theory and relativity. In the reading, you will come across some mathematics that you may not understand. DON'T PANIC! You will not have to perform any calculations. However, you will be required to understand what a few equations mean and how they are used. There will be relatively few of them. Above all, don't be afraid to ask questions because that is the only way you will learn!

**CLASS FORMAT**: The class lessons will consist of a mixture of in-class lecture notes, movies and videos, all done in the planetarium. Make sure that you take good notes, since the exams will come primarily from your notes and any discussion we have on the videos.

**iClickers:** We will be using the ver 2 iClicker for in-class questions, test review questions, class participation and to provoke discussions. Clicker points will be normalized to 40 points or 10% of your grade and is **mandatory** for the class. See the **iClicker Handout handout** for more info.

**Notes, Handouts:** The lecture notes as well as the syllabus, iClicker and Mastering Astronomy handouts are on **WebAccess**.

**EXAMS:** The examinations will be taken from the lecture notes, which will be in Powerpoint format, videos, textbook as well as any handouts that may be given to you. **There will be three midterms and the final exam. I will drop your lowest scoring midterm exam, not the final. That also means, there will be no make-up exams.** If you miss an exam, that exam will count as your lowest one. Each exam will be worth 105 pts. It will consist of 50 multiple choice questions, worth 2 pts each, for a total of 100 pts and a short answer bonus question, worth 5 pts, for a total of 105 pts. **The mid-terms and final will be about 1 hour long. The final exam will not be comprehensive. It will cover where we left off after the 3rd midterm.**

**Extra Credit:** A student can get up to 30 points extra credit. You can get them by going to planetarium shows, observing sessions, etc and writing 2 pages on what you learned.

**PLAGIARISM**: If anyone is caught cheating on an exam, that person or those persons will get a **big fat zero** for that exam. **DON’T CHEAT!**

**CLASS ETIQUETTE**: **Keep chatter to an absolute minimum. There is no eating or drinking (except water) in the planetarium. Please refrain from using your iPods and laptops during class. There is nothing as annoying or infuriating as students texting or staring at their laptops during class. If you feel that you must do so, please leave the class.**

**To Be Arranged or TBA hours:**This course requires one TBA hour to be done per week, or 16 TBA’s for the semester. These TBA hours are not homework but are instructional activities designed to augment the lecture portion of the course. Look at the TBA handout on WebAccess.

**Homework**: There will be numerous homework sets given out which will be due the following week. Each problem will be worth from 10 to 20 points for a total of ~200 points. But these points will be normalized to 60 points or 15% of your grade. **Important: The problems will be done online, using the Mastering Astronomy website that works with the textbook. See the additional Mastering Astronomy handout**.

**STUDENT LEARNING OBJECTIVES**: Here are the student learning objectives for the class:

Upon completion of this course, a student will be able to:

• Discriminate between normal and active galaxies.

• Recognize the importance of the proton-proton chain in the sun

• Explain the different methods for determining stellar distances.

• Assess the significance of the H-R diagram as related to stellar classification.

• Assess the role of dark energy in determining the eventual fate of the universe.

**GRADING**: Here is the total points breakdown:

Midterm Exams 200 pts

Final Exam 100 pts

Homework 60 pts

iClicker 40 pts

400 pts

**Day** **Topics/Assigned Reading**

Jan 13, 15 Ch 1 Our Place in the Universe,

**Jan 20 Martin Luther King Day – No classes**

Jan 17, 22 Ch 2 Discovering the Universe for Yourself

Jan 24, 27, 29, 31 Ch 3 The Science of Astronomy, Ch 4 Making Sense of the Universe

Feb 3, 5, 7 Ch 5 Light and Matter

**Feb 10** ***Quiz 1 - Ch 1, 2, 3, 4, 5***

Feb 12 Ch 6 Telescopes

**Feb 14, 17 President’s Day – No classes**

Feb 19, 21, 24, 26 Ch 14 Our Star, Ch 15 Surveying the Stars

Feb 28, Mar 3, 7 Ch 15 Surveying the Stars, Ch 16 Star Birth, Ch 17 Stellar Evolution

**Mar 5 Flex Day. No class**

Mar 10, 12Ch 17 Stellar Evolution

**Mar 14** ***Quiz 2- Ch 6, 14, 15, 16, 17***

Mar 17, 19, 21 S3 Spacetime and Gravity

Mar 24, 26, 28 Ch 18 Bizarre Stellar Graveyard

**Mar 31, Apr 2, 4** **Spring break, no classes**

Apr 7, 9 Ch 19 Our Galaxy

Apr 11, 14, 16 Ch 20 Galaxies and Foundations of Cosmology

**Apr 18** ***Quiz 3 Ch S3, 18, 19, 20***

Apr 21, 23, 25 Ch 21 Galaxy Evolution

Apr 28, 30, May 2 S4 Building Blocks of the Universe

May 5, 7, 9 Ch 22 Dark Matter, Dark Energy

May 12, 14, 16 (last class) Ch 23 Beginning of Time

**Monday, May 19**  **FINAL (covering Ch 21, S4, 22, 23) 11:10 - 1:40 PM**