### Course Description: ACGM or WECM

Study of stars, galaxies, and the universe outside our solar system. May or may not include a laboratory. (Cross-listed as PHYS 1403, 1303, & 1103)

### Course Description: HCC Catalog Description

An introduction to the present cosmological theories about the structure and evolution of the universe. A comparison with previous models since antiquity. A study of the celestial sphere and the constellations, the motions in the sky. A study of gravity, light, radiation, optics, telescopes and spacecraft. A survey of the stars, clusters, galaxies, super clusters, their properties, structure and evolution. Laboratory includes an introduction to observational techniques using telescopes, in-class projects/exercises on spectroscopy, stellar positions, solar heating, planetary motions, solar and astrophotography, star clusters, galaxies, and cosmology.

### Academic Discipline Program Learning Outcomes

1. To provide the student a basic and practical understanding of Astronomy and recognize its relevance in our lives.

2. To prepare our students to meet with success in higher level Astronomy and other science courses when they transfer to four-year universities.

3. To enhance class lectures with a meaningful, hands-on laboratory experience involving making measurements, evaluating the results, and
<table>
<thead>
<tr>
<th><strong>Course Student Learning Outcomes (SLO)</strong></th>
<th><strong>Upon successful completion of this course the student will be able to:</strong></th>
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</table>

1. Develop an appreciation for the nature of science and the scientific method.
2. Demonstrate an understanding of the modern theories about the origins, structure and evolution of our star, the Sun, and other stars, galaxies and the universe as a whole.
3. Understand properties of stars, and galaxies.
4. Apply the scientific method to the study of the universe, and in varying degrees, to the student's own interest and particular field of work or study

Learning Objectives (Numbering system linked to SLO)

Upon completion of this course the student should be able to:

1.1 Compare and contrast the size of the planet Earth to size of the solar system and the Milky way Galaxy.
1.2 Distinguish among astronomical unit, light year and parsec.
1.3 Name a few of the constellations, and relate brightness of stars to their size and distance.
1.4 Describe the cycles of the moon state the conditions for solar and lunar eclipses.

2.1 Explain the difference between heliocentric and geocentric models of the universe.

3.1 Demonstrate knowledge of the basic laws of physics that pertain to the study of stars and galaxies.
3.2 Classify stars according to the luminosity temperature (Hertzsprung—Russell) diagram.
3.3 Write a summary of the different stages in star development, including it's birth, life, and death.
3.4 Understand properties of galaxies and how these properties are determined.

4.1 Demonstrate knowledge of the nature of expansion of the universe and what can be learnt from its expansion about the past, the present and the future of the universe.
4.2 Use the tools of astronomy, such skygazer and telescopes to measure the properties of celestial objects, and use that data to produce charts and graphs and solve problems*.

SCANS and/or Core Curriculum Competencies

Reading, Speaking/Listening, Critical Thinking, Computer/Information Literacy

Course Calendar Schedule may be subject to change as the course progresses

Week 1 Chapter 1 – Scale of the Cosmos, Chapter 2 – The Sky
Week 2 Chapter 3 – The Cycles of the Moon,
Week 3 Chapter 4 – The origins of Modern Astronomy Week 4 Chapter 5 – Newton, Einstein and Gravity,
Exam I
Week 7 Chapter 7 - Atoms and Starlight,
Week 8 - The Sun
Week 10 Chapter 9 – The Family of Stars, Chapter 10 – The interstellar Medium
Week 11 Chapter 11 – The Formation of Stars, Chapter 12 - Stellar Evolution
Week 12 Chapter 13 – The Death of Stars, Chapter 14 – Neutron Stars and Black Holes.

Exam II
Week 13 Chapter 15 – The Milky Way Galaxy, Chapter 16 - Galaxies
Week 14 Chapter 17, Galaxies with Active Nuclei,
Week 15 Chapter 18 – Cosmology in the 21st Century.
Chapter 26 Life on other Planets

Exam III
EXTENSIVE REVIEW

Exam IV is the:
FINAL EXAMINATION

Instructional Methods
Standard class lectures using the Smart screen with the use of PowerPoints, videos, self study using ipod software

Student Assignments
Homework will be assigned for each chapter covered and should be submitted for grading. In addition, students are strongly advised to attempt all end of chapter question from the text book. In general, student who fail to do these assigned activities do not do well in the course.

Student Assessment(s)
The overall score is based on the following:
- Three regular exams 60%
- Final Exam 20%
- Outside activities 10%
- Media presentation 10%
Overall Score = cumulative average of above

Instructor’s Requirements
Exams and Make-up Policy
Examinations will consist of three non-cumulative regular exams plus a comprehensive final. Make-up exams will not normally be given, so make every effort to take the exams on their scheduled dates. In the event that you must miss a regular exam, I will count the grade made on the final exam as the grade for the missed exam (for one missed exam only), and calculate the final course grade accordingly. If you do not miss any of the regular exams, I will replace your lowest exam score with your final exam score if the final exam grade is higher. This is intended to provide you a "second chance" if you do not do well on a particular exam. Remember that the final exam will be comprehensive (meaning that it will cover all of the material from the whole semester, not just the last part). Please note that all students are required to take the final (no student can be exempted).
### Program/Discipline Requirements

At the program level, the Astronomy Discipline strives to accomplish the Program Learning Outcomes, Student Learning Outcomes, and Learning Objectives as described above. Our aim is to ensure that students receive a challenging and rewarding experience in our Astronomy classes which will prepare them well for future Astronomy and related science courses that they may take in the future.

### HCC Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Points per Semester Hour</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>100 – 90:</td>
<td>4 points</td>
</tr>
<tr>
<td>B</td>
<td>89 – 80:</td>
<td>3 points</td>
</tr>
<tr>
<td>C</td>
<td>79 – 70:</td>
<td>2 points</td>
</tr>
<tr>
<td>D</td>
<td>69 – 60:</td>
<td>1 point</td>
</tr>
<tr>
<td>F</td>
<td>59 and below</td>
<td>0 points</td>
</tr>
<tr>
<td>E</td>
<td>Fail to withdraw from the course = FX</td>
<td>0 points</td>
</tr>
<tr>
<td>IP</td>
<td>(In Progress)</td>
<td>0 points</td>
</tr>
<tr>
<td>W</td>
<td>(Withdrawn)</td>
<td>0 points</td>
</tr>
<tr>
<td>I</td>
<td>(Incomplete)</td>
<td>0 points</td>
</tr>
<tr>
<td>AUD</td>
<td>(Audit)</td>
<td>0 points</td>
</tr>
</tbody>
</table>

IP (In Progress) is given only in certain developmental courses. The student must re-enroll to receive credit. COM (Completed) is given in non-credit and continuing education courses. To compute grade point average (GPA), divide the total grade points by the total number of semester hours attempted. The grades "IP," "COM" and "I" do not affect GPA.

### Instructor Grading Criteria

See the above descriptions of the lab, exams, homework, and final examination. The course grade is based on these four criteria according to the Assessment section above.

### Instructional Materials

**Textbook**


**eText:**


**Author(s):** Seeds/Backman

**Publisher:** Cengage Learning

**Copyright year:** © 2013
Note: Your section will use iPONS preloaded with all course materials, including audio and video lectures, ppt, and various astronomy applications software.

Access Student Services Policies on their Web site: http://hccs.edu/student-rights

Attendance Policy
The HCCS attendance policy is stated as follows: "Students are expected to attend classes regularly. Students are responsible for materials covered during their absences, and it is the student’s responsibility to consult with instructors for make-up assignments. Class attendance is checked daily by instructors. Although it is the responsibility of the student to drop a course for non-attendance, the instructor has full authority to drop a student for excessive absences. A student may be dropped from a course for excessive absences after the student has accumulated absences in excess of 12.5% of the hours of instruction (including lecture and laboratory time)."

Note that 12.5% is approximately 2 classes or labs for a 4 semester hour course, such as this one, which meets once per week in a normal 16 week semester. If circumstances significantly prevent a student from attending classes, please inform the instructor. Sometimes, outside circumstances can interfere with school, and the instructor will try to be as accommodating as possible, but please be aware of the attendance policy.

Policy Regarding Multiple Repeats of a Course
"NOTICE: Students who repeat a course three or more times may soon face significant tuition/fee increases at HCC and other Texas public colleges and universities. If a student is considering course withdrawal because he/she is not earning passing grades, conferring with the instructor/counselor as early as possible about study habits, reading and writing homework, test-taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available is advised."

Last Day for Administrative and Student Withdrawals
For 16-weeks Spring 2013 classes, this date is April 1, 4:30 PM. Students who are contemplating withdrawing from the class are urged to see the instructor first! Students may be doing better than they think.

Policy Regarding Withdrawals
Students desiring to withdraw from a class must do so by the above withdrawal date by filling out a withdrawal form at the registrar’s office. After this date, instructors can no longer enter a grade of “W” for the course for any reason.

ADA Policy
HCCS is committed to compliance with the American with Disabilities Act and the Rehabilitation Act of 1973 (section 504)

"Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the Disability Services Office at the respective college at the beginning of each semester. Faculty are authorized to provide only the accommodations..."
succeed in college classes or participate in college programs/activities, please contact the office of disability support services at the college. Upon consultation and documentation, a student will be provided with reasonable accommodations and/or modifications. Please contact the DSS office as soon as the term begins. For questions, contact Donna Price at (713) 718- 5165 or the Disability Counselor at HCC-Southwest: Dr. Becky A. Hauri at (713) 718-7909; also see the Schedule of Classes for additional DSS numbers.

Access DE Policies on their Web site:
http://de.hccs.edu/DistanceEd/DE Home/faculty resources/PDFs/DE Syllabus.pdf

Access CE Policies on their Web site:

Also visit the ADA web site at: http://www.hccs.edu/students/disability/index.htm. Faculty Handbook/ Faculty Orientation is also available at http://www.hccs.edu/students/disability/faculty.htm

**Academic Dishonesty**

Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty. "Scholastic dishonesty" includes, but is not limited to, cheating on a test, plagiarism, and collusion. "Cheating" on a test includes:

- Copying from another student's test paper;
- Using materials during a test that are not authorized by the person giving the test;
- Collaborating with another student during a test without authority;
- Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of an administered test;
- Bribing another person to obtain a test that is to be administered.

"Plagiarism" means the appropriation of another's work and the unacknowledged incorporation of that work in one's own written work offered for credit.

"Collusion" means the unauthorized collaboration with another person in preparing written work offered for credit.

**Students Discipline**

Any student failing to abide by appropriate standards of conduct during scheduled College activities may be asked to leave that day's class or activity by the instructor or another College official. (The student has the right to return to the next class/activity.) If a student refuses a request to voluntarily leave the classroom, security may be summoned to remove the student so that the scheduled activity may resume without further disruption. In cases of serious problems, the faculty member will document and report the incident to his/her supervisor. Further disciplinary action may be pursued.

**HCCS Sexual Harassment Policy**

HCC shall provide an educational, employment, and business environment free of sexual harassment. Sexual harassment is a form of sex discrimination that is not tolerated at HCC. Any student who feels that he or she is the victim of sexual harassment has the right to seek redress of the grievance. HCC provides procedures for reviewing and resolving such complaints through its Grievance Policy. Substantiated accusations may result in disciplinary action against the offender, up to and including termination of the employee or suspension of the student. In addition, complainants who make accusations of sexual harassment in bad faith may be subject to equivalent disciplinary action.
<table>
<thead>
<tr>
<th><strong>Test Bank</strong></th>
<th>N/A</th>
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<tbody>
<tr>
<td><strong>Scoring Rubrics</strong></td>
<td>Tests and the final will consist of multiple-choice and problem-solving questions</td>
</tr>
<tr>
<td><strong>Sample Assignments</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Sample Instructional Methods/Activities</strong></td>
<td>PowerPoint presentations, laboratory handouts and other instructional material</td>
</tr>
<tr>
<td><strong>EGLS Evaluation for Greater Learning Student Survey System</strong></td>
<td>At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and division chairs for continual improvement of instruction. Look for the survey as part of the Houston Community College Student System online near the end of the term.</td>
</tr>
</tbody>
</table>