COURSE DESCRIPTION

Study of the sun and its solar system, including its origin. Introduction to the solar system and the historical development of astronomical ideas. Topics include the study of the celestial sphere, the planets and their satellites, the sun and other objects in the solar system. Emphasis is on the application of scientific principles and explanation of phenomena in the solar system. The laboratory includes outdoor viewing sessions, constellation identification and the use of telescopes. (3 Lec., 3 Lab.)

Prerequisite: DREA 0093 or English as a Second Language (ESOL) 0044 or have met the Texas Success Initiative (TSI) standard in Reading.

COURSE OVERVIEW

This is a 4-credit hour core curriculum course that will fulfill the lab science requirements for non-science majors. Students will access lecture and lab materials on-line, using DCCCD's online system. In addition to using the text, students will use some free software for star maps and a few lab exercises. Stargazing sessions which are an important component of the lab activities, can be done on the Brookhaven College campus or on the field trip to a dark sky site, planned each semester. Students who cannot come to campus or the field trip may write essays to replace the star gazing.

STUDENT LEARNING OUTCOMES

1. Explain the daily and annual motions that occur in the sky.
2. Relate the contributions of astronomers through the centuries and describe the methods used by them to explain their observations.
3. Apply the principles to science to describe and explain various astronomical phenomena.
4. Describe the basic features of the Sun and explain how it produces its energy.
5. Compare the characteristics of the terrestrial and Jovian planets and their satellites.
6. Distinguish between comets, asteroids, meteors and explain current views on the formation of the solar system.
7. Describe the physical properties of the Sun and its effect on earth.
8. Perform lab experiments and exercises which illustrate the concepts listed above.
9. View the night sky, identify the brightest stars and constellations, and observe various objects through the telescope, to personally experience the marvels of the universe.
CORE COMPETENCIES

PHYS 1404 is part of the Life and Physical Sciences Component Area 030.

(i) Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method.

(ii) Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

(iii) The following four Core Objectives are addressed in this course to fulfill this requirement:

- **Critical Thinking Skills:** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
- **Communication Skills:** to include effective development, interpretation and expression of ideas through written and visual communication.
- **Empirical and Quantitative Skills:** to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.
- **Teamwork:** to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

COURSE MATERIALS

The textbook for this course is *Cosmic Perspective* by Jeffrey Bennett, Megan Donahue, Nicholas Schneider & Mark Voit. **Eighth Edition.** Published by Pearson, 2017. ISBN: 978-0-13-411031-8 (loose-leaf version) or 978-0-13-12755-2 (eText)

Other items needed for the course are a scientific calculator with exponential notation key, a metric ruler and protractor.

The University of Nebraska website has free animations which are helpful to understand astronomical concepts. They can be accessed at: [http://astro.unl.edu/animationsLinks.html](http://astro.unl.edu/animationsLinks.html)

COURSE OUTLINE

To be successful in this course it is necessary for you to take responsibility for your learning, since you will not be attending class in a traditional format. As an overview, keep in mind the course is divided into 12 units with a quiz after every lesson. There are also 6 labs during the semester. During a 5-week summer semester **you will be submitting a quiz, lab or test every day.** The list below shows the dates for the work to be completed.

<table>
<thead>
<tr>
<th>Week</th>
<th>Unit</th>
<th>Topics</th>
<th>Chapter</th>
<th>Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>The Big Picture</td>
<td>1</td>
<td>Lab 1 – Stars and Constellations</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>The Celestial Sphere, The Moon, Eclipses</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>History of Astronomy and its Foundation</td>
<td>3</td>
<td>Lab 2 – Phases of the Moon</td>
</tr>
<tr>
<td>2</td>
<td>(1, 2, 3)</td>
<td>Test 1 (7-17-19 to 7-18-19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>Motion, Energy, and Gravity</td>
<td>4</td>
<td>Lab 3 – Kepler’s Laws</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>Light and Matter</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>Telescopes</td>
<td>6</td>
<td>Lab 4 – Annual Motion of the Sun</td>
</tr>
<tr>
<td>3</td>
<td>(4, 5, 6)</td>
<td>Test 2 (7-24-19 to 7-25-19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>The Solar System and its Formation</td>
<td>7,8</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>Planetary Geology</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>Planetary Atmospheres</td>
<td>10</td>
<td>Lab 5 – Scale of the Solar System</td>
</tr>
<tr>
<td>4</td>
<td>(7, 8, 9)</td>
<td>Test 3 (7-31-19 to 8-1-19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>The Jovian Planets</td>
<td>11</td>
<td>Lab 6 - Astronomy Videos</td>
</tr>
<tr>
<td>5</td>
<td>11</td>
<td>Asteroids, Comets, Dwarf Planets, and Exoplanets</td>
<td>12,13</td>
<td>Lab 7 – Space Exploration via the Net (optional)</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>The Sun</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>(10, 11, 12)</td>
<td>Test 4 (8-7-19 to 8-8-19)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Course Calendar lists the topics and due dates for items to be submitted. The work must be done in the identified time-frame, so you can keep up with the class. I strongly suggest you set aside at least three to four hours per day to work on this course. Test preparation will need additional hours. Remember there's a lab component, and each lab will take about two to three hours of your time.

EVALUATION

The final grade will be calculated as follows:

<table>
<thead>
<tr>
<th>Grade Item</th>
<th>Points Each</th>
<th>Total Points</th>
<th>Percent of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation Quiz</td>
<td>1 @ 10 points</td>
<td>10 points</td>
<td>1.1%</td>
</tr>
<tr>
<td>Unit Quizzes</td>
<td>12 @ 20 points</td>
<td>240 points</td>
<td>26.7%</td>
</tr>
<tr>
<td>Lab Exercises</td>
<td>6 @ 25 points</td>
<td>150 points</td>
<td>16.7%</td>
</tr>
<tr>
<td>Stargazing Activities</td>
<td>4 @ 10 points</td>
<td>40 points</td>
<td>4.4%</td>
</tr>
<tr>
<td>Discussion Boards</td>
<td>5 @ 12 points</td>
<td>60 points</td>
<td>6.7%</td>
</tr>
<tr>
<td>Tests</td>
<td>4 @ 100 points</td>
<td>400 points</td>
<td>44.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>900</strong></td>
<td><strong>100 %</strong></td>
<td></td>
</tr>
</tbody>
</table>

Divide the total by 9 to obtain the percentage and determine your final grade

A = 90 to 100  B = 80 to 89  C = 70 to 79  D = 60 to 69  F = below 60

Incomplete grades are given only when an unforeseen emergency prevents a student from completing the course work. Division deans must approve all "I" grades.

**Quizzes:** The course is divided into twelve units and there is a quiz for each unit, which is graded for 20 points. Late assignments will not be graded, unless you have made arrangements with the Instructor. A 10-point orientation quiz is also required, to familiarize you with the various components of the website. Feedback on graded Quizzes is released for your review when all grading for a given assignment has been completed.

**Lab Exercises:** There are 6 lab exercises scheduled, graded for 25 points each. Students are welcome to come up to campus for Open Lab for assistance (See Open Lab Hours at the top of the Syllabus). A student must make a passing grade in lab to receive a passing grade in the course.

**Discussion Board:** 5 discussion topics will be posted on the Discussion Board at regular intervals. Post your frank and thoughtful responses to each original topic and at least one other classmates for each forum. Follow the rules for online etiquette. Your participation on the discussion board will be graded for 60 points of your final grade.

**Tests:** There will be four tests, each worth 100 points. Tests will be multiple choice, fill in the blanks, true false and short answer. Some questions may involve simple computations. All tests are taken on-line and are open-book, but are timed for 120 minutes. You will receive instructions and passwords prior to the test in the weekly emails.

**STARGAZING ACTIVITIES:** At Brookhaven College you have the opportunity to do real star gazing on campus or on field trips using telescopes and binoculars. However, since this is an online course, an optional lab (Lab 7) which consists of writing essays, is also available in case stargazing is not possible.

Stargazing sessions conducted by Chaz Hafey will be held at the Brookhaven College campus on Wednesday evenings, clear skies permitting. You are required to do at least four star gazing activities during the semester, each worth 10 points. You can typically complete two or three activities at one on-campus session. A star party to a dark sky site is also planned during the semester and you may be able to complete all the stargazing at the star party. We will also have a field trip planned to Planetarium where 2 stargazing activities can be completed.

You may also do up to three extra star gazings for extra credit. This is the only extra credit we allow.
Optional Lab 7, which consists of writing essays, is also available in case Stargazing is not possible, but the essays may not be used for extra credit.

**Possible observation activities include:**

1. Azimuth and Altitude (naked eye)
2. Magnitude & Color (naked eye)
3. Artificial Satellites (naked eye)
4. Galileo (telescope)
5. Binary Stars (telescope)
6. M-objects (telescope)
7. Alcor & Mizar (telescope & binoculars)
8. Planet Observing (telescope)

Other activities may be used, after consulting your instructor. **It is your responsibility to keep track of the stargazing activities you complete. You will only be given credit for each activity once.**

**Star Gazing Protocol**

1. Call 972-860-4301 after 6:00 p.m. on Wednesday to find out the status, since the sessions are subject to change due to weather.
2. Observing sessions will begin after sunset, please check the time at the phone number given above.
3. Bring a clipboard, pencil and a flashlight.
4. Meet in the lobby of K-building, downstairs for initial discussion. Then follow the instructor to the stargazing site, usually on the plaza between K and X Buildings.
5. Plan to arrive at the beginning of the session to accomplish the most work. Worksheets and star maps will be distributed to you, and it is your responsibility to turn them in.
6. Since we will be outdoors, please dress appropriately. Spray for mosquitoes if it is warm and do not use perfumes. As the weather cools, wear a jacket, hat and gloves

**POLICIES**

1. **The deadline for withdrawal is July 30, 2019.** If you are unable to complete the course, it is your responsibility to withdraw, by filling in the appropriate forms. Failure to do so will result in a performance grade which may be an F.
2. You cannot drop more than 6 courses during your entire undergraduate career unless it qualifies as an exemption.
3. Failure to attend classes could result in a loss of financial aid. Please check with the Financial Aid Office prior to withdrawing.
4. All students must be certified. For this online course students must complete the Questionnaire and the Orientation Quiz to be certified.
5. Students on F-1 visas cannot withdraw without permission of the International Student Advisor.
6. DCCCD Colleges will charge additional tuition for students who register for a third or subsequent time for a course.
7. Code of Student Conduct – Your registration in this course implies your acceptance of the DCCCD Code of Student Conduct. As a college student you are considered a responsible adult and no form of scholastic dishonesty will be tolerated. Scholastic dishonesty includes but is not limited to cheating on a test, plagiarism and collusion.
8. Please follow netiquette rules when you communicate with your instructors or fellow students. These can be found at [http://www.learnthenet.com/learn-about/netiquette/](http://www.learnthenet.com/learn-about/netiquette/)
9. Students may access their grades during the semester on eCampus and their final letter grade on eConnect.
10. The Family Educational Rights and Privacy Act (FERPA) gives students certain rights with respect to their educational records. See complete statement at the link below.
11. DCCCD policy prohibits harassment, discrimination and sexual misconduct.
12. Policy for work submitted after the deadline – Please contact your instructor by email or phone if you miss any deadlines. Instructors will use their discretion to deduct points, give partial credit or no credit. While we want to help you complete the course, we can recognize it when students are being dishonest. Also, be aware that
this is not a self-paced course and due dates are stated in the course calendar to help you complete the course work in the time frame of the semester
13. The instructor reserves the right to add, delete or revise segments of the syllabus if necessary.

All Policies can be accessed at https://www.Brookhavencollege.edu/syllabusaddendum

ASSISTANCE
1. If you need any assistance due to a disability, please contact Brookhaven College’s Disability Support Services located in Bldg S Room 124. Their phone is 972-860-4673, or email: bhcADAServices@dcccd.edu

2. The BlackBoard Content Management system is ADA compliant. Students using screen readers are advised to consult the screen reader tutorial available in BlackBoard Help. Also, look at BlackBoard’s Commitment to Accessibility at http://www.blackboard.com/Platforms/Learn/Resources/Accessibility.aspx

Please feel free to contact me by email or phone with your questions, comments, suggestions and ideas. Be sure to get even your smallest questions answered so you can progress to the next step with confidence. In addition to my office hours I am also available by appointment.

Open Lab Hours: Chaz Hafey is the Lab Coordinator, and he is available to assist you during open lab hours with any course material in K-251. Tutoring assistance is also available. Timings for all these help modes are listed on the first page of this document.

Office Hours via BlackBoard Collaborate: To better accommodate the online course, I will hold my office hours online over BlackBoard Collaborate. To access these, at the time of a scheduled appointment scheduled office hour, click on the “Online Office Hours” link in the left menu on the course page. Then click on the link that says, “Click here during office hours.” Finally click “Join Room.” If it is the first time you are using BlackBoard Collaborate on your machine, you will need you will need to download the launcher software which is located on the page where you join. Then you will need to click join again. This system provides everything we need for an online meeting, video, audio, screen sharing, chat, and a shared wipe board.

Other Help: As your instructor I want to hear from you! Please feel free to contact me by email or phone with your questions, comments, suggestions and ideas. Be sure to get even your smallest questions answered so you can progress to the next step with confidence. We look forward to “reaching the stars” with you!