BARTON COMMUNITY COLLEGE
COURSE SYLLABUS

I. GENERAL COURSE INFORMATION

Course Number:	PHSC 1408
Course Title:	ASTRONOMY
Credit Hours:	3 hours
Prerequisites:	none
Division/Discipline:	Academics Division/Physical Science
Course Description:	This is a general Astronomy course designed to acquaint the student the dark sky, planetary systems, the Sun and stars, galaxies and cosmology. Emphasis will be placed on the methods and tools used in exploring the solar system and the local galaxy.

II. INSTRUCTOR INFORMATION

III. COLLEGE POLICIES

Students and faculty of Barton Community College constitute a special community engaged in the process of education. The College assumes that its students and faculty will demonstrate a code of personal honor that is based upon courtesy, integrity, common sense, and respect for others both within and outside the classroom.

Plagiarism on any academic endeavors at Barton Community College will not be tolerated. The student is responsible for learning the rules of, and avoiding instances of, intentional or unintentional plagiarism. Information about academic integrity is located in the Student Handbook.

The College reserves the right to suspend a student for conduct that is determined to be detrimental to the College educational endeavors as outlined in the College Catalog, Student Handbook, and College Policy & Procedure Manual. (Most up-to-date documents are available on the College webpage.)

Any student seeking an accommodation under the provisions of the Americans with Disability Act (ADA) is to notify Student Support Services via email at disabilityservices@bartonccc.edu.

IV. COURSE AS VIEWED IN THE TOTAL CURRICULUM

Astronomy is a general education course that would be considered a non-laboratory physical science course designed to fill the requirements of many curricula. It attempts to give the student an appreciation of the physical universe as experienced in their daily

lives. It also serves as the introductory course, in astronomy for those interested in a baccalaureate degree in astronomy.

The learning outcomes and competencies detailed in this course syllabus meet or exceed those specified for this course by the Kansas Core Outcomes Groups project, and as approved by the Kansas Board of Regents – http://kansasregents.org/transfer_articulation.

V. ASSESSMENT OF STUDENT LEARNING

Barton Community College is committed to the assessment of student learning and to quality education. Assessment activities provide a means to develop an understanding of how students learn, what they know, and what they can do with their knowledge. Results from these various activities guide Barton, as a learning college, in finding ways to improve student learning.

Course Outcomes, Competencies, and Supplemental Competencies:
Students will be able to do the following:

A. Explain the scientific method.
    1. Define hypothesis, theory, model, and experiment.
    2. Describe how theories are continually tested by new experiments and observations.
    3. Describe examples of the application of the scientific method within astronomy.

B. Interpret astronomical observations, demonstrating critical thinking and basic problem solving.
    1. Explain phases of the moon and eclipses based on the positions of the sun, moon, and earth.
    2. Relate the seasons to observed changes in the motion of the sun across the sky.
    3. Explain observations made throughout history that led to the current understanding that the earth is round and it orbits the sun.
    4. Relate motions of planets and stars to the Celestial Sphere model.

C. Explain astronomical phenomena in terms of appropriate scientific models
    1. Describe the overall scale and history of the universe.
        a. Rank objects like moons, planets, stars, and galaxies in terms of size.
        b. Rank events like the formation of the sun, formation of the Milky Way, formation of the earth, the first dinosaurs, and human civilization in terms of age.
    2. Describe the differences between a heliocentric model of the solar system and a geocentric model.
        a. List advantages of heliocentric models.
        b. List advantages of geocentric models.
    3. Explain the Nebular Theory of the formation of the solar system.

a. Describe the sequence of events within the Nebular Theory of the formation of the solar system.
b. Explain how terrestrial planets, Jovian planets, moons, comet, and asteroids fit into the Nebular Theory of the formation of the solar system
c. Relate the Nebular Theory of the formation of the solar system to basic physics principles like gravity, gas laws, and conservation of energy.

4. Explain basic properties of stars.
   a. State the basics of nuclear fusion and how this provides the power for stars.
   b. Explain how stars change and evolve, and how this relates to nuclear fusion.
   c. Explain how parallax is used to determine the distance to stars.
   d. Explain how color and absorption spectra are used to determine temperatures of stars.
5. Explain the basics of the Big Bang Theory for the universe.
   a. State key evidence supporting this theory
   b. Describe the key eras in the history of the universe, as theoutlined in the Big Bang theory.

D. Explain and critique science as presented in the media
   1. Compare and contrast information from sources such as news articles, science magazines, or blogs, with information presented in the course.

E. Identify, locate and predict characteristics of celestial objects
   1. Use a planisphere, star chart, and/or planetarium software to locate and identify stars and constellations.
   2. Predict the positions of planets in the sky based on their orbits around the sun
   3. Use a Hertzsprung-Russell to predict characteristics of stars.
   4. Use Hubble's law to predict the motions of galaxies.

VI. INSTRUCTOR'S EXPECTATIONS OF STUDENTS IN CLASS

VII. TEXTBOOKS AND OTHER REQUIRED MATERIALS

VIII. REFERENCES

IX. METHODS OF INSTRUCTION AND EVALUATION

X. ATTENDANCE REQUIREMENTS

XI. COURSE OUTLINE