Physics 1403- Stars & Galaxies
Departmental Syllabus

Catalog Description (4-3-3)
Study of stars, galaxies, and the universe outside our solar system, including the night sky, motion of the sun and moon, information from starlight, and formation and evolution of stars and galaxies. Prerequisite: The student must be TSI complete. Laboratory fee $35. F, Sp (available also as a web course) (40.0201.51 03)

Textbook and Resources

Course Intent
This course is intended for non-science majors who need to fulfill a laboratory science requirement. The text has 20 chapters and is designed for a two-semester course. PHYS 1403 will involve chapters 1-15 of the text, though not all will be studied in detail. This course will also help students attain logical thinking and problem solving skills.

Scope of Course
Unit 1: Scale of the cosmos; the sky and its cycles
Unit 2: Astronomy in history; astronomical instruments
Unit 3: Light and atoms: information from the stars
Unit 4: The sun, and the family of other stars
Unit 5: Formation and structure of stars
Unit 6: Evolution of stars: white dwarfs, neutron stars, and black holes
Unit 7: Our Milky Way galaxy, and the family of galaxies
Unit 8: Galaxies with active nuclei; modern cosmology

Learning Outcomes
1. To become more aware of the universe and of our place within it.
1. The student will compare the scale of a human with that of planets, stars, galaxies, and the universe, in approximate powers of ten.

2. To appreciate the importance of distance measurement in astronomy.
2. The student will briefly explain at least two different methods for estimating stellar distances

3. To improve ability to “read” the night sky at different times of the year.
3. The student will interpret a monthly star chart and identify at least five constellations by direct observation.
4. To consider the relationship of human history to the evolution of the universe.

4. The student will give reasonable estimates for: the age of terrestrial life, the age of the solar system, a typical stellar lifetime, and the age of the universe.

5. To understand the basic goals of stellar investigation.

5. The student will list at least three principal properties of stars and suggest measurements astronomers use to determine them.

6. To recognize the universal manifestation of gravity and angular momentum.

6. The student will describe two phenomena that are common to the formation of galaxies, stars, and planets.

**Learning Activities and Assessment**

Students will attend and participate in lectures and group work, do homework on paper, and do on-line activities (homework and/or quizzes). Student outcomes will be assessed by a combination of some or all of the following: homework grades, quiz grades, major exam grades, and a comprehensive final exam.

Throughout the semester the following **Core Curriculum Objectives** will be addressed:

1. **Critical Thinking Skills** – which may include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.

2. **Communication Skills** – which may include effective development, interpretation and expression of ideas through written and visual communication.

3. **Empirical and Quantitative Skills** – which may include the manipulation and analysis of numerical data or observable facts/data resulting in informed conclusions.

4. **Teamwork** – to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

**ADA Statement**

Kilgore College is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential. If you choose to request accommodations for a documented disability which may impact your performance, attendance, or grades in this course, you must first register with the Office of Disability Services. Please note that classroom accommodations cannot be provided prior to your instructor’s receipt of an accommodation letter from the Office of Disability Services. For more information about accommodations, please contact the Disability Services Office on the second floor of the Devall Student Center: (903) 983-8206.