

## Colonnade Program Course Proposal: Explorations Category

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1. What course does the department plan to offer in Explorations? Which subcategory are you proposing for this course? (Arts and Humanities; Social and Behavioral Sciences; Natural and Physical Sciences)

**Astronomy 106 - Astronomy of Stars and Stellar Systems**  
**Subcategory: Natural and Physical Sciences**

2. How will this course meet the specific learning objectives of the appropriate subcategory. Please address **all** of the learning outcomes listed for the appropriate subcategory.

**Objective 1. Demonstrate an understanding of the methods of science inquiry in astronomy**

This core focus is addressed by hands-on laboratory exercises integrated throughout the course. The department has approved a list of acceptable laboratory exercises that guide the students through the methods of science inquiry.

**Objective 2. Explain basic concepts and principles of astronomy**

Classroom activities, including many conceptual exercises (for example, Prather et al.'s *Lecture Tutorials for Introductory Astronomy*) use active learning methods to guide students into confronting their own scientific misconceptions and reinforce basic concepts and principles of astronomy.

**Objective 3. Apply scientific principles to interpret and make predictions in astronomy.**

This core focus is addressed by the hands-on laboratory exercises integrated throughout the course. The acceptable laboratory exercises teach the students to apply scientific principles and make predictions in astronomy.

**Objective 4. Explain how scientific principles of astronomy relate to issues of personal and/or public importance.**

Throughout the course, students gain a comprehensive understanding of our place in the cosmos, and other ways that scientific principles of astronomy relate to issues of personal and/or public importance. This core focus is addressed by the hands-on laboratory exercises integrated throughout the course.

3. Syllabus statement of learning outcomes for course. NOTE: In multi-section courses, the same statement of learning outcomes must appear on every section's syllabus.

**Upon completion of this course the student will:**

- Understand the development of scientific thought and practices.
- Understand how scientific practices yield knowledge of our universe
- Understand Earth's place in our solar system, galaxy, and universe
- Understand the development and state of our current knowledge of the evolution, nature and structure of the universe

- **Understand the various types of stars and stellar systems, and how they combine to form the structure of the universe**
- **Be able to distinguish between various types of astronomical objects**
- **Understand the patterns and the diversity of objects in the universe**
- **Understand how knowledge of the cosmos allows us to better understand our Earth**

4. Brief description of how the department will assess the course for these learning objectives.

**Objective 1, Objective 3, Objective 4.** Each class section will include a minimum of six of the laboratory exercises approved by the department. At the end of each academic term, the department will collect each student's average score for the laboratory exercises. The goal is to have at least 70% of the students in all sections achieve a score of 70% or better.

**Objective 2.**

Each class section will have 10 common questions on the final exam. At the end of each academic term, the department will collect each student's average score for the common questions. The goal is to have at least 70% of the students in all sections achieve a score of 70% or better.

5. How many sections of this course will your department offer each semester?

One to two sections will be offered each semester.

6. Please attach sample syllabus for the course.

See attached. Note that this is a generic template syllabus for the class, containing information that will appear on the syllabus for each section. Areas that are blank are instructor specific and instructors are free to add information specific to their own course sections, in accordance with the department's view of academic freedom.

Please send your proposal to: [robert.dietle@wku.edu](mailto:robert.dietle@wku.edu)

## **Astronomy 106 - Astronomy of Stars and Stellar Systems**

### **Section 001    Fall 2014**

**Instructor:**

**Office:**

**Phone:**

**E-mail:**

**Office Hours:**

**Textbook:**

**Class Meets:**

**Course Grade:**

#### **Course Catalogue Description:**

An introductory study of that portion of the physical universe in the space beyond the bounds of the solar system. Topics include the physical properties of stars and stellar systems, stellar formation and evolution, supernovas, pulsars, galaxies, quasars, black-holes, and cosmology-scientific theories of the origin, evolution, and fate of the universe on the grandest scale. Emphasis is given to the significance of these topics to the development and fate of the earth and its star. This course contains an integrated laboratory that includes planetarium exercises, out-of-class activities, and telescope observing sessions scheduled in the evening.

**General education learning objectives:** Through lectures, discussions, in-class and out-of-class activities, and laboratory exercises; students will be able to: 1. Demonstrate an understanding of the methods of science inquiry, 2. Explain basic concepts and principles in one or more of the sciences, 3. Apply scientific principles to interpret and make predictions in one or more of the sciences, and 4. Explain how scientific principles relate to issues of personal and/or public importance.

**Learning Outcomes:** Upon completion of this course the student will:

- Understand the development of scientific thought and practices.
- Understand how scientific practices yield knowledge of our universe
- Understand Earth's place in our solar system, galaxy, and universe
- Understand the development and state of our current knowledge of the evolution, nature and structure of the universe
- Understand the various types of stars and stellar systems, and how they combine to form the structure of the universe
- Be able to distinguish between various types of astronomical objects
- Understand the patterns and the diversity of objects in the universe
- Understand how knowledge of the cosmos allows us to better understand our Earth

**Students with disabilities:** In compliance with university policy, students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Office for Student Disability Services in DUC A-200 of the Student Success Center in Downing University Center. Please DO NOT request accommodations directly from the professor or instructor without a letter of accommodation from the Office for Student Disability Services.

**Attendance Policy:** Regular and prompt attendance is expected and required for student success in this class.