

**Indiana University Northwest  
College of Arts and Sciences  
Department of Chemistry, Physics, and Astronomy**

**COURSE SYLLABUS**

**Course:** AST-A 105

**COURSE TITLE:** Stars and Galaxies

**CREDIT HOURS:** 3

**CLASS SCHEDULE:**

The class meets on Saturdays from 8:45 a.m. to 12:30 p.m. from February 20 to May 7. There is no class meeting on Saturday, March 19 (Spring Break) and April 23 (Indiana Planetarium Meeting – date is subject to change).

**CLASS LOCATION:**

The class is meeting at the Merrillville Community Planetarium, which is located inside of Clifford Pierce Middle School. Pierce is part of the Merrillville Community Schools and is located at 199 East 70th Avenue in Merrillville. Pierce is one block east of Broadway, two blocks south of 68th Place, and two blocks north of 73rd Avenue.

Please park on the west side of Pierce – the side closest to Broadway. There are no fees or parking passes required. Enter on the west side of Pierce at entrance marked “Main Office/Planetarium”.

**COURSE DESCRIPTION:**

The sun as a star, physical properties of stars, principles of spectroscopy as applied to astronomy, double stars, variable stars, star clusters, gaseous nebulae, stellar motions and distributions, Milky Way system, external galaxies, expanding universe, and cosmic time scale.

**PREREQUISITES:** None

**TEXTBOOK** (recommended, not required): **Universe** (Revised Updated Edition, 2012) by Robert Dinwiddie, published by Dorling Kindersley (DK)

**RATIONALE:**

Stars are the building blocks of the universe. This course provides students with the opportunity to learn about stars: their composition, how they generate energy, and their birth and death. We will also be learning about galaxies, which are composed of stars and we will discuss the origin of our universe.

**INTENDED AUDIENCE:**

This course is intended for students who want to know more about the stars and galaxies and for educators who desire to include more astronomy in their teaching.

**INSTRUCTIONAL ACTIVITIES:**

The course will make use of the planetarium for demonstrations, planetarium programs, and class activities. Students are expected to take lecture notes. Some handouts will be provided.

**COURSE CONTENT:**

- A. Questions About Stars
- B. How Stars Are Studied
- C. Basic Facts About Stars
- D. How Do Stars Get Their Energy?
- E. Summary of Basic Facts About Stars
- F. Hertzsprung-Russell (H-R) Diagram
- G. Stellar Evolution
- H. Evolution of "Average" Stars (small and medium mass)
- I. Evolution of Massive Stars (approximately four times the mass of our sun)
- J. The Milky Way and "Island Universes"
- K. Galaxies
- L. Cosmology
- M. The Big Bang

**STUDENT EVALUATION:** Students will be evaluated using the following:

- Tests (approximately 55% of the grade) – There will be four tests, each covering approximately one-quarter of the course material.
- Research project (approximately 10% of the grade) – Each student will pick from a provided list of topics (or discuss other potential topics with the instruc-

tor), then research his or her topic. The student will then present a list of resources used and evidence of learning.

- Class activities (approximately 20% of the grade) – There will be planetarium programs, demonstrations, and/or lab activities that students are expected to participate and/or complete. If you miss a class activity, you will not be able to make it up.
- Student participation (approximately 15% of the grade) – Each student is expected to participate in the class by attending, asking questions, and contributing to discussions. Student participation is earned per class meeting; if you miss a class meeting, you will not be able to make up the participation for that class meeting.

In addition to the above, graduate students will be held to a higher standard in their tests and will be expected to complete some additional work.

#### Course Grade Assignment

100 - 90%	A
89 - 80%	B
79 - 70%	C
69 - 60%	D
59% and below	F

#### **CLASS ATTENDANCE:**

This course has been approved to enforce the IU Northwest Attendance and Course Commitment Policy and the full text of this policy is available at:

<http://www.iun.edu/registrar/policies/couse-commitment-attendance-policies.htm>

As a student in this course, you are expected to attend scheduled class meetings and actively participate in all class activities. Students who miss the first week of the course or who do not attend 50% of the scheduled class meetings before the end of the fourth week of the course may be subject to administrative withdrawal. Regardless of attendance, students who do not actively participate in this class by receiving less than 50% of their Class activities and Student participation scores during the first four weeks are subject to administrative withdrawal. Students who are administratively withdrawn from this class after the fourth week will not be eligible for a tuition refund. Administrative withdrawals may have an impact on the student's financial aid awards and visa status.