



COURSE IMPLEMENTATION DATE: December 2001
COURSE REVISED IMPLEMENTATION DATE: September 2012
COURSE TO BE REVIEWED: October 2015
(six years after UEC approval) (month, year)

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department - see course syllabus available from instructor

Table with 3 columns: COURSE NAME/NUMBER (ASTR 104), FACULTY/DEPARTMENT (Science/Physics), UFV CREDITS (4). Includes COURSE DESCRIPTIVE TITLE: Astronomy: The Cosmos.

CALENDAR DESCRIPTION:

This introductory course in astronomy focuses on the stars and universe. Topics include properties of stars, galaxies, life cycle of a star, modern theories in astronomy, and origin and evolution of the universe. Students will be given a number of laboratory exercises to supplement the material covered in class. The course will place emphasis on conceptual development rather than a rigorous mathematical treatment and is a suitable non-calculus-based laboratory science course for Arts students.

Note: Students with PHYS 104 may not take ASTR 104 for further credit.

PREREQUISITES:

COREQUISITES:

PRE or COREQUISITES: One of the following: Principles of Mathematics 11, Pre-Calculus 11, or Math 085; or a C or better in Applications of Mathematics 11 or Foundations of Mathematics 11.

SYNONYMOUS COURSE(S):

- (a) Replaces: PHYS 104
(b) Cross-listed with:
(c) Cannot take: PHYS 104 for further credit.

SERVICE COURSE TO: (department/program)

TOTAL HOURS PER TERM: 90

STRUCTURE OF HOURS:

Lectures: 60 Hrs
Seminar: Hrs
Laboratory: 30 Hrs
Field experience: Hrs
Student directed learning: Hrs
Other (specify): Hrs

TRAINING DAY-BASED INSTRUCTION:

Length of course:
Hours per day:

OTHER:

Maximum enrolment: 36
Expected frequency of course offerings: Once per year
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only) [] Yes [] No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department) [] Yes [] No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE: [X] Yes [] No

Table with 2 columns: Approval/Consultation (Course designer, Department Head, Supporting area, Curriculum Committee chair, Dean/Associate VP, UEC approval) and Date approved/meeting (April 2011, April 8, 2011, May 13, 2011, June 3, 2011, October 28, 2011).

LEARNING OUTCOMES:

- To give the student an appreciation of the structure and contents of the universe, and of astronomical time-scales.
- To show the student how basic laws of physics and chemistry explain the life cycle of stars and galaxies.
- To introduce the student to ideas which are totally beyond our everyday experience, i.e. black holes, quasars, neutrino fluxes.
- To show how astronomy is a living science; which will be done by discussion of some of the latest exciting discoveries.
- To enable students to solve various problems or understand the concepts in each of the topic areas listed in the Calendar Description.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lecture, demonstration, small group practice, discussion, audiovisual presentation, use of models and charts, and laboratory experiments.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

Examination(s) Portfolio assessment Interview(s)

Other (specify): Please see the Physics PLAR policy on the department's webpage

TEXTBOOKS, REFERENCES, MATERIALS: *[Textbook selection varies by instructor. Examples for this course might be:]*

Astronomy: Journey to the Cosmic Frontier John D. Fix, 4th ed. (2004)
Any first year astronomy text.

SUPPLIES / MATERIALS:

Fully-equipped physics lab.

STUDENT EVALUATION: *[An example of student evaluation for this course might be:]*

Laboratory work	20%
Assignments	15%
Midterm	25%
Final	40%

COURSE CONTENT: *[Course content varies by instructor. An example of course content might be:]*

Week 1	Chap 21 Surveying the heavens
Week 2	Chap 22 Analyzing starlight
Week 3	Chap 23 Double stars
Week 4	Chap 24 The stars, a celestial census
Week 5	Chap 25 Gas and dust in space
Week 6	Chap 26 The sun, structure
Week 7	Chap 27 The sun, nuclear powerhouse
Week 8	Chap 28 The birth of stars
Week 9	Chap 29 Star clusters, stellar evolution
Week 10	Chap 30 Evolution and death of stars
Week 11	Chap 31 General Relativity, curved spacetimes
Week 12	Chap 32 The milky way
Week 13	Chap 33 Galaxies
Week 14	Chap 34 Structure and evolution of the universe
Week 15	Chap 35 The big bang

LABORATORY EXPERIMENTS

Between 7 and 9 labs will be done depending on whether or not the student has taken Physics 103. These will help clarify some of the more abstract concepts presented in class. Other lab periods can, weather permitting, be used for observation.

0. Further math review
1. Inverse Square Law
2. Spectroscopy
3. Reflection and Refraction
4. Lenses and Telescopes
5. Blackbody Radiation and BV Filter Photometry
6. Hertzsprung-Russell Diagram (two lab periods)
7. Stellar Distances
8. Observation Lab (selected from a list of 20+ procedures)