**MASTER COURSE OUTLINE**
Prepared By: Jim Hamm Date: Sep 2017

**COURSE TITLE**
Intro to Astronomy

**GENERAL COURSE INFORMATION**
Dept.: ASTR& Course Num: 101 (Formerly: AST 120)
CIP Code: 40.0201 Intent Code: 11 Program Code: N/A
Credits: 5
Total Contact Hrs Per Qtr.: 55
Lecture Hrs: 44 Lab Hrs: 22 Other Hrs: 0
Distribution Designation: Lab Science LS

**COURSE DESCRIPTION** (as it will appear in the catalog)
A survey course intended for the non-science major. Topics studied will include most of the following: historical astronomy, electromagnetic radiation, telescopes, the Earth-Moon system, the solar system, the sun, stars, stellar evolution, galaxies, quasars, and cosmology. The laboratory portion of the course may include optics, visual astronomical observing techniques, use of the telescope, spectroscopy, and distance measurement. (Credit will not be granted for both ASTR& 100 and ASTR& 101).

**PREREQUISITES**
MATH 099 or higher placement

**TEXTBOOK GUIDELINES**
A current introductory astronomy text

**COURSE LEARNING OUTCOMES**
*Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:*
1. Discuss some of the history of astronomy
2. Identify major seasonal constellations and some of the brighter stars in the night sky.
3. Identify lunar phases and, given a lunar phase, predict rising and setting times.
4. Describe conditions necessary for solar and lunar eclipses.
5. Demonstrate knowledge of the solar system, stellar evolution, galaxies, quasars, and black holes.
6. Describe the role of gravity in various astronomical processes.
7. Describe how astronomers employ electromagnetic radiation to learn about astronomical objects.
8. Perform simple algebra and calculations involving relations used in astronomy such as Wien's Displacement Law, Kepler's Third Law, and other relations used in introductory astronomy.
9. Discuss qualitatively current theories of cosmology.
10. Demonstrate knowledge of telescope powers (resolving power, light-gathering power, and magnification) to compare telescopes of different apertures and designs.

**INSTITUTIONAL OUTCOMES**

IO2 Quantitative Reasoning: Students will be able to reason mathematically.

**COURSE CONTENT OUTLINE**

Motions in the Sky
Seasonal Changes in the Night Sky
Astronomical History
Early Astronomy
    Developments in Astronomy of Copernicus, Galileo, and Kepler
Newton's Laws and the Celestial Clockwork
    Orbits of the Planets and Moons
Light, Optics, and Optical Astronomy
The Solar System
The Planets
    Asteroids, Comets, and Meteoroids
Radio, Infrared, and High-Energy Astronomy
Stars
Interstellar Distances
    Spectral Analysis of Starlight
    Nuclear Fusion
    Stellar Evolution
Galaxies
Other Astronomical Objects
    Quasars
    Black Holes
Cosmology
    The Expanding Universe
    Cosmological Models
    The Big Bang
    Dark Matter, Dark Energy, and the Fate of the Universe

**DEPARTMENTAL GUIDELINES** *(optional)*

Laboratory Work 20%; Papers 20%; Other Written Assignments 10%; Exams and Quizzes 50%

PO5 should be assessed: Students will be able to solve problems by gathering, interpreting, combining and/or applying information from multiple sources.

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**DIVISION CHAIR APPROVAL** **DATE**