
COURSE PREFIX/NO:	AST 101
COURSE TITLE:	Solar System Astronomy
LECTURE HOURS/WEEK:	3.0
LAB HOURS/WEEK	3.0
CREDIT HOURS/SEMESTER	4.0

[Distance Learning Attendance/VA Statement](#)
[Textbook Information](#)

COURSE DESCRIPTION

This is the first in a sequence of astronomy courses and is a descriptive survey of the universe with emphasis on basic physical concepts and the objects in the solar system. Related topics of current interest are also included in the course. Topics include solar system astronomy, a review of the history of astronomy, basic motion, and optics.

COURSE COMPETENCIES/PERFORMANCE OBJECTIVES

Upon completion of the course the student should be competent to perform the following tasks:

Module 1: Basics of Astronomy

- Describe the differences between planet, solar system, galaxy, and universe.
- Explain current theories of the history and future of the universe.
- Explain basic scientific principles related to astronomy, including gravity, motion, matter, and radiation.
- Solve word problems relative to motion in one dimension using fundamental mathematical skills, including unit conversion.
- Define the following: distance, speed, displacement, initial and final velocity, acceleration.
- Explain modern concepts involving mass and velocity.
- Identify types and properties of electro-magnetic radiation.
- Specify results of addition, subtraction, multiplication, and division to proper number of significant figures.
- Demonstrate unit conversion.
- Understand and apply the scientific method as a critical thinking and problem solving technique.

Module 2: Looking Outward

- Understand and identify examples of rotation, revolution, and precession.
- Identify daily, monthly, and yearly changes in the night sky.
- Describe the development of astronomy.
- Explain Kepler's laws of planetary motion.
- Work problems related to gravitation and circular motion.
- Draw optical ray diagrams and solve problems involving mirrors and lenses.
- Identify types and benefits of various telescopes.
- Summarize the history and discoveries of manned and unmanned space exploration.

- Obtain data in laboratory situations and use techniques such as graphing, finding percent error in order to verify relationships in one- and two-dimensional motion, and properly report results of laboratory work.
- Make regular physical observations of the moon, stars, and planets.

Module 3 – Sun and Earth

- Explain the concept and components of the Solar System.
- Describe the features, type, and parts of the Sun.
- Explain the recurring pattern and results of sunspots.
- Explain the basics of the atmosphere, geology, and climate of the Earth, preparatory to studying the other planets.
- Discuss the phases and features and effects of the moon.

Module 4 – Planets and Other Solar System Objects

- Explain the characteristics of each of the planets of our solar system.
- Value the uniqueness of Earth as a life-supporting planet.
- Explain the debate regarding Pluto's status as a dwarf planet.
- Discuss the other dwarf planets.
- Describe meteors, asteroids, and comets and their positions in the solar system.

Module 5 – Stars and the Milky Way Galaxy

- Use the HR diagram to describe types of stars.
- Trace the Main Sequence of stars.
- Be able to explain the lifetime and various stages of a star.
- Describe the structure and our place in the Milky Way galaxy.
- Define the terms binary stars, multiple stars, solar clusters, nebula, black hole, variable stars, and pulsars.
- Discuss planets being found around other stars.

Module 6 – Galaxies, the Universe, and Constellations

- Discuss types of galaxies.
- Describe how galaxies evolve and collide.
- Discuss the vastness of space and the incredible quantity of systems in the universe.
- Use sky charts to understand the positions of stars and constellations.
- Use a planisphere to predict where objects will be found at different days and times.

MINIMAL STANDARDS

Minimal standards of performance for receiving credit for the course are indicated by 60% accuracy on evaluation instruments (see evaluation strategies listed below) that address the performance objectives listed above.

COURSE REQUIREMENTS

Attendance Policy

Students are responsible for attending meetings in the course until they have completed all course requirements. Students are responsible for all material covered and for all assignments made in all classes. Students who are absent from a course more than 10% of the total contact hours assigned may be withdrawn in accordance with attendance policy of York Technical College.

Withdrawal from the Course

A student may withdraw from a course after the drop/add period by notifying the instructor or division office of intent to withdraw. If withdrawal is initiated by midterm, the student will receive a grade of "W." Withdrawals after midterm may result in either a grade of "W" or "WF" depending upon the student's academic performance and attendance in the course at the time of the withdrawal.

Student Conduct

Students are expected to conform to all standards of conduct as specified in the York Technical College Handbook and Catalog. Students found guilty of academic dishonesty such as cheating or plagiarism will be given a grade of zero or may be subject to further disciplinary action.

Evaluation Strategies/Grading

Module grades are derived from assignments, homework, and exams. The laboratory grade will be determined by participation, accuracy, and documentation.

Module grades	75% of course grade (12.5% for each module)
Laboratory grade	25% of course grade

The grading scale is as follows:

- A 90 – 100
- B 80 – 89
- C 70 – 79
- D 60 – 69
- F Below 60

The above requirements and topics are standard and required for the course. Additional requirements and/or policies depend on the instructor for the course.

ENTRY LEVEL SKILLS – NA

PREREQUISITES – ENG 100 and MAT 032 or above

CO-REQUISITES – None

Disabilities Statement:

Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.

Effective: 2009SU