

**STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK**



COURSE OUTLINE

ASTR 102 – ASTRONOMY of the SOLAR SYSTEM LAB

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**CANINO SCHOOL OF ENGINEERING TECHNOLOGY
PHYSICS
MAY 2015**

- A. **TITLE:** ASTRONOMY of the SOLAR SYSTEM LAB
- B. **COURSE NUMBER:** ASTR 102
- C. **CREDIT HOURS:** 1
- D. **WRITING INTENSIVE COURSE:** No
- E. **COURSE LENGTH:** 15 weeks
- F. **SEMESTER(S) OFFERED:** Fall
- G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:** 2 hours laboratory per week
- H. **CATALOG DESCRIPTION:**
 This is a laboratory course to accompany ASTR 101 –Astronomy of the Solar System. Laboratory exercises will both explore fundamental concepts and physical principles introduced in lecture such as the properties of light in the Introduction to Spectroscopy Lab, as well as give the students a feel for the work of a modern Astronomer with computer based simulation exercises.
- I. **PRE-REQUISITES/CO-REQUISITES:**
 a. Pre-requisites: None
 b. Co-requisite(s): ASTR 101 (Astronomy of the Solar System), or permission of instructor
- J. **GOALS (STUDENT LEARNING OUTCOMES):**
 By the end of this course, the student will be able to:

<u>Course Objective</u>	<u>Institutional SLO</u>
a. Understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement, and data collection, experimentation, evaluation of evidence, and employment of mathematical analysis.	2. Crit. Thinking 4. Inter-Intrapersonal Skills
b. Application of scientific data, concepts, and models in astronomy.	2. Crit. Thinking 4. Inter-Intrapersonal Skills
c. Use software to visualize and complete the mathematics associated with models, and compare to data, either real or simulated.	2. Crit. Thinking 4. Inter-Intrapersonal Skills
d. Organize a lab report to summarize your work and results.	1. Communication 2. Crit. Thinking 4. Inter-Intrapersonal Skills

- K. **TEXTS:** Palen, Kay, Smith, and Blumenthal 2015. *Understanding Our Universe, 2nd Ed.*, W.W. Norton & Co., New York, N.Y. 101110-0017.

- L. **REFERENCES:** Evolving on-line material and Stellarium planetarium program
- M. **EQUIPMENT:** computers
- N. **GRADING METHOD:** A-F
- O. **MEASUREMENT CRITERIA/METHODS:**
- Laboratory reports
- P. **DETAILED COURSE OUTLINE:** See companion lecture ASTR 101 – Astronomy of the Solar System
- Q. **LABORATORY OUTLINE:**
- I. Create a scale model of the Solar System
 - II. Mapping the Earth and the Celestial Sphere
 - III. Light Intensity and the Inverse Square Law
 - IV. Determination of the Mass of Jupiter (computer based simulation)
 - V. Introduction to Spectroscopy
 - VI. Romer's Determination of the Speed of Light (computer simulation)
 - VII. Hydrogen Energy Levels (computer simulation)
 - VIII. Geometric Optics and Building a Refracting Telescope
 - IX. Retention of an Atmosphere (computer simulation)
 - X. Search for Exoplanets (computer simulation)