



# BROWARD COLLEGE COURSE OUTLINE

**LAST REVIEW:** 2010-11  
*(i.e. 2003-2004)*

**NEXT REVIEW:** 2015-16  
*(i.e. 2008-2009)*

**STATUS:** A  
*(A, I, D)*

**COURSE TITLE:** Astronomy Laboratory

**COMMON COURSE NUMBER:** AST 1022L

**CREDIT HOURS:** 2

**CONTACT HOUR BREAKDOWN**  
*(per 16 week term)*

**CLOCK HOURS:**  
*(Voc. Course ONLY)*

Lecture: Lab: 48

Clinic: Other:

**PREREQUISITE(S):**

**COREQUISITE(S):**

**PRE/COREQUISITE(S):**

**COURSE DESCRIPTION** *(750 characters, maximum):*

AST 1022L is a laboratory which allows students to able to collect and analyze data in a variety of experiments covering topics covered in its companion courses; AST 1002, AST 1003, or AST 1004. Students will create experiment reports and conduct telescopic observations.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s): 4C Area  
General Education Requirements – Associate in Science Degree (AS), meets Area(s): 4C Area  
General Education Requirements – Associate in Applied Science Degree (AAS), meets Area(s): Area

## UNIT TITLES

1. Laboratory Safety
2. Indoor Labs: Physical Experiments and Astronomical Databases
3. Telescopic Observations

\*\*\* Complete the following only if course is seeking general education status \*\*\*

**GENERAL EDUCATION Competencies and Skills \*:**

In the box to the right of the Competency/Skill, enter all specific **student learning outcome** unit numbers, as indicated in the course outline (i.e. 1.1, 2.7, 4.2, 4.0 and 5.12) that apply.

<b>Course must include <u>all</u> of the following:</b>	
<b>1. Read with critical comprehension**</b>	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7
<b>2. Write clearly and coherently**</b>	2.8
<b>3. Demonstrate literacy as appropriate within a given discipline**</b>	A: 2.4, 2.5, 2.6, 2.7 B: 2.1, 2.2, 3.1 C: 1.0, 3.2 E: 2.1, 2.2 F: 2.2, 2.3, 3.3, 3.4, 3.5
<b>4. Apply problem solving skills or methods to make informed decisions in a variety of contexts**</b>	2.0, 3.0
<b>Course must include at least <u>one</u> of the following:</b>	
<b>5. Differentiate between ethical and unethical behavior</b>	
<b>6. Demonstrate an understanding of the physical, biological, and social environments and how individual behaviors impact this complex system.</b>	2.0, 3.0
<b>7. Demonstrate an understanding of and appreciation for human diversities and commonalities.</b>	
<b>8. Speak and listen effectively.</b>	

*\*General Education Competencies and Skills endorsed by 2010-2011 General Education Task Force*

**\*\*Required Competencies**

**1) Read with critical comprehension.**

The student will be introduced to the basic texts, concepts, vocabulary, and methods necessary for developing an understanding of the discipline and meeting the required benchmarks as stated in the course outline.

**2) Write clearly and coherently.**

The student will demonstrate an understanding and mastery of subject matter in a variety of ways, including writing. Writing activities may include both graded and ungraded essays, short answer quizzes, summaries, reactions, journals, and various other reports.

**3) Demonstrate and apply literacy across all the disciplines (indicate which ones apply).**

- a) **Information literacy** means understanding how to locate needed information, using the appropriate technology for the task, managing and evaluating the extracted information and using it effectively and ethically.
- b) **Technology literacy** is the ability to responsibly and effectively use appropriate technology to access, manage, integrate, or create information, and/or use technology to accomplish a given task.
- c) **Workplace literacy** is having the appropriate knowledge and skills to communicate and work with others effectively and perform job duties, whether it is through the use of computers and/or other technology.
- d) **Cultural literacy** is recognizing, understanding, and appreciating the similarities and differences between one's own culture and the cultures of others through a study of the arts, customs, beliefs, values, and history that define a culture.
- e) **Quantitative literacy** is having the ability to formulate, solve and interpret mathematical/statistical operations and graphical/tabular representations to make informed decisions.

f) **Scientific literacy** means understanding the methodology and application of the scientific process, the physical and biological worlds, and recognizing that scientific knowledge is continuously updated or revised as new information is discovered.

g) **Environmental literacy** is creating a context within which environmental issues can be viewed, imparting knowledge to enhance one's ability to analyze the issues, make the connections between humans' decisions and actions and the challenges facing the environment, and instilling the desire to sustain the environment through ethical practices in both one's professional and personal lives.

**4. Apply problem-solving skills or methods to make informed decisions in a variety of contexts.**

The student will use acquired skills or methods to recognize, analyze, adapt, and apply critical thinking to solve problems and make informed decisions.

## EVALUATION:

In the box to the right of the Methods of Assessment, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 4.0, 4.2 and 5.12) that apply.

1. Portfolio	
2. Short essays	
3. Research Papers	2.0, 3.0
4. Group projects	
5. Discussions (In class and online)	
6. Multiple Choice tests	
7. Presentations	
8. Service Learning Projects	
9. Quizzes (pop, announced, etc.)	1.0, 2.0, 3.0
10. Take-home tests	
11. Summaries, critiques, and analyses	
12. Reaction papers	
13. Surveys	
14. Performance	
15. Short answer tests	
16. Classroom debates and colloquia	
17. Blogs, wikis, web pages	
18. Other (Please explain)	Experiment Reports: 2.0 Telescopic Observations: 3.0

## **UNITS**

### **Unit 1 Laboratory Safety**

#### **General Outcome:**

- 1.0 The students shall be able to** (1) conduct an experiment using proper safety procedures, (2) recognize and deal with potentially hazardous situations, (3) demonstrate an understanding for the necessity of safe laboratory procedures, and (4) collaborate with fellow students to perform laboratory experiments.

#### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 1.1.** Interpret the safety rules as provided by the instructor.
- 1.2.** Explain why these safety rules are important.
- 1.3.** Locate and describe the use of safety equipment including the following
  - 1.3.1.** Fire extinguisher
  - 1.3.2.** Fire blanket(s)
  - 1.3.3.** Eye wash

**Common Course Number:** AST 1022L

**Unit 2 Indoor Labs: Physical Experiments and Astronomical Databases**

**General Outcome:**

- 2.0 The student shall:** be able to analyze physical concepts and astronomical databases important in the study of astronomy.

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

Physical Experiments

- 2.1** Determine the location in the sky of a given celestial object when provided the celestial coordinates and a celestial globe.
- 2.2** Calculate the focal length of a lens or mirror, the local acceleration of gravity, and the charge of an electron.
- 2.3** Identify elemental constituents of an emission tube on the basis of its spectrum.

Astronomical Databases

- 2.4** Compare the primary morphological characteristics of impact craters on the surfaces of solar system bodies.
- 2.5** Distinguish various morphological features of tectonic and erosional activity on the appropriate solar system bodies.
- 2.6** Organize stellar spectra according to the Henry Draper temperature classification sequence.
- 2.7** Classify galactic images according to their Hubble type.
- 2.8** Present the data and analysis in a clearly written laboratory report.

**Common Course Number: AST 1022L**

**Unit 3 Telescopic Observations**

**General Outcome:**

- 3.0 The student shall:** be able to acquire specific astronomical objects with the telescope and diagram their characteristics.

**Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 3.1** Identify important stars and constellations visible during the early evening.
- 3.2** Acquire a given celestial object with the telescope when provided the celestial coordinates of the object.
- 3.3** Collect observations of the moon such as basins, craters and rilles under different conditions of solar illumination.
- 3.4** Distinguish various nebulous objects such as galaxies, globular clusters and planetary nebulae.
- 3.5** Diagram temporal changes in planetary appearances that are accessible to an observational study of one semester.