**COURSE OUTLINE : ASTRO 102**
**D Credit – Degree Applicable**
**COURSE ID 004001**
**Cyclical Review: November 2020**

**COURSE DISCIPLINE :** ASTRO

**COURSE NUMBER :** 102

**COURSE TITLE (FULL) :** Observational Astronomy

**COURSE TITLE (SHORT) :** Observational Astro

**CATALOG DESCRIPTION**

ASTRO 102 maps the sky by means of bright stars and constellations. Small telescopes are used for observing celestial objects, and indoor laboratory experiments will be performed for more complete student understanding of astronomical data analysis.

Total Lecture Units: 0.00

Total Laboratory Units: 1.00

**Total Course Units: 1.00**

Total Lecture Hours: 0.00

Total Laboratory Hours: 54.00

Total Laboratory Hours To Be Arranged: 0.00

**Total Contact Hours: 54.00**

**Total Out-of-Class Hours: 0.00**

Prerequisite: ASTRO 110 or ASTRO 120.

**ENTRY STANDARDS**

| | Subject | Number | Title | Description | Include |
|---|---|---|---|---|---|
| 1 | ASTRO | 110 | Astronomy Of The Solar System | identify, classify, and compare the observable objects in the universe | Yes |
| 2 | ASTRO | 110 | Astronomy Of The Solar System | recognize and explain the movements of the Sun, Moon and planets, as viewed from Earth, over the course of time; | Yes |
| 3 | ASTRO | 110 | Astronomy Of The Solar System | examine and critique both the geocentric and the heliocentric models of our solar system and explain them within a historical perspective; | Yes |
| 4 | ASTRO | 110 | Astronomy Of The Solar System | explain the production, transmission, refraction and reflection of electromagnetic radiation and the detection of this radiation by both Earth-based and space-based instruments | Yes |
| 5 | ASTRO | 120 | Astronomy Of Stars and Galaxies | understand the methods astronomers use to study stars and galaxies; | Yes |
| 6 | ASTRO | 120 | Astronomy Of Stars and Galaxies | know what astronomers have learned about stars and galaxies; | Yes |
| 7 | ASTRO | 120 | Astronomy Of Stars and Galaxies | know what unanswered questions drive current research programs dealing with stars and galaxies. | Yes |

**EXIT STANDARDS**

1 Identify bright, naked-eye stars and constellations.
2 Students should be able to assemble, use, and disassemble various types of telescopes.

**STUDENT LEARNING OUTCOMES**

1 Identify the methods astronomers use to study objects in the solar system
2 Identify and explain the results of Earth-based and space probe studies of objects in the solar system.

**COURSE CONTENT WITH INSTRUCTIONAL HOURS**

| | Description | Lecture | Lab | Total Hours |
|---|---|---|---|---|
| 1 | Star and constellation identification<br>• Bright stars<br>• Myths and star patterns | | 7 | |

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|---|---|---|---|---|
| 2 | The celestial sphere<br>• Co-ordinate systems<br>• Celestial motions<br>• Phases of the Moon<br>• “Fixed” stars and “wandering stars” (planets) | | 7 | |
| 3 | The use of astronomical references<br>• Star charts and atlases<br>• Catalogs and almanacs | | 4 | |
| 4 | Telescopes<br>• Simple optics of lenses and mirrors<br>• Equatorial mounts and telescope drives<br>• Using setting circles to find celestial objects<br>• Using a telescope and a digital camera to photograph celestial objects | 0 | 16 | 16 |
| 5 | Telescope observations<br>• The Moon<br>• The Sun<br>• Planets<br>• Deep sky objects | 0 | 13 | 13 |
| 6 | Different kinds of light<br>• The electromagnetic spectrum<br>• Observatories in space | 0 | 7 | 7 |
| | | | | **36** |

**OUT OF CLASS ASSIGNMENTS**

1 Observation and Recording the Phases of the Moon
2 Observation of Sunrise or Sunset

**METHODS OF EVALUATION**

1 Quizzes
2 Laboratory Reports
3 Practical examinations

**METHODS OF INSTRUCTION**

- [x] Lecture
- [x] Laboratory
- [ ] Studio

- [ ] Discussion
- [x] Multimedia
- [ ] Tutorial
- [ ] Independent Study
- [ ] Collaboratory Learning
- [ ] Demonstration
- [ ] Field Activities (Trips)
- [ ] Guest Speakers
- [x] Presentations

**TEXTBOOKS**

| Title | Type | Publisher | Edition | Medium | Author | IBSN | Date |
|---|---|---|---|---|---|---|---|
| Astronomy Activity and Laboratory Manual | Required | Jones and Bartlett Publishers Inc. | 2 | Print | Alan W. Hirshfeld | 9781284113747 | 2020 |