

# INTRODUCTION TO TELESCOPES

## Course Design

1999-2000

### Course Information

<b>Organization:</b>	EASTERN ARIZONA COLLEGE
<b>Division:</b>	Science & Allied Health
<b>Course Number:</b>	PHY 021
<b>Title:</b>	INTRODUCTION TO TELESCOPES
<b>Credits:</b>	1
<b>Developed by:</b>	BONNIE BRISCOE
<b>Lecture/Lab Ratio:</b>	1 hour lecture per week/ no lab
<b>Transfer Status:</b>	elective credit to state universities
<b>Extended Registration Class:</b>	No
<b>CIP Code:</b>	40.0201
<b>Assessment Mode:</b>	pre-post test (Questions = 50, Points = 100)
<b>Awareness Course:</b>	No
<b>Intensive Writing Course:</b>	No
<b>Prerequisites:</b>	1. None
<b>Educational Value:</b>	This course is designed for those students interested in using a telescope for observing the sky.
<b>Goals:</b>	<ol style="list-style-type: none"><li>1. to develop an understanding and appreciation of the night sky</li><li>2. to acquire the ability to operate different types of telescope and giant binoculars</li></ol>
<b>Description:</b>	The novice will have an opportunity to learn about and use a series of telescope and giant binoculars in viewing the night sky and to learn the major constellations and visible planets. Topics on general aspects of astronomy will be included.
<b>Textbooks:</b>	---. <i>None.</i> This textbook is not required.
<b>Supplies:</b>	none

## Competencies and Performance Standards

<b>1. Interpret a star chart</b>			
<i>Domain--Cognitive</i>	<i>Level--Evaluation</i>	<i>Importance--Essential</i>	<i>Difficulty--High</i>
<p><b>Criteria</b>--Performance will be satisfactory when:</p> <ul style="list-style-type: none"> <li>* learner can identify major constellations and stars associated with a particular season of the year</li> <li>* learner can identify the motion of planets along the ecliptic</li> <li>* learner can identify deep-sky objects</li> <li>* learner can explain the properties of a moon</li> <li>* learner can locate celestial objects with various sets of coordinates</li> <li>* learner can identify the properties of stars</li> </ul>	<p><b>Conditions</b>--Competence will be demonstrated:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> in objective/ essay tests</li> <li><input type="checkbox"/> in reports based on sky observations</li> </ul>	<p><b>Learning Objectives:</b></p> <ul style="list-style-type: none"> <li>* Locate constellations and stars in the sky with a star chart and observe their positions in the sky during a season</li> <li>* Plot the path of planets in the sky with the constellations</li> <li>* Identify the distance, size, composition and types of deep-sky objects in the sky</li> <li>* Identify the surface features and phases of our Moon</li> <li>* Identify the orbits of the moons of other planets</li> <li>* Identify the phases and configurations of the planets</li> <li>* Locate a celestial object with right ascension, declination azimuth and altitude coordinates</li> <li>* Compare the parallax, magnitude, size, temperature, age and evolutionary stage of major stars</li> </ul>	
<b>2. Operate different types of telescope</b>			
<i>Domain--Cognitive</i>	<i>Level--Application</i>	<i>Importance--Essential</i>	<i>Difficulty--High</i>
<p><b>Criteria</b>--Performance will be satisfactory when:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> learner can identify the major types of telescopes</li> <li><input type="checkbox"/> learner can assemble and operate a telescope</li> </ul>	<p><b>Conditions</b>--Competence will be demonstrated:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> in objective/ essay test</li> <li><input type="checkbox"/> in class activities with telescopes</li> </ul>	<p><b>Learning Objectives:</b></p> <ol style="list-style-type: none"> <li>a. Explain the major functions of a telescope</li> <li>b. Describe the types of telescope that detect visible and invisible light</li> <li>c. Compare the different types of optical telescope designs</li> <li>d. Describe advantages and disadvantages of reflector and refractor telescopes</li> <li>e. Explain the major parts of an optical telescope and their functions</li> <li>f. Assemble and operate a telescope</li> </ol>	

## Types of Instruction

lecture and class discussions  
student presentations  
lecture demonstrations  
sky observations

## Grading Policy

**Evaluation Methods:** PRE-TEST- given first week of class = (0%)

SKY OBSERVATION REPORTS = (50%)

SKY MAP and TELESCOPE TESTS = (38%)

FINAL EXAM + POST-TEST (10%) same as pre-test = (12%)

**Grading Scale:**

Grade	Requirement
A	90-100%
B	80-89%
C	70-79%
D	60-69%

## Learning Plans

### Learning Plan 1-- STAR CHART

**Overview:** Introduce the learner to information provided on a star chart.

**Competency:** 1. **Interpret a star chart**

**Learning Activities:**

- \_\_\_ 1. Observe lecture demonstrations
- \_\_\_ 2. Listen and take notes during lectures
- \_\_\_ 3. View and take notes on videos and slides
- \_\_\_ 4. Ask questions during lecture and demonstrations
- \_\_\_ 5. Participate in class and small group discussions
- \_\_\_ 6. Complete activities with sky and telescope observations

**Performance Assessment Activities:** \* Complete sky map and objective/ essay tests  
\* Submit lab reports

### Learning Plan 2-- TELESCOPES

**Overview:** Introduce the learner to the operation of different types of telescopes.

**Competency:** 2. **Operate different types of telescope**

**Learning Activities:**

- \_\_\_ 1. Observe lecture demonstrations
- \_\_\_ 2. Listen and take notes during lectures
- \_\_\_ 3. View and take notes on videos and slides
- \_\_\_ 4. Ask questions during lecture and demonstrations
- \_\_\_ 5. Participate in class and small group discussions
- \_\_\_ 6. Complete activities with sky and telescope observations

**Performance Assessment Activities:** \_\_\_ 1. Complete sky map and objective/ essay tests  
\_\_\_ 2. Submit lab reports