Minnesota State University Moorhead

AST 266: Observational Astronomy

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: Goal 03 - Natural Science

An introduction to the use of telescopes and CCD imaging techniques in astronomical research. Students are expected to take and analyze image data from the Feder Observatory for a research project as part of the course. MnTC Goal 3L.

B. COURSE EFFECTIVE DATES: 03/11/2021 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Error in astronomical measurements
2. Time scales in astronomy
3. Coordinate systems for astronomical objects
4. Magnitude system
5. Measurement of magnitudes from images
6. Calibration of image data
7. Differential photometry and transformation to the standard magnitude system

D. LEARNING OUTCOMES (General)

1. Extract useful measurements from the reduced images (e.g. relative or absolute photometry).
2. Operate the telescope at the Feder Observatory.
3. Plan observations for a scientific project, including: Selecting date(s)/time(s) to take data at the Feder Observatory; generating finding charts for observations; choosing a method to analyze the data.
4. Calibrate images taken at the Feder Observatory for a scientific project.
5. Select a scientific project appropriate to the equipment available at MSUM.
6. Use these measurements to reach a conclusion in a scientific project.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 03 - Natural Science

1. Demonstrate understanding of scientific theories.
2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted