

**Course Assessment Report
Washtenaw Community College**

Discipline	Course Number	Title
Astronomy	111	AST 111 06/22/2019- General Astronomy
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Physical Sciences	Daniel Majaess
Date of Last Filed Assessment Report		

I. Review previous assessment reports submitted for this course and provide the following information.

1. Was this course previously assessed and if so, when?

No

2. Briefly describe the results of previous assessment report(s).

3.

4. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

5.

II. Assessment Results per Student Learning Outcome

Outcome 1: Students will be able to identify concepts and recognize principles of the History of Astronomy, the Night Sky, and Cosmology.

- Assessment Plan
 - Assessment Tool: Departmental Exam
 - Assessment Date: Fall 2008
 - Course section(s)/other population: all
 - Number students to be assessed: all
 - How the assessment will be scored:
 - Standard of success to be used for this assessment:

- Who will score and analyze the data:

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
164	147

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

The assessed sample excludes students who withdrew or completed few tasks.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

The sample features students from a F2F morning section, a F2F afternoon section, and several DL sections.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

The outcome was assessed on the basis of tests which exhibit an uncomplicated answer key (e.g., multiple choice).

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: No

The existing decade-old master syllabus exhibited the following breakdown: i) the history of astronomy, ii) [objects in] the night-sky, and iii) cosmology. The current tests essentially sample among the following matching areas, namely i) the history of astronomy, celestial cycles, planets, ii) starlight and stars, iii) galaxies and cosmology.

The results are as follows, and are tied to straight averages: i) 75%, ii) 77%, and iii) 69%. The straight average across all test scores is 75%, whereby 56% of the class scored above 75%. The implied average test mark is consistent with that

expected for a high-standard and robust science astronomy class but does not meet the dated criterion that 75% of the class achieve an average test score of 75%.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

The results hint that students achieved higher marks when the topic was linked to stars (second test). At first glance one could potentially hypothesize that this test garnered increased student attention due to its content, which includes the nuclear fusion process powering the Sun and exotic phenomena such as supernovae. However, an equally compelling hypothesis is that the second test scores were higher than the first because the students gained experience, and astronomy is a subject where the knowledge is cumulative. However, the mark for the third test subsequently drops owing to fatigue endemic to term's end.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The tests require constant refinement, namely to sharpen the succinctness of the questions and their possible answers. Instructors must continue questioning what is most important for a demographic of students taking this course. The majority are pursuing careers outside astrophysics, and beyond enhancing their cosmic, lab, and arithmetic knowledge, the aim is to enrich their lives going forward and draw them toward the wonder of the encompassing Universe(s).

Outcome 2: Students will be able to solve astronomical problems pertaining to the Night Sky, Cosmology, and the History of Astronomy.

- Assessment Plan
 - Assessment Tool: Departmental Exam
 - Assessment Date: Fall 2008
 - Course section(s)/other population: all
 - Number students to be assessed: all
 - How the assessment will be scored:
 - Standard of success to be used for this assessment:
 - Who will score and analyze the data:
1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2019	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
164	147

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

The assessed sample excludes students who withdrew or completed few tasks.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

The sample features students from a F2F morning section, a F2F afternoon section, and several DL sections.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

The outcome was assessed on the basis of labs which exhibit an uncomplicated answer key (e.g., numerical value).

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

New tailor-made labs were created since the last master syllabus (a decade ago) that aim to bolster the course's MTA accreditation. The course's MTA nature is linked to the labs, and the College expanded the department faculty in part to institute such changes. The emphasis is on enhancing lab, scientific research, and math technique. A key pillar being the comprehension of uncertainties linked to solving astronomical problems, comparing results using uncertainties in science, and interpreting and constructing graphs that exhibit data featuring uncertainties. That broadly matches the outcome cited on the existing decade-old master syllabus, namely "Students will be able to solve astronomical problems ..." The class straight average is 85%, which is high granted students were afforded the ability to achieve a perfect score on the arithmetic-based labs if they committed the time. The standard of success was achieved according to the dated

criterion (i.e., 75% of students obtain an average of 75%), as 80% of the class achieved a score of 75%.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

The labs are accomplishing their task, namely to buttress the course's MTA designation and enhance a student's lab, scientific research, and arithmetic experience.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The new labs implemented are achieving the objectives sought, but require incessant fine-tuning, particularly on the DL platform. Specifically, further embedding of videos and graphics is desirable, and perhaps additional visuals whereby a measurement is inferred by the student, rather than the student being provided results to analyze.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

There was no previous report.

2. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

The course is beneficial and enriching for students, yet a process of incessant refinements continues. A suite of modifications were and will be made to the course, and partly aim at improving its ease of use and bolstering the course's MTA standing. Concerning the latter, beyond newly implemented labs, students now engage in a project to carry out visual (naked eye) observations of the cosmos with the aid of advanced smartphone apps. The assessment helped cement existing ideas concerning the course's improvement and of pedagogy in general.

3. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

The instructor has been fortunate that numerous colleagues at the institution have acted as a sound-board, given counsel drawn from years of experience, and provided encouragement to carry out envisioned modifications. That open discussion continues unabated, including findings shared in this report.

4.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Outcome Language	The second outcome shall be adjusted to garner pertinent laboratory, scientific research, and math experience.	The adjustment reflects the importance of bolstering the course's MTA designation, which relies on a viable lab component.	2019
Outcome Language	A new outcome to be implemented is that students shall observe the cosmos.	Visual observations are a pertinent part of astronomy, and the course shall convey to students how they can readily access the cosmos using a smartphone app.	2019
Outcome Language	The first outcome will be adjusted slightly to i) the history of astronomy, celestial cycles, planets, ii) starlight and stars, iii) galaxies and cosmology.	The slight change better matches the present iteration of the course, relative to the existing decade-old master syllabus.	2019

5. Is there anything that you would like to mention that was not already captured?

6.

III. Attached Files

[AST 111 Assessment Data](#)

Faculty/Preparer: Daniel Majaess **Date:** 07/26/2019
Department Chair: Suzanne Albach **Date:** 07/29/2019
Dean: Kimberly Jones **Date:** 08/13/2019
Assessment Committee Chair: Shawn Deron **Date:** 09/11/2019