

# NS A011N: MESA (MATH, SCIENCE, ENGINEERING ACHIEVEMENT) LABORATORY AND INDUSTRY EXPLORATION

| Item                               | Value  |
|------------------------------------|--|
| Curriculum Committee Approval Date | 03/12/2025                                     |
| Top Code                           | 493014 - Study Skills                          |
| Units                              | 0 Total Units                                  |
| Hours                              | 63 Total Hours (Lecture Hours 9; Lab Hours 54) |
| Total Outside of Class Hours       | 0  |
| Course Credit Status               | Noncredit (N)                                  |
| Material Fee                       | No   |
| Basic Skills                       | Basic Skills (B)                               |
| Repeatable                         | Yes; Repeat Limit 99                           |
| Open Entry/Open Exit               | Yes  |
| Grading Policy                     | P/NP/SP Non-Credit (D)                         |

## Course Description

The second course, in a two-course certificate of competency program for MESA students, will support and enhance the student's academic success within the STEM pathways through the development of knowledge and understanding of the existing college processes and resources. The class also provides a forum and instruction in soft-skill (writing, speaking, etc.) development that will improve workforce preparation. Not Transferable.

## Course Level Student Learning Outcome(s)

1. Produce higher rates of persistence in Calculus-based major.
2. Apply advanced preparation in application writing.
3. Application of a variety of STEM lab skills.
4. Demonstrate improvement in STEM content mastery.

## Course Objectives

- 1. Produce higher rates of persistence in MESA students compared to other calculus-based STEM major students.
- 2. Demonstrate understanding of a variety of STEM lab skills
- 3. Demonstrate improvement in content mastery through the completion of writing and discussion exercises and use of appropriate college resources.

## Lecture Content

Advanced Application skills Interview techniques and practice  
Examine different types of applications Scholarship Internship College  
Introduction to industry Learn about local industry Opportunities to  
network at local industry events Guest speakers Participation with  
professional development organizations (ie, SHPE, NCAS, etc. Leadership  
developmnet Shared leadershipo in plaanning, marketing, and executing

skills labs or guest speakers for MESA Presentations on MESA program to ASOCC and at other student or college events

## Lab Content

STEM skills labs Lab tours/orientation Bio/chem lab skills (i.e. pipet use, orientation to lab materials) Intro to graphing calculators and their use in physics/engineering Basic coding review for CS majors Open lab time for students to practice and apply their skills

## Method(s) of Instruction

- Enhanced NC Lect (NC1)
- Enhanced NC Lab (NC2)

## Instructional Techniques

1. Independent and group study. 2. Written and oral activities that provide a vehicle for developing essential academic and learning skills. 3. Direct collaborative learning exercises that encourage the students to take responsibility for processing the course material.

## Reading Assignments

This course will enhance critical thinking, learning skills, and academic performance through collaborative and active learning strategies, including written or oral activities.

## Writing Assignments

This course will enhance critical thinking, learning skills, and academic performance through collaborative and active learning strategies, including written or oral activities.

## Out-of-class Assignments

This course will enhance critical thinking, learning skills, and academic performance through collaborative and active learning strategies, including written or oral activities.

## Demonstration of Critical Thinking

This course will enhance critical thinking and academic performance through collaborative and active learning strategies, including written or oral activities.

## Required Writing, Problem Solving, Skills Demonstration

Instructor evaluation of attendance, satisfactory completion of individual and group exercises.

## Eligible Disciplines

Astronomy: See physics/astronomy Master's degree required. Biological sciences: Master's degree in any biological science OR bachelor's degree in any biological science AND master's degree in biochemistry, biophysics, or marine science OR the equivalent. Master's degree required. Chemistry: Master's degree in chemistry OR bachelor's degree in chemistry or biochemistry AND master's degree in biochemistry, chemical engineering, chemical physics, physics, molecular biology, or geochemistry OR the equivalent. Master's degree required. Computer science: Master's degree in computer science or computer engineering OR bachelor's degree in either of the above AND master's degree in mathematics, cybernetics, business administration, accounting or engineering OR bachelor's degree in engineering AND master's degree in cybernetics, engineering mathematics, or business administration OR bachelor's degree in mathematics AND master's degree in cybernetics, engineering mathematics, or business administration OR bachelor's degree in any of the above AND a master's degree in information science, computer information systems, or information systems OR

the equivalent. Note: Courses in the use of computer programs for application to a particular discipline may be classified, for the minimum qualification purposes, under the discipline of the application. Master's degree required. Counseling: Master's degree in counseling, rehabilitation counseling, clinical psychology, counseling psychology, guidance counseling, educational counseling, social work, or career development, marriage and family therapy, or marriage, family and child counseling, OR the equivalent. (NOTE: A bachelor's degree in one of the above listed degrees and a license as a Marriage and Family Therapist (MFT) is an alternative qualification for this discipline.) Master's degree required. Title 5, section 53410.1 Earth science: Master's degree in geology, geophysics, earth sciences, meteorology, oceanography, or paleontology OR bachelor's degree in geology AND master's degree in geography, physics, or geochemistry OR the equivalent. Master's degree required. Ecology: Master's degree in ecology or environmental studies OR the equivalent OR see interdisciplinary studies. Master's degree required. Engineering: Master's degree in any field of engineering OR bachelor's degree in any of the above AND master's degree in mathematics, physics, computer science, chemistry, or geology OR the equivalent. (NOTE: A bachelor's degree in any field of engineering with a professional engineer's license is an alternative qualification for this discipline.) Master's degree required. Title 5, section 53410.1 Mathematics: Master's degree in mathematics or applied mathematics OR bachelor's degree in either of the above AND master's degree in statistics, physics, or mathematics education OR the equivalent. Master's degree required. Physical sciences: See interdisciplinary studies Master's degree required. Physics/Astronomy: Master's degree in physics, astronomy, or astrophysics OR bachelor's degree in physics or astronomy AND master's degree in engineering, mathematics, meteorology, or geophysics OR the equivalent. Master's degree required.

## Other Resources

1. Instructor-provided resources as needed.