

OHLONE COLLEGE
Ohlone Community College District
OFFICIAL COURSE OUTLINE

I. Description of Course:

1. **Department/Course:** MATH - 111

2. **Title:** Introduction to Matlab

3. **Cross Reference:**

4. **Units:** 3

Lec Hrs: 3

Lab Hrs:

Tot Hrs: 54.00

5. **Repeatability:** No

6. **Grade Options:** Grade Only (GR)

7. **Degree/Applicability:**

Credit, Degree Applicable, Transferable
- CSU (T)

8. **General Education:**

9. **Field Trips:** Not Required

10. **Requisites:**

Prerequisite

MATH 101A Calculus With Analytic
Geometry and/or

Advisory

ENGL 101A Reading and Written
Composition

12. Catalog Description:

This course provides students with an introduction to the software package Matlab. Topics include programming, two and three dimensional graphing, data import and export, curve fitting, recursion and applications to calculus.

13. Class Schedule Description:

An introduction to the software package Matlab.

14. Counselor Information:

This course is designed for students majoring in engineering and the physical sciences.

II. Student Learning Outcomes

The student will:

1. Use Matlab in an interactive mode.
2. Use Matlab in a programming mode.
3. Integrate Matlab with Microsoft Word.
4. Create and edit two and three dimensional graphs.
5. Solve a variety of mathematical problems including root finding, numerical differentiation, numerical integration, and regression.

III. Course Outline:

A. MATLAB Basics

1. Use the interactive features of MATLAB

B. Arrays and Vector Operations

1. Work with arrays and vector operations
2. Incorporating MATLAB output into other documents

C. Programming

1. Input/Output,
2. if-then-else,

- 3. Boolean operators,
- 4. functions, m-files, and scripts
- D. Creating and modifying 2-dimensional graphics
- E. Creating and modifying 3-dimensional graphics
- F. Use curve fitting techniques with data sets
 - 1. Least squares regression
 - 1. Interpolation and extrapolation
- G. Recursion
- H. Numerical root finding
- I. Numerical differentiation
- J. Numerical integration

IV. Course Assignments:

A. Reading Assignments

- 1. As assigned by the instructor.

B. Projects, Activities, and other Assignments

- 1. Students will complete a variety of assignments that require the use of the software package Matlab.

C. Writing Assignments

- 1. Certain assignments may require written assignments to analyze the purpose/output of Matlab code.

V. Methods of Evaluation:

- A. Complete a series of assignments using Matlab.
- B. Complete a series of progress assessments, including a final.

VI. Methods of Instruction:

- A. Lecture
- B. Laboratory
- C. Distance Learning

VII. Textbooks:

Recommended

Supplemental

- A. Hanselman and Littlefield *Mastering Matlab 7* 1st Edition, Prentice Hall, 2004 ISBN: 0131430181
- B. Higham and Higham *Matlab Guide* 1st Edition, SIAM, 2005 ISBN: 0898715784

VIII. Supplies:

- A. Students may choose to buy the student version of Matlab.