



**THE OHIO STATE UNIVERSITY**  
COLLEGE OF ENGINEERING

# Introduction to Computer Programming in MATLAB for Engineers and Scientists

## ENGR 1221

**Credit Hours:**

2.00

---

**Course Levels:**

Undergraduate (1000-5000 level)

---

**Course Components:**

Lecture

Lab

---

**Course Description:**

Introduction to computer programming and problem solving techniques with MATLAB applications in engineering and the physical sciences; algorithm development; programming lab experience.

---

**Prerequisites and Co-requisites:**

Prereq: Engr 1181.01 or 1181.02 or 1187 or 1281.01H or 1281.02H or 1281.03H.

---

**Course Goals / Objectives:**

- Be competent with writing simple MATLAB programs performing numerical calculations
  - Be competent with use of basic constructs provided by high-level imperative programming languages: sequencing, selection, and iteration
  - Be familiar with algorithmic thinking
  - Be familiar with use of computational approaches to solving problems in science and engineering
  - Be familiar with using basic data structures such as arrays
  - Be familiar with procedural composition
  - Be exposed to computational science concepts, including simulation, optimization, and data analysis
-

**Course Topics:**

- Introduction to computation, concept of algorithm
  - Variables, expressions and assignment
  - Selection statements: if, switch
  - Booleans, strings
  - Matrices and indexing
  - Loops: for and while; use of arrays
  - Graphing, input/output with files, scripts
  - Functions
  - Higher order operators on matrices
  - Review/exams
- 

**Designation:**

Elective