**Math/CAM 1351**

**Mathematical Technology (3-0)**

# Subject Matter

This course is intended to familiarize students with a variety of software for mathematical computation and technical document processing, while also introducing some interesting mathematical topics.

**Prerequisite**: Mathematics 1302.

This course is part of the ASU core. The learning outcomes, assignments/general activities, and assessments are identified below.

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| **Course Level Learning Outcomes** | **Proposed 2014 Core Assignments/General**  **Learning Activities for the Core Objectives** | **Proposed 2014 Core Assessments** |
| **MATH/CAM 1351**  **CT1:** Students will use contemporary software to analyze and solve a variety of mathematical problems such as those involving algebraic equations, probability simulations, curve fitting, iteration and recursion, area and volume computations, and matrix applications.  **CS1:** Students will analyze and interpret symbolic, numerical, and graphical mathematical problems and incorporate their results in a mathematical document or presentation of professional quality incorporating text, mathematical notation, and graphics.  **EQS1:** Students will acquire, organize, and analyze numerical data using curve fitting (linear and nonlinear) and visual aids (two-dimensional plots with linear and logarithmic scales, scatter plots, and bar graphs). | **MATH/CAM 1351**  **CT1:** Assignments/projects requiring the use of the MATLAB software package to analyze mathematics problems from symbolic, numerical, and graphical points of view  **CS1:** Assignments/projects requiring the MATLAB software package to create graphics and analyze mathematical problems and incorporate the results into a professionally written document using the LaTeX software package  **EQS1:** Assignments/projects requiring the MATLAB software package to analyze data numerically and graphically | **MATH/CAM 1351**  All SLOs in CT, CS, and EQS will be evaluated by scoring one or more assignments and/or projects |

# Student Learning Outcomes

1. **The students will demonstrate factual knowledge.** Students will utilize the specific functions and commands for producing mathematical documents. Students will also utilize specific functions and commands from the program MATLAB.
2. **The students will apply the fundamental aspects of mathematical technology.** Students will use contemporary software to study a variety of mathematical problems such as those involving algebraic equations, probability simulations, curve fitting, iteration and recursion, area and volume computations, and matrix applications. Students will also represent data and functions using visual aids such as two-dimensional plots with linear and logarithmic scales, scatter plots, histograms, three-dimensional surface plots, contour plots, and animations.
3. **The students will apply course material to solve problems.** Students will implement algorithms for analyzing and solving mathematical problems, using an appropriate high-level programming language.
4. **The students will develop specific skills, competencies, and thought processes sufficient to support further use of mathematical technology.** Students will prepare mathematical documents and presentations of professional quality incorporating text, mathematical notation, and graphics. Students will also solve problems, represent solutions, and develop algorithms using software.

# Major Course Requirements

## Attendance

Regular attendance is important since much of what we cover involves hands-on computer work. In-class quizzes cannot be rescheduled for any reason, including absences. Unexcused absences will result in deductions from the attendance grade.

## Daily Work

Daily work will consist primarily of computer assignments made available on Blackboard, supplemented by some in-class quizzes. Assignments turned in late will generally not be accepted for full credit, if for any credit at all.

## Calculations

Your attendance grade will count for 10%, your grade on the daily work will count for 65%, the midterm project will count for 10%, and the final project will count for 15%; then the usual grades (90 and above ↔ A, 80-89 ↔ B, 70-79 ↔ C, 60-69 ↔ D, and less than 60 ↔ F).