

ESC 205 – Computational Tools for Physical Science II

Syllabus

Credit

2 semester hours

Prerequisites

PHY 151 or 251

Course Description

An introduction to the use of a commercially available array processing software package such as MATLAB to analyze large blocks of data (e.g., multiple time-dependent temperatures)

Rationale for Course

Recent college science graduates entering the workplace are often required to use commercially-available software as problem solving tools. This class exposes the student to such a tool that is widely used throughout the science and technology industry.

Learning Objectives

To introduce the student to computer programming concepts that are useful in solving physical science problems.

Academic Integrity

Students are expected to be honest and to submit their own work on exams and research papers. Strict adherence to the Mississippi College “Honesty Policy” (*2009–2010 Mississippi College Undergraduate Bulletin, pg. 60*) will be followed.

Course Outline

- Assignment statements
- Data input/output, looping
- File input/output
- Plot generation
- Solving systems of algebraic equations
- Statistics
- Curve fitting
- Numerical integration/differentiation
- Image processing
- Simple graphical user interface (GUI) development.

Methods of Instruction

Presentation of course material will be accomplished through a combination of lectures (oral and audio-visual), demonstrations, laboratory sessions and possibly reading assignments.

Recommended Text

MATLAB, A Practical Introduction to Programming and Problem Solving; Attaway; Butterworth-Heinemann

Grading

Final grades will normally be determined by the average scores on a number of examinations as well as some weighted average of homework assignments. Topical reports may also be assigned by the instructor. A ten point scale will be used to assign letter grades.

Makeup Tests

Makeup tests will be given only under the following circumstances:

- Consent of the instructor has been obtained prior to the test.
- An excused absence is obtained from a doctor or the Vice-President for Academic Affairs

Absences

Mississippi College policies on attendance and academic integrity will be enforced. Please see the *2009-2010 Mississippi College Undergraduate Bulletin*, pg. 56-57 for additional details of these policies. Students are responsible for all work missed during an absence.

Special Needs

If you need special accommodations due to learning, physical, psychological, or other disabilities, please contact Dr. Buddy Wagner in the Counseling and Career Development Center. He may be reached by phone at 601-925-3354