

**Exam 1 Objectives** - For this exam you should be able to:

## Basic functions:

1. Perform and document calculations using MATLAB and Excel
2. Explain and use the order of precedence of operators in MATLAB and Excel
3. Explain and use the assignment operator (=)
4. Identify, explain and troubleshoot general aspects of the MATLAB interface
5. Use trigonometric and inverse trigonometric functions
6. Use the *roots* and *polyval* functions

## Complex numbers

7. Create complex numbers in MATLAB
8. Perform simple calculations (**add**, subtract, multiply and divide) by hand and in MATLAB.
9. Determine magnitude and angle of a complex number in MATLAB

## Vectors

10. Create row and column vectors in MATLAB
11. Address specific elements in a vector
12. Determine the value and location of the maximum or minimum of a vector
13. Determine the summation, or magnitude of a vector
14. Complete element-by-element calculations with vectors using MATLAB
15. Define and carryout the concatenation of two vectors

## Programming

16. Create and run a script file in MATLAB
17. Create and run a function in MATLAB with multiple inputs and multiple outputs from the command line
18. Explain the nature of and difference between Global and Local variables
19. Describe the differences between a script and a function.
20. Describe the nature of and use proper comments in programs
21. Use the input function to request user input in a script file

## Problem Solving

22. Be able to solve geometric and algebraic problems similar to those on homework assignments and class examples.

## Matrices

23. Create a two-dimensional matrix in MATLAB
24. Transpose matrix in MATLAB and by hand.
25. Address specific elements of a matrix or determine the elements addressed both by hand and in MATLAB
26. Complete element-by-element calculations in MATLAB
27. Use Matrix functions (e.g. *max*, *min*, *size*, *length*...)
28. Carry out Matrix multiplication by hand and in MatLAB.

**Exam 1:**

**Exam Date:**  
February 20<sup>th</sup>

- Part of the exam will be without the computer, part of it will be with the computer.
- Exam will include a function problem worth 20 – 30 % of points. Expect multiple inputs, multiple outputs and the need to handle vectors.
- No make up exams will be given
- Closed book and notes.
- You may have one (8.5 x 11) sheet of paper (both sides) with your own notes. Your note sheet must be unique and is to be turned in with your exam.
- Accessing the internet, your network drive or portable media during the exam will result a failing grade on the exam.