

Professor H. L. Wong

Introduction to Computer Methods in Civil Eng.

How well did you learn?				
Not at all → Very Well				
1	2	3	4	5
CIRCLE YOUR RATINGS				
↓ BELOW		↓		

Course Objectives and Outcomes

Objective: Learn the fundamentals of programming (in MATLAB®).						
Outcome. How well did this course increase your ability to understand and/or do the following?						
1	Navigate folder and files	1	2	3	4	5
2	Understand types of numbers (integer and floating point), character strings, logical (booleans), etc.	1	2	3	4	5
3	Understand the concept of a computer algorithm, flow charts	1	2	3	4	5
4	Perform arithmetic and logical expressions using a computer program.	1	2	3	4	5
5	Perform basic input/output operations for reading and writing data to/from a file.	1	2	3	4	5
6	Understand the concepts of data structures and cell arrays.	1	2	3	4	5
7	Perform basic plotting and graphing functions.	1	2	3	4	5
8	Use vectors and matrices to store and retrieve data.	1	2	3	4	5
9	Develop functions and subfunctions to perform some task.	1	2	3	4	5
10	Use conditional statements to handle optional parts of an algorithm.	1	2	3	4	5
11	Use loops to perform repeated tasks.	1	2	3	4	5
12	Use the built-in debugger to follow the flow of code and debug code.	1	2	3	4	5
13	Understand the concept of different "workspaces" for each function as well as base & global workspaces.	1	2	3	4	5
14	Understand how to use recursion to solve numerical problems.	1	2	3	4	5
15	Understand the limited precision of floating point math and how it impacts numerical solutions.	1	2	3	4	5
16	Use inline functions and function handles to pass arbitrary (anonymous) functions to another function.	1	2	3	4	5

Objective. Learn how to design algorithms for solving problems in civil engineering.						
Outcome. How well did this course increase your ability to understand and/or do the following?						
17	Develop a numerical algorithm from a set of given instructions or procedures	1	2	3	4	5
18	Debug an existing numerical algorithm.	1	2	3	4	5
19	Write code in a style that is easily humanly readable.	1	2	3	4	5

Objective. To study numerical algorithms: sorting, roots of equations, numerical integration, solve linear eqns.						
Outcome. How well did this course increase your ability to understand and/or do the following?						
20	Sort numbers.	1	2	3	4	5
21	Find the roots of an equation.	1	2	3	4	5
22	Perform numerical integration.	1	2	3	4	5
23	Solve a set of linear equations in multiple unknowns.	1	2	3	4	5

Relationship of Civil Engineering Program Course Objectives to Outcomes

Objective. Give the students an overall understanding of the engineering process, applications, the role of computers in engineering and instill the need for continuing education and keeping skills current.						
Outcome. How well did this course increase your ability to understand and/or do the following?						
(a)	an ability to apply knowledge of mathematics, science, and engineering.	1	2	3	4	5
(e)	an ability to identify, formulate, and solve engineering problems.	1	2	3	4	5
(i)	a recognition of the need for, and an ability to engage in life-long learning.	1	2	3	4	5