Course number and name: Computer Programming
Credits: 6 ECTS (3 US credits)
Credit categorization: Mathematics and basic science
Instructor: To be determined

Office:
Email:
Office hours:

Text book:

Required:
Programming Logic and Design, Comprehensive, 8th Ed. Joyce Farrell

Recommended supporting material:
Mark Lutz; Learning Python. 5th Ed. O'Reilly

Specific Course information:

Brief description:
This course is an introduction to fundamental concepts of programming and computational problems solving. Includes the design, implementation, testing and evaluation of computer programs. Provides the basic building blocks found in most programming languages. The course aims computational thinking to solve problems and design systems using concepts of computer science.

Prerequisites or co-requisites:
Mathematics

Required (Required, Elective or Selected Elective)

Course objectives and outcomes:

Course objectives:

1. Provide students with the basic knowledge to design programs and their application to solve basic problems
2. Understand the application of variables and control structures to real-life computational problems
3. Apply computer programming to solve problems of engineering practical applications

Course outcomes:

1. Identify, formulate and solve engineering problems using the application of computer programming (ABET outcome 1)
2. Ability to communicate effectively in oral and written communications (ABET outcome 3)
3. Ability to function effectively on a team to complete class assignments related with the design, implementation, testing and evaluation of computer programs (ABET outcome 5)
4. Ability to acquire and apply new knowledge as needed, using appropriate learning strategies (ABET outcome 7)

List of topics to be covered:

1. Variables, Expressions and String Basics
2. If-else, Boolean Expressions, and String Formatting
3. While-Loops and Basic List, Tuple, Set, and Dict

4. For-Loops, Nested Loops, and program Design
5. Functions, Parameters and Return Values
6. Objects and Graphics
7. Methods, Nesting, Slicing, and Comprehension
8. Dictionaries II and Handle Exceptions
9. Files

Assessment structure:

Methods of Evaluation	**Weight**	**Date/freq.**	**Description**
Final exam	40%	End of semester	Grading: 70% problems, 30% of theory
Following up activities	50%	Three/ course	Assessment controls lasting 1 hour
Homework and presentations	5%	Every week	
Experimental work or fieldwork	5%	2-3 hours/ week	Assessment of experimental skills, report writing and oral communication presenting report