

COLLEGE/SCHOOL OF (SOMAC)

Course Outline

Shift? Day/Evening

Lecturer: Orban Martin-Luther

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Course Title: Introduction to Structured Programming.

Course Program: Bachelor/Diploma.

Academic Year: 2020 - 2021

Semester Two (Aug – Dec 2021)

Overview

Overall Description of the Course	This course is an introduction to structured computer programming. Students will study algorithms and top-down design, and will implement algorithms in a procedural programming language. Lab exercises and programming assignments will emphasize scientific and numerical applications. This course has been designed with the following objectives in mind: (1) To provide the understanding of structured programming Principles (2) To use structured programming principles in problem solving by transferring the model-based problem into computer based solution (3) To enhance communication and social skills through group project
Overall Learning Outcomes	Upon successful completion of this course, students will be able to : ❖ Demonstrate the ability to understand the structured programming principles ❖ Design algorithm for problem solving and implement the solution using structured programming language ❖ Participate effectively in a team based programming of small scaled-project.
General Description of Teaching/Learning Methods and Modes of Assessment	Guest lecturers: Presentations: Experiments/Lab practices Online instruction: Mode of Assessment:

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	Assignments 10% Lab exercises 10% CAT 20% Final Exam 60%
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Details

Topic <i>(also give brief description of topic)</i>	Teaching and Learning Methods to be Employed	Learning Outcomes <i>(In terms of knowledge, skills, attitudes, and character)</i>
Topic 1: Overview of programming	Lecture by teacher	Demonstrate the ability to understand the structured programming principles
Topic 2: Problem-solving and C	Small groups such as task oriented, discussion, Socratic	Participate effectively in a team based programming of small scaled-project
Topic 3: Variables, constants and assignment statements	Lecture by teacher and Lab experiments/ exercises	Demonstrate the ability to understand the structured programming principles
Topic 4: Built-in and programmer-defined functions	Lecture by teacher and Class projects	Demonstrate the ability to understand the structured programming principles
Topic 5: Selection structures (branching)	Lecture by teacher and Lab experiments/ exercises	Design algorithm for problem solving and implement the solution using structured programming language
Topic 6: Repetition structures (looping)	Lecture by teacher and Lab experiments/ exercises	Design algorithm for problem solving and implement the solution using structured programming language
Topic 7: Sequential access files	Lecture by teacher and Lab experiments/ exercises	Demonstrate the ability to understand the structured programming principles
Topic 8: Arrays	Small groups such as task oriented, discussion, Socratic	Participate effectively in a team based programming of small scaled-project

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Topic 10: Structs	Lecture by teacher and Lab experiments/ exercises	Demonstrate the ability to understand the structured programming principles
Topic 11: Pointers	Small groups such as task oriented, discussion, Socratic	Participate effectively in a team based programming of small scaled-project
Topic 12: Classes	Lecture by teacher and Lab experiments/ exercises	Design algorithm for problem solving and implement the solution using structured programming language
Topic 13: Mini projects 1	Experiments and Presentation	Participate effectively in a team based programming of small scaled-project
Topic 14: Mini projects 2	Role play	Participate effectively in a team based programming of small scaled-project
Topic 15:		

Useful Books and Papers

1. Greg Perry, Dean Miller. "C Programming Absolute Beginner's Guide", 3rd ed., Que Publishing, 2013.
2. Stephen G. Kochan. "Programming in C", 4th ed., Addison-Wesley Professional, 2014.
3. Paul Deitel and Harvey Deitel. "C for Programmers with an Introduction to C11", Prentice Hall, 2013.
4. Stephen Prata. "C Primer Plus", 6th ed., Addison-Wesley Professional, 2013.
5. Samuel P. Harbison and Guy L. Steele Jr. "C: A Reference Manual", 5th ed., Pearson, 2002.
6. Charles Petzold. "Code: The Hidden Language of Computer Hardware and Software", Microsoft Press, 2000.

Useful Web Sources 1. Course page (to be organized)

2. <http://web-int.u-aizu.ac.jp/~pyshe/> : Evgeny Pyshkin's web page on the university web site.
3. <https://www.programiz.com/c-programming>: Learn C Programming. The definitive guide
4. <http://www.cprogramming.com/> : C Programming and C++ Programming
5. <http://web-ext.u-aizu.ac.jp/course/prog1/> (in Japanese) : University of Aizu "Programming C"