TKU211131

Fundamentals of Programming

Pemrograman Dasar

BASIC INFORMATION

Course Credit	3 / 150 minutes per Week
Course Type	Required
Course Classification	Engineering Topics
Prerequisites	-

STUDENT AND LEARNING OUTCOMES

Covered Student Outcomes

Fundamental and Engineering Knowledge (KP.1)

Development of Engineering Solution (KP.2)

Modern Tools Utilization (SK.1)

Learning Outcomes

LO1 Student are able to explain the concept of programming, including syntax, error handling and file managements.

LO2 Students are able to develop procedural paradigm programming

LO3 Student are able to utilize various data types and basic data structures to develop the programs.

LO4 Students are able to implement effective and error-free programs.

COURSE DESCRIPTION

This course will discuss about program development steps, ranging from defining problem, determining program input & output, and determining steps by utilizing operator and operands, data types, structure, programming control. This course also elaborates programming strategies and modularity.

TOPICS

PART 0 : MOTIVATION

1. Computer, People, and Programming

1.1 Introduction

1.2 Software

1.3 People

1.4 Computer are everywhere

1.5 Ideal for Programmer

1.6 History, ideals and professionalism

1.7 Programming Language History Overview

PART I : THE BASIC

2. Hello World!

2.1 Program

2.2 The classic first program

2.3 Compilation

2.4 Linking

2.5 Programming Environments

3. Object, Types, and Values

3.1 Input

3.2 Variables

3.3 Input and type

3.4 Operations and Operators

3.5 Assignment and initialization

3.6 Composite assignment operators

3.7 Names

3.8 Types and Objects

3.9 Type safety (Safe & Unsafe conversions)

4. Computation

4.1 Computation

4.2 Objective and tools

4.3 Expressions

4.4 Statements

4.5 Functions

5. Error

5.1 Introduction

5.2 Sources of errors

5.3 Compile-time error

5.4 Link-time error

5.5 Run-time errors

5.6 Exceptions

5.7 Logic errors

5.8 Estimation

5.9 Debugging

5.10 Pre- and Post-conditions

5.11 Testing

6. Writing a Program

6.1 Thinking about the problem

6.2 Grammar & Code

6.3 Program Structure

7. Completing a Program

7.1 Introduction

10.1 Input and Output

10.2 The I/O stream model

10.3 Files

10.4 Opening a file

10.5 Reading and writing a file

10.6 I/O error handling

10.7 Reading a single value

10.8 User-defined output & input operators

10.9 A standard input loop

10.10 Reading a structured file

11. Customizing Input and Output

11.1 Regularity and irregularity

11.2 Output formatting

11.3 File opening and positioning

11.4 String streams

11.5 Line-oriended input

11.6 Character classification

11.7 Using nonstrandard separator

12. Testing

12.1. Introduction to Testing

12.2. Testing Procedure

12.3. Design for testing

12.4. Debugging

12.5. Performance

REFERENCES

[1] Programming Principle and Practice Using C++ 2nd Ed. (Bjarne Stroustrup)
[2] The C++ Programming Language 4th Ed. (Bjarne Stroustrup)