Data Structures

CT077-3-2- DSTR and Version VD1

Introduction and Overview

Lecturer information

Lecturer Name: Syed Mohd Zahid

Email: syedmohdzahid@staffemail.apu.edu.my

Telephone Extension:

Pre-requisites for this module

- Fundamentals of Software Development (CT010-1-1)
- Or equivalent

Aims of this module

- This module is designed to introduce common data structures that are essential for computing, and to practice implementing them using a suitable programming language.
- The module will enable students to develop their skills to choose appropriate data structures for problem solving.

Course Learning outcomes, CLOs

- **At the end of this course, YOU should be able to:**

1. Explain various data structures and their applications in computing environment. (C2, PLO1)

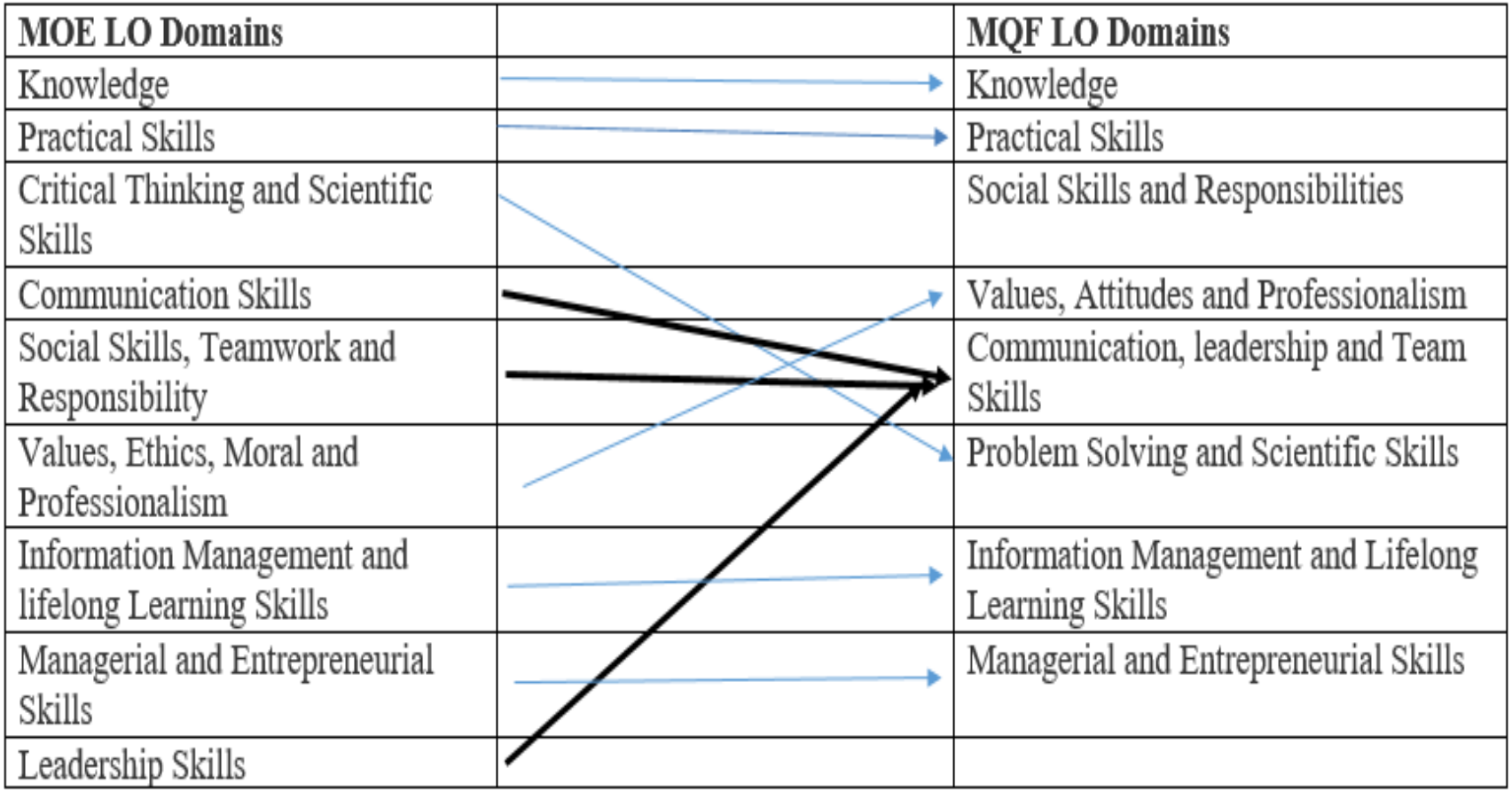
2. Apply various data structures using a programming language (C3, PLO3)

3. Demonstrate a solution using appropriate data structures for a given problem (A3, PLO7).

Mapping of CLOs with MOEs Domain

Course Learning Outcomes (CLO)	Programme Learning Outcomes (PLO)											
	Knowledge and Understanding, Cognitive Skills	Cognitive Skills,	Practical Skills,	Interpersonal Skill,	Communication skill,	Digital Skills,	Numeracy Skills,	Leadership, autonomy and responsibility,	Personal Skills,	Entrepreneurial Skills,	Ethics and professionalism	
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CLO 1	✓											
CLO 2		✓										
CLO 3					✓							

MQF and MOE Domains



MOE LO Domains	MQF LO Domains
Knowledge	Knowledge
Practical Skills	Practical Skills
Critical Thinking and Scientific Skills	Social Skills and Responsibilities
Communication Skills	Values, Attitudes and Professionalism
Social Skills, Teamwork and Responsibility	Communication, leadership and Team Skills
Values, Ethics, Moral and Professionalism	Problem Solving and Scientific Skills
Information Management and lifelong Learning Skills	Information Management and Lifelong Learning Skills
Managerial and Entrepreneurial Skills	Managerial and Entrepreneurial Skills
Leadership Skills	

Teaching Strategies

- Lecture
- Lab Practical
- Case Study (Individual)

Assessment Methods

- Final Exam **(50%)** : CLO1

- Group Project **(50%)**
  - C++ Programming : CLO2, CLO3

  **refer to SAIS for details

Student Learning Time (SLT)

- **Course Credit Value: 3**
- **Total Learning Hours:**
  - Lecture: 28 hours per semester
  - Tutorial : 21 hours per semester
  - Independent Learning Time: 51 hours

Methods of Delivery

Hence,

- We are now moving from the traditional topic based teaching to outcome-based education

Outcomes Based Education (OBE)

- OBE is education based on producing particular educational outcomes that:
  - Focus on what students can actually do after they are taught
  - Expect all learners / students to successfully achieve particular (sometimes minimum) level of knowledge and abilities.

So…What is OBE?

It’s

NOT

What we want to teach,

It’s

What You should learn

Course Content Outline

CLO1 : Final Exam (50%)

Lecture

- C++ programming
- Linked-list
- Stack
- Queue
- Tree
- Graph

Course Content Outline

CLO3 : Group Project(50%)

Case Study

- Case Study: Upper Triangular Matrix
- Implementation of the data structure discussed in lecture.

What is expected of you

- **You should abide to all the rules & regulation of APU**
  - **Proper attire**
  - **No speaking of dialects**
  - **Attendance is compulsory and valid medical certificates or letters from parents /guardians must support any absence from class.**
  - **Three lateness will be equal to one absence**
  - **All pagers and handphones should be turned off during lectures.**

What support is available for you

- **Consultation hours**
- **Resources**
  - **Reference material**

Essential Reading

- Malhotra, D. & Malhotra, N. (2019). Data Structures and Program Design Using C++. Mercure Learning and Innovation. ISBN: 978-1-68392-370-1
- Malik, D. S. (2012), Data Structures Using C++ (2nd Edition) , Course Technology (ISBN: 978- 8131518236) * • Drozdek, A. (2013), Data Structures and Algorithms in C++ (4th Edition), Course Technology (ISBN: 978- 1133608424)

  - **Internet resources**
  - **Software :** Visual Studio (Visual C++)

Achievement requirements

Undergraduate:

Marks	Alphabetical Grade	Grading Point	Classification
80-100	A+	4.0	Distinction
75-79	A	3.7	
70-74	B+	3.3	Credit
65-69	B	3.0	
60-64	C+	2.7	Pass
55-59	C	2.3	
50-54	C-	2.0	
40-49	D	1.7	Fail (marginal)
30-39	F+	1.3	Fail
20-29	F	1.0	Fail
0-19	F-	0	Fail

Question and answer session

Q & A

What we will cover next

- Overview of C++ (part 1)
  - Basic C++ programming
  - Selection Control
  - Repetition Control
  - Functions