MULTIMEDIA UNIVERSITY®

COURSE INFORMATION

1.	**Name of Course**	Programming Fundamentals
2.	**Course Code**	TCP1101
3.	**Type of Course** **(e.g. : Core, major, elective etc.)**	Core
4.	**Synopsis**	This course is designed for students to learn about computer programming, including structured programming, procedural abstraction, arrays, files and streams, memory management, and introduction to OOP.
5.	**Version** **(State the date of theSenate's approval - previous and the current approval date)**	Current: January 2018 Previous: June 2016
6.	**Name(s) of Academic Staff**	Wong Ya Ping Ku Day Chyi Bau Yoon Teck Lee Kian Chin
7.	**Semester and Year Offered**	Trimester 1 (Beta Level)
8.	**Credit Value**	4
9.	**Pre-Requisite**	NIL

10. **Objective of the course in the programme:**

To give an introduction to basic programming concepts through the use of the C++ programming language. It covers the basic notions and techniques for algorithm development and the implementation of algorithms in a high-level programming language.

11. **Justification for including the course in the programme:**

To provide students with an adequate first course in computer programming, equipping them to study the follow up programming courses.

12. **Course Learning Outcomes (CLO)**

		Domain	Level
CLO1:	Identify basic concepts of a high level programming language correctly.	Cognitive	2
CLO2:	Demonstrate the basic notions and techniques for algorithm development.	Cognitive	3
CLO3:	Develop programs for problem solving.	Cognitive	6

13. **Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment:**

Course Learning Outcomes (CLO) (Must tally with CLOs in item 12)	Programme Learning Outcomes (PLO)												Teaching Methods	Assessment Method
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12		
CLO1	✓	✓											Lecture/Practical	Test, Quizzes, Final Exams
CLO2		✓	✓	✓									Lecture/Practical	Assignments, Test, Quizzes, Final Exams
CLO3			✓	✓	✓	✓							Lecture/Practical	Assignments, Final Exams
Total	**1**	**2**	**2**	**2**	**1**	**1**							*Indicate the relevancy between the CLO and PLO by ticking "✓" the appropriate relevant box (This description must be read together with standards 2.1.2, 2.2.1, and 2.2.2 in Area 2 – pages 16 & 18 of COPPA 2.0)*	

14. **Transferable Skills:**

Logical thinking

15. **Distribution of Student Learning Time (SLT)**

	Course Content Outline	**CLO	Teaching and Learning Activities – Guided Learning (F2F)* *L	*T	*P	*O	Guided Learning (NF2F)*	Independent Learning (NF2F)*	Total SLT
1	**Problem Solving and Software Development** Sample text. (Double click to edit)	**1**	6	2				8	16
2	**Element of Structured Programming** Basic constructs of structured programming: sequence, repetition, selection; data types; identifiers;variables; reference; scope and lifetime of variables; statements; operators; operator precedence; type conversion; bitwise manipulation.	**1**	5	4			2	9	20
3	**Functions** Top-down design; standard library functions; procedural abstraction; local and global variables; function overloading; function return types; function parameters: call-by-value, call-by-reference; command line arguments; testing and debugging functions; general debugging techniques.	**2**	5	4			2	9	20
4	**Arrays** Single and multi-dimensional arrays; arrays as function parameters; simple sorting and searching on arrays; Standard Template Library's Vector class.	**2**	5	4			2	9	20
5	**Classes and Abstraction** Basic UML class diagrams; struct and class; object instantiation; public and private members; accessor and mutator functions; class constructors; copy constructor; destructors; passing object reference variable to function; assignment operator; encapsulation; abstract data type (ADT).	**3**	5	4			2	9	20
6	**File Handling, Separate Compilation and Namespaces** Concept of files; files and I/O streams; standard file handling functions; separate compilation; namespaces; name qualifiers.	**3**	1	2				3	6

	7	**Pointers** Pointer variables; arrays and pointers; strings and pointers; pointers and functions.	**2**	5	4			2	9	20
	8	**Dynamic Memory Allocation** Dynamic variables; dynamic array; pointer arithmetic; destructors and dynamic memory in classes	**2**	2	2			2	4	10
									Total SLT	**132**

SUMMATIVE ASSESSMENT

1. Continuous Assessment	**Percentage %**	**Total SLT**
Assignments	20%	**6**
Test	30%	**5**
Quizzes	10%	**3**
	Total SLT for Continuous Assessment	**14**

2. Final Assessment	**Percentage %**	**Total SLT**	
		F2F	**ILT**
Final Exam	40%	2	12
	Total SLT for Final Assessment (F2F + NF2F)	**14**	
Grand Total	**100%**	**160**	

****Indicate the CLO based on the CLO's numbering in Item 12.**
***L= Lecture, *T= Tutorial, *P= Practical, *O= Others, F2F*= Face to Face, NF2F*= Non Face to Face**

16 . **Identify Special Requirement to Deliver the Course (e.g., software, nursery, computer lab, simulation room):**
Computer labs with MinGW GCC and code editor.

17 . **Main References:**
Walter Savitch, Problem Solving with C++, Addison-Wesley, 2017.

18 . **Additional References:**
Deitel & Deitel, C++ How to Program, Prentice Hall, 2016.
Stroustrup, The C++ Programming Language, Addison-Wesley, 2013.
Stanley B. Lippman, Josée Lajoie, Barbara E. Moo, C++ Primer, Addison-Wesley Professional, 2012.

Note:
Cells shaded light grey contain formulas / fixed values. Edit these formulas only if needed.