COURSE OUTLINE

PRE-REQUISITE	: -
EQUIVALENCE	: -
LECTURE HOURS	: 3 Hours Lectures

Lecturers	E-Mail	Room No.	Phone No.
1. Mohsin Mohd Sies	mohsin@utm.my	N01-324	
2.			
3.			
4			
5.			

SYNOPSIS

This course formally introduces the concept of computers, algorithms, programming languages, pseudocode, and problem solving. The two programming languages introduced in this course are Fortran and MATLAB. Topics covered in this course include data types, constants, variables, arithmetic operations, assignment statement, looping, formatted I/O, functions, arrays, matrix operations, data structures, plotting, and model building.

PREPARED BY :	CERTIFIED BY :
Name : Mohsin Mohd Sies	**Name** :
Signature :	**Signature** :
Date : 10 August 2017	**Date** :

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COURSE LEARNING OUTCOMES

By the end of the course, students should be able to :

No.	Course Learning Outcomes	Programme Learning Outcome(s) Addressed	Learning Taxonomy & Generic Skill Assessed	Assessment Methods
1.	Outline programming concept, flow chart and algorithm for solving given computational processes.	PO1, PO2	C2	HW, PR
2.	Construct appropriate Fortran programs for solving given engineering problems.	PO1, PO2, PO6	C3	HW,T,PR
3.	Construct appropriate MATLAB programs for solving given engineering problems.	PO1, PO2, PO6	C3	HW,T,PR
4	Illustrate graphical solutions for given engineering problems.	PO1, PO2	C3	HW/PR

Note :
   (T – Test ; PR – Project ; Q – Quiz; HW – Homework ; Pr – Presentation; F – Final Exam)

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STUDENT LEARNING TIME

No.	Teaching and Learning Activities	Student Learning Time (hours)
1.	Face to face learning 　　　　Lecture 　　　　Practical/tutorial/studio 　　　　SCL activities	42 0 0
2.	Independent Study 　-　Non-face to face learning 　- 　-　Revision 　- 　-　Preparing for assessments	28 38 9
3.	Formal Assessement 　-　Continuous assessment 　- 　　　Final exam	3 0
Total		**120**

TEACHING METHODOLOGY

1.　The course introduces the basic programming concepts, algorithms, and programming languages.

2.　Teaching and learnig are done through lectures, hands-on sessions, and problem solving.

3.　Students are required to complete the given projects.

4.　Students are required to write reports on the assigned projects.

COURSE OUTLINE

WEEKLY SCHEDULE

Week	Lecture	Topic / Content
1	1-3	**Part I : Programming Concepts** Introduction to Computers & Programming Programming Concept Algorithm
2	4-6	Algorithm Flowcharts Pseudocode
3	7-9	Problem Solving Problem Solving Hands-on session
4	10-12	**Part III: Programming with Fortran** Data Types, Constants, Variables Arithmetic Ops and Functions Assignment Statement
5	13-15	Data Files Opening and Closing a Data File Processing a Data File
6	16-18	Control Statements Branching – IF ELSE Looping – Counted and Condirional Loops
7	19-21	Functions and Subroutines Defining and Accessing a Funtion Passing Arguments to a Function
8		**MID SEMESTER BREAK**

COURSE OUTLINE

WEEKLY SCHEDULE

Week	Lecture	Topic / Content
9	22-24	Arrays Defining an Array Processing an Array 2D Arrays
10	25-27	Project Project Project
11	28-30	**Part III: Programming with Matlab** Introduction to Matlab Array, Files and Plots Array and Matrix Operations
12	31-33	Array and Matrix Operations Functions and Files User-Defined functions
13	34-36	Relational and Logical Operators Conditional Statements and Loops Conditional Statements and Loops
14	37-39	Advance Plotting Advance Plotting Advance Plotting and Model Building
15	40-42	Project week Project week Project week
16-18		**STUDY WEEK AND FINAL EXAMINATION**

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REFERENCES

1. Fortran 90/95 for Scientists and Engineers, Chapman, McGraw Hill.
2. Programming With Fortran 77 (Schaum's Outlines) Paperback – McGraw Hill, May, 1995
3. A Consice Introduction to Matlab, International Edition, William J.Palm III, McGraw-Hill (2008)

GRADING

No.	Assessment	Number	% each	% total	Dates
1.	Assignment		10	10	
2.	Test 1	1	25	25	
3.	Test 2	1	25	25	
4.	Project	2	20	40	
Overall Total				**100**	

ATTENDANCE

The student should adhere to the rules of attendance as stated in the University Academic Regulation :-

1. Student must attend not less than 80% of lecture hours as required for the subject.

2. The student will be prohibited from attending any lecture and assessment activities upon failure to comply the above requirement and zero mark will be given for this subject.