

**FAKULTI KEJURUTERAAN TEKNOLOGI
UNIVERSITI MALAYSIA PAHANG**

1	Course Code and Name	BTP2412 Numerical Methods and Optimisation
2	Semester and Year Taught	Semester 1 Year 2
3	Name(s) of Academic Staff	Raihana Zahirah Edros
4	Name(s) of Vocational Training Officer	Nil
5	Rationale for the Inclusion for the Course/ Module in Program	Numerical Methods & Optimisation is one of the tools used for mathematical analysis and modelling of experimental data in the pharmaceutical product discovery and development stages. It is also used for process optimisation in utilities and production.
6	Program Level/Category	Degree/Program Core
7	Unit	2 Credits
8	Prerequisite Course	Nil
9	Contact Hours	Lecture: 1 hours X 14 weeks Tutorial: 2 hours X 14 weeks Laboratory: 0 hour X 14 weeks
10	Course Synopsis	This course focuses on the application of numerical methods in solving engineering technology problems and process optimisation. As the solution of numerical methods often lengthy and time-consuming, the effort used can be reduced by using the computer programming software as as problem solving tools such as MATLAB and Microsoft Excel.
11	Course Outcomes	By the end of semester, students should be able to: CO1 Apply numerical methods in solving engineering problem and process optimisation CO2 Manipulate computer programming software in solving numerical methods CO3 Present the ideas & help team to solve the engineering problems using numerical methods
12	Transferable Skills	Students will acquire problem solving, communication and programming skills at the end of the course.
13	Learning References	<ol style="list-style-type: none"> 1. Steven C. Chapra and Raymond P. Canale (2009), Numerical Methods for Engineers, McGraw-Hill, 6th Edition 2. James F. Epperson (2010), An Introduction to Numerical Methods and Analysis, Solution Manual, John Wiley & Sons Inc., 2nd Edition 3. J. Douglas Faires & Richard Burden (2013), Numerical Methods, Brooks/Cole, Cengage Learning, 4th Edition 4. Jaan Kiusalaas (2005), Numerical Methods in Engineering with MATLAB, Cambridge University Press

Relationships between Program Outcomes (PO) with Course Outcomes (CO)

Domains	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		C	C	C	P	P	A	A	A	A	A	A	A
CO1	Apply numerical methods in solving engineering problem and process optimisation (C3)			X									
CO2	Manipulate computer programming software in solving numerical methods (P4;TS2)					X							
CO3	Defend ideas to solve the engineering problems using numerical methods (A5; CS4)									X			

P: PS1-Practical Skill, P:PS2-Lab Report, A:LS1-Leadership, A:TW1-Teamworking, A:CS1-Oral, A:CS2-Written, A:CS3-Group Discussion, A:CS4-Presentation, A:ES1-Engineers & Society, A:E1-Ethics, A:PM1-Project Management, A:ENS1-Environmental & Sustainability, A:LL1-Information Management, A:LL2-Independent Learning, A:LL3-Curiosity, A:ENT1-Entrepreneurship

Learning Domains	Distribution (%)		CO1	CO2	CO3
	Project	Test/Quiz			
Cognitive	Project 1	20 %	x		
	Test	30 %	x		
	Quizzes	5 %	x		
Psychomotor	Project 2	20 %		x	
Affective	Presentation 1	10 %			x
	Presentation 2	15%			x
	Total	100 %			