

## COURSE INFORMATION

<b>School/Faculty:</b>	Civil Engineering/Engineering	<b>Page:</b>	1 of 8
<b>Program name:</b>	Master of Engineering (Transportation)		
<b>Course code:</b>	MKAQ 1113	<b>Academic Session/Semester:</b>	2018-2019/1
<b>Course name:</b>	Pavement Management System	<b>Pre/co requisite (course name and code, if applicable):</b>	
<b>Credit hours:</b>	3		

<b>Course synopsis</b>	<p>Students will learn two major things at the end of the course.</p> <ol style="list-style-type: none"> <li>i. Evaluation of various steps of pavement management system and</li> <li>ii. Effective selection of the methods needed for managing pavement.</li> </ol> <p>Students will also acquire a comprehensive knowledge of problems associated with pavement and how to maintain the roads effectively. They will get knowledge about "Arahan Teknik Jalan, Malaysia" and also latest technologies used by developed countries.</p> <p>The course consists of the following topics: Overall picture of world highways as well as Malaysian roads, Network level and project level pavement management system, evaluation of different pavement layers and other infrastructure works, such as drainage etc.</p> <p>They will also acquire functional and structural failures of pavement and corresponding rehabilitation works required including life cycle cost analysis.</p> <p>They will gain knowledge about the source of finance for the most important public asset of roads for their construction and maintenance.</p> <p>In Malaysia, they will get the knowledge of different organizations involved in pavement such as IKRAM, PLUS Bhd, Propel Bhd, HCM etc. From these evaluations and rehabilitations, they will get a widespread knowledge to manage the roads practically.</p>			
<b>Course coordinator (if applicable)</b>	Dr. Md. Maniruzzaman B. A. Aziz			
<b>Course lecturer(s)</b>	<b>Name</b>	<b>Office</b>	<b>Contact no.</b>	<b>E-mail</b>
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**Mapping of the Course Learning Outcomes (CLO) to the Programme Learning Outcomes (PLO), Teaching & Learning (T&L) methods and Assessment methods:**

No.	CLO	PLO (Code)	*Taxonomies and **generic skills	T&L methods	***Assessment methods

<b>School/Faculty:</b>	Civil Engineering/Engineering	<b>Page:</b>	2 of 8
<b>Program name:</b>	Master of Engineering (Transportation)		
<b>Course code:</b>	MKAQ 1113	<b>Academic Session/Semester:</b>	2018-2019/1
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CLO1	Evaluate network and project level pavement management	PO1 (AKW)	C5,A4	Lecture, active learning	A/T/F/P
CLO2	Categorize functional and structural failures and corresponding rehabilitation works	PO6 (LL)	C4,P5,A4	Project-based learning	A/T/F/P
CLO3	Evaluate different layers of pavement courses including drainage	PO1 (AKW)	C5,A4	Lecture, active learning	A/T/F/P
CLO4	Assess road asset management and review road finance and economics	PO1 (AKW)	C6,A4	Lecture, active learning	A/T/F/P
Refer *Taxonomies of Learning and **UTM's Graduate Attributes, where applicable for measurement of outcomes achievement ***T – Test; Q – Quiz; HW – Homework; Asg – Assignment; PR – Project; Pr – Presentation; F – Final Exam etc.					

<b>Prepared by:</b>		<b>Certified by:</b>	
Name:	Dr. Md. Maniruzzaman B. A. Aziz	Name:	Nor Zurairahetty Bt Mohd Yunus
Signature:		Signature:	
Date:	6/8/2018	Date:	6/8/2018

#### Details on Innovative T&L practices:

No.	Type	Implementation
1.	Active learning	Conducted through in-class activities

#### Weekly Schedule:

Week 1	<b>Chapter 1. Introduction</b> Course Outcome PMS Overview Highway Engineering Overview Asphalt and Concrete Pavement
Week 2	Network Level PMS Project Level PMS PMS on Runways of Airport Project Quality Plan (PQP)

<b>School/Faculty:</b>	Civil Engineering/Engineering	<b>Page:</b>	3 of 8
<b>Program name:</b>	Master of Engineering (Transportation)		
<b>Course code:</b>	MKAQ 1113	<b>Academic Session/Semester:</b>	2018-2019/1
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Week 3	Evaluation of Subgrade to blacktop <b>Drainage Evaluation</b>
Week 4	Restoration
Week 5	Thin Overlay Structural Overlay Reconstruction
Week 6	Recycling Life Cycle Cost Analysis Project Selection
Week 7	Review and Test 1
Week 8	Mid-Semester Break
Week 9	Road asset management
Week 10	Road asset management
Week 11	Road finance and economics
Week 12	Road finance and economics
Week 13	Commercial PMS System
Week 14	Mini Project Presentation
Week 15	Review and Test 2

**Transferable skills (generic skills learned in course of study which can be useful and utilised in other settings):**

Team working Written communication
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**Student learning time (SLT) details:**

Distribution of student Learning Time (SLT) Course content outline	Teaching and Learning Activities				TOTAL SLT	
	Guided Learning (Face to Face)	Guided Learning Non-Face to Face				Independent Learning Non-Face to face
CLO	L	T	P	O		
	35	7			10	56

<b>School/Faculty:</b>	Civil Engineering/Engineering	<b>Page:</b>	4 of 8
<b>Program name:</b>	Master of Engineering (Transportation)		
<b>Course code:</b>	MKAQ 1113	<b>Academic Session/Semester:</b>	2018-2019/1
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<b>Total SLT</b>	35	7			10	56	108
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Continuous Assessment		PLO	Percentage	Total SLT
1	Test 1	PLO1 (AKW)	15	9
2	Test 2	PLO1 (AKW)	15	
3	Assignment 1	PLO6 (LL)	15	
4	Assignment 2	PLO1 (AKW)	15	
Final Assessment			Percentage	Total SLT
1	Final Exam	PLO1 & PLO6 (AKW & LL)	40	3
<b>Grand Total</b>			<b>100</b>	<b>120h</b>

L: Lecture, T: Tutorial, P: Practical, O: Others

**Special requirement to deliver the course (e.g: Visit to construction sites, Visual inspection, the latest equipment for Pavement Management System)**

Computer lab with MATLAB/Simulink

**Learning resources:**

1. A guide to the visual assessment of flexible pavement surface conditions: JKR 20709-2060-92
2. Interim guide to evaluation and rehabilitation of flexible road pavements: JKR 20709-0315-94
3. Pavement design and Management guide: Transportation association of Canada
4. Recommended performance guidelines for emulsified asphalt slurry seal surfaces: International slurry seal association
5. Pavement Management for Airports, Roads and Parking Lots-Second Edition, 2005 by M.Y. Shahin

**Online**

<http://elearning.utm.my>

**Academic honesty and plagiarism: (Below is just a sample)**

Assignments are individual and or group, depending on type. Visual inspection and construction site visits are group. Other than that are individual. Copying of work (texts, simulation results etc.) from other students/groups or from other sources is not allowed. Brief quotations are allowed and then only if indicated as such. Existing texts should be rephrasing with students own words used to explain what you have read. It is not acceptable to retype existing texts

<b>School/Faculty:</b>	Civil Engineering/Engineering	<b>Page:</b>	5 of 8
<b>Program name:</b>	Master of Engineering (Transportation)		
<b>Course code:</b>	MKAQ 1113	<b>Academic Session/Semester:</b>	2018-2019/1
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and just acknowledge the source as a reference. Be warned: students who submit copied work will obtain a mark of **zero** for the assignment and disciplinary steps may be taken by the Faculty. It is also unacceptable to do somebody else's work, to lend your work to them or to make your work available to them to copy. Content similarity should be limited to minimum. Syntax should be proper. Sufficient citation with references is required for the assignments and Reports.

**Other additional information (Course policy, any specific instruction etc.):**

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**Disclaimer:**

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<b>School/Faculty:</b>	Civil Engineering/Engineering	<b>Page:</b>	6 of 8
<b>Program name:</b>	Master of Engineering (Transportation)		
<b>Course code:</b>	MKAQ 1113	<b>Academic Session/Semester:</b>	2018-2019/1
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<b>School/Faculty:</b>	Civil Engineering/Engineering	<b>Page:</b>	7 of 8
<b>Program name:</b>	Master of Engineering (Transportation)		
<b>Course code:</b>	MKAQ 1113	<b>Academic Session/Semester:</b>	2018-2019/1
<b>Course name:</b>	Pavement Management System	<b>Pre/co requisite (course name and code, if applicable):</b>	
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**Details on Innovative T&L practices:**

No.	Type	Implementation
1.	Active learning	Conducted through in-class activities
2.	Project-based learning	Conducted through design assignments. Students in a group of 3 are given 2 design projects that require power electronics solutions involving the design calculations and verification using MATLAB/Simulink. Compliance to the design specifications need to be given in the form of written reports.

**Student learning time (SLT) details:**

Distribution of student Learning Time (SLT) Course content outline					Teaching and Learning Activities			TOTAL SLT
	Guided Learning (Face to Face)				Guided Learning Non-Face to Face	Independent Learning Non-Face to face		
CLO	L	T	P	O				
CLO 1	26h			4h	6h		42h	78h
CLO 2	6h			6h	3h		21h	36h
<b>Total SLT</b>	<b>32h</b>			<b>10h</b>	<b>9h</b>		<b>63h</b>	<b>114h</b>

<b>School/Faculty:</b>	Civil Engineering/Engineering	<b>Page:</b>	8 of 8
<b>Program name:</b>	Master of Engineering (Transportation)		
<b>Course code:</b>	MKAQ 1113	<b>Academic Session/Semester:</b>	2018-2019/1
<b>Course name:</b>	Pavement Management System	<b>Pre/co requisite (course name and code, if applicable):</b>	
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