

COURSE INFORMATION

School/Faculty:	Razak Faculty of Engineering and Informatics	Page:	1 of 4
Program name:	Executive Diploma In Facility Management		
Course code:	FRSI 2043	Academic Session/Semester:	2021/2022-1
Course name:	Maintenance Technology	Pre/co requisite (course name and code, if applicable):	
Credit hours:	3		

Course synopsis	This course introduces the basic and important of maintenance technology towards maintenance of facility in building and plant/utility equipment. This course consists of introduction to building and facility, their function, operation and maintenance. Establishment of maintenance department, job delegation, approaches to maintain mechanical and electrical equipment in building and selected utility. Acts and regulations towards safety and healthy in maintenance are highlighted for proper compliance and administration aspects.			
Course coordinator (if applicable)				
Course lecturer(s)	Name	Office	Contact no.	E-mail
	Prof. Madya Sallehuddin Bin Muhammad		012-2965526	sallehuddin.kl@utm.my
	Dr. Sa'ardin Bin Abdul Aziz	Level 14 Menara Razak	019-2643641	saa.kl@utm.my
	Dr. Mohd Yusof Bin Md Daud		019-6038525	yusof.kl@utm.my

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
CLO1	Describe building techniques for the shell and exterior, as well as green maintenance and operations.	PLO1	C2	Active Learning	Test 1 (20%)
CLO2	Apply techniques to improve energy efficiency of the building envelope through insulation, windows, energy modelling, HVAC system selection.	PLO2	P1	Case Study	PMA (50%)
CLO3	Identify of the facility management issues associated with site features that fall outside.	PLO3	P2	Lecture	Quizzes (10%)
CLO4	Define the process to establish policies, procedures and practices for	PLO6	A2	Active Learning	Test 2 (20%)

Prepared by:	Certified by:
Name:	Name:
Signature:	Signature:
Date:	Date:

School/Faculty:	Razak Faculty of Engineering and Informatics	Page:	2 of 4
Program name:	Executive Diploma In Facility Management		
Course code:	FRSI 2043	Academic Session/Semester:	2021/2022-1
Course name:	Maintenance Technology	Pre/co requisite (course name and code, if applicable):	
Credit hours:	3		

	implementing an O&M program for the components.				
<p><i>This is the basic mapping required for the CI. Any added information is allowed (extra columns for weight or other elements) provided this is made consistent for all CI at program/school/faculty level.</i></p> <p><i>*Up to 5 CLO</i></p> <p><i>Refer **Taxonomies of Learning and ***UTM's Graduate Attributes for UG and Generic Skills for PG, where applicable for measurement of outcomes achievement</i></p> <p><i>****T – Test; Q – Quiz; HW – Homework; Asg – Assignment; PR – Project; Pr – Presentation; F – Final Exam, PMA – Post Module Assessment etc.</i></p>					

Details on Innovative T&L practices:

No.	Type	Implementation
1.	Active learning	Conducted through in-class activities, post-course assignment and test

Weekly Schedule:

Week 1	Chapter 1. Introduction to Maintenance Technology Operations - Building Systems, Grounds, Exterior and Interiors, Technique and Approaches, Policy and strategies
Week 2	Chapter 2. Types of Building, Facilities and Utility Function and Installation, Air Cond., Heating and Cooling Systems, Boiler and Thermal Oil Heaters, Water Supply and Plumbing
Week 3	Fire Fighting Systems, Lift, Escalator, Crane, Hoist and Plant Air, Compressed Air Systems
Week 4	Chapter 3. Heating and Air Conditioning (HVAC) and Chillers Operate, maintain heating and HVAC equipment systems
Week 5	Operate, troubleshoot, maintain and chilled water systems and cooling towers
Week 6	Chapter 4. Predictive and Preventive Maintenance Establishment of maintenance department, Job delegation and monitoring, Perform diagnostic
Week 7	Chapter 5. Electrical Supply and Distribution Operation and installation, Maintain lighting, Computer systems and networking
Week 8	Mid-Semester Break
Week 9	Low voltage systems, Green technology and energy saving
Week 10	Chapter 5. Building Mechanical Systems Maintain and operate mechanical equipment systems, Lift, escalator, dumb waiter and walkelator, domustair
Week 11	Conveyer and elevator, Crane, hoist and mechanical handling equipment, Acts and regulations
Week 12	Chapter 6. Plant Utility and Piping Maintenance Maintain and operate, Fire Fighting systems, Water reticulation, cold water system and plumbing, Compressed air systems, plant air and distribution
Week 13	Boiler and steam piping, thermal oil heater systems, Acts and regulations
Week 14	Chapter 7. Environmental , Compliance, Safety and Administration Compliance with environmental, Safety requirements

School/Faculty:	Razak Faculty of Engineering and Informatics	Page:	3 of 4
Program name:	Executive Diploma In Facility Management		
Course code:	FRSI 2043	Academic Session/Semester:	2021/2022-1
Course name:	Maintenance Technology	Pre/co requisite (course name and code, if applicable):	
Credit hours:	3		

Week 15	Compliance with local, state and national acts, codes of standards Organize and operate maintenance and operation function for a building and facility
---------	---

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

Problem Solving Skills Ethics and Morals

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	4h			4h	8h	8h		24h
CLO 2	6h			15h	10h	29h		60h
CLO 3	2h			3h	2h	5h		12h
CLO4	4h			4h	8h	8h		24h
Total SLT	16h			26h	28h	50h		120h

Continuous Assessment		PLO (Code)	Percentage	Total SLT
1	Quizzes	PLO3	10	As in CLO3 (1h)
2	Test 1	PLO1	20	As in CLO1 (2h)
3	Test 2	PLO6	20	As in CLO4 (2h)
Final Assessment			Percentage	Total SLT
1	PMA	PLO2	50	As in CLO2 (24h)
Grand Total			100	120h

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

Special requirement to deliver the course (e.g: software, nursery, computer lab, simulation room):

--

School/Faculty:	Razak Faculty of Engineering and Informatics	Page:	4 of 4
Program name:	Executive Diploma In Facility Management		
Course code:	FRSI 2043	Academic Session/Semester:	2021/2022-1
Course name:	Maintenance Technology	Pre/co requisite (course name and code, if applicable):	
Credit hours:	3		

Learning resources:

Text book (if applicable)

1. D. Palmer, Maintenance Planning and Scheduling Handbook, 4th Edition, McGraw Hill Professional, 2019

Main references

1. Gerardus Blokdyk, Maintenance Management A Complete Guide - 2020 Edition, 5STARCOOKS (August 26, 2019)
2. Gahlot P. S., Building Repair and Maintenance Management, CBS (1 January 2019)

Other references

1. Akta 139 (Akta Kilang dan Jentera Dan Peraturan-Peraturan), 1967. MDC Publishers Sdn. Bhd., K.Lumpur, 2009.
2. Uniform Building By-Laws, 1984. ILBS, K.Lumpur.
3. MWA Design Guidelines for Water Supply Systems. 1994, Malaysian Water Association, Kuala Lumpur.
4. Transportation Systems in Buildings – CIBSE Guide D: 2005. The Chartered Institution of Building Services Engineer, London

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

Assignments are individual tasks and NOT group activities (UNLESS EXPLICITLY INDICATED AS GROUP ACTIVITIES)
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 reformulated with your own words used to explain what you have read. It is not acceptable to retype existing texts 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.

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

-

Disclaimer:

All teaching and learning materials associated with this course are for personal use only. The materials are intended for educational purposes only. Reproduction of the materials in any form for any purposes other than what it is intended for is prohibited.
While every effort has been made to ensure the accuracy of the information supplied herein, Universiti Teknologi Malaysia cannot be held responsible for any errors or omissions.