	UNIVERSITI KUALA LUMPUR **MALAYSIAN INSTITUTE OF INDUSTRIAL TECHNOLOGY** **SECTION OF:** **PLANT ENGINEERING TECHNOLOGY**	Rev. No.:	003
		Rev. Date:	24/02/2022
		COURSE SYLLABUS	

Prepared by:		**Reviewed by:**	
Name:	**MOHAMAD SHAHRUL EFFENDY BIN KOSNAN**	**Name:**	**MOHD AL-FATIHHI BIN MOHD SZALI JANUDDI**
Position:	**SUBJECT-MATTER EXPERT**	**Position:**	**PROGRAMME COORDINATOR**

Approved by:	
	Ts DR SALLAUDDIN HASSAN Senior Lecturer Deputy Dean Academic & Technology UniKL Kampus Cawangan MITEC
Name:	**SALLAUDIN BIN HASSAN**
Position:	**DEPUTY DEAN ACADEMIC & TECHNOLOGY**

PROGRAMME	**BACHELOR OF ENGINEERING TECHNOLOGY (HONS) IN FACILITIES MAINTENANCE ENGINEERING**
COURSE CODE	**JFB 22904**
COURSE NAME	**FACILITIES PLANNING AND DESIGN**
COURSE CATEGORY	**DISCIPLINE CORE**
PASSING MARK	**40%**
EFFECTIVE DATE	**SEPTEMBER 2023**

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Table 4: Summary of Course Information

COPY SHEET | UPDATE INDEX | CLEAR FORM

1	Course Name:	FACILITIES PLANNING AND DESIGN				
	Course Code:	JFB 22904				
	Course Classification:	Major (core)				
2	Synopsis:	Facilities planning focus on the requirements for people, equipment, space, and material in the facility. It presents concepts and techniques to facilitate the generation of alternative facilities plans and continues to focus on generating alternative facilities plans. This subject is to equip student with design, modelling, and documentation process plants by the application of CAD Plant 3D software. The software is also integrated which CAD P&ID function that enables to create and edit P&IDs and reconcile underlying data with the 3D model.				
3	Name(s) of Academic Staff:	1	MOHAMAD SHAHRUL EFFENDY BIN KOSNAN			
		2	MAHZAN BIN JOHAR			
		3				
4	Semester and Year offered:	Year Offered	2	Semester	2	*Remarks:*
5	Credit Value:	4				
6	Pre-requisite/ co-requisite (if any):	None				

7 Course Learning Outcomes (CLO)

CLO1	Examine the requirement for location, personnel, security and facilities maintenance management system. (C4,PLO3)
CLO2	Perform hands-on exercise on layout design, facilities and system simulation modeling. (P4,PLO4)
CLO3	Construct 2-Dimensional (2D) and 3-Dimensional (3D) drawing based on standard, features and symbols used in Plant Design. (P4,PLO5)
CLO4	Demonstrate the professional ethics and responsibilities in planning and design development. (A3, PLO8)

8 Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods

Course Learning Outcomes	Programme Learning Outcomes (PLO)												Teaching Methods	Assessment Methods
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11	PLO 12		
CLO1			√										Lectures, tasks which involve students providing solutions and justifications of choices	Written Test
CLO2				√									Practical Task, simulations, demonstrations	Practical Test
CLO3					√								Project or trouble-shooting of problems	Practical Report
CLO4								√					Groupwork, cooperative learning, PBL, collaborative learning	Project Report, Presentation
Mapping with MQF Cluster of Learning Outcomes			C3E	C3A	C3A			C5						

Indicate the primary causal link between the CLO and PLO by ticking 'v' in the appropriate box.

C1 = Knowledge & Understanding, **C2** = Cognitive Skills, **C3A** = Practical Skills, **C3B** = Interpersonal Skills, **C3C** = Communication Skills, **C3D** = Digital Skills, **C3E** = Numeracy Skills, **C3F** = Leadership, Autonomy & Responsibility, **C4A** = Personal Skills, **C4B** = Entrepreneurial Skills, **C5** = Ethics & Professionalism

9 Transferable Skills (if applicable)

(Skills learned in the course of study which can be useful and utilized in other settings)

1	Ethics and Professionalism
2	Personal Skills
3	Cognitive skills

Open-ended response (if any)

4	

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10 Distribution of Student Learning Time (SLT)

Note: This SLT calculation is designed for home grown programme only.

	Course Content Outline and Subtopics	CLO*	Learning and Teaching Activities**									Total SLT
			Face-to-Face (F2F)								NF2F Independent Learning (Asynchronous)	
			Physical				Online/ Technology-mediated (Synchronous)					
			L	T	P	O	L	T	P	O		
1	Facilities Planning and Design	CLO1	4								8	
2	Campus Planning and Design	CLO1	4								8	
3	Workplace Planning and Design	CLO1	4								8	
4	Building Legislation, Regulation and Code Compliance	CLO4	4								8	
5	Introduction to Plant Design	CLO1	4								8	
6	3D Plant Design, P&ID Drawing and Symbols	CLO1	4								8	
7	Creating 3D Plant, Managing Data and Generating Report	CLO1	4								8	
8	Practical Task 1: Creating Projects and P&IDs	CLO2			6							
9	Practical Task 2: Creating Structures	CLO2			9							
10	Practical Task 3: Creating Equipment	CLO2			6							
11	Practical Task 4: Editing Specifications and Catalogs	CLO3			3							
12	Practical Task 5: Routing Pipes, Adding Valves, Fitting and Pipe Supports	CLO3			6							
13	Practical Task 6: Creating Isometric and Orthographic Drawing with Managing Report	CLO3			6							
14												
15												
											SUB-TOTAL SLT:	**120**

	Continous Assessement	%	Face-to-Face (F2F)		NF2F Independent Learning for Assessment (Asynchronous)	
			Physical	Online/ Technology-mediated (Synchronous)		
1	Written Test (CLO1)	20	2		6	
2	Practical Test (CLO2)	20	3		10	
3	Practical Report (CLO3)	20			8	
4	Project Report (CLO1)	20			6	
5	Project Presentation (CLO4)	20	1		4	
					SUB-TOTAL SLT:	**40**

	Final Assessement	%	Face-to-Face (F2F)		NF2F Independent Learning for Assessment (Asynchronous)	
			Physical	Online/ Technology-mediated (Synchronous)		
1						
2						
3						
					SUB-TOTAL SLT:	
					SLT for Assessment:	40
					GRAND TOTAL SLT:	160

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A	% SLT for F2F Physical Component: *[Total F2F Physical /(Total F2F Physical + Total F2F Online + Total Independent Learning) x 100)]*	43.75
B	% SLT for Online & Independent Learning Component: *[(Total F2F Online + Total Independent Learning) /(Total F2F Physical + Total F2F Online + Total Independent Learning) x 100]*	**56.25**
C	% SLT for All Practical Component: *[% F2F Physical Practical + % F2F Online Practical]*	**22.50**
C1	% SLT for F2F Physical Practical Component *[Total F2F Physical Practical /(Total F2F Physical + Total F2F Online + Total Independent Learning) x 100)]*	**22.50**
C2	*% SLT for F2F Online Practical Component* *[Total F2F Online Practical / (Total F2F Physical + Total F2F Online + Total Independent Learning) x 100]*	

Please tick (√) if this course is **Industrial Training/ Clinical Placement/ Practicum** using 50% of Effective Learning Time (ELT)

Note:

* Indicate the CLO based on the CLO's numbering in Item 8

** For ODL programme: Courses with mandatory practical requiremnets imposed by the programme standards or any related standards can be exempted from complying to the minimum 80% ODL delivery rule in the SLT.

11	Identify special requirement or resources to deliver the course (e.g., software, nursery, computer lab, simulation room etc)	Plant 3D Design Software, Computer Lab, AutoCAD
12	References (include required and further readings, and should be the most current)	1. Tickoo, S. (2020), AutoCAD Plant 3D 2021: For Designers 6th Edition, USA: CADCIM Technologies. 2. Lian, J. (2019), Facilities Planning and Design: An introduction for Facility Planners, Facility Project Managers and Facility Managers: WSPC 3. Singh, V. K., & Lillrank, P. (Eds.). (2017). Planning and Designing Healthcare Facilities: A Lean, Innovative, and Evidence-based Approach. Taylor & Francis. 4. Wu, X. P., Li, H., & Wang, X. (2017). Integrated Building Information Modelling. Bentham eBooks imprint.
13	Other additional information (if applicable)	

Note: Number of PLO indicated is purely for illustration purposes only and the number is subjected to the curriculum design.

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DETAILS OF COURSE CONTENT OUTLINE

Chapter	Content Outline	Ref
1. Facilities Planning and Design	1.1 Facilities Planning and Design Defined 1.2 Objective and importance of Facilities Planning and Design 1.3 Understanding the Phases in facility 1.4 Parties Involved in the Development of Building 1.5 Strategic Planning and Facility Master Plan 1.6 Space Standard and Universal Design	1. Tickoo, S. (2020), AutoCAD Plant 3D 2021: For Designers 6th Edition, USA: CADCIM Technologies. 2. Lian, J. (2019), Facilities Planning and Design: An introduction for Facility Planners, Facility Project Managers and Facility Managers: WSPC 3. Singh, V. K., & Lillrank, P. (Eds.). (2017). Planning and Designing Healthcare Facilities: A Lean, Innovative, and Evidence-based Approach. Taylor & Francis. 4. Wu, X. P., Li, H., & Wang, X. (2017). Integrated Building Information Modelling. Bentham eBooks imprint.
2. Campus Planning and Design	2.1 Facility Master Planning Process 2.2 Environment Planning 2.3 Capital Improvement Planning 2.4 Process Steps of Capital Improvement Planning	
3. Workplace Planning and Design	3.1 Changes in Workspace, Meeting Spaces, Support Spaces and Technology 3.2 Considerations in Planning and Design of Offices 3.3 Coworking Space 3.4 Space Management Technology and Policy	
4. Building Legislation, Regulation and Code Compliance	4.1 Regulatory overview 4.2 Uniform Building By Law (UBBL) 4.3 Enforcement procedure 4.4 Complience procedure	
5. Building Legislation and Regulation	5.1 Regulatory overview 5.2 Uniform Building By Law (UBBL) 5.3 Code Compliance, OSHA, ADA Regulations 5.4 Safety Issues	
6. Introduction to Plant Design	6.1 Overview of CAD Design 6.2 User Interface and File Commands 6.3 Drawing Setup: 3D Modeling Software 6.4 Product Design Specification 6.5 Multidisciplinary Design Optimization	
7. 3D Plant Design, P&ID Drawing and Symbols	7.1 Introduction to CAD 3D Plant Design and P&ID 7.2 General information in Plant Design and P&ID Specifications 7.3 Standard Parts and Symbols & Codes 7.4 Equipment 7.5 Line and Piping 7.6 P&ID standard information	
8. Creating 3D Plant, Managing Data and Generating Report	8.1 Creating Structure Design 8.2 Adding Equipment 8.3 Design Piping lines 8.4 Generate accurate isometrics, orthographic, and other documents. 8.5 Managing Data, Generate Material Report and Exporting Files	

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