COURSE OUTLINE FRSH 1453 - PT

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1 **Name of Course**
Plant Technology

2 **Course Code**
FRSH 1453

3 **Name(s) of academic staff:**
Dr. Aminudin bin Abu/
Assoc Prof Dr Mat Rebi Tel 075534734 E Mail: matrebi@fkm.utm.my

4 **Rationale for the inclusion of the Course in the programme**
Plant technology Course is aimed at providing student with basic knowledge on operating procedures in plant to ensure the continuity of operation. This Course enables student to apply gained knowledge at workplace.

5 **Semester and Year offered**
Semester 1, Year 2

6 **Total Student Learning Time (SLT)**

Total Student Learning Time (SLT)	Face to Face (21h)				Total Guided and Independent Learning	Total SLT
L=Lecture D=Discussion P=Presentation O1=Quiz LS=Literature Survey O2=Others (Revision and Report)	L 17	T	P 4	O1	99	120 hours

7 **Credit Value**
3

8 **Prerequisite (if any)**
Nil

9 **Learning outcomes**
By the end of the Course, students should be able to:

No.	Course Learning Outcome	Programme Learning Outcome	Program Outcome MQA	Taxonomies (C, P, A)	Transferable Skill	Assessment Methods
1	Describe the energy scenario and economics of power generation	PO1 PO2	PO1 PO2	C3 P3		Quiz and report
2	Describe the working principles of different types of power plant process	PO1 PO2	PO1 PO2	C3 P3		Quiz and report
3	Demonstrate the environmental considerations in power generation	PO3	PO6	C3 P3,A2	CTPS2	Quiz and report

10 **Transferable Skills:**
Skills and how they are developed and assessed, project and practical experience and Internship

Transferable Skills	How they are developed	Assessment
Critical Thinking	Developed through class discussion and report writing	Assessed through report

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11 **Teaching-Learning and Assessment Strategy**

Teaching-Learning strategy:
Lectures
Group Discussion
Independent learning

Assessment strategy:
Presentation
Peer Assessment

12 **Synopsis**

The Course covers necessary information on skills, knowledge and competencies for students regarding various items of plant and equipment. The Course gives an overview on how to apply theories learnt in the workplace to encourage good practice in areas like operation and management of equipment. To achieve this good practice, students are required to review procedures of safe and effective operation and testing of plant, investigate the application of the steady flow energy equation to plant and equipment, investigate the principles of heat transfer as applied to plant processes and investigate the performance of power supply equipment.

13 **Mode of Delivery**
Lecture, discussion

14 **Assessment Methods and Types**

No	Assessment	Number	% each	% total	Hours
2	Group presentation	2	20	40	2 hr/each
3	Post Course Assignment	1	60	60	
	TOTAL			**100**	

15 **Mapping of the Course to the Programme Aims**
Course Learning Outcomes (CLO) are shown in item 9 above. Refer Programme Educational Outcomes in Appendix 1.2

CLO	Program Education Outcome (PEO)
CLO1	PEO1
CLO2	PEO1
CLO3	PEO1

16 **Mapping of the Course to the Programme Learning Outcomes**

Refer to Appendix 1.3

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17	**Content outline of the Course and the SLT per topic**					
	Lecture (Topic)	Student Learning Time (SLT)				
		L	**T**	**P**	**O**	
	Types of buildings, plants and facilities • Identify and be familiar with the various types of building heating and mechanical systems • Identify and be familiar with the various types of building cooling and related systems	3	-	-		
	Heating and air conditioning • Heating and HVAC equipment and systems • Boiler and chiller plant auxiliary and accessory equipment and systems • Chillers and cooling towers	3	-	-		
	Heating boilers – Steam and Hot Waters • Fire tube and water tube boilers • Components, fittings, accessories and auxiliary systems associated with heating boilers and mechanical equipment • Boiler equipment and systems including feed water, steam accessories, fuel systems, water treatment and associated control systems and equipment	4	-	-		Total Guided and Independent Learning 120
	Presentation and Report 1			2		
	Prime movers • Steam, gas, electric-driven prime mover systems • Operation of prime movers their major equipment and systems	3	-	-		
	Pump/compressor/turbine - Piping etc**.**					
	Environmental, compliance, safety and administration • Identify and maintain compliance with environmental, and safety requirements • Identify and maintain compliance with local, state and national codes and standards • Maintenance and operation function for a building or plant	4	-	-		
	Presentation and Report 2	-	-	2		
	Total	**17**		**4**		
	Total SLT	**21 (Guided) + 99 (Independent) = 120**				
	Subject Credit	**3**				
18	**Main references supporting the Course** **REFERENCES:** 1. Charles E. Baukel, Jr. 2000 CLC Press LLC. Heat Transfer in Industrial Combustion. 2. Process Technology Plant Operations by Michael Speegle (Paperback - June 8, 2006).THOMSON					
19	**Other additional information:** NIL					

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