Module (Course Syllabus) Catalogue

2023-2024

College/ Institute	Erbil Technology College	
Department	Renewable Energy Technology	
Module Name	Control Systems	
Module Code	COS204	
Degree	Technical Diploma [•] Bachelor [ ] High Diploma [ ] Master [ ] PhD [ ]	
Semester	4TH.	
Qualification	Msc.	
Scientific Title	Assistant Lecturer	
ECTS (Credits)	7	
Module type	Prerequisite [ ] Core [•] Assist. [ ]	
Weekly hours	4	
Weekly hours (Theory)	(2)hr Class	(168)Total hrs Workload
Weekly hours (Practical)	(2)hr Class	(168)Total hrs Workload
Number of Weeks	12	
Lecturer (Theory)	Fadi Riyadh Shamoon	
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Lecturer (Practical)	Fadi Riyadh Shamoon	
E-Mail & Mobile NO.	fadi.shamoon@epu.edu.iq	
Websites		

Course Book

Course Description	This course is prepared to provide a comprehensive understanding about the main principles of control systems of refrigeration cycles engineering in such a way that the tutees will gain theoretical and practical experience for HVAC control systems, General electrical control components and related issues in real world application.
Course objectives	The lectures are divided on four weekly hours. Mainly, the first two hours will be dedicated for the topic backgrounds and the main principles. Notes and hand-outs are given to the students containing the detail of the topics. This will be assisted by presentations using word and/or power point slides during the lecture time. Discussion time is provided for the students for questions. The second part of the week is practical time in which scientific experiments are done in the laboratory.
Student's obligation	Missed classes will not be compensated including the quizzes and the scheduled assignments. The students will lose marks on unattended classes with quizzes unless a legal document or authorized leave is presented which should explain the excuse of the absence. However, the absent student should take the responsibility for making up the missed lecture.
Required Learning Materials	All lectures prepared in soft and exhibit on data show. Also they are given to students in hard copy. Make about 10 quizzes and one intermediate exam during annual course. In addition to seminars and reports.

Evaluation

	Task	Weight (Marks)	Due Week	Relevant Learning Outcome
	Paper Review			
Assignmen	Homework	10		
	Class Activity	2		
	Report			
	Seminar			

		Essay	14		
		Project			
	Quiz		4		
	Lab.		14		
	Midterm Exam		16		
	Final Exam		40		
	Total				
Specific learning outcome:	This course is prepared to provide a comprehensive understanding about the main principles of air conditioning in such a way that the tutees will gain theoretical and practical experience for fundamentals, processes, control terminology , basic parameters to be controlled , wiring and connecting control components of HVAC systems				
Course References:	Lecture notes 1. - CONTROL SYSTEMS FOR HEATING, VENTILATING, AND AIR CONDITIONING SIXTH EDITION Roger W. Haines 2. Refrigeration and air conditioning G.F Hundy , A.R Trott ,T.C. welch				

Course topics (Theory)	**Week**	**Learning Outcome**
Control, control definition in general, basic definitions	Week 1	***1***
Types of control and access to control systems for cooling machines in a simple way	Week 2	***1 , 2 and 8***
To measure, define, the relationship of measurement to control, the variables that are subject to measurement and then control	Week 3	***3 and 8***
Some basic measuring and control equipment used in refrigeration machines and how to work principle	Week 4	***3***
Electrical control equipment	Week 5	***1,2, 4 and 8***
Controlling the work of the icing system through the work of expansion valves and their types	Week 6	***2, 3 , 4 and 5***
Midterm Examination	**Week 7**	
Midterm Examination	Week 8	

How to control the cooling capacity	Week 9	***4 , 5 and 6***
Types of humidity control equipment	Week 10	***5, 6 and 8***
Types of temperature control equipment	Week 11	***4 , 8***
Electrical load circuit breakers	Week 12	***4, 5 and 6***
Relay , contactor	Week 13	***4, 5 and 6***
High pressure regulators, their types, indications for use and how to work	Week 14	***2, 7 and 8***
Practical Topics	**Week**	**Learning Outcome**
Relay , contactor	1	
Timers	2	
On- Off Starter	3	
Two way controls	4	
Temperature Control	5	
Solenoid valves	6	
Expansion valves	7	

19. Examinations:

Ministry of Higher Education & Scientific Research

Erbil Polytechnic University

Second Year

Subject: Control Systems

Time: 2 Hours

Academic year: 2018 – 2019

Q1/ What is meant by “flow switch “? What it is importance? At which cases it start working? , draw a diagram to showing its internal structure

(20 Mark)

Q2/Define each of the following

1-Control

2-Resistance thermometer

3-Contactor

4-Thermistor

5-Photocell humidistat

(20 Mark)

Q3/List the main components of “Control system “, explain each of these components, draw a diagram which contains these components

(20 Mark)

Q4/ Draw a diagram of “Automatic expansion valve “, what are the main advantages a

(20 Mark)

disadvantages of using this type

Q5/ What are the types of timer? Explain each kind in detail, what is the importance using the timer in refrigeration cycle?

(20 Mark)

Fady R. Shamoon

Extra notes:

Nothing

External Evaluator: