



Arab Academy for Science, Technology & Maritime Transport
 College of Engineering & Technology
 Mechanical Engineering Department

University/Academy: Arab Academy for Science, Technology & Maritime Transport
Faculty/Institute: College of Engineering & Technology
Program: B.Sc. Mechanical Engineering

Form no. (12): **Course Specification**

1- Course Data

Course Code: ME 523	Course Title: Power Plant Operation and Management	Academic Year/Level: 5 year / 9 semester	
Specialization: Mechanical	No. of Instructional Units	Lecture	Practical
	3 credits	2 hrs.	2 hrs.

2- Course Aim

- Introducing students to methods of operation and management of power plants.

3- Intended Learning Outcomes

a- Knowledge and Understanding	<p>Through knowledge and understanding, students will be able to:</p> <p>a.4) Principles of design including elements design, process and/or a system related to specific disciplines.</p> <p>a.7) Business and management principles relevant to engineering.</p> <p>a.p.2) Internal combustion, pumps, turbines and compressors, classification, construction design concepts, Operation and characteristics</p> <p>a.p.5) Business and management techniques and practices appropriate to mechanical power and energy Engineering applications</p>
b- Intellectual Skills	<p>Through intellectual skills, students will be able to:</p> <p>b.p.1) Evaluate mechanical power and energy engineering designs, processes and performances and</p> <p>Propose improvements</p> <p>b.p.4) Analyze the performance of the basic types of internal combustion engines and hydraulic machines</p>
c- Professional Skills	<p>Through professional and practical skills, students will be able to:</p> <p>c.p.5) Design, operate, repair and maintain fluid hydraulic power systems for diverse applications</p> <p>c.p.7) Work in mechanical power and energy operations, maintenance and overhaul</p>

d- General Skills	Through general and transferable skills, students will be able to: d.9) Refer to relevant literature
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4- Course Content

Week No.1	Load Curves
Week No.2	Power Plant Economics
Week No.3	Investment in Power Plants
Week No.4	Investment in Power Plants
Week No.5	Selection of Plant
Week No.6	Selection of Plant
Week No.7	Station Performance, Revision and Evaluation / 7th week evaluation
Week No.8	Station Performance, Revision and Evaluation
Week No.9	Operation of Gas Turbines
Week No.10	Typical Problems in Gas Turbines Operation
Week No.11	Operation of Steam Turbines
Week No.12	Operation of Boiler (1)- 12th week evaluation / 12 th week evaluation
Week No.13	Operation of Boiler (2).
Week No.14	Water Treatment
Week No.15	Operation of Cooling Towers and Condensers
Week No.16	Final Examination

5- Teaching and Learning Methods

<ul style="list-style-type: none"> • Lectures • Tutorials • Reports & sheets • Laboratories • Seminars

6-Teaching and Learning Methods for Students with Special Needs

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

Engineering Requirements and Design Considerations in college Buildings and its Leading Passages

- The design of college buildings and pedestrian passages leading to it are sloppy to allow the transportation of the handicapped;
- Doors are wide enough to let wheel chairs pass through easily and conveniently.
- Lifts are provided for movement between floors.
- Doors are made from light weight materials to make it easy for the handicapped suffering from weakness in limb muscles or those handicapped using prosthetic limbs to deal with them with the least muscular effort.
- Class floors are made from non-slippery materials to prevent falls on the part of the handicapped.
- Sudden changes in the floor level are prevented.

Design Considerations of the Classes

- Class boards are placed at 60 cm high to allow wheeled chair users or those suffering from limited arm mobility use them.
- Enough spaces are left between seats and benches to prevent hindering the movement of wheeled chairs between them.
- Handicapped students sit among normal people in class to be able to interact with them. Nevertheless, in urgent cases according to the nature of the disability, the handicapped students sit in fixed suitable places whether at the front or the back of the class.
- Handicapped students sit close to the main exits of the class to be able to evacuate in case of emergencies.

Academic Support:

- The general academic advisor appoints an academic supervisor for handicapped students.
- Continuous follow ups are made for handicapped students after each assessment to evaluate their academic level of achievement

7- Student Assessment

a-Procedures used	1-Written Examinations to assess The Intended Learning Outcomes.	
	2-Class Activities (Reports, Discussions, -----) to assess The Intellectual Skills.	
b- Schedule:	Assessment 1	7 th Week Assessment
	Assessment 2	12 th Week Assessment
	Assessment 3	Continuous Assessments
	Assessment 4	16 th Week Final Written Exam
c- Weighing of Assessment	7 th Week Evaluation	30 %
	12 th Week Evaluation	20 %
	Final-term Examination	40 %
	Oral Examination	00 %
	Practical Examination	00 %
	Semester Work	10 %
	Total	100%

8- List of References:

a- Course Notes	N/A
b- Required Books (Textbooks)	<ul style="list-style-type: none">• Woodruff, Everett Bowman. MCGRAW-HILL, "Steam Plant Operation" – Latest Edition.•
c- Recommended Books	<ul style="list-style-type: none">•
d- Periodicals, Web Sites, etc.	N/A

Course Instructor: Prof. Mohamed Teamah

Head of Department: Prof. El-Sayed Saber

Program Manager: Prof. El-Sayed Saber

Dean of College of Engineering and Technology of AASTMT

Name: Prof. Moustafa Hussein Aly

Signature:

Executive Manager of Quality Assurance Center of AASTMT

Name: Prof. Aziz Ezzat

Signature: