The University of Jordan
School of Engineering

Department	Course Name	Course Number	Semester
Mechanical Engineering	Design of Sanitary Systems	0904467	

2019 Course Catalog Description

Basic definitions, Water sources, water quality and treatment, drinking water quality. Basic fluid mechanics principles, building cold water supply systems and design, building hot water supply systems and design. Valves in water supply systems and selection, plumbing materials, plumbing fixtures. Building soil and waste drainage systems (internal and external), traps, clean-outs, interceptors, and back water valves, indirect waste piping and special wastes, drainage systems design, vents and venting, design of storm water drains, building fire fighting systems.

Instructors

Name	E-mail	Sec	Office Hours		Lecture Time	

Text Books

	Text book 1	Text book 2
Title	Handouts	
Author(s)		
Publisher, Year, Edition		

References

Books	1. Hall, F. "Plumbing: Cold water supplies, drainage and Sanitation, Third edition, Longman Scientific & Technical, 1994. 2. F. Hall, " Water Installation and Drainage Systems, The construction press 3. F. Hall, " Design Calculations for Plumbing and Heating Engineers, " Longman 4. F. Hall, " Plumbing Technology, " 2nd Ed., *Longman Scientific and Technical* 5. Jordan Codes
Journals	Jordanian codes related to mechanical services to buildings
Internet links	

Prerequisites

Prerequisites by topic	-
Prerequisites by course	Fluid Mechanics (1) 0904361
Co-requisites by course	-
Prerequisite for	-

Topics Covered

Week	Topics	Chapter in Text	Sections
1-2	• The importance of sanitary systems in buildings • The water supply sources & Water quality		
3-4	• Cold water supply systems, Water storage requirements • Appropriate pipe sizing methods		
5-8	• Valves and piping systems, Materials & construction		
9-11	• Soil and waste drainage systems, Vent system, Septic systems • Internal and external systems: materials, layouts, components • Design and installation of drainage systems.		
12-14	• Fire hazards and control: fire basic knowledge & classification • Classification of firefighting, riser, hose reel & sprinkler systems.		

	• Design of firefighting systems		
15	• Importance of water conservation in buildings • Water conservation techniques • Methods of developing a water conservation program		

Mapping of Course Outcomes to ABET Student Outcomes

SOs	Course Outcomes
2	1. Be able to properly select the valves used in building sanitary systems and firefighting systems, design and select components and material of building cold and hot water supply, layout and design building drainage systems (both internal and external), select the proper type of building firefighting system, design it and select components, and learn system design, layout and selection of sanitary systems components.
4	1. Be able to use local and international codes of practice in building sanitary systems design.
7	2. Develop appreciation for water and energy conservation measures in building sanitary systems.

Evaluation

Assessment Tools	Expected Due Date	Weight
Project		20%
Midterm Exam		30%
Final Exam		50%

Contribution of Course to Meet the Professional Components

The course contributes to building the knowledge and understanding of sanitary systems components and provides an ability to design complete sanitary and firefighting systems for small and large buildings.

Relationship to Student Outcomes

SOs	1	2	3	4	5	6	7
Availability		X		X			X

Relationship to Mechanical Engineering Program Objectives (MEPOs)

MEPO1	MEPO2	MEPO3	MEPO4	MEPO5

ABET Student Outcomes (SOs)

1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3	An ability to communicate effectively with a range of audiences
4	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Updated by ABET Committee, 2021