

**The University of Jordan
School of Engineering**



Department	Course Name	Course Number	Semester
Mechanical Engineering	Energy Conversion	0904459	

2019 Course Catalog Description

Energy classification, sources and utilization, Energy growth and economics, Fossil Fuel Systems and combustion in steam power plants. Steam generators. Boiler rating and performance. Environmental aspects of thermal power plants. Overview on renewable energy sources with emphasis on solar and wind energy systems. Introduction to direct energy conversion systems, Thermoelectric, photovoltaic and thermionic converters. Energy Storage.

Instructors

Name	E-mail	Sec	Office Hours	Lecture Time

Text Books

	Text book 1	Handout by the Instructor
Title	Principles of Energy Conversion	Available on E-learning
Author(s)	Archie W. Culp	
Publisher, Year, Edition	McGraw-Hill, 1991, 2 nd Edition	

References

Books	Solar Engineering of Thermal Processes, by John Duffie and William Beckman, John Wiley, 2014, 4 th edition
Journals	
Internet links	www.memr.gov.jo www.iea.org/statist/index.htm www.inerdata.fr www.eia.doe.gov/emeu/cabs/east-med/background www.worldbank.org

Prerequisites

Prerequisites by topic	1. Basic thermodynamic concepts such as systems and properties; energy, work and heat. 2. Thermal power cycles. 3. Vapor and gas mixtures. 4. Chemical reactions of combustion. 5. Basics of fluid mechanics and heat transfer.
Prerequisites by course	Thermodynamics (2) 0904342
Co-requisites by course	-
Prerequisite for	-

Topics Covered

Week	Topics	Chapter in Text	Sections
1, 2	1. Energy classification, resources and utilization.	Chapter 1	1.1, 1.4, 1.5, 1.7
3, 4	2. Principal fuels for energy conversion.	Chapter 2	
5,6,7	3. Production of thermal energy.	Chapter 3	
8,9,10	4. Fossil fuel systems.	Chapter 4	
11,12	5. Environmental impact of power plant operation.	Chapter 6	
13	6. Production of electrical energy (by direct energy conversion).	Chapter 8	
14	7. Wind energy.	Chapter 7	7.3.3

