

King Saud University
Mechanical Engineering Department
ME 476 Solar Energy
Second Semester – 1436/1437H

Instructor: Dr. Hany Al-Ansary

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Course Description:

Introduction; Solar radiation; Solar collectors: Flat plate, Concentrating collectors, Photovoltaic; Thermal analysis and performance of parabolic trough collectors; Solar energy applications: Power generation and desalination.

Credit hours 3

References:

1. “Solar Engineering of Thermal Processes” J. A. Duffie, W. A. Beckman, Wiley, 4th Edition, 2013.
2. “Solar Energy Engineering: Processes and Systems” Soteris Kalogirou, Elsevier, 2009.

Course Content

Unit	Title	Weeks
1	Introduction	0.5
2	Revision of Thermal Radiation	1.5
3	Solar Radiation	3.0
4	Solar collectors: Flat plate, Concentrating collectors, Photovoltaic panels	3.0
5	Thermal analysis and performance of solar collectors	3.0
6	Solar energy applications: Power generation and desalination	3.0

Design Content: 20%

Lectures: 100 %

Laboratory Portion: None

Assessment Tools:

2 Midterm Exams: 40 %

Term Project: 20%

Final Exam: 40 %

Estimated ABET Category Content:

Mathematics and Basic Science: 0 credit units (0%)

Engineering Science: 2.4 credit units (80%)

Engineering Design: 0.6 credit units (20%)

Prepared by

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