

SYLLABUS FOR Sustainable Energy 402/585 Fall 2023

Dr. Michael Caggiano, Professor Emeritus

Lecture Time 10:20 – 11:40 Monday and Thursday

Office: EE-111

Office Hr: Monday and Thursday. 11:40-1pm; Tuesday 1:30 – 2:30

Text: Textbook: Sustainable Energy by Richard A. Dunlap, Cengage, 2nd Edition.

Text Chap.	Topic	# Lectures
1, 2	Introduction Sustainable Energy, Issues with Present Energy Use.	1
1, 2	Energy, Basics and Efficiency Different forms of Energy, Energy and Power, Electricity: Generation and Distribution, Energy Conversion	2
1	Heat Engine, Heat Pumps and Thermodynamic Laws	1
3, 4	Fossil Fuels: sources. Extraction, Processing. Transportation End Use Environmental Consequences and Energy Conversion	3
11	HydroPower: History, Harvesting, Conversion Principles and Efficiency	2
10	WindPower: Resources, Machinery and Generating, Rating and Economics	2
Mid-Term Exam 2 nd or 3 rd Week in October		
8	Solar Thermal: General Characteristics, Passive and Active Energy, Concentrated Solar Power.	2
9	Solar Energy – Photovoltaic: Semiconductor Materials, Conversion Efficiency and Capacity.	2
5	Nuclear Energy	1
6	Uranium Fission Reactors Types and Fuel.	2
7, 8	Nuclear Energy: Fusion Reactors, Safety And Economics.	2
6	Thorium Fission Reactors	1
15, 16	Geothermal, Biomass and Renewable Sources	2
	Graduate Presentations	1

COURSE GRADING Tentative

Homework (From Text Book)	10%
Quizzes (From Lectures)	10%
Individual Project	10%
Team Project (Up to 5 Undergrad or 2 Graduate Students)	20%
Two Mid-Term Exams	33%
Third Exam	17%
Final exam (Rain Date)	17%