

ENE 301 ENERGY CONVERSION PROCESSES I
2017-2018 FALL SEMESTER
WEEKLY SCHEDULE

Week 1: Brief Introduction to Basic Energy Concepts.

Lecture 1-2: Energy basics

Lecture 3-4: Energy engineering discipline and applications

Week 2: Introduction to Fossil Fuels

Lecture 1-2: Fundamentals of fossil fuels

Lecture 3-4: Applications of fossil fuels (power plants, engines etc...)

Week 3: Conversion of biomass into biofuels through biological routes

Lecture 1-2: Lignocellulosic biomass and pretreatment

Lecture 3-4: Bioethanol and biobutanol production

Week 4: Conversion of biomass into biofuels and chemicals through catalytic routes

Lecture 5-6: Gasification, pyrolysis, APR (Aqueous phase reforming) and catalytic strategies for chemicals production

Lecture 7-8: Recent Developments in Biorefineries

Week 5-6: Materials for energy application

Magnetic energy harvesting

Week 7: MIDTERM

Week 8: Solar Energy

Lecture 1-2: Basic concepts of solar energy

Lecture 3-4: Solar collectors

Week 9: Introduction to Wind Energy and Turbine

Lecture 1-2: History of Wind Turbine

Lecture 3-4: Wind Turbine Configurations

Week 10: Wind Power Systems

Lecture 1-2: System Components: Tower, Turbine, Blades

Lecture 3-4: System Design Features

Week 11: Tidal Energy

Lecture 1-2: Basic concepts: Fundamentals of tidal/wave energy

Lecture 3-4: Tidal/wave energy conversion: characterisations

Week 12: Geothermal Energy

Lecture 1-2: Fundamentals of geothermal energy

Lecture 3-4: Sources, uses and advantages

Week 13-14: Students Presentations & MIDTERM