Course Number: 28093

Course Name: Advanced Fuel & Combustion

Course Type: Theory	Type & Max Unit: Constant 3
Prerequisite:	Corequisite:
Level: Graduate	First Presentation:
Group: Energy Conversion	Last Edition:

Objectives:

The main goal of this course is to present the basic principles of combustion process of different fuels and acquaintance with chemical equilibrium and chemical kinetics. Also, it covers theory of premixed and diffusion flames, droplet evaporation and reacting systems.

Topics:

- **Review of Chemical Equilibrium and Combustion and Thermochemistry**
- **Chemical Kinetics and Some Important Chemical Mechanisms**
- **Coupling Chemical and Thermal Analyses of Reacting Systems and Simplified Conservation Equations for Reacting Flows**
- **Detonations**
- **Laminar Premixed Flames**
- **Droplet Evaporation and Burning**
- **Laminar Diffusion Flames**
- **Introduction to Turbulent Flows**

References:

1. Kenneth K. Kuo, **Principles of Combustion**, 2nd Ed., John Wiley & Sons Inc., 2005.
2. Stephen R. Turns, **An Introduction to Combustion: Concepts and Applications**, 3rd Ed., McGraw Hill Inc., 2011.
3. Chung K. Law, **Combustion Physics**, Cambridge University Press, 2006.
4. Irvin Glassman, **Combustion**, 3rd Ed. , Academic Press,1996.
5. Forman A. Williams, **Combustion Theory**, 2nd Ed., Benjamin/Cummings Publishing Co. Inc., 1985.
6. J. Warnatz, U. Maas, and R. W. Dibble, **Combustion**, 3rd Ed., Springer, 2001.