

Aerospace Engineering **Division: Propulsion**
Level and Major: Graduate, Aerospace Eng

Course Title: Advanced Fuel and Combustion **Number of Credits: 3** **Prerequisite**
Lecturer: Amirreza Ghahremani

Course Description:

The key effects of fuel and combustion on our life cannot be ignored. In the present course the basic concepts of fuel and combustion and their wide variety of practical applications have been investigated.

Course Goals and Objectives:

Introduction to Fuels and Combustion, Concepts and Applications

Course Topics:

- Introduction
- Thermodynamics and Equilibrium
- Chemical Kinetics and Important Mechanisms
- Reactor Models and Conservation Laws
- Detonation
- Laminar Premixed Flame
- Mass Transfer and Droplet Evaporation
- Laminar Non-Premixed Flame

The course aims to:

At the end of this course, it is expected that the students would be familiar with the basic subject matter of combustion. So, they can apply their knowledge in different applications of combustion at various professional fields.

Reading Resources:

- Stephen R. Turns, An Introduction to Combustion : Concepts and Applications, third edition, McGraw Hill Inc., 2011
- Kenneth K. Kuo, Principles of Combustion, second edition, John Wiley & Sons Inc., 2005
- Chung K. Law, Combustion Physics, Cambridge University Press, 2006

Evaluation:

40% Final Exam, 30% Midterm, 10% Homework, 20% Project