

MIE1123 – Fundamentals of Combustion

The objective of the course is to provide you with a good understanding of the fundamentals of combustion science.

Instructor: Ali Naseri

Lectures: Friday (10:00 am– 1:00 pm), online

Exams: Final: April 23, online

Marks: Assignments 40% (Note: Assignments due at the start of class)
Readings 10%
Final 50% (Note: open book, bring your textbook)

Text: “Combustion” 5th Edition by I. Glassman (an e-book of the fourth edition is available through the library for free)
<http://www.sciencedirect.com.myaccess.library.utoronto.ca/science/book/9780124079137>

Supplemental Reading: S.R. Turns, “An Introduction to Combustion” 3rd edition, TJ254.5.T88 2012
C.K. Law, “Combustion physics”, 2nd edition, QD516.L27 2006X
K. Kuo, “Principles of Combustion” QD516.K86 2005
N. Peters, “Turbulent Combustion” TJ254.5.P38 2000

Website: Quercus

Lecture Schedule

Month	Date	Lecture Description	Text Chapter	Assignment	Due Date
Jan.	15	1: Conservation Equations	1, T7		
	22	2: Chemical Kinetics	2	Reading 1	12/2
	29	3: Fuel Oxidation	3	1 (10%)	19/2
Feb.	5	4: Premixed Flames: Laminar Flame Structure and Flammability	4		
	12	5: Premixed Flames: Effect of Turbulence	4		
	19	Reading week, no classes		2 (10%)	12/3
	26	6: Detonation	5		
March	5	7: Non-Premixed Flame: Laminar Flame Structure	6		
	12	8: Non-Premixed Flame: Effect of Turbulence	6	Reading 2 3 (10%)	26/3 2/4
	19	9: Non-Premixed Flame: Droplet Combustion	6		
	26	10: Autoignition	7		
April	2	11: Forced Ignition	7	4 (10%)	16/4
	9	12: Solid Fuels	9		
	16	13: Environmental (soot)	8		
	23	Final			