

MIE1123 – Fundamentals of Combustion

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

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Lectures: Wednesday (10:00 – 1:00) MC 306

Exams: Final: April 24, in class

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.	9	1: Conservation Equations	1, T7		
	16	2: Chemical Kinetics	2	Reading 1	6/2
	23	3: Fuel Oxidation	3	1 (10%)	13/2
	30	4: Premixed Flames: Laminar Flame Structure and Flammability	4		
Feb.	6	5: Premixed Flames: Effect of Turbulence	4		
	13	6: Detonation	5	2 (10%)	6/3
	20	Reading Week: no class			
	27	7: Non-Premixed Flame: Laminar Flame Structure	6		
March	6	8: Non-Premixed Flame: Effect of Turbulence	6	3 (10%) Reading 2	27/3 20/3
	13	9: Non-Premixed Flame: Droplet Combustion	6		
	20	10: Autoignition	7		
	27	11: Forced Ignition	7	4 (10%)	10/4
April	3	12: Solid Fuels	9		
	10	13: Environmental (soot)	8		
	24	Final			