Introduction to Thermodynamics

ME 205 (CRN: 38920)

Fall 2015

Prerequisites: PHYS 141, MATH 181
Lectures: MWF 5–5:50 pm, LC F4
Office Hours: MW 2–4, F 10–4 (except lunch)
Help Sessions: TBD

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https://uic.blackboard.com/webapps/login/

Text: Moran et al., "Fundamentals of Engineering Thermodynamics," 8th Ed., Wiley. ISBN-13: 978-1118412930

Course Description: The what, why and how of thermodynamics and its applications in daily lives
Course Objectives: 1. Review and reinforce what you learned in Physics I, 2. Introduce the laws of thermodynamics and their applications, and 3. Learn how to analyze real-world problems using thermodynamics
Skills Required to Succeed: Math (algebra, calculus), spatial visualization (ability to imagine), handwriting, time management & self-esteem

Attendance

If I don't see you in class, I will hunt you down.

Participation

You're required to interrupt my lectures with questions. Shyness is prohibited and frowned upon. But if you interrupt my lecture by **yawning** or even whispering to other students (yes, I have superman hearing), I will throw you out - after embarrassing you in front of everyone, "soup nazi" style.

Homework

...is key to success and will help you get an **A** in this class – along with honesty, consistency, and a sense of purpose. **Do assigned homework on days of lecture.** If your work even remotely resembles the solution manual, I will seriously execute you (Okay, maybe not. But the Dean of Students might be tempted).

Communications Between Classes

Blackboard will be used as the primary means of communications for announcements (e.g., extra-credit quiz?).

Cell Phone, Tablet, Laptop

Cell phone will be confiscated and subsequently destroyed (or put on ebay) should it be caught ringing during lecture. Also, you're not allowed to use your cell phone as a ***calculator*** – c'mon, a Casio scientific calculator costs < $10. **No e-books are allowed** - this means no laptops or tablets in class, either.

[No] Make-up

Absolutely no make-ups are given unless ***prior*** permissions are granted or due to medical, family or other emergencies. Call the MIE department (312-996-5318), or email/call me ***before*** you must miss something.

Grading

Homework	20%
Projects	20%
Quizzes	20%
Midterm Exam	20%
Final Exam	20%

A	B	C	D	F
90-100	80-89	70-79	60-69	< 60
4.0	3.0	2.0	1.0	0.0

Important Dates

Last day to drop a class w/o “W”:	Sept 4, 2015 (Friday)
Last day to drop a class w/ “W”:	Oct 30, 2015 (Friday)

Integrity Policy

Cheating => Getting kicked out of school. Don't get kicked out of school.

Disability Accommodation

We are very accommodating. Contact the Disability Resource Center (DRC), 312-413-2183, and visit:
http://www.uic.edu/depts/oaa/disability_resources/faq/accommodations.html

Emergency Preparedness

When in doubt…call University Police at 312-355-5555 (or 5-5555 on any campus phone).

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Tentative Schedule (updated 9/14/15):

Week	Lecture #	Day, Date	Sections	Topics	HW Problems
1	1	M 8/24	-	Welcome!	
	2	W 8/26	Ch.1	Intro	
	3	F 8/28	Ch.1	System, properties, state, process, cycle	4, 9a, 20
2	4	M 8/31	Ch.1	Units & dimensions, p & T	25, 31, 51
	5	W 9/2	Ch.2	1st law for closed system, heat, work	21, 28, 32, 33
	6	F 9/4	Ch.2	1st Law, energy, heat, work, polytropic	56, 60
3	7	M 9/7	-	**No Class – Labor Day**	
	8	W 9/9	Ch.2	More on work	67
	9	F 9/11	Ch.2	1st law for cycle, **Quiz 2**	74, 80
4	10	M 9/14	Ch.2	Cycle efficiencies	92
	11	W 9/16	Ch.3	p-v-T	6, 7, 9, 10, 14
	12	F 9/18	Ch.3	Quality, u, h	18, 23, 38
5	13	M 9/21	Ch.3	+1st law, cv & cp, liq & solids	46, 58
	14	W 9/23	Ch.3	+1st law, cv & cp, liq & solids, **Quiz 3**	78, 83
	15	F 9/25	Ch.3	Compressibility, ideal gas	92, 98, 103
6	16	M 9/28	Ch.3	u, h, cv, cp for I.G.	112, 116, 127
	17	W 9/30	Ch.3	1st law for I.G.	132
	18	F 10/2	Ch.3	1st law for I.G., **Quiz 4**	142
7	19	M 10/5	Ch.3	Polytropic for I.G.	144
	20	W 10/7	-	Review	
	21	F 10/9	Ch.4	Open system (C.V.), mass conservation	6, 17, 19
8	22	M 10/12	-	**Midterm Exam**	
	23	W 10/14	Ch.4	Energy conservation, S.S., C.V. Analysis	24, 31, 37
	24	F 10/16	Ch.4	S.S., C.V. Analysis	42, 53
9	25	M 10/19	Ch.4	S.S., C.V. Analysis	66, 75
	26	W 10/21	Ch.4	S.S., C.V. Analysis	102
	27	F 10/23	Ch.5	2nd law, reversibility	9
10	28	M 10/26	Ch.5	Apply 2nd law to cycles, **Quiz 5**	17, 20
	29	W 10/28	Ch.5	Apply 2nd law to cycles	30
	30	F 10/30	Ch.5	Power/AC-HP, Max Eff., Carnot	43, 50
11	31	M 11/2	Ch.5	Power/AC-HP, Max Eff., Carnot	68, 74
	32	W 11/4	Ch.6	Entropy, Clausius Inequality, Reversible	3, 7, 15
	33	F 11/6	Ch.6	Entropy, Clausius Inequality, Reversible	20
12	34	M 11/9	Ch.6	T-ds, entropy change for I.G., **Quiz 6**	
	35	W 11/11	Ch.6	T-ds, entropy change for I.G.	
	36	F 11/13	Ch.6	2nd law for closed system	41, 49
13	37	M 11/16	Ch.6	2nd law for closed system	
	38	W 11/18	Ch.6	2nd law for open system, **Quiz 7**	85
	39	F 11/20	Ch.6	Isentropic processes	119
14	40	M 11/23	Ch.6	Isentropic efficiencies	143
	41	W 11/25	Ch.6	Isentropic efficiencies	162
	42	F 11/27	-	**No Class - Thanksgiving**	
15	43	M 11/30	Ch.8	Vapor power cycles, **Quiz 8**	
	44	W 12/2	Ch.9	Gas power cycles	
	45	F 12/4	-	Review	

Final Exam: ?

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