MAE 320 –Thermodynamics, Fall 2014

Session 002: **MWF 10:00 – 10:50 AM**, Class Room **G39 ESB**

Course Syllabus

Instructor	Dr. **V'yacheslav (Slava) Akkerman**, Office: Annex 273 ESB; Phone: (304) 293-0802; Cell: (650) 815-9021; Email: vyacheslav.akkerman@mail.wvu.edu; vyakkerman@mix.wvu.edu
Office Hours:	**2:00 – 3:30 pm, Mon-Fri (unless cancelled!) or by appointment**.
Teaching Assistant	*Berk Demirgok*, Office: Annex 276 ESB; Phone:(304)293-0807; Email: bedemirgok@mix.wvu.edu
TA Office Hours:	*12:00 – 1:00 pm, Tue & Wed (unless cancelled!) or by appointment.*
TA HWs service:	*4:00 – 6:00 pm*, *two days prior to homework due*, G28 ESB or Freshmen Engineering.
Prerequisites	PHYSICS 111, MATH 156
Required Textbook:	**Thermodynamics: An Engineering Approach, 7th Edition, Y. A. Cengel and M. A. Boles, 2011.**
Catalog Description:	MAE 320 Thermodynamics 3 Hr lecture. Principles of thermodynamics; properties of ideal gases and vapors; closed and control volume system; first and second laws of thermodynamics; entropy and entropy generation; basic gas and vapor cycles; basic refrigeration cycles.
Course Format	The class format will be in the form of lectures with room for student discussions and questions.
Course outline:	See attached sheet. Homework and exam dates are tentative and subject to change.
Course Goal:	This course continues the knowledge gained in the PHYS 111 course with the introduction of the properties of ideal gases and vapors and the development of the 1st and 2nd laws of thermodynamics. The 1st and 2nd laws of thermodynamics are applied to simple gas and vapor power and refrigeration cycles. Students should be able to analyze and solve simple to complex thermodynamic problems.
Outcomes of ABET evaluation:	Upon successful completion of this course, the student should have an ability to identify, formulate and solve engineering problems related to thermodynamics (ABET Outcome E). Additionally, the student should have the broad education necessary to understand the impact of engineering solutions in a global and societal context (ABET Outcome H) and the knowledge of contemporary issues (ABET Outcome J).

- Outcome E: Apply the 1st and 2nd law of thermodynamics to processes.

- Outcome E: Apply tabular and graphical data to thermodynamic problems.

- Outcome E: Apply an entropy balance to processes.

- Outcome H: Demonstrate an understanding of the impact of thermodynamic solutions from global perspectives.

- Outcome J: Demonstrate an understanding of contemporary issues pertaining to the environment and society.

- Outcome J: know and comprehend the importance of cost factors in engineering design.

- Outcome J: understand and appreciate the importance of international standards and units.

Attendance Policy:	Class attendance is *strongly recommended* though not mandatory. Attendance may be used to determine borderline grades. If you miss class, it is your responsibility to study and catch up the material presented.
Homework Policy:	There will be nine home works. Each home work must be legible and should be turned in at the start of class on the day it is due. The homework Assignments must be properly headed (**name, date, course, session and homework number**), stapled together in the upper left corner, and submitted flat (not folded). Without a valid reason as per WVU rules, late homework will not be accepted after the day it is due. Homework is to be done on Engineering Paper with the solution presented in a logic order. **IT IS YOUR RESPONSIBILITY TO PREPARE THE HOMWWORK IN SUCH A WAY THAT THE "TA" CAN READ AND GRADE IT PROPERLY. UNREADABLE HOMEWORK WILL BE GRADED AS ZERO.**

Hour Exams and Final Exam:	There will be three hour exams: Exam 1 (*tentatively, Sep 24th*) will cover Chapters 1~3; Exam 2 (*tentatively, Oct 24th*) will cover Chapters 4 and 5; Exam 3 (*tentatively, Nov 14th*) will cover Chapter 6 and a part of Chapter 7. Eventually, a comprehensive two-hour final exam will be given at the end of the semester as scheduled by WVU, on Dec 15th. Exams are expected to be close-book and close-notes. The grade of Exam 1 will be used for the midterm grade.

Make-up exams will be given only if the student can show a really valid reason as per WVU rules. This valid absence normally has to be established before the regularly scheduled exam **with the exception of emergency**. The make-up exam will be given no later than 1 week after the scheduled exam. The makeup exam to the final will be given no later than the last day of final exam week to catch the deadline for final mark reporting. **There will be no makeup to makeup exams.**

Course Binder:	You are required to keep all of your home works and exams in a binder after they are returned to you. This collection can be used to check the instructor's grading records. In case of errors in recording grades, you will need to supply your original graded paper as verification. Some of the home works and exams will be copied for reference. *Any changes or modification to your answer after the homework and exam is returned to you will be considered as cheating if you plan to use it as evidence for a better mark*.

Academic Integrity:	The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code: http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code.

Group study is expected and even encouraged in preparing the assignments to the extent to which it promotes understanding to questions by all involved. Students may discuss on finding the solution of those questions and but must prepare and submit his/her own solutions for assignments. Copy of assignments will be considered as cheating and marked as zero. The "Group work" on exams will be considered as cheating. *The penalty for the 1st offense of cheating will be a grade of zero on that exam. The penalty for the 2nd offense will be a non forgivable grade of F for this course.*

Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.

Social Justice Statement:	WVU is committed to social justice. The instructor of this course concurs with WVU's commitment and expects to maintain a positive learning environment, based upon open communication, mutual respect and nondiscrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color, or national origin. Any suggestions are encouraged as to how to further such a positive and open environment and to anticipate needing any type of accommodation in order to participate in this class. Please advise us and make appropriate arrangements with Disability Services (293-6700).

Course Grading:	Homework		10%
	Three hour exams	+	60% (20% for each hour exam)
	Final Exam	+	30%
	Total:		100%

Grading Scale:	90 – 100	A	60 – 69	D
	80 – 89	B	Below 60	F
	70 – 79	C		

MAE 320 – Thermodynamics – Session 002 (Fall 2014)

Course Schedule

Month	Date	Day	Period	Activity	Assignment Due and Day of Special Concern
August	18	M	1	Introduction, Ch 1	First Day of Classes
	20	W	2	Ch 1	
	22	F	3	Ch 1	Last day to register, add new courses, etc.
	25	M	4	Ch 1	
	27	W	5	Ch 1	TA hours for HW1: Wed, 27th & Thu 28th, 4-6pm
	29	F	6	Ch 2	**HW 1**
September	1	M		*Labor Day Recess, University Closed*	
	3	W	7	Ch 2	
	5	F	8	Ch 2	
	8	M	9	Ch 2	TA hours for HW2: Mon 8th & Tue 9th, 4-6pm
	10	W	10	Ch 3	**HW 2**
	12	F	11	Ch 3	
	15	M	12	Ch 3	
	17	W	13	Ch 3	
	19	F	14	Ch 3	TA hours for HW3: Thu 18th & Fri 19th, 4-6 pm
	22	M	15	*Review for Exam 1*	**HW 3**
	24	W	16	**Exam 1**	
	26	F	17	Ch 4	
	29	M	18	Ch 4	
October	1	W	19	Ch 4	
	3	F	20	Ch 4	*Mid-term*
	6	M	21	Ch 4	TA hours for HW4: Mon 6th & Tue 7th, 4-6 pm
	8	W	22	Ch 5	**HW 4**
	10	F	23	Ch 5	*Mid-term reports due*
	13	M		*Fall Break Recess*	
	15	W	24	Ch 5	
	17	F	25	Ch 5	
	20	M	26	Ch 5	TA hours for HW5: Mon 20th & Tue 21st, 4-6 pm
	22	W	27	*Review for Exam 2*	**HW 5**
	24	F	28	**Exam 2**	*Last Day to Drop the Class*
	27	M	29	Ch 6	
	29	W	30	Ch 6	
	31	F	31	Ch 6	
November	3	M	32	Ch 6	TA hours for HW6: Mon 3rd & Tue 4th, 4-6 pm
	5	W	33	Ch 7	**HW 6**
	7	F	34	Ch 7	
	10	M	35	Ch 7	
	12	W	36	Ch 7	TA hours for HW7a: Wed 12th & Thu 13th, 4-6 pm
	14	F	37	*Review for Exam 3*	**HW7a**
	17	M	38	**Exam 3**	
	19	W	39	Ch 7	
	21	F	40	Ch 7	
	22-30			*Thanksgiving Recess*	
December	1	M	41	Ch 7	TA hours for HW7b: Mon 1st & Tue 2nd, 4-6 pm
	3	W	42	Ch 9-11	**HW7b**
	5	F	43	Ch 9-11	TA: Wednesday and Thursday
	8	M	44	Ch 9-11 & Review	**Last day of class**, *HW8 to be distributed*
				Final Exam as described on the WVU website Monday, Dec 15th, 11:00am – 1:00 pm	

Note: TA service: 4:00 pm to 6:00 pm, two days prior to homework due.