

MECH 6390-001 Combustion (CRN 17760)

Course Syllabus

Fall 2018

COURSE OBJECTIVES: The course covers the fundamentals of combustion, including chemical thermodynamics and kinetics, flames in premixed gases, diffusion flames, ignition, and heterogeneous combustion.

TIME: TR 3:00 pm – 4:20 pm

LOCATION: Bell Hall 130A

INSTRUCTOR: Dr. Evgeny Shafirovich

E-MAIL: eshafirovich2@utep.edu

OFFICE HOURS: MTWR 10:00 am – 11:00 am

OFFICE: A112

TEXTBOOK: Irvin Glassman, Richard A. Yetter, and Nick G. Glumac, *Combustion*, 5th Edition, Academic Press, 2015. ISBN: 978-0-12-407913-7.

A PDF version is available at <https://www.sciencedirect.com/science/book/9780124079137>

BLACKBOARD: Instructor will be using Blackboard for uploading materials, updating the syllabus (if necessary), and communicating with students via “Announcements” and email.

ASSIGNMENTS: Homework assignments will be given during the semester. They will include problems and a term paper. The solutions of the problems will not be graded.

Each student will prepare an individual term paper. A list of possible topics will be provided by the instructor. Student can also propose any other relevant topic (has to be approved by the instructor). Before writing the term paper, student will submit a one-page abstract to the instructor for review and feedback. The term paper has to be submitted to the instructor and presented in class during a special session. The deadlines for selecting the topic and submitting both abstract and paper are shown in the course calendar.

EXAMS: There are two exams. All exams are open book and close notes.

GRADING: Your grade for the course will be determined using the following formula:

Term Paper	50%
Exam 1	25%
Exam 2	25%

ABET PROGRAM OUTCOMES: This class addresses the following ABET objectives:

- (a) An ability to apply knowledge of mathematics, science, and engineering.
- (e) An ability to identify, formulate, and solve engineering problems.
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

ACCOMODATIONS: If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at <https://www.utep.edu/student-affairs/cass/>.

COURSE CALENDAR

Week	Day	Date	Topic	Chapters
1	T	8/28	Introduction. Thermodynamics of combustion	1.1, 1.2
1	R	8/30	Thermodynamics of combustion	1.3
2	T	9/4	Thermodynamics of combustion	1.4
2	R	9/6	Chemical kinetics	2.1, 2.2
3	T	9/11	Chemical kinetics	2.3, 2.4
3	R	9/13	Chemical kinetics	2.5 – 2.7
4	T	9/18	Explosive characteristics of fuels. The term paper topic is approved for each student.	3.1 – 3.3
4	R	9/20	Flames in premixed gases	4.1, 4.2
5	T	9/25	Flames in premixed gases. Abstract of the term paper is due.	4.3
5	R	9/27	Flames in premixed gases	4.3
6	T	10/2	Flames in premixed gases	4.3
6	R	10/4	Flames in premixed gases	4.4
7	T	10/9	Flames in premixed gases	4.6
7	R	10/11	Flames in premixed gases	4.7
8	T	10/16	Diffusion flames (gases)	6.1, 6.2
8	R	10/18	Diffusion flames (gases)	6.2
9	T	10/23	Exam 1	Chs. 1 - 4
9	R	10/25	Diffusion flames (droplets)	6.3
10	T	10/30	Diffusion flames (droplets)	6.3
10	R	11/1	Ignition	7.1, 7.2
11	T	11/6	Ignition	7.3
11	R	11/8	Ignition	7.3
12	T	11/13	Ignition	7.4, 7.5
12	R	11/15	Combustion of solid fuels	9.1, 9.2
13	T	11/20	Combustion of solid fuels. The term paper is due.	9.2
13	R	11/22	<i>Thanksgiving Day</i>	
14	T	11/27	Combustion of solid fuels	9.3, 9.4
14	R	11/29	Combustion of solid fuels	9.4, 9.5
15	T	12/4	Review	
15	R	12/6	Exam 2	Chs. 6, 7, 9

There is no Final (comprehensive) Exam.

The day(s) for presenting term papers will be determined based on students' schedules.

Department's Policies

Academic Honesty

During exams and quizzes, you are not allowed to use any form of wifi enabled electronic device, including cell phones or other electronic communication devices or methods (wrist watches, earbuds, etc.). No wrist watch or other electronic device may be worn.

No electronic version of the book, loose paper print-outs of the book or extra sheets of paper of any kind are allowed unless explicitly mentioned in writing by the instructor. As a part of the zero-tolerance policy, if you have a cellphone or other electronic device capable of communication on your person; or if any proctor sees or hears any electronic device during the exam or if you share your work with someone else, you will be reported to the proper authorities and you may receive a zero on the exam and an F in the class. Other actions including suspension may also be pursued.

If anyone leaves the exam room during an exam they must be accompanied by a proctor. This includes restroom breaks.

University approved recording devices may also be located at various locations in the room and may be out of sight of the students. These recordings will be managed according to the UTEP approved regulations for such media.

If you are suspected of scholastic dishonesty, you may not be directly confronted about your conduct by the instructor or proctor. You will, however, be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) and your exam will not be admissible. Your grade in the class may not be available until OSCCR makes a final ruling, this may adversely impact your ability to enroll in other classes.

If you arrive more than 15 minutes late to an exam, you will not be allowed to take the examination.

There will be no makeup exams administered. If you have a university approved excuse, your instructor will have a process for determining how to handle the missing grade outlined in the syllabus. However, no makeup exams will be given.

If you miss more than one exam, the instructor may choose to administratively drop you from the class. This may adversely impact a visa and financial aid.

Any food or drink brought into the examination room is subject to careful inspection by a proctor.

Departmental policy allows for the use of assigned seats. All students must present their UTEP issued ID prior to and during every exam and may be required to sign in. Not having a UTEP issued ID when asked will result in forfeiture of the exam.

Scholastic dishonesty on homework, lab assignments and all other class assignments will be held to the same standards and requirements of academic honesty as quizzes and exams.

Class Attendance Policy

Attendance is mandatory. Anyone with 5 or more absences will be dropped from the class. A drop for not attending will count toward the State Allowed Six Drop Limit. If you are failing the class at the time of the drop you may also be given a WF designation. Be advised that a drop could adversely impact visa status, financial aid and other programs.

As per UTEP rules, you may be asked to show a UTEP ID at any time during class. Anyone who is present and not registered in the class will be subject to disciplinary action unless the instructor gives prior approval.

Excused Absence for Exams

The UTEP catalog allows Exam Absence to be excused ONLY for University-Recognized Activities and very specific other situations. Medical absence is NOT allowed in the UTEP catalog. For consistency with the catalog, students will NOT be excused from exams due to illness.

Harassment Policy

The department has a zero-tolerance policy for harassment. Engagement in any behavior considered harassment will be reported to the proper authorities. In addition to generally understood forms of harassment, the department also treats the following behavior as harassment:

- Repeated emails and/or calls regarding subjects that have already been addressed. Once a decision has been made or a question answered, a student who continues to ask the same question will be given a warning by the recipient of the email/call. If the student continues, the behavior will be reported. Questions that seek understanding of course material are not harassment; but repeated questions about a grade or an administrative decision are.
- Grades are NOT negotiable, ever. If you believe a grading mistake has been made, you must follow the process described in the UTEP catalog. Any request for a grade elevation that is NOT based on a mistake is considered harassment and will be reported immediately.
- Remaining in an office after the occupant requests you leave is considered harassment and potentially threatening. You will be reported immediately without warning and depending on the severity, may be reported to law enforcement.
- Similar behavior towards department staff, and student advisors will also be treated as harassment, including persistent phone calls, emails, and badgering. Department staff and student advisors are there to help students, and should be treated with due respect.