Fire Protection and Safety Engineering Technology
Engineering North
Stillwater, Oklahoma 74078-8016
744-9517

I. Course Information:

Course:	**FPST 3373: Fire Dynamics**
Semester:	**Fall 2022**
Lecture:	**MW 8:30 AM – 9:20 AM, EN107 and online**
Lab:	**Th 1:30 PM – 4:20 PM, FSL 104 and online**
Instructor:	**Haejun Park, PhD**
	543 Engineering North (405) 744-9517
Contact:	**Haejun.park@okstate.edu**
Office Hours:	**T and Th 9:30 am – 10:30 am (zoom or in-person with mask preferred)**

A. Final Exam

The final exam schedule for this course is at **8:00 – 09:50 am, Monday, December 12, 2022 for on-campus students and TBD for online (SWJTU) students. It will be an online exam through Canvas Quiz. For on-campus students, exam will be in EN107, and for online students, the exam will be proctored via Zoom. Camera in your cell phone should be operational with Zoom.** This is a mandatory comprehensive examination. Details of the online exams will be notified later.

B. Course description

Fundamental thermodynamics of combustion, fire chemistry, fire behavior, and compartment fire phenomena. A basic understanding of computer fire models.

C. Prerequisites: Discuss with your advisor to check if you have satisfied the prerequisites:

All prerequisites require a grade of C or better

- Thermodynamics or Heat transfer
- Fire hydraulics or fluid mechanics

D. Course Objectives:

This course covers the fundamental principles related to the growth and effects of fire. The intent of the course is to impart an understanding of the science, mathematics, and measurement behind fire behavior and related issues. Each component requires the introduction of the overall system theory and details in a lecture based, classroom setting, and the application of the ideas in laboratory setting.

E. Learning Objectives:

- Understand fire-related flow mechanics
- Evaluate ignition hazards from external heat source and self-heating
- Understand burning behaviors of gaseous, liquid and solid fuels
- Understand compartment fire phenomena

F. Course Learning Outcomes:

- Calculate heat flux from conduction, convection and radiation heat transfer and determine whether ignition may occur or not

- Calculate the ignition time of thermally thin and thick solid materials
- Calculate flashpoint and LFL concentration of liquid fuels
- Understand fire plume and calculate key parameters of fire plumes
- Calculate heat release rate, flame height, burning duration of a pool fire
- Utilize NUREG 1805 spreadsheets

II. Student Responsibilities:

A. Obtain Course Materials

1. Textbooks

- Required text: None.
- Recommended text:
  - An Introduction to Fire Dynamics, 3rd Ed. By Dougal Drysdale

2. Laptop Computers

- Per the University Catalog, page 111: "For students in Engineering, Architecture, and Technology, the college requires that all students have several basic tools. Students in the College must have a scientific calculator and a laptop computer. The scientific calculator should be capable of computing trigonometric functions, logarithmic and natural logarithmic functions, basic statistical analysis, and all algebraic functions. The laptop requirements are published on the college IT website http://ceat-its.okstate.edu ."
- Students are required to bring a laptop, with a fully charged battery, to lecture when informed by the instructor.

B. Syllabus Fee/ Course Receipt (On-campus students only)

Each student must pay a syllabus fee for lab expendables acquired and utilized throughout the semester. The student shall purchase a course coupon from the bookstore in the Student Union. Take a photo of the receipt on which you write down your name and CWID clearly and upload it to the Dropbox under Assignments folder in the Canvas course website by **Friday, September 9 at 5:00 p.m. FPSET Program Policy provides for a penalty of a zero score on the first exam for students who fail to deliver the appropriate receipt.**

C. Complete the required coursework:

1. Assignments:

a. The student is responsible for all assigned homework.
b. This class will have an on-line component using Canvas Online Classroom. All assignments will be posted in the Canvas in the relevant week. Assignments will be accepted through Canvas Online Classroom. **Late assignments will not be accepted and be marked a score of zero.**
c. If submission is required, multiple scanned pages shall be combined into **one PDF document** and submitted to the Canvas Online Classroom.
d. Any turned-in materials failing to follow the formatting instructions of the assignment will receive a grade of zero. Failure to place your name on the submitted file will result in a

grade of zero. **Complete all calculations utilizing pencil and have the answer clearly boxed.**

e. This class involves significant out-of-class assignments. The student is responsible for all material assigned regardless of inclusion in class lecture. Preparation for class discussions is expected.
f. **All the lab works are to be submitted to the Canvas course website.**

2. Attendance (lectures, labs, seminars, and conferences):

   a. Course policies are based on students being mature individuals with emphasis placed on commitment to a sense of responsibility and accountability for their own education and academic success. Each student is accountable for all work covered in the course. **All on-campus students are expected to attend all classes and labs. However, it is encouraged to stay home if any symptoms related COVID 19 is shown. In this case, it should be communicated in writing to the instructor as soon as the student becomes aware that absence is necessary. Online students are expected to timely follow up the course contents uploaded in the Canvas course website.**
   b. **Attendance will be taken for in-person class.**
   c. When attending class in the classrooms on the north side of the Fire Safety Lab (FSL) building (Pump Lab, Riser Lab, Large Fire Bay, and Fire Behavior Lab) and at the hazardous materials training laboratory, students must wear **closed toed shoes** and **long pants** that cover the tops of the shoes. Failure to wear proper attire will result in dismissal from the lab and a score of zero for the exercise.
   d. Distinguished seminars or guest lectures
      The FPST Program presents the Distinguished Seminar Series (DSS) each semester. This invited guest lecture is a significant enrichment activity for students.

      - Date/Time: None.
      - Location: None.

      In case of in-person seminar, **business casual dress is expected when attending lectures** from guest speakers. Dress code for field trips will be announced. Failure to follow the dress code will result in a zero for the lab.

3. For online students, asynchronous classes/labs will be conducted. For on-campus students who take classes/labs synchronously, the following conditions must be followed:

   a. Individual cameras are required to be turned on, with the student's face clearly visible in the camera view
   b. Students should be fully clothed in the view of the camera.
   c. The background of the viewing area should be assessed and any inappropriate contents should be removed or covered.
   d. Do not attempt to operate a vehicle or other heavy machinery while logged in from a tablet or smart phone

4. Exams

   a. **All the exams will be taken using Canvas quiz and the exams will be proctored through zoom app via student cellphone.**
   b. If you do not take exams without a prior notice to the instructor and a prior permission of the instructor for any reason, the missing exam score will be 50% of the lowest score of the other exams.

c. If you miss any exam except for the final exam with a permission of the instructor, you can take a substitute exam during the dead week. However, the substitute exam will be comprehensive covering the entire course contents regardless of the missing exam.

d. The following calculators are only allowed during exam.
Hewlett Packard -- HP 30s; Hewlett Packard - HP 33s; Hewlett Packard - HP 9s, Casio - FX 115 ES, FX115MS, andFX.115MSPlus (Note: FX115ESand FX115MS models ending with an "-SR" designation are also allowed.); Texas Instruments - TI3OXA (or TI 3OXa);Texas Instruments - TI 30X HS and TI 30X 11B; Texas Instruments - TI36X Solar
(Note: almost all TI calculators with a TI 3x number are compliant with the department policy). These calculators are those typically permitted for certification and professional licensing examinations (CSP, FE, and CIH). Prohibited calculators include PDAs, cell phone calculators, or programmable calculators such as the TI 82, 83, 84 and 89. Also allowed, after inspection by the instructor, are basic 4 or 5 function or nonprogrammable inexpensive scientific calculators. However, these basic calculators may put the student at a disadvantage on math problems that are complex or involve some special trig functions.

D. Avoid Academic Misconduct:

University policies and procedure regarding academic misconduct will be applied per OSU policy 2-20822. Visit the OSU academic integrity website https://academicintegrity.okstate.edu/ and the syllabus attachment for more information. Having or hiring another person to write original content for you is flagrant plagiarism and will result in a recommendation for suspension from the university. If non-original work is suspected, the student will be asked to perform an oral defense of the work in front of a panel consisting of the instructor of record, the student's advisor, an academic integrity facilitator, and another independent faculty member if necessary to form an odd-numbered panel. Self-plagiarism is turning in your own work from another course is also considered a violation of the academic integrity policy. Academic dishonesty includes both **giving** and **taking** of improper assistance on writing assignments or examinations as well as any other form of attempting to gain credit for work that is not that of the student.

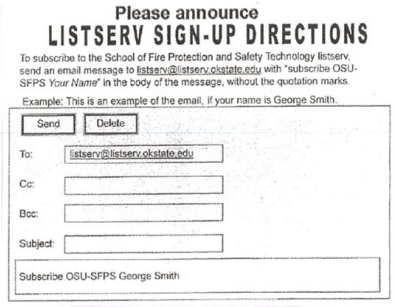
E. Demonstrate appropriate classroom behavior:

1. This and all FPST courses are preparation and practice for a profession and therefore mature, professional, adult conduct is expected. Students who are disrespectful to others or disrupt the class in any way (as defined by the instructor) will be asked to leave and will be marked absent for that class period.
2. With respect to cell/smart phones, and using technology in an appropriate manner: (e.g. participating in interactive surveys during class that use texting technology are appropriate) playing games, chatting with friends, using social media, etc. are not appropriate. Phones, if on, should be placed in silent mode or vibrate to allow for emergency alerts.
3. The use of audio or video recording equipment such as smart phones, or other recording devices, are **NOT PERMITTED** without the expressed written consent of the instructor. Any unauthorized recordings will result in an F! for the course.

F. Communicate with the instructor in a professional manner.

1. Beyond the office hours, the instructor and TA will also be generally available during regular working hours. All meetings will be conducted online and need to be arranged at least 24 hours in advance. The instructor will also respond to student questions by e-mail during regular business hours for non-emergency situations.

2. The instructor will send out email notices of important news, events, and updates regarding the course. **Students must ensure that they have regular access their OSU email account**.
3. Questions about the lecture or technical content should be voiced **during the lecture** or **during the general question and answer periods at the end of each session**. Additional assistance or answers to questions may be sought during office hours or via email.
4. Questions about individual grades, attendance, or other FERPA privacy covered issues must be discussed with the professor in a private setting, such as office hours or via email.
5. Unprofessional, unintelligible, or disrespectful communication in person, by phone, social media, or email, will receive no response from the instructor. Disrespectful or disruptive behavior towards the instructor, another student, either in class or outside of class, will be reported to the OSU Office of Student Conduct.
6. FPST Student ListServ:
   All current FPST students should be signed up on the FPST Student ListServ. Directions are shown here. Please read them carefully, and send your request as directed. **Being on the ListServ is important**, as it is the primary means of contact with the entire FPST student population for notifications from the faculty and student organizations. **You must send your request from your OSU email account, request from other accounts are declined to avoid spam.**

   
   Please announce
   LISTSERV SIGN-UP DIRECTIONS
   To subscribe to the School of Fire Protection and Safety Technology listserv, send an email message to listserv@listserv.okstate.edu with "subscribe OSU-SFPS *Your Name*" in the body of the message, without the quotation marks.
   Example: This is an example of the email, if your name is George Smith.
   Send Delete
   To: listserv@listserv.okstate.edu
   Cc:
   Bcc:
   Subject:
   Subscribe OSU-SFPS George Smith

   Make certain that emails from the ListServ and your instructor are not being captured by your spam filter.
7. FPST Student Community on Canvas
   All current FPST, FSEP, ME-FPS, and SAES students should be signed up on the FPST Student ListServ. Below is the link for you to be able to self-enroll if you are not already on the community page! Being on this page is important, as it is the main means of contact that the program has will the student population for notifications from faculty and student organizations.
   https://canvas.okstate.edu/enroll/YE7F84

III. Special Accommodations for Students

If any member of the class has a disability and needs special accommodations of any nature whatsoever, the instructor will work with the student and the office of Disabled Student Services, 326 Student Union, to provide reasonable accommodations to ensure the student has a fair opportunity to perform this class. Please advise the instructor of such disability and the desired accommodations at some point immediately after the first scheduled class period.
Student Accessibility Services located at 1202 W Farm Rd, 155 UHS, Stillwater, OK 74078.

IV. Evaluation

1. Course grades will be based on the table below.

HWs	20%
Lab works/reports	20%
Exam1	15%

Exam2	20%
Final exam (comprehensive)	25%

For each exam, you will be given 40 as a base-point. You can achieve up to 60 points by solving exam problems, which makes the full point be 100.

2. If any of the grading items are missing with an acceptable reason, the relevant contribution will be proportionally distributed to the rest.

3. Final Grade Scale
   A = 90% and above
   B = 80% to 89.9%
   C = 70% to 79.9%
   D = 60% to 69.9%
   F = 59.9% and below or cheating in any assignment or exam

V. Course Schedule (subject to change per progress): refer to another separate excel spreadsheet in the course website.