TO: The Faculty of the College of Engineering
FROM: The Davidson School of Chemical Engineering
RE: New Graduate Course, CHE 65500 Safety in Chemical Engineering

The faculty of the Davidson School of Chemical Engineering have approved the following new course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

Course: CHE 65500 Safety in Chemical Engineering
Fall/Spring, Lecture, Cr. 1
Restrictions: May not be enrolled as the following Classifications:
Freshman: 0 - 14 hours
Freshman: 15 - 29 hours
Sophomore: 30 - 44 hours
Sophomore: 45 - 59 hours
Junior: 60 - 74 hours
Junior: 75 - 89 hours

Description:

This course will provide you with necessary safety information to comply with the Purdue and other federal requirements (OSHA29 CFR 1910.1450 standard) for working safely in a chemical engineering laboratory setting/environment. The course will cover general safety principles (electrical safety, hazard assessment and controls, etc.) and fundamentals of laboratory safety practices specific to experimental work in chemical engineering laboratories. The course will provide valuable information on how to find, read, interpret and use the information in Safety Data Sheets (SDSs), chemical labels and other printed chemical safety information. Other topics covered include: gas cylinder safety, safety equipment (fume hoods, fire protection systems and building elements, eyewash stations and safety showers, etc.), laboratory equipment safety, hazard assessment and understanding of administrative and engineering controls, selection of suitable personal protective equipment (PPE) necessary for laboratory work with chemicals, etc.

Sangtae Kim
Jay and Cynthia Ihlenfeld Head of Chemical Engineering

PURDUE UNIVERSITY
Davidson School of Chemical Engineering
ChE 69700 - Safety in Chemical Engineering

Fall 2021; Monday, 10:30 - 11:20 am, FRNY 1043

Syllabus

A. Objectives

This course will provide you with necessary safety information to comply with the Purdue and other federal requirements (OSHA29 CFR 1910.1450 standard) for working safely in a chemical engineering laboratory setting/environment. The course will cover general safety principles (electrical safety, hazard assessment and controls, etc.) and fundamentals of laboratory safety practices specific to experimental work in chemical engineering laboratories. The course will provide valuable information on how to find, read, interpret and use the information in Safety Data Sheets (SDSs), chemical labels and other printed chemical safety information. Other topics covered include: gas cylinder safety, safety equipment (fume hoods, fire protection systems and building elements, eyewash stations and safety showers, etc.), laboratory equipment safety, hazard assessment and understanding of administrative and engineering controls, selection of suitable personal protective equipment (PPE) necessary for laboratory work with chemicals, etc.

B. Instructor(s)

Dr. Gabriela Nagy, FRNY G051, tel.: 765-496-1710, email: nagyg@purdue.edu

Office hours: Please request an appointment via email, at nagyg@purdue.edu. Appointments may be in person, via teleconference, or by phone. In-person appointments must follow the Protect Purdue Pledge, including the current University policies regarding the correct use of a face mask.

C. Specific Course Information. Procedures and Policies

CHE 69700 Safety in ChE is a one credit-hour course, offered in the fall semester. The completion of this course is mandatory for all chemical engineering graduate students in their first fall semester of studies at Purdue. The class meets once per week for 50 minutes, for the duration of the fall semester. For this class, all will need strong and reliable internet connection and an electronic device with internet access, such as a laptop or tablet. Please bring this electronic device with you to class every session, as you may need to use it in class for quizzes or for activities.

There is no textbook for this course, but students are required to read the FRNY Building Emergency Plan (https://www.purdue.edu/ehps/emergency_preparedness/bep/FRNY-bep.html), the OSHA Laboratory Standard 29 CFR 1910.1450 and the Purdue Chemical Hygiene Plan (CHP) (https://www.purdue.edu/ehps/rem/documents/programs/chp2014.pdf). In addition, students are required to complete any assigned pre-class work before coming to the class. Students are also required to complete homework assignments and submit printed certifications by the end of the semester, as outlined in the lecture schedule.

Class procedures:

1. All students will need to wear a face mask (disposable or cloth) correctly at all times during class. Students will not be allowed to participate in class without a face mask. It is advisable that you always have an extra face mask with you, to replace a damaged, or soiled used mask.

2. Upon entry in the room, students will use the disinfecting supplies available in the room to disinfect their seat and desk before and after use.
3. Per University policies, food and drinks are not to be consumed in the classroom. If you need a drink of water, please step out of the room to drink. You should not eat during class, unless necessary due to a medical condition, in which case you need to leave the room.
4. Unannounced (timed) quizzes will be given during some classes. These short quizzes will be in Brightspace; thus, students are required to bring a laptop to class, or other electronic device with access to internet to be able to log in and take the short quiz.

Course Communications

Brightspace: All course materials, announcements, assignments, etc. will be posted on Brightspace site for this course. Each student is responsible for confirming that they can access Brightspace.

E-mail: E-mail will be used for announcements and reminders from the instructor to only those students enrolled in the course. Please make sure that these emails are not being caught by any spam filtering software. If you do not receive these emails, please verify that you are enrolled in the course, by contacting your ChE Academic advisor.

Attendance

All students are expected to arrive before class starts and stay until explicitly dismissed by the instructor. If you arrive late, or you need to leave early, please try not to disturb the class. If you are consistently late because of a previous class or because of another commitment, please see me individually so we can discuss your options.

Each student is allowed to miss **one class** for a valid reason: illness, family emergency or reasonable excuse; this first absence will not count towards your final grade. Additional absences may be allowed in special cases, but must be discussed with, and approved by Dr. Gabriela Nagy by email, prior to the absence. Unexcused absences may result in a failing grade. **If you have 3 unexcused absences you will need to retake the class next year**.
Additional information on Purdue class attendance and absence reporting policy can be found at
http://www.purdue.edu/advocacy/students/absences.html and
http://www.purdue.edu/studentregulations/regulations_procedures/classes.html

If you are experiencing any Covid-19 symptoms, follow the University guidelines and contact Protect Purdue Health Center (call 765-496-INFO (4636) or toll-free at 833-571-1043), and the instructor. Depending on your personal circumstances, exceptions from this attendance policy can be made, and an alternative attendance policy may be applied for you.

Conduct and Academic Integrity

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information is submitted the greater the opportunity for the university to investigate the concern. More details are available on the course Brightspace table of contents, under University Policies.

I do not expect to have any unprofessional behavior or academic dishonesty issues in this class; however, my expectations and consequences are as follows:

You are expected to behave professionally at all times during class. Occasionally, we will have guest speakers in class, who will broaden and improve your educational experience through discussions on selected topics or through organized workshops. I consider it a high priority to treat these speakers

with professional courtesy and respect. Unprofessional behavior in class, such as disruptive talking, using a cell phone, reading a newspaper or working on another subject will not be tolerated. In such cases, for the first instance the student will be warned. Additional unprofessional behavior for the same students may result in the student being counted absent and being reported to the Director of Graduate Studies. The use of cell phones for texting, speaking, accessing social media, etc. in class is not allowed.

Any student caught cheating in a quiz/homework will be awarded 0 points for that quiz/homework and will be reported to the Director of Graduate Studies. If the academic dishonesty is during the final assessment, the student will receive 0 points for the test and will fail the class. All students should be familiar with Purdue's student guide for academic integrity: https://www.purdue.edu/odos/academic-integrity/.

Grading:

Grades will be assigned based on attendance/participation, performance in in-class quizzes, assignments, submission of required certifications, and the results of a final test.

The proportion of these components in the final grade is:

Attendance/Participation	**= 10 %**
Quizzes	**= 25 %**
Assignments:	**= 25 %**
Final test:	**= 40 %**
Submission of Lab Safety Fundamentals Certification (LSF) – required, not graded	
Submission of Lab Specific CHP Certification - required, not graded	
Total:	**= 100%**

Grade assignment will be done as below:

A+ 100.0 - 97.0%	**B+** 86.5 - 89.5%	**C+** 76.0 - 78.9%	**D+** 65.5 - 68.4%	**F** < 58.0%
A 96.9 - 93.0%	**B** 82.5 - 86.4%	**C** 72.0 - 75.9%	**D** 61.5 - 65.4%	
A- 92.9 - 89.5%	**B-** 79.0 - 82.4%	**C-** 68.5 - 71.9%	**D-** 58.0 - 61.4%	

Assignments will be given as shown on the lecture schedule. Assignment requirements including due date will be provided on Brightspace.

Quizzes and homework assignments

Unannounced **quizzes** will be given in class throughout the semester. These will consist of several multi choice questions and/or questions that require you to formulate and write your answer. Students are required to bring a laptop to class, or other electronic device with access to internet to be able to log into Brightspace and take the short quiz. The quiz will only be available in Brightspace for the duration of that lecture period.

If you miss a quiz because you are late for class, or for an unexcused reason, you may take the quiz later. However, there will be a 20% penalty to the score you achieve for that quiz. You will have until 11:59 pm on the same Monday as class to complete the quiz (for 20% penalty), unless previously agreed with Dr. G. Nagy on another timeframe.

There will be **homework** assigned after several lectures. These will help you understand the material presented in class better. This type of homework/activity is not gradable and will not count towards your final grade. However, some quizzes might have questions based on this homework.

There will be several **assignments** throughout the semester. These are individual or group assignments and the due date will be clearly spelled out at the time the assignment is given. Assignment details, including due dates will be available on Brightspace.

Late assignments are accepted within 48 hours of due date, but there will be a 20% penalty for late submission. **Assignments submitted later than 48 hours after initial due date will not be accepted, unless approved by Dr. G. Nagy via email in advance.**

Revised Grades: Any requests for regrading must be made in writing, to Dr. Gabriela Nagy (nagyg@purdue.edu) within **48 hours** from when the grades for that assignment/quiz was released on Brightspace. Requests received later than two days will not be accepted.

Nondiscrimination

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. Purdue's nondiscrimination policy can be found at http://www.purdue.edu/purdue/ea_eou_statement.html.

Students with disabilities

Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

Emergency Procedures

The evacuation and shelter-in-place procedures for Forney are posted at the entrances to all Forney classrooms and detailed in the Building Emergency Plan https://www.purdue.edu/ehps/emergency_preparedness/bep/FRNY-bep.html. The procedures will be reviewed in class, and students are responsible for understanding and adhering to these procedures in the event of an emergency.

Major Campus Emergency

In the event of a major campus emergency, course requirements, deadlines and grading are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Information about relevant changes in will be posted on Brightspace and emailed to the enrolled student e-mail list.

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Lecture Schedule*

*This lecture schedule is subject to change at the instructor's discretion. Students will be notified in advance of any changes in the initial schedule.

Date	Topic
August 23	Course introduction Training requirements at Purdue Wellness at work Common Safety Acronyms
August 30	OSHA Laboratory Standard Hazard identification and communication
September 13	Chemical hazards. Storage of chemicals
September 20	Chemical spills Transportation of hazardous chemicals
September 27	Hazard assessment. Control measures and hierarchy of controls. Management of change.
October 4	Laboratory safety controls: engineering controls and safety equipment; administrative controls; PPE
October 18	Compressed gas cylinder safety Cryogenic liquids safety
October 25	Fire safety: prevention and protection *Lecture to potentially include demonstration and practice on the use of fire extinguishers*
November 1	Waste collection and disposal procedures Hazardous waste management
November 8	What happens to the hazardous waste generated on campus?
November 15	Introduction to Lock-Out-Tag-Out (LOTO) Laboratory Electrical Safety
November 22	**Final in-class assessment**
November 29	**Special topic session**: Choose **one** from: (a) Use of Swagelok fittings workshop. (b) Bio-safety awareness.
December 6	Radiation Safety