

INSY 5010/6010(6) – Safety Engineering

Syllabus for Fall 2020

Bulletin Description: (3 hrs). Lec. 3, Prerequisite of INSY 3020, or permission of the instructor. Occupational safety engineering and management with emphasis on control of hazardous materials, fire prevention, safety considerations in production facility design and maintenance, and operation of effective safety programs. Elective INSY undergraduate curriculum course.

Topics Discussed:

OSHA standards, risk management, hazard identification and elimination, hazard communication, professional certification, and other applied safety topics intrinsic to industry and production facility design and operation.

Faculty: Richard Seseek, PhD, CPE, seseek@auburn.edu / 3341 Shelby

Online office hours: 11-12 T/W/H and by appointment

Office hours link: <https://auburn.zoom.us/j/91642114819>

GTA: Anjaneya "AJ" Bandekar, MISE, aj.bandekar@auburn.edu

Fehmi Capanoglu, MISE, mfc0006@auburn.edu

Online office hours: 11-12 T/W/H and by appointment

Office hours link: <https://auburn.zoom.us/j/91642114819>

Text: Safety and Health for Engineers, 3rd Edition, by Brauer. Wiley & Sons, Inc. (2016)
ISBN-13: 978-1118959459 – 2nd Edition may also be used.

Canvas: All course materials will be available on the AU Access Canvas page for this course, INSY 5010/6010(6).

Class Meetings: Tuesday/Thursday, 9:30 am – 10:45 am – On-line and recorded

Zoom Link for Lectures: <https://auburn.zoom.us/j/7607175453>

Professional Objectives:

Expose students to the regulatory and professional aspects of occupational safety. Law and ethics are stressed throughout the course. Engineering skills are reinforced by requiring students to apply basic engineering principles to safety related problems.

Evaluation of Student Performance:

5010	UG Project*	10% of Final Grade		6010(6)	Graduate Project*	25% of Grade
	Mid-Term	40% of Final Grade			Mid-Term Exam	30% of Grade
	<u>Final Exam*</u>	<u>50% of Final Grade</u>			<u>Final Exam**</u>	<u>45% of Grade</u>
	Total	100%			Total	100%

***Project details will be announced and posted to Canvas.** The project report will entail a real-world safety analysis/evaluation with recommendations for system improvement. Project reports must be typed and presented in a professional manner. Late work will receive a penalty of up to 10% per day. Unexcused absences from exams cannot be made up.

****The Final Examination will be cumulative** in nature. **All examinations will be closed book/notes** and be **based on the materials covered or assigned** during the course. All necessary formulas will be provided.

The lecture schedule shows the text material to be covered each class period. It is recommended that students read the material before the class lecture. Due dates, holidays, and exam dates are also listed. The schedule will be adhered to as closely as possible; however, some changes will undoubtedly be required (e.g., to schedule guest lecturers and to respond to unforeseen circumstances). Changes to the schedule (due dates, additional information provided, etc.) will be announced during the lecture period and/or posted to Canvas. You are responsible for noting these changes.

Notes:

1. Although the class will be available on video, students are encouraged to view lectures live and ask questions as the material is presented. Much of the material presented in the classroom is not readily available elsewhere.
2. The instructor will retain all graded exams. A short review will be held after each examination to discuss exam questions. Students can review their exams with Dr. Seseek or the GTA via teleconference.

Grading:

A = 90%-100% B = 80%-89% C = 70%-79% D = 60%-69% F = 0%-59%

Accommodations: Students who need accommodations are asked to electronically submit their approved accommodations through AU Access and to arrange a meeting during office hours the first week of classes, or as soon as possible if accommodations are needed immediately. If you have a conflict with office hours, an alternate time can be arranged. To set up this meeting, please contact me by e-mail. If you have not established accommodations through the Office of Accessibility, but need accommodations, make an appointment with the Office of Accessibility, 1228 Haley Center, 844-2096 (V/TT).

The **ISE Department has specific policies on academics, calculators, etc.** with which you are required to comply. **You are responsible to comply with these policies.** They can found at: http://www.eng.auburn.edu/files/acad_depts/insy/documents/course-policies.pdf

Course Contingency Statement:

If normal class and/or lab activities are disrupted due to illness, emergency, or crisis situation (such as the on-going Covid-19 pandemic), the syllabus and other course plans and assignments may be modified to allow completion of the course. If this occurs, an addendum to your syllabus and/or course assignments will replace the original materials.

Note: This course is taught by Dr. Seseek with GTA support from Fehmi Capanoglu and Anjaneya Bandekar all of whom are capable of teaching this course independently, if necessary. In the event that Dr. Seseek is unable to instruct this course, due to Covid-19 illness or other reasons, other OSE faculty will be asked to deliver and evaluate course materials. These faculty include Drs. Davis and Garnett, both of whom have instructed this course previously. The instructor will provide additional accommodations beyond the normal excused absence policy for any student requiring extended medical care, and will support anyone needing to take an incomplete in the course as a result.

Course Delivery.

- The course exam(s) will be delivered through Canvas using the Honorlock on-line proctoring system.
- ***In order to use Honorlock, you will need a high-speed internet connection, a webcam (internal or external), a Windows or Apple operating system, and a government-issued photo ID, student ID or Passport.***
- **You must use the Chrome Browser for the exam.**
- **If your cell phone, smart watch, another computer, open books/notes, or other individuals are present in the room during the exam, you will receive a zero on the exam or quiz. Any such activity will be sent (along with the video of the incident) to the Academic Honesty Committee.**
- For computer or Software Issues enghelp@eng.auburn.edu; For Honorlock Issues contact: Honorlock on-line help.
- This is a remote exam, but the University Honor Code will apply:

Each test or quiz will ask you to acknowledge the following: "I acknowledge that I am aware of the Auburn University policy concerning academic honesty, plagiarism, and cheating. This policy is defined in the current Tiger Cub Student Handbook, Code of Laws, Title XII, Student Academic Honesty Code, Chapters 1200-1203. I further attest that the work I am submitting with this exam is solely my own and was developed during the exam. I have used no notes, materials, or other aids except those permitted by the instructor."

Academic Honesty:

All portions of the Auburn University student academic honesty code (Title X11) found in the student handbook (http://www.auburn.edu/student_info/student_policies/) will apply to this class. **All academic honesty violations** or alleged violations of the SGA Code of Laws **will be reported** to the Office of the Provost, which will then refer the case to the Academic Honesty Committee. Violations include, but are not limited to:

- **Cheating on an examination** – This includes such things as copying from another's paper, using unauthorized notes, calculators, etc., or giving or receiving unauthorized aid, such as trading examinations, whispering answers, passing notes, or using electronic devices (i.e., mobile phones) to transmit or receive information.
- **Plagiarism** – This is using someone else's work without giving credit. It is, for example, using ideas, phrases, papers, laboratory reports, computer programs, and data - copied directly or paraphrased - that you did not arrive at on your own. Sources include published works such as book, movies, web sites, and unpublished works such as other students' papers/reports or material from a research service. In brief, **representing someone else's work as your own is academically dishonest**. The risk of plagiarism can be avoided in written work by clearly indicating, either in footnotes or in the paper itself, the source of any major or unique idea or wording that you did not arrive at on your own. Sources must be given regardless of whether the material is quoted directly or paraphrased. Copying another student's work and putting your name on it is plagiarism.
- **Unauthorized collaboration** – This is working with or receiving help from others on graded assignments without the specific approval of the instructor. If in doubt, seek permission from the instructor before working with others. Students are encouraged to learn from one another: Form study groups and discuss assignments, but each assignment must be individual work unless specifically stated and turned in as a group assignment. You are encouraged to talk to one another about your assignments, however, all assignments must be done by the student(s) whose name is (are) on it!

- **Multiple submission** – This means using the same work to fulfill the academic requirements in more than one course. Prior permission of the instructors is essential.

INSY 5010/6010/6016 Schedule

<u>Date</u>	<u>Topic</u>
Aug-18	Introduction & Course Overview (Chapters 1-6)
Aug-20	Introduction to OSHA Act (Chapters 1-6) Fundamental Concepts (Chapters 1-6, 8)
Aug-25	Accident Investigation and OSHA Recordkeeping
Aug-27	Noise and Vibration (Chapter 23) (Bandekar)
Sept-1	Hazard Control (Chapter 9)
Sept-3	Covid-19 Discussion Panel (Fagen, Thaper, Sesek, Sesek)
Sept-8	Mechanics and Structures (Chapter 10)
Sept-10	Walking and Working Surfaces (Chapter 11)
Sept-15	Slips, Trips, Falls (Chapter 11)
Sept-17	Machine Guarding (Chapter 13)
Sept-22	Machine Guarding (Chapter 13)
Sept-24	Lockout/Tagout (Chapter 13)
Sept-29	Midterm Exam Review & Practice Calculations
Oct-1	** Midterm Exam **
Oct-6	Electrical Safety (Chapter 12)
Oct-8	Fire Protection, Prevention and Egress (Chapters 16, 17, 29)
Oct-13	Fire Protection, Prevention and Egress (cont.)
Oct-15	Flammable/Combustible Liquids and Explosives (Chaps 16, 17)
Oct-20	Workplace Violence (Guest Speaker)/Active Shooter (video)
Oct-22	Radiation (Chapters 21 and 22)
Oct-27	Hazard Communication (Chapter 24)
Oct-29	Confined Space Entry (Chapter 25)
Nov-3	PPE (Chapter 28)
Nov-5	Safety Research (School Bus Evacuation) (Panel)
Nov-10	Protective Eyewear and other Safety Demonstrations
Nov-12	Case Studies (Chapters 37 and 38) 5010 Semester Projects Due!
Nov-17	Case Studies (Chapters 37 and 38)
Nov-19	Expert Witness and Safety Consulting (Davis)
Nov-24	Course Overview, Practice calculations and Final Exam Review Extra Credit Deadline (extra credit will <i>NOT</i> be accepted after 11/24) 6010/6016 Semester Projects Due!
Nov-26	Thanksgiving Holiday
Dec-1	Reading/Study Day
Dec-8	**Final Exam** <u>Tuesday FROM 8:00 – 10:30 am</u>

All video lectures will be found on Canvas.

All material from the text and all topics on this schedule **will be covered**. **You will be responsible for all material** presented in class, in the text, in homework assignments, and in handouts.

Milestones to add to your calendar!

10/1	MIDTERM EXAM
11/12	5010 Semester Projects Due
11/24	Extra Credit Deadline – extra credit will NOT be accepted after 11/24. 6010/6016 Semester Projects Due
11/24	Exam Review
12/8	FINAL EXAM –<u>8:00 – 10:30 am</u>

Notes:

- ❖ Exams will cover material in the textbook, handouts, project, and material discussed in class. **Exams will be cumulative in nature.**
- ❖ Class materials/readings (etc.) will be available on the course Canvas site. This **schedule is subject to change** based on current events and changes to OSHA regulations or enforcement that may impact the practice of safety, but plan on all of the above topics to be covered. For example, if a major safety-related event occurs or there is a significant change to the practice of safety (e.g., new standard), this material may be incorporated via additional videos. However, while the lecture content may vary somewhat from the syllabus, the **scheduled times for exams are fixed**. **You are responsible for all materials presented in class, posted on Canvas, handed out, or assigned.** If presentation order alters significantly from this schedule, a revised schedule will be provided (posted online). Grading, however, will be as described on this syllabus.
- ❖ **Homework assignments will not be graded**, but are intended to help you learn the material. **Exam questions regarding the homework should be expected.** Materials placed in the “optional supplemental” folder on Canvas are intended to broaden your safety knowledge, but will not appear as exam questions (though they may be included as extra credit questions on exams).

CLASS POLICIES:

Students are responsible for all material covered in class and on Canvas.

The work (projects reports and tests) submitted for grading should represent your individual effort. However, studying and working with your peers (on outside class assignments) is not only acceptable, but greatly encouraged. Study groups can provide an extremely valuable resource to students, and you are encouraged to join one.

Submitting work copied from others is considered academic misconduct. Plagiarism of ideas or work as well as giving or receiving unauthorized information on examinations is considered academic misconduct. **All academic misconduct will be dealt with severely** and may result in a course grade of F. Refer to University Regulations (www.auburn.edu/student_info/student_policies/) and the student handbook for complete information on your rights and responsibilities as a student.

Extra Credit: 5% MAXIMUM EXTRA CREDIT will be computed as a % according to the following 50 max point system: **5 points for Membership** in HFES, ASSP, AIHA or another OSH (Occupational Safety and Health) related **professional society** (note: ASSP student membership is just \$15/year); **up to 10 points for Attendance** of a Safety related

seminar/webinar and subsequent brief summary report (e.g., what was learned relevant to safety and health – seminars/webinars should be ~1 hour in duration); **up to 10 points** for **exam questions** and corresponding answers submitted of “exam caliber”; **up to 10 points** “bringing in” and/or **sharing OSH material** that is used in class (submitting a short supplemental video, voice over PowerPoint, personal “safety share story” that can be shared with the class); **up to 10 points** for actively participating in **Canvas on-line forums**, **up to 5 points** for participation in the **“study buddy” program** (see below), **up to 10 points** for submissions that are used on the noisehelp.auburn.edu website, and **up to 10 points** for a “HW3” **OSH personal improvement** submission that can be shared with others. For example: you are a student member of ASSP (American Society of Safety Professionals) (5 pts), you submit a question that is used as the basis for an exam question (6 pts) and you participate extensively in the Canvas on-line forums (10 pts) ... you would be eligible for $21/50 \times 5\% = 2.1$ extra credit percentage points added to your “Total” grade. Other extra credit opportunities may also be offered, but under no circumstances can earned extra credit exceed 5% of the total grade. Previous studies have indicated that participation in extra credit activities increases grades beyond the extra credit points themselves. Students who participate in extra credit tend to outscore their non-participating colleagues on exams, projects, and other work. **Note: Extra credit will NOT be accepted after 11/24/20.**

Study Buddy Program: to encourage beneficial (and honest) collaboration among students, I am offering the opportunity to earn up to 1% extra (see extra credit above) for helping your classmates (*and for being helped by your classmates!*). To earn these points, you will need to upload brief summaries of your study activities (i.e., made flash cards and reviewed them, typed notes and shared them with others, wrote exam questions and quizzed others, or ... you were the beneficiary of the tutoring). To earn the points, you need to upload your activities to Canvas periodically (we have created extra credit assignments for that purpose). Include, the date you studied, how long you studied, how you studied, and with whom you studied. All participants should upload their own summaries to receive points (whether you are the tutor or the tutee). You do *not* need to upload all materials used (e.g., notes, note cards, etc.), but you *must* do so in *your own words* (DO NOT upload the same summaries and your Study Buddy!). Upload your own summaries. If you have particularly interesting or novel ways of studying, please share them in your summaries. **Note: we realize that studying with your fellow outreach colleagues will be difficult (particularly with social distancing). However, we want to encourage this behavior (e.g., via “quizlets” and other materials you find beneficial to your own work – be creative!). You can connect to your on-line colleagues via Canvas and by sharing HW-0 (Personal Introduction) assignments.**

Undergraduate Student Mini-Project (5010): The semester project for undergraduate students will involve providing preliminary recommendations for a startup that will produce carbon fiber bicycle frames in Auburn, Alabama. To help get you started we will provide links to resources regarding bicycle manufacture, particularly carbon fiber bicycle frames. Assume that this company will produce frames only. They will produce custom frames for high-end clients. Assume that the market for such frames is robust and that the customers are willing to pay top dollar for the frames. Therefore, your safety and health recommendations will not be significantly resource limited (i.e., they can afford engineering controls). Projects will be based on a hypothetical startup, “Tiger Fiber Frames”. Your report will outline the major safety and health concerns related to the processes required to fabricate carbon fiber frames along with recommendations for how you would control related hazards. Any assumptions should be as realistic as possible. Additional guidance will be provided on Canvas.

Graduate Student Project (6010/6016): The semester project for graduate students will involve recommendations for a manufactured home factory. To help get you started we will provide links to resources and specific images to use for your report. Projects will be based on a hypothetical company, "Tuscaloosa Town Homes" (aka T-Town Homes). The videos that provide background on the overall process depict an operation that is safer and more efficient than the images that you will be given of your fictional company. Those images are from different facilities that also produce manufactured homes and are more in line with what would be expected from a company named T-Town Homes. There are multiple images of the manufacturing process and each graduate student will be assigned a sub-set of images on which to report. You will provide a "consulting report" that will be similar to the format discussed in class by Dr. Sesek. This report will include for each image: the hazard(s), any applicable standards (primarily OSHA), and the action(s) that you recommend to control or abate the hazards depicted in each image. The conclusion of the report should summarize the key recommendations and overall concerns you have. This report will require a number of assumptions, some of which you will be given, others you will have to infer. Assumptions should be as realistic as possible. Additional guidance will be provided on Canvas.

Project Cooperation: In the safety and health profession, there is often sharing of resources and, while companies will carefully guard manufacturing trade secrets, they will often share safety innovations. A notable example is IISE's Applied Ergonomics Conference (AEC) where companies display some of their most creative ergonomics and safety solutions in a collaborative conference setting while competing for the "Ergo Cup" and other trophies in a variety of categories (e.g., creativity, cost effectiveness, simplicity, etc.). In that spirit, we encourage collaboration with your safety classmates. We will create Canvas discussion boards to facilitate sharing resources that you may discover and find particularly useful (e.g., videos, pictures, reports, manufacturing machines, etc.). While we want to stimulate collaboration and cooperation, the projects themselves are to be ***written independently***. You may share resources (e.g., references such as technical documents, useful videos, "good" images of the manufacturing process, etc.). You should not share your reports. All reports will be analyzed using "Turn-it-IN", "Plag-Scan", or a similar plagiarism software to determine if work has been copied (either from your classmates or the original sources). Cheating, especially plagiarism, will not be tolerated. Plagiarism will be punished severely and cases will be referred to the graduate school for academic misconduct prosecution.

UG and Grad students can participate on the project discussion boards for either project (carbon fiber bike startup or manufactured home factory). You are responsible to submit the project report only for your class (5010 or 6010/6), but you are encouraged to explore both projects. Please note: the 5010 project represents 10% of the overall grade and the 6010/6 project represents 25% of the overall grade. Your work should reflect this percentage level of commitment.

Policies Regarding Mask/PPE Compliance

While this class will be conducted remotely, we are including a policy statement on Covid.

In response to COVID-19, and in alignment with Auburn University's Presidential directives, and local, state, and national health official guidelines face coverings are required at all times while on campus, except when alone in a private office. This includes the classroom, laboratory, studio, creative space, or any type of in-person instructional activity, and public spaces. "A "face covering" is defined as a "covering that fully covers a person's nose and mouth, including without limitation, cloth face mask, surgical mask, towels, scarves, and

bandanas. Costume and decorative masks that do not provide equivalent protection will not be allowed.

If a student has a medical exception to the face covering requirement, please contact the Office of Accessibility to obtain appropriate documentation. This documentation will need to be presented to the instructor before attending a class meeting.

Anyone who is not wearing a face covering will be asked to put one on or leave the class immediately. Individuals may also be asked to leave class if they remove their face covering during the class, or have to be asked multiple times to wear it correctly (i.e., effectively covering both nose and mouth).

Failure to comply with a request to leave class for not correctly wearing a face covering is a serious health issue, and may result in any or all of the following:

- Immediate cancellation of the entire class period or activity. All students will then be required to cover the material for that class or activity on their own.
- Submission of a complaint to Student Conduct concerning the incident and the individual's refusal to wear, or correctly wear, the required face covering.
- **A final semester grade of an F for the course for the person refusing to wear, or correctly wear, the required face covering.**

Additional Personal Protective Equipment (PPE) may be required for some courses and labs, and using it properly will be treated with the same severity as the requirement to wear a face covering.