

155:415 Process Engineering Lab I
Fall 2017, 4 credits

Instructors

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Class Meeting Schedule

155:415	Tuesdays (Section 01)	Process Eng. Lab
	Wednesdays (Sections 01& 02)	SEC-118
	Thursdays (Section 02)	Process Eng. Lab

Lab Manual

155:415/416 Process Engineering I, II Laboratory Manual by Henrik Pedersen

Sakai

<https://sakai.rutgers.edu>; select “PROCESS ENGRG | 01 F17”

Prerequisites

Transport phenomena I & II, Analysis I & II, Thermodynamics I & II, Separations Processes and Kinetics

Course Description

This is a senior level course designed for students to: (1) get a hands-on experience with pieces of equipment that have been discussed in previous courses; (2) learn how to design experiments and analyze data; (3) develop oral and written communication as an individual and in a group; and (4) learn to work in a group and share responsibilities.

Before students enter the lab they will have a meeting with the professor(s), teaching and learning assistants where groups of 4 – 6 students will explain their experimental plan for obtaining data and using that data to calculate relevant coefficients. Afterwards students will have three weeks to carry out their experimental design and submit a report discussing the determined values and explaining how the group reached their conclusions. At the conclusion of the experiment students will each give an individual oral presentation to classmates clearly explaining the apparatus used and the coefficients obtained. This cycle will occur twice during the semester.

Class sessions will be used to help students learn how to analyze data, write technically, and verbally explain chemical engineering principles. Students will need to come prepared to class as a fair portion of class will be for students to work in groups.

Learning Objectives: By the end of this course, student will be able to:

1. Design and conduct experiments to obtain values related to previous coursework
2. Effectively analyze data and apply appropriate statistical tests
3. Write technical, concise lab reports

4. Give an individual oral presentation, whereby the student can clearly explain the material being presented
5. Learn how to be a part of a team and gain an understanding of the benefits and challenges of working in a group
6. Practice appropriate safety techniques in the lab

Grades

A	90 – 100
B+	85 – 89.5
B	80 – 84.5
C+	75 – 79.5
C	70 – 74.5
D	65 – 69.5
F	< 65

Grade Breakdown:

1. Homework	30%
2. Lab Reports (x2)	50% (20% & 30%)*
3. Individual Oral Presentations (x2)	20% (5% & 15%)**

*Two group lab reports will be submitted; one at the middle and one near the end of the semester. The top score out of the two lab reports will count for 30% of your final grade and the lower score will count for 20% of your final grade.

**Two individual oral presentations will also be given by every student this semester. These will occur the week after your third period in lab. The first presentation will count for 5% of your grade and will occur about halfway through the semester. This is meant to serve as a low-stakes form of practice for your oral presentation. The second presentation which will be close to the end of the semester will count for 15% of your final grade.

Descriptions of Graded work:

1. Pre-Class Assignments:

Homework is typically assigned before every class session and sometimes assigned as a post-class assignment to provide practice for the material discussed in class. Both pre and post-class assignments are **due** by **5:00 PM** on Sakai the **day before class** unless otherwise mentioned. Late homework will not receive credit unless there is an emergency or illness. In such instances verification (in the form of an email or a letter) is required and the homework assignment(s) in question will be dropped from final grade calculations. Each homework assignment is graded primarily on effort. If a reasonable amount of effort was applied to the assignment you will receive full credit (usually 5 – 10 points depending on the assignment) and if it is significantly lacking effort 0 points will be awarded. All homework is to be completed as individuals. However, you are encouraged to consult your peers in addition to the instructor for help.

2. Lab Reports:

Over the course of this semester you will conduct two experiments with a group of 4 – 6 students. Before students are allowed to enter the lab they must provide a detailed explanation of what they intend on doing in lab. Students will have a 20 minute window where they have 10 – 12 minutes to explain to the professor and TAs/LAs what they plan on accomplishing in lab and answering questions to fully demonstrate an understanding of what is being proposed. The group's performance in the meeting will contribute to 15% of the final grade of the report. The final lab report will be due, for the Tuesday group (section 1), by 5 PM on October 9 and November 20 for reports 1 and 2 respectively, and for the Thursday group (section 2), they will be due by 5 PM on Wednesday October 11 and November 22 for reports 1 and 2 respectively. Labs must be submitted

both by hard copy and electronically. Reports will be graded based on how well results are explained, grammar, thoroughness, and appropriate statistical analyses performed. A sample rubric will be distributed on Sakai by the third week of classes.

3. Oral Presentations:

Each student will give two oral presentations. Four sections of students will be formed (each will roughly consist of 30 students). The first presentation will be worth 5% of the final grade and will be 8 – 10 minutes long. It will take place during the middle of the semester. The second presentation will be worth 15% of your final grade and will also be 8 – 10 minutes long. Each oral presentation is to be given about the experiment you conducted and will be graded on content, clarity, delivery, timing and flow. A rubric that elaborates on these criteria will be administered two weeks before students start presenting. You are expected to be present for the section you are scheduled to give a presentation for. With each oral presentation there will be a mandatory reflection survey where you reflect on the positives of your presentation and ways to improve your presentation for the future.

Course Policies:

Accommodations for Learning: If a student has a documented disability (or disabilities) that require special accommodation(s), the student should contact disability resources (dsoffice@echo.rutgers.edu) and privately provide me with documentation about the disability by the second week of class.

Religious holidays: If you celebrate a holiday that conflicts with class or prevents you from completing an assignment please let me know by the end of the second week of class. I will do my best to accommodate your needs.

Attendance: Attendance to all class sessions is required, because there are frequent discussions and activities that will aid in learning the course material. However, I realize that there are situations that preclude you from attending class. If there is an urgent matter either personal or professionally that arises, please let me know as soon as possible so I can plan accordingly and you can make up the work in a timely manner.

Participation: Participation is not graded, but strongly encouraged. You will spend about half the class time talking with your peers about the material in class. Additionally, participation will be taken into consideration if you are on the border between two letter grades.

Late work: Is generally not accepted unless there are unexpected family or medical emergencies. If you must submit work late because of an emergency please notify me about the situation as soon as possible and submit the work when the situation is resolved.

Academic Integrity and other Expectations: Every student is expected to adhere to the regulations outlined in the Student Code of Conduct (in particular the section on academic integrity). To quickly and simply paraphrase, you are responsible for the integrity of your submitted work. Cheating, plagiarism, and/or fabrication will be reported according to procedures outlined in the Student Code of Conduct.

Mobile Devices: They are allowed to be brought to class but it is strongly encouraged to not use them during class. Please keep your phones on silent or airplane mode while class is in session. Studies have shown that students learn better when they are not distracted with electronics.

Class Schedule: September 5 – December 13, 2017

All preparatory readings, videos, etc. for pre-class assignments can be found on Sakai.

Week	Dates	Tuesday	Wednesday	Thursday
1	9/5 - 9/8	No lab	Introductions	Orientation to Equipment*
2	9/11 - 9/15	Meetings	Meetings	Meetings
3	9/18 - 9/22	Lab	Technical Writing and Giving an Oral Presentation	Lab
4	9/25 - 9/29	Lab	Statistics	Lab
5	10/2 - 10/6	Lab	Breakout Groups/ Practice Presentations	Lab
6	10/9 - 10/13	Oral Presentations	Oral Presentations	Oral Presentations
7	10/16 - 10/20	Oral Presentations	Oral Presentations	Oral Presentations
8	10/23 - 10/27	Meetings	Meetings	Meetings
9	10/30 - 11/3	Lab	No Class	Lab
10	11/6 - 11/10	Lab	Brain Swap (will be explained closer to class)	Lab
11	11/13 - 11/17	Lab	More Statistics/ Additional Safety (if time permits/if necessary)	Lab
12	11/20 - 11/22	No Lab**	No class (Friday schedule)	Happy Thanksgiving
13	11/27 - 12/1	Oral Presentations	Oral Presentations	Oral Presentations
14	12/4 - 12/8	Oral Presentations	Oral Presentations	Oral Presentations
15	12/11 - 12/13	No lab**	Last Class	

* There will be an additional session on Friday, 9/8 for the Tuesday students who cannot be present on Thursday for equipment orientation.

** These days with no lab may be used instead as office hours for students to meet with TAs, LAs or the professors to go over any questions they have.