

“Food Processing Engineering” Course Outline

FS 400:302 — Spring Semester, 2017 (4 credit hours)

The purpose of this course is to help the students to understand and apply the concepts and principles of food engineering. The topics to be covered are mass and energy balances, fluid mechanics, psychometrics, heat and mass transfer, and others. The emphasis is to develop the analytical skills of the students to solve practical problems.

Instructor: Professor Kit L. Yam

Room 415, Food Science Building

E-mail: kyam@sebs.rutgers.edu; phone: (848) 932-5467

Office hours: by appointment

Classroom: 109 Food Science Building, M 2:15 – 3:35 PM, W 2:15 - 5:15 pm

Textbook: Introduction to Food Engineering, Singh and Heldman (fifth edition), Academia Press, 2014.

Lecture	Date	Topic
1	W 1/18	Course introduction and basic concepts (Chapter 1)
2	M 1/23	Basic concepts (Chapter 1)
3	W 1/25	Mass and energy balances (Chapter 1)
4	M 1/30	Mass and energy balances (Chapter 1)
5	W 2/1	Quiz 1 Fluid flow in food processing (Chapter 2) Laboratory 1 (rising film vacuum evaporation)
6	M 2/6	Fluid flow in food processing (Chapter 2)
7	W 2/8	Fluid flow in food processing (Chapter 2) Recitation Due date of Laboratory 1 report
8	M 2/13	Fluid flow in food processing (Chapter 2)
9	W 2/15	Due date of Assignment 1 Fluid flow in food processing (Chapter 2)
10	M 2/20	Fluid flow in food processing (Chapter 2)
11	W 2/22	Quiz 2 Psychometrics (Chapter 9) Laboratory 2
12	M 2/27	Psychometrics (Chapter 9)
13	W 2/29	Psychometrics (Chapter 9) Recitation Due date of Laboratory 2 report
14	M 3/6	Heat transfer in food processing (Chapter 4)
15	W 3/8	Due date of Assignment 2 Heat transfer in food processing (Chapter 4)
	M 3/13	Spring recess
	W 3/15	Spring recess
16	M 3/20	Heat transfer in food processing (Chapter 4)

17	W 3/22	Quiz 3 Heat transfer in food processing (Chapter 4) Laboratory 3
18	M 3/27	Heat transfer in food processing (Chapter 4)
19	W 3/29	Preservation processes (Chapter 5) Recitation Due date for Laboratory 3 report
20	M 4/3	Preservation processes (Chapter 5)
21	W 4/5	Refrigeration (Chapter 6) Due date Assignment 3
22	M 4/10	Refrigeration (Chapter 6)
23	W 4/12	Quiz 4 Refrigeration (Chapter 6) Laboratory 4
24	M 4/17	Mass transfer (Chapter 10)
25	W 4/19	Mass transfer (Chapter 10) Recitation Due date for Laboratory 4 report
26	M 4/24	Dehydration (Chapter 12)
27	W 4/26	Dehydration (Chapter 12)
28	M 5/1 (last day) T 5/9	Dehydration (Chapter 12) Final exam, 12–3 pm at Room 109, Food Science Building

GRADING SYSTEM

4 Quizzes	20%
Final examination	25%
3 home assignments	15%
4 laboratory reports	30%
<u>Class participation</u>	<u>10%</u>
Total	100%

Class attendance is required. A student is allowed to miss up to two classes without penalty. For each additional class missed, 2% of the total scores will be deducted.

Students will work in teams of two people to submit their home assignments and laboratory reports. In the beginning of an assignment or report, the person who submits it should list the contribution of each person (for example, 50/50 if the partners contribute equally). By the end of the third class (Wednesday, January 25), each team should email the teaching assistant a short description about how they will work effectively for the assignments and reports. See the teaching assistant or instructor if you have issues with your teammate.

Home assignments will be given 2 or 3 weeks before the due dates. Home assignments may be written by hand or computer, but laboratory reports must be written by computer. Instructions for preparing laboratory reports will be given separately.

STUDENT WELLNESS SERVICES

Just In Case Web App

<http://codu.co/cee05e> Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ www.rhscaps.rutgers.edu/

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932- 1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Scarlet Listeners

(732) 247-5555 / <http://www.scarletlisteners.com/>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.