

Syllabus

FOOD 3210: FOOD ENGINEERING FUNDAMENTALS

(Winter 2024)

TABLE OF CONTENTS

COURSE DETAILS.....	3
INSTRUCTOR CONTACT INFORMATION.....	3
TRADITIONAL TERRITORY/LAND ACKNOWLEDGMENT	3
TEACHING ASSISTANT (TA) & GRADER/MARKER (GM) CONTACT INFORMATION	4
COURSE DESCRIPTION	4
COURSE GOALS	4
COURSE LEARNING OBJECTIVES	4
TEXTBOOK, READINGS, AND COURSE MATERIALS	5
USING COPYRIGHTED MATERIAL	5
COURSE TECHNOLOGY	5
EXPECTATIONS: I EXPECT YOU TO	5
EXPECTATIONS: YOU CAN EXPECT ME TO	6
CLASS SCHEDULE AND COURSE EVALUATION	6
COURSE EVALUATION/ASSESSMENTS.....	7
LAB EXPECTATIONS.....	9
LAB SCHEDULE	9
GRADING	9
VOLUNTARY WITHDRAWAL	9
LAB REPORT DESCRIPTIONS	10
REFERENCING STYLE	10
LAB REPORT EXTENSION AND LATE SUBMISSION POLICY	10
FEEDBACK	10

COURSE DETAILS

Course Title & Number:	FOOD ENGINEERING FUNDAMENTALS, FOOD 3210
Number of Credit Hours:	3 CH
Class Times & Days of Week:	Lectures → 1:00 pm - 2:15 pm Tuesdays and Thursdays Labs → 2:30-5:25 Thursdays
Location for classes/labs:	Lectures → 344 Ellis Building Labs → 216 Ellis Building
Pre-Requisites:	BIOE 3530

Instructor Contact Information

Instructor(s) Name & Preferred Form of Address: Filiz Koksel
You can all me: Filiz, Dr. Filiz, Dr. Koksel



Office Location: Room 112, Richardson Centre for Food Technology and Research;
Room 205, Ellis Building

Office Hours or Availability: To schedule an appointment, contact me via email.

Office Phone No. (204) 474 6486


Email: Filiz.Koksel@umanitoba.ca (preferred method of communication)
Note: All emails should contain FOOD 3210 at the subject line and must conform to the [Communicating with Students](#) university policy. Please introduce yourself in your emails, and avoid using emoticons. Expect return emails within 2 work days.

Contact: Email is the preferred method of communication. You can also book an in-person or virtual meeting with me, at a mutually convenient time (please book through email).

Traditional Territory/Land Acknowledgment

The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota and Dene peoples, and on the homeland of the Red River Métis Nation. I respect the Treaties that were made on these territories, I acknowledge the harms of the past and the present, and I dedicate myself to move forward in partnership with Indigenous communities in a spirit of reconciliation and collaboration.

Teaching Assistant (TA) & Grader/Marker (GM) Contact Information

TA/GM Name:	Siwen Luo	
Office Location:	Richardson Centre For Food Technology and Research	
Office Hours or Availability:	To schedule an appointment, contact via email <u>at least 1 work day in advance</u> .	
Email:	luos345@myumanitoba.ca Expect return emails within 2 work days.	

Course Description

U of M Course Calendar Description

Applications of engineering fundamentals to unit operations in the food industry.

General Course Description

This course is designed to teach students the fundamentals required for food engineering. You will acquire knowledge of food engineering principles in food processing, such as flow characteristics of fluids, heat and mass transfer (and their combination), refrigeration, and an introduction to the interaction of electromagnetic radiation with food materials, in order to apply these fundamentals to various unit operations in the food industry.

Course Goals

By the end of the course, you should be able to:

1. Identify the mechanisms by which various unit operations in food processing optimize food quality and extend the shelf life of foods.
2. Apply physical principles to understand why food components are processed in specific ways.
3. Justify the application of basic mathematical principles to food processing issues.
4. Acquire specific success skills to prepare for a career in the food industry.

Course Learning Objectives

By the end of the course, you should be able to:

- Analyze transport processes and unit operations in food processing as demonstrated both conceptually and in practical laboratory settings
- Explain basic fluid dynamics characteristics of liquid foods
- Predict the effect of specific heat and mass transfer operations on product quality and safety
- Manipulate mass and energy balances for a given food processing operation
- Critique practical, real-world food process situations and problems using food engineering concepts
- Generate process flows to attain specific process strategies
- Demonstrate effective written communication skills
- Apply critical thinking skills to new situations, especially processing problems

Textbook, Readings, and Course Materials

There is no required textbook for the course, but much of the course material is taken from: "Introduction to Food Engineering" (Singh & Heldman). Any edition of this book works (you do not need the latest edition). Full-text version of the textbook is available online through [University of Manitoba Libraries](#). Course material will be given as web-pages, hand-outs or class notes.

Required materials: Scientific calculator for lectures, lab sessions and exams.

Using Copyrighted Material

Please respect copyright. We will use copyrighted content in this course. I have ensured that the content I use is appropriately acknowledged and is copied in accordance with copyright laws and university guidelines. Copyrighted works, including those created by me, are made available for private study and research and must not be distributed in any format without permission. Do not upload copyrighted works to a learning management system (such as UM Learn), or any website, unless an exception to the *Copyright Act* applies or written permission has been confirmed. For more information, see the University's Copyright Office website at <http://umanitoba.ca/copyright/> or contact um_copyright@umanitoba.ca.

Course Technology

Required course material will be given as web-pages or class notes through UM Learn. Tablets, cellphones and laptops can be used during the lectures and labs to take notes, in a responsible, efficient, ethical and legal manner.

Some of the class participation marks will be recorded via iClicker. Students are required to install iClicker Student - formerly known as iClicker Reef - on their mobile device.

Expectations: I Expect You To

- Make yourself familiar with and follow [Respectful Work and Learning Environment Policy](#).
- Attend the classes and lab sessions regularly and punctually.
- Attend the discussions actively and answer questions I may ask (to the best of your ability).
- Use your laptop/phone/tablet in the class for course-related purposes only, and not interrupt the others.
- Not leave the class before it ends.
- Follow the policies around Class Communication, Academic Integrity, and Recording Class Lectures as described below.

Class Communication:

You are required to obtain and use your University of Manitoba email account for all communication between yourself and the university. All communication must comply with the Electronic Communication with Student Policy:

http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html.

Academic Integrity:

You are expected to abide by the University of Manitoba [Academic Integrity principles](#). Always remember to reference the work of others that you have used. Also be advised that you are required to complete

your assignments independently unless otherwise specified. If you are encouraged to work in a team, ensure that your project complies with the academic integrity regulations. You must do your own work during exams. Inappropriate collaborative behavior and violation of other Academic Integrity principles, will lead to the serious [disciplinary action](#). Visit the [Academic Calendar](#), [Student Advocacy](#), and [Academic Integrity](#) web pages for more information and support.

- Lab projects performed in groups are subject to the rules of academic dishonesty.
- All lab reports should be completed independently.

Recording Class Lectures:

No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission of Dr. Filiz Koksel. Course materials (both paper and digital) are for your private study and research.

Student Accessibility Services:

The University of Manitoba is committed to providing an accessible academic community. [Students Accessibility Services \(SAS\)](#) offers academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services
520 University Centre
Phone: (204) 474-7423
Email: Student_accessibility@umanitoba.ca

Expectations: You Can Expect Me To

I will be in class for 10 minutes prior to and after the class time to discuss any questions or comments you may have.

CLASS SCHEDULE AND COURSE EVALUATION

This schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students but such changes are subject to [Section 2.8 of ROASS](#).

Date	Class Content & Teaching Strategies	Required Readings or any Pre-class Preparation	Evaluation	
			Type of Assessment	Value of Final Grade
9-Jan, Tue	Introduction	Course syllabus	-	-
11-Jan, Thu	Dimensions & units	Required reading*	iClicker	0.5%
16-Jan, Tue	Mass & Energy Balances	Lecture notes	Example question	0.5%
18-Jan, Thu	Mass & Energy Balances	Lecture notes	Example question	0.5%
23-Jan, Tue	Fluid mechanics	Required reading*	iClicker	0.5%
25-Jan, Thu	Fluid mechanics	Lecture notes	Example question	0.5%
30-Jan, Tue	Mechanical energy balances	Lecture notes	Example question	0.5%

1-Feb, Thu	Mechanical energy balances	Lecture notes	Example question	0.5%
6-Feb, Tue	Problem set	-	-	-
8-Feb, Thu	Steady state heat tr.	Required reading*	Quiz	2.5%
13-Feb, Tue	Steady state heat tr.	Lecture notes	Example question	0.5%
15-Feb, Thu	Problem set	-	-	-
20-Feb, Tue	Reading week	-	-	-
22-Feb, Thu	Reading week	-	-	-
27-Feb, Tue	Midterm	-	Midterm	26%
29-Feb, Thu	Unsteady state heat tr. Guest lecturer: Siwen Luo	Lecture notes	Example question	0.5%
5-Mar, Tue	Unsteady state heat tr. Guest lecturer: Siwen Luo	Lecture notes	Example question	0.5%
7-Mar, Thu	Mass tr.	Required reading*	iClicker	0.5%
12-Mar, Tue	Mass tr.	Lecture notes	Example question	0.5%
14-Mar, Thu	Refrigeration	Required reading*	iClicker	0.5%
19-Mar, Tue	Refrigeration	Lecture notes	Example question	0.5%
21-Mar, Thu	Problem set	-	-	-
26-Mar, Tue	Psychrometrics	Required reading	Quiz	2.5%
28-Mar, Thu	Psychrometrics	Lecture notes	Example question	0.5%
2-Apr, Tue	Psychrometrics	Lecture notes	Example question	0.5%
4-Apr, Thu	Evaporation	Required reading*	iClicker	0.5%
9-Apr, Tue	Evaporation	Lecture notes	Example question	0.5%
TBA	Final exam	-	Final exam	30%
Labs:				30%
TOTAL:				100%

*All required reading materials will be provided through UM Learn.

Course Evaluation/Assessments

Class participation: 9% of your overall grade

- **Procedure:** Class participation is recorded through answering questions (multiple choice, short answer, etc.) using iClicker, and other in-class example problem solving activities. Class participation is not class attendance.
- **Submission Guidelines:** Submission/discussion during class time and through your iClicker Student account for iClicker marks.
- **Evaluation Criteria:** Answers reviewed in class. Grades available in UM Learn (or in your iClicker Student account for iClicker marks) at the end of the next class.

Lab attendance and reports: 30% of your overall grade

- **Procedure:** Attendance will be taken at the beginning of each lab session by your teaching assistant (TA). You will lose 1% of your mark for each minute you are late. Any communication related to the labs should first be directed to your TA.
- **Submission Guidelines:** Lab reports need to be typed (not hand written) and uploaded to UM Learn. Reports are due 2 weeks after a lab, not later than midnight on day 14. You are not

allowed to hand over lab reports without attending the lab sessions. You will submit your own report and be marked individually, despite performing the labs in groups.

- **Evaluation Criteria:** Lab report guidelines are specific to individual lab sessions, and more information (and rubric) is provided on UM Learn. Late reports will lose 10% of the credit for submission after the due date (does not matter if it is 1 minute or 23 hours late) and 10% for each additional day late. UM Learn automatically date stamps submissions.

Quizzes: 2.5 + 2.5 = 10% of your overall grade

- **Procedure:** Written in class and include multiple choice, short answer, etc. type questions.
- **Submission Guidelines:** Submission during class time to Dr. Koksel.
- **Evaluation Criteria:** Answers reviewed in class. Grades will be available in UM Learn within 2 weeks of a quiz.

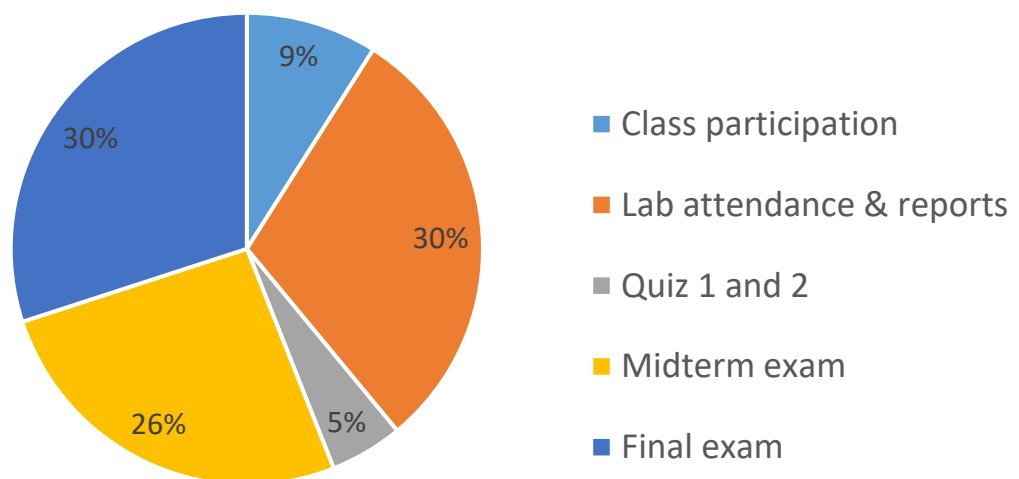
Midterm exam: 26% of your overall grade

- **Procedure:** Written in class and includes calculations, problem solving, graph reading, flow diagrams, etc. type questions. The topics will cover all materials covered in class and in the labs.
- **Submission Guidelines:** Submission, during class time, at the end of the exam to Dr. Koksel (or the exam invigilator).
- **Evaluation Criteria:** Answers reviewed in class. Grades will be available in UM Learn within 2 weeks of the midterm.

Final exam: 30% of your overall grade

- **Procedure:** Will include calculations, problem solving, graph reading, flow diagrams, etc. type questions. Date will be set later by the UM. The topics will cover all materials covered in class and in the labs.
- **Submission Guidelines:** Submission at the end of the exam time to Dr. Koksel (or the exam invigilator).
- **Evaluation Criteria:** Grades will be available in UM Learn within 2 weeks of the final exam.

Summary: Breakdown of course assessments



Lab Expectations

- Any communication related to the lab sections of the course should be directed to your teaching assistant (TA) and grader/marker (GM). If you need further clarifications on the labs or your reports, you can reach Dr. Koksel via email.
- You are expected to arrive to the lab on time. For every minute you are late, you will lose 1% of your total lab report mark.
- Lab attendance is mandatory. The lab manuals will be available prior to the lab session date on UM Learn.
- 100% of the mark allocated to a lab will be deducted if absent without a doctor's note or documentation of a substantiated and compelling personal matter in writing. Students are not allowed to handover lab reports without attending the lab sessions.
- You will work in groups as assigned for labs, and each group will collect (or be provided) different data sets for their reports. **Each student will submit their own report.** Any evidence of plagiarism in lab reports (e.g., whether from another lab partner, or group, or lab report from previous courses or years, or artificial intelligence) will result in "0" mark, and the matter will be subject to disciplinary action in accordance with university policy on academic misconduct.
- Lab reports are due 2 weeks after a lab. Late write-ups will lose 10% of credit for submission after the due date, and 10% for each additional day late. Please see the lab report rubrics on UM Learn.

Lab Schedule

Lab session topics include: computer lab, mass and energy balance, viscosity, transport of liquids, thermal properties determination, rate of heat transfer, heat exchanger, psychrometric parameters. Every student will perform the computer lab. You will perform five labs (including the computer lab) out of the 8 topics listed above. You will be assigned a lab group in the first week of classes. These lab groups will be posted on UM Learn.

Grading

Indicate your grading scale. A sample is given below that you can adjust to your course expectations.

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	95-100	4.25-4.5	4.5
A	86-94	3.75-4.24	4.0
B+	80-85	3.25-3.74	3.5
B	72-79	2.75-3.24	3.0
C+	65-71	2.25-2.74	2.5
C	60-64	2.0-2.24	2.0
D	50-59	Less than 2.0	1.0
F	Less than 50		0

Voluntary Withdrawal

- Jan 19, 2024: Last date to DROP Winter term courses and Winter/Summer term spanning courses.
- Mar 20, 2024: Voluntary Withdrawal (VW) deadline for Winter Term Courses

LAB REPORT DESCRIPTIONS

Lab report instructions and evaluation criteria (rubrics) will be provided ([Section 2.5 ROASS](#)) through UM Learn. All lab reports must be uploaded onto UM Learn in .pdf format (unless otherwise stated). Lecture notes and lab handouts are not acceptable sources to be cited in your lab reports

Referencing Style

Lab reports should use the reference style of “Journal of Food Engineering” as outlined in: <https://www.elsevier.com/journals/journal-of-food-engineering/0260-8774/guide-for-authors>

Lab Report Extension and Late Submission Policy

Lab reports must be received through UM Learn before midnight on its the due date. For every late day, you will lose 10% of the total mark for that lab report. **You must attend all the lab sessions to pass the course (unless you have a doctor’s note or documentation of a substantiated and compelling personal matter in writing).** All lab reports need to be submitted to pass the course.

Feedback

Lab report feedback will be provided in the formative (i.e., comments) and summative (i.e., grade) form via UM Learn. You can expect to receive your graded lab reports within 2 weeks after you hand them in.

You can also expect the midterm exam and quiz grades 2 weeks and 1 week after you write them, respectively.