



SYLLABUS

FDSCTE 5420

Dairy Processing (3 credits)

The Ohio State University

Autumn 2020

Meeting Schedule:

MoWe 10:20AM-11:15AM

Lab Section 1: Fri 9:10-10:40

Lab Section 2: Fri 10:55-12:25

Parker Food Sci Bldg 118

Lab Parker 152 (Pilot Plant)

In person class unless dictated
by University

COURSE OVERVIEW

Instructor

Instructor: Rafael Jimenez-Flores, Department of Food Science & Technology

Email address: jimenez-flores.1@osu.edu

Phone number: 614-292-1993

Office hours: By ZOOM appointment only.

Prerequisites

FDSCTE 2400 or graduate standing, or permission of instructor.

HOW THIS COURSE WORKS (IF ON-LINE DESCRIPTION)

Mode of delivery: In this course there are two parts; Lectures will be given in person with allowances for those in need to attend via Carmen Zoom, the Laboratory sessions will be on-

line unless specified and allowed by the University. If the university 'pivots' to on-line, the lectures and labs will be on-line through Carmen-Zoom.

Pace of online activities: The online component of the course is divided into **modules** that are released one week ahead of time. Students are expected to keep pace with deadlines and assignments but may schedule their efforts freely within that time frame.

Credit hours and work expectations: This is a **3-credit-hour course**. According to Ohio State policy (go.osu.edu/credithours), students should expect around 3 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 6 hours of homework (reading and assignment preparation, for example) to receive a grade of (C) average.

Attendance and participation requirements: The lectures are in-person and attendance and participation is expected from all students. In the event of requirement that the class goes on-line, your attendance is based on your online activity and participation. The following is a summary of students' expected participation:

- **Participating in online activities for attendance: AT LEAST ONCE PER WEEK**
You are expected to log in to the course in Carmen every week. The instructions for the laboratory are absolutely required, and attendance will be taken on Laboratory days. If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible*.
- **Office hours and live sessions: OPTIONAL**
All live, scheduled events for the course, including my office hours by Zoom appointment, are optional.

Course description

This course is a specialized processing area that focuses on Dairy Foods production. The general objective of the course is to familiarize and describe the unit operations that take place to produce dairy foods and ingredients used in the Food Industry. Overview of the chemical composition of milk, chemistry and biochemistry of changes during processing and main equipment used in the production of dairy foods is presented throughout the course.

Specific Learning Objectives:

- Appreciation for size and scope of dairy processing industry
- Knowledge base on composition, quality and properties of milk
- Familiarity with specific composition of dairy foods and ingredients
- Familiarity with basic unit operations and their organization into production processes to convert raw milk into the main dairy foods and ingredients
- Familiarity with government agencies, regulation and policies affecting dairy foods industry
- To evaluate the impact of manufacturing processes, including storage and distribution, on the quality of dairy products

- To describe the processes required for cleaning and sanitation of dairy manufacturing facilities
- Familiarity with contemporary issues in dairy foods

Course learning outcomes

Expected Learning Outcomes:

1. To understand the basics of the dairy industry, milk composition and proximate composition of dairy foods and ingredients
2. To be able to explain in simple terms how the main dairy products and ingredients are processed to maximize efficiency, nutrition and impact on environment.
3. To be conversant in the science, technology and regulations of milk and milk products

COURSE MATERIALS AND TECHNOLOGIES

Textbooks

Required: Alfa Laval Dairy Processing Handbook –Will be the major source of information

Journal articles: Will be assigned if necessary to expand on instruction of specific topics

Course technology

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at <https://ocio.osu.edu/help/hours>, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** <http://ocio.osu.edu/selfservice>
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

TECHNOLOGY SKILLS NEEDED FOR THIS COURSE

- Basic computer and web-browsing skills
- Navigating Carmen (go.osu.edu/canvasstudent)
- CarmenZoom virtual meetings (go.osu.edu/zoom-meetings)
- Recording a slide presentation with audio narration (go.osu.edu/video-assignment-guide)
- Recording, editing, and uploading video (go.osu.edu/video-assignment-guide)

REQUIRED EQUIPMENT

- Computer: current Mac (MacOs) or PC (Windows 10) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed and tested
- Microphone: built-in laptop or tablet mic or external microphone
- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication

REQUIRED SOFTWARE

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365. Full instructions for downloading and installation can be found at go.osu.edu/office365help.

CARMEN ACCESS

You will need to use BuckeyePass (buckeyepass.osu.edu) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions (go.osu.edu/add-device).
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application (go.osu.edu/install-duo) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357(HELP) and IT support staff will work out a solution with you.

GRADING AND FACULTY RESPONSE

How your grade is calculated

ASSIGNMENT CATEGORY	POINTS
Midterms:	30

Quizzes:	10
Homework, & assignments:	5
Laboratory reports	30
Final Exam (comprehensive)	25
Total	100

*Please refer to Carmen for due dates of assignments.

Descriptions of major course assignments

Midterms: There will be two exams during the semester. The midterm will cover content from week 1-8 and the second exam weeks 9-13. The exam questions will come from material presented in the lectures and readings. Each student must complete the exam on her or his own. You are NOT permitted to receive assistance from anyone else during the exam. You are NOT permitted to take the exams as part of a group. You ARE permitted to use notes, slides, textbook, journal articles, and books during the exam. Both the Midterm and Final will be online via Carmen. There are NO make-up exams except for valid reasons (e.g., medical excuse, work-related conflict). If you are sick, you must have a note signed by your medical doctor (i.e. a licensed physician) and dated the same day as the exam and excusing you from the day that the exam is scheduled. If there is a work-related time conflict, this should be communicated with the instructor at least one week ahead of time. Otherwise, you will receive a 0 on the exam. The instructor will determine if your excuse is valid. If you do not have a reasonable excuse for missing an exam then you will receive a zero for the exam.

Quizzes- Quizzes will be given periodically throughout the semester to test your knowledge on skills and design concepts. These cannot be made up unless you have a documented health reason.

Homework/Assignments- There will be periodic assignments for further develop a concept on the students own or in teams, and individual homework to complement understanding of the dairy foods and products in everyday life. Knowledge gained through assignment/homework will be evaluated independently and the topics will also be evaluated along with quizzes and midterm.

Laboratory Reports: Lab reports will be expected the week after the practice has taken place. The lab reports will contain: Title, Objective, Description of process and a Summary of learnt principles. Lab reports will be NO LONGER THAN TWO PAGES, including figures if needed.

In-Class Participation & Discussion: This type of course requires engagement from the students with the topics at hand. Each student will be individually assessed on how they engage throughout the semester in discussion by providing their opinions, bringing in contextually appropriate comments and examples, and supporting the learning environment by asking questions of their peers and guest speakers {140 pts; due throughout the semester}

Final Exam: The final exam is comprehensive and will assess students' learning of topics throughout the semester.

Late assignments

Late submissions will not be accepted. However, students can miss **ONE** laboratory report during the whole semester without penalty.

Grading scale

93–100: A

90–92.9: A-

87–89.9: B+

83–86.9: B

80–82.9: B-

77–79.9: C+

73–76.9: C

70 –72.9: C-

67 –69.9: D+

60 –66.9: D

Below 60: E

Faculty feedback and response time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

- **Grading and feedback:** For large assignments, you can generally expect feedback within **7 calendar days**.
- **E-mail:** I will reply to e-mails within **48 hours on school days**.

PARTICIPATION AND ATTENDANCE

Student participation requirements

Students are expected to attend every class. If a class is missed it is the student's responsibility to review and understand the notes given in Canvas, and be compliant with the assignments posted in the module. In case of on-line class, the participation and return of assignments will become 30% of the grade.

OTHER COURSE POLICIES

Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style:** While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.
- **Tone and civility:** Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.
- **Citing your sources:** When we have academic discussions, please cite your sources to back up what you say. For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.
- **Backing up your work:** Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

Academic integrity policy

See **Descriptions of major course assignments**, above, for my specific guidelines about collaboration and academic integrity in the context of this online class.

OHIO STATE'S ACADEMIC INTEGRITY POLICY

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university's *Code of Student Conduct* (studentconduct.osu.edu), and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in

the university's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the university's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the university's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- Committee on Academic Misconduct web page (go.osu.edu/coam)
- Ten Suggestions for Preserving Academic Integrity (go.osu.edu/ten-suggestions)
- Eight Cardinal Rules of Academic Integrity (go.osu.edu/cardinal-rules)

Copyright for instructional materials

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Safe and Healthy Buckeyes (include also on your Carmen site):

Health and safety requirements: All students, faculty and staff are required to comply with and stay up to date on all university safety and health guidance (<https://safeandhealthy.osu.edu>), which includes wearing a face mask in any indoor space and maintaining a safe physical distance at all times. Non-compliance will result in a warning first, and disciplinary actions will be taken for repeated offenses.

Statement on Title IX

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at equity.osu.edu,
2. Call 614-247-5838 or TTY 614-688-8605,
3. Or Email equity@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

This course adheres to The Principles of Community adopted by the College of Food, Agricultural, and Environmental Sciences. These principles are located on the Carmen site for this course; and can also be found at <https://go.osu.edu/principlesofcommunity>. For additional information on Diversity, Equity, and Inclusion in CFAES, contact the CFAES Office for Diversity, Equity, and Inclusion (<https://equityandinclusion.cfaes.ohio-state.edu/>). If you have

been a victim of or a witness to a bias incident, you can report it online and anonymously (if you choose) at <https://studentlife.osu.edu/bias/report-a-bias-incident.aspx>.

Commitment to a diverse and inclusive learning environment

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

Your mental health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life Counseling and

Consultation Services (CCS) by visiting ccs.osu.edu or calling (614) 292- 5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at (614) 292-5766 and 24 hour emergency help is also available through the 24/7 National Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org.

David Wirt, wirt.9@osu.edu, is the CFAES embedded mental health counselor. He is available for new consultations and to establish routine care. To schedule with David, please call 614-292-5766. Students should mention their affiliation with CFAES when setting up a phone screening..

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting accommodations

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Accessibility of course technology

This online course requires use of CarmenCanvas (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- Canvas accessibility (go.osu.edu/canvas-accessibility)
- Streaming audio and video
- CarmenZoom accessibility (go.osu.edu/zoom-accessibility)
- Collaborative course tools

Course schedule

Week Number	Date of Week	Topics
1	08/25-28	Introduction to the class. Orientation to learning objectives (in person or on-line)
2	08/31-09/04	Introduction to milk synthesis and production Dairy industry Worldwide-Standards Milk Proximate Composition (Lab on-line)
3	09/08-09/11	Chemistry & Physical Properties of Milk. Cleaning, Sanitation & Dairy Foods Safety (Farm) (Lab on-line)
4	09/14-09/18	Raw milk properties and handling An introduction to processing; handling of raw milk, transport and storage, preservation concepts, HACCP, quality assurance (Plant) (Lab on-line)

Week Number	Date of Week	Topics
5	09/21-09/25	Milk Processing Basics Pasteurization
6	09/28-10/02	Separation, Standardization, Homogenization impacts of heat on milk components; kinetics of reactions (Lab on-line)
7	10/5-10/09	Cream & Butter Processing Packaging and storage of butter; by-products and other high-fat products
8	10/12-10/16	UHT and ESL milk (Lab on-line)
9	10/19-10/23	Starter Cultures and Fermentations Yogurt and Cultured Buttermilk Lactose Intolerance, Milk Allergy, A2 Milk
10	10/26-10/30	Overview on Cheese/ Principles
11	11/02-11/06	Cheese Processing and Dry milk
12	11/09-11/13	Dry Dairy Products -Spray drying theory (On-line)
13	11/16-11/20	Ice Cream and Frozen desserts /Laboratory Quiz
14	11/30-12/04	Concentration and Evaporation/Whey processing Milk Powder/Infant Formulae/Ingredients (On-line)
Final Exam Week:	12/07-12/11	Final Exam