

**FS 429/529 DAIRY PRODUCTS** (3 credits)  
Fall 2015

**Instructor:** Denise Smith  
Professor, School of Food Science  
202 FSHN, WSU  
509-335-2101, [denise.smith@wsu.edu](mailto:denise.smith@wsu.edu)

**Office Hours:** Monday noon – 1:00 p.m. and by appointment.

**FS 430/530 Laboratory Instructor:**

Mike Costello  
Instruction and Classroom Support Technician, School of Food Science  
230 FSHN, WSU  
509-432-9369, [michael\\_costello@wsu.edu](mailto:michael_costello@wsu.edu)

**Pre-requisites:** CHEM 345; MBIOS 303.

**Lecture:** Monday, Wednesday and Friday 11:10 a.m. - noon

**Textbook:**

*Dairy Science and Technology*. P Walstra, JTM Wouters, TJ Geurts, 2nd Edition, Taylor and Francis Group, 2006.

**Other Resources:**

*Tetra Pak Dairy Processing Handbook*. Online resource: New version available September 2015

*The Dairy Science and Technology eBook*. HD Goff, Dairy Science and Technology Education Series, University of Guelph, Canada. Online resource: [www.uoguelph.ca/foodscience/book-page/dairy-science-and-technology-ebook](http://www.uoguelph.ca/foodscience/book-page/dairy-science-and-technology-ebook)

*Cheese Making Technology eBook*. AR Hill. Dairy Science and Technology Education Series, University of Guelph, Canada. Online resource: [www.uoguelph.ca/foodscience/book-page/cheese-making-technology-ebook](http://www.uoguelph.ca/foodscience/book-page/cheese-making-technology-ebook)

*The Ice Cream eBook*. HD Goff. Dairy Science and Technology Education Series, University of Guelph, Canada. Online resource: [www.uoguelph.ca/foodscience/book-page/ice-cream-ebook](http://www.uoguelph.ca/foodscience/book-page/ice-cream-ebook)

Additional materials will be distributed in class, by e-mail or posted on BBL.

**Attendance:**

Attendance is essential to your success in this class. Attending all lectures, studying your notes, reading the assigned chapters, completing all assignments on time and asking questions, will help you succeed. Announcements regarding assignments, exams and other important changes/events will be made in class. Excused absences include university-sanctioned events,

illness and family emergencies as per WSU policy. It is the student's responsibility to acquire lecture notes, assignments and handouts from missed classes.

**Course Grading:**

**FS 429**

ACTIVITY	POINTS
Exam I	100
Exam II	100
Worksheets	50
Dairy company profile and presentation	50
Hot topic report, presentation and critiques	120
<b>TOTAL POINTS</b>	<b>420</b>

**FS 529**

ACTIVITY	POINTS
Exam I	100
Exam II	100
Dairy company profile	25
Hot topic report, presentation and critiques	120
Processing presentation & supporting materials	200
<b>TOTAL POINTS</b>	<b>545</b>

Detailed instructions for each assignment will be given in class. Grades for late assignments will be reduced by 10% per day.

Several worksheets will be required to be turned in for grading throughout the course. The lowest two worksheet grades will be dropped when calculating the final worksheet score.

A university approved absence must be presented to the instructor prior to missing an exam. Failure to take an exam without previous permission will result in an automatic zero for the exam. Arrangements to take a make-up exam must be made prior to the scheduled exam.

Exams are closed book and will include material from lectures, handouts, worksheets and assigned reading. You may prepare and bring to each exam one 3" x 5" index card with hand-written notes. Dictionaries, notes, textbooks, cell phones, and electronic equipment cannot be used, played, or consulted during examinations unless authorized by the instructor in advance.

**Grading Scale:**

Grade	Total Points (%)
A	>92
A-	89-92
B+	86-88.9
B	82-85.9
B-	79-81.9
C+	76-78.9
C	72-75.9
C-	69-71.9
D+	66-68.9
D	60-65.9
F	<60

**FS 429/529 Course Outline – Fall Semester 2015**

	<b>Date</b>	<b>Topic</b>	<b>Speaker</b>	<b>Assignment</b>
1	M Aug 24	Introduction and Course Policies		
2	W Aug 26	Course Assignments		
3	F Aug 28	Graduate Student Specific Assignment	Undergraduate student attendance is not required	
4	M Aug 31	Dairy Trends, Milk Composition		
5	W Sept 2	WSU Creamery: History, Products and Operations	Russ Salvadalena, Manager Emeritus WSU Creamery	
6	F Sept 4	Milk Marketing	John Swain WSU Animal Sciences	
	M Sept 7	<b>HOLIDAY</b>		
7	W Sept 9	Milk Handling at the Farm; Production, Collection and Storage	Amin Ahmadzadeh, Professor UI Animal Sciences	
8	F Sept 11	Pasteurized Milk Ordinance	Les Boian, Consumer Safety Officer, FDA, Spokane	
9	M Sept 14	Milk Pasteurization I	Russ Salvadalena	
10	W Sept 16	Milk Pasteurization II	Russ Salvadalena	
11	F Sept 18	Fluid Milk Processing	WSU Creamery	Graded worksheet
12	M Sept 21	Standards of Identity		
13	W Sept 23	Trends in Dairy Foods	Mike Schmitt, Technical Services Manager for Consumer Products Darigold, Seattle	
14	F Sept 25	Developing Products to Meet Current Trends	Mike Schmitt	
15	M Sept 28	Dairy Company Profiles	Undergraduate student presentations	
16	W Sept 30	Dairy Company Profiles	Undergraduate student presentations	
17	F Oct 2	Hot Topic Team Meeting		
18	M Oct 5	Microbiology of Milk – Pathogens, Spoilage Organisms	Mike Costello, Instructor, SFS	
19	W Oct 7	Microbiology of Milk – Shelf-life and quality defects	Mike Costello	
20	F Oct 9	Quality Control of Fluid Milk	Nial Yager, Certified Cheese Professional, WSU Creamery	
21	M Oct 12	Quality Control in Cheese and Whey Manufacturing	Athena Beckwith, Quality Manager, Glanbia	
22	W Oct 14	Sensory Analysis of Milk	Mike Costello	

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23	F Oct 16	Cleaning and Sanitizing	Courtney Jones Allen VonderHeide Ecolab	
24	M Oct 19	CIP/COP Systems	WSU Creamery	Graded worksheet
25	W Oct 21	<b>Review</b>		
26	F Oct 23	<b>EXAM 1</b>		
27	M Oct 26	Milk Components		
28	W Oct 28	Milk Components		
29	F Oct 30	Homogenization and Separation; Butter, AMF, Dairy Spreads and Cream Products	Graduate student presentation	Graded worksheet
30	M Nov 2	Extended Life Milk Products	Graduate student presentation	Graded worksheet
31	W Nov 4	Evaporation: Concentrated Milks	Graduate student presentation	Graded worksheet
32	F Nov 6	Ice Cream	Graduate student presentation	Graded worksheet
33	M Nov 9	Lactic Acid Bacteria	Graduate student presentation	Graded worksheet
	W Nov 11	<b>HOLIDAY</b>		
34	F Nov 13	Cultured Dairy Products	Graduate student presentation	Graded worksheet
35	M Nov 16	Cheese Making and Ripening	Graduate student presentation	Graded worksheet
36	W Nov 18	Membrane Processing: Milk and Whey Powders	Graduate student presentation	Graded worksheet
37	F Nov 20	Hot Topic Team Meeting		
	Nov 23-27	<b>HOLIDAY</b>		
38	M Nov 30	Drying: Milk and Whey Powders	Graduate student presentation	Graded worksheet
39	W Dec 2	<b>Review</b>		
40	F Dec 4	<b>EXAM 2</b>		
41	M Dec 7	Hot Topics in Dairy	Team presentations	Critiques
42	W Dec 9	Hot Topics in Dairy	Team presentations	Critiques
43	F Dec 11	Hot Topics in Dairy	Team presentations	Critiques

The course outline may change at the discretion of the instructor due to availability of guest lecturers or other unforeseen issues. Modifications will be communicated as far in advance as possible.

**STUDENT LEARNING OUTCOMES:**

<b>At the end of this course, the student should be able to:</b>	<b>The following topics will address this outcome:</b>	<b>This outcome will be evaluated primarily by:</b>
Describe and discuss the size and scope of the dairy processing industry	Weeks 1, 2, 5, 6. Production and consumption trends; Dairy Company Profile assignment; Guest lectures	Class discussion; Exams; Presentations and written assignment
Explain the scope and purpose of the Pasteurized Milk Ordinance	Week 3, 4. PMO and pasteurization	Class discussion; Exams
Explain how the chemical and physical properties of milk components impact the characteristics and quality of dairy products	Weeks 5, 7, 9, 10. Composition and chemistry of milk components; Dairy ingredients in food product development	Class discussion; Exams
Describe the important pathogens and spoilage microorganisms in dairy products and the conditions under which they grow	Weeks 7, 8. Microbiology of milk, cleaning and sanitizing	Exams; Presentations and written assignments; Class discussion
Describe the principal quality attributes, shelf life stability issues and defects that occur in dairy products	Weeks 7, 8, 10-14. Quality, microbiology, sensory and unit operations	Exams; Presentations and written assignments; Class discussion
Explain the unit operations applied in the manufacture of fluid milk and dairy products	Weeks 2-4, 10-14. Fluid milk and dairy products processing lectures	Exams; Presentations and written assignments; Class discussion
Explain and discuss relevant concepts in dairy foods in a succinct and technically sound manner	Individual and team assignments; classroom discussion; small group discussion	Exams; Presentations and written assignments; Class discussion
Utilize credible scientific information and critical thinking skills to prepare a written and oral presentation on a controversial topic affecting the dairy foods industry	Week 15. Hot topic team assignment	Team report and presentation
FS 529 only: Prepare a lesson plan and teach a unit on dairy processing suitable for junior/senior level students	Weeks 8-14. Processing presentations	Class presentation and supporting materials

**Students with Disabilities:**

Reasonable accommodations are available for students with a documented temporary or permanent disability. If you have a disability and need accommodations to fully participate in this class, please visit or call the Access Center (Washington Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center. For more information contact a Disability Specialist in Pullman or WSU Online: 509-335-3417 <http://accesscenter.wsu.edu>, [Access.Center@wsu.edu](mailto:Access.Center@wsu.edu)

**WSU Campus Safety Statement:**

Washington State University is committed to maintaining a safe environment for its faculty, staff, and students. Safety is the responsibility of every member of the campus community and individuals should know the appropriate actions to take when an emergency arises. In support of our commitment to the safety of the campus community, the University has developed a Campus Safety Plan, <http://safetyplan.wsu.edu>. It is highly recommended that you visit this web site as well as the University emergency management web site at <http://oem.wsu.edu/emergencies> to become familiar with the information provided.

Please access this link (<http://oem.wsu.edu/emergencies>) for WSU's latest classroom emergency and safety information. Also, be familiar with the WSU ALERT site (<http://alert.wsu.edu>).

**Academic Honesty:**

“Academic integrity is the cornerstone of the university. You assume full responsibility for the content and integrity of the academic work you submit. You may collaborate with classmates on assignments, with the instructor's permission. However the guiding principle of academic integrity shall be that your submitted work, examinations, reports, and projects must be your own work. Any student who violates the University's standard of conduct relating to academic integrity will be referred to the Office of Student Conduct and may fail the assignment or the course. You can learn more about Academic Integrity on your campus using the URL listed in the Academic Regulations section or to <http://conduct.wsu.edu/academic-integrity-policies-and-resources>. Please use these resources to ensure that you don't inadvertently violate WSU's standard of conduct. “

**Academic Etiquette:**

Students should become engaged in the interactive learning processes, participate in classroom discussions, and ask questions when a particular topic or point is unclear. Appropriate professional behavior demonstrating respect for fellow students and the instructors is expected.

**Please turn off or mute cell phones during class.**

**Plagiarism:**

Plagiarism is defined by Webster's Dictionary as, “*to steal and pass off the ideas or words of another as one's own.*” There are two general forms of plagiarism:

(a) Unintentional: the use of other writers' words, phrases, sentences, paragraphs as though they were your own *without understanding* the need to cite the original source. Unintentional

plagiarism normally occurs when the individual does not understand the conventions of scientific writing and the need to cite sources of information.

(b) Intentional: the use of another writers' work and claiming it as your own. Intentional plagiarism includes *knowingly copying* or incorporating sections of books, articles, or other sources into your work without citation.

To avoid plagiarism, you must acknowledge the source of information. In scientific writing, this can be performed in the text of your work through the use of surnames of authors and the year of publication (*e.g.*, Smith et al., 2003) or by using numbers enclosed by parentheses which correspond to specific citations in the reference section. In addition to employing citations in the text, plagiarism can be avoided by applying special techniques when writing about information obtained from a source:

(a) Paraphrase: rewording information in which you accurately present the main ideas from the source but do so using your own organization, words, and sentence structures.

(b) Summary: a concise statement of the main idea from a section within a source.

(c) Direct quotation: use of quotes surrounding the passage written by another author.

In general, paraphrasing (a) and the use of summary statements (b) are very common techniques used in scientific writing. Use of quotations (c) in scientific writing is rare and should be avoided.

Plagiarism is dishonest and is **not** tolerated. If caught using a purchased paper, all or portions of a current or former classmate's writing/notes or other sources of information without proper attribution will result in a grade of "zero" for the assignment. Additional penalties for plagiarism are possible as outlined by WSU policies.