**FSN 520 FOOD PROCESSING & PRESERVATION**

**Professor:** Anuradha Prakash

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Office hours: Tuesdays, Thursdays 4-5:30 pm, other times by appointment

**Catalog Description:**

Methods used for food processing and preservation, effects of processing technologies on shelf-life, nutritional value, and quality attributes. Factors that affect selection of most appropriate technology and equipment. 3 credits.

**Required Text:**

# Food Processing Technology: Principles and Practice, Fourth Edition, 2017. P.J. Fellows, Woodhead Publishing.

**Course Objectives:**

**At the end of the semester, you will be able to**

1. Appreciate the role of food processing on satisfying consumer needs for safety, nutrition, variety, and convenience
2. Explain the basis of various technologies used for processing food
3. Relate the technological concepts to the safety and quality of food
4. Select the most appropriate technology given the type of food, consumer expectations, and cost
5. Identify the processing technology used to process any given food product

**Food Science Program Learning Outcomes**

1. Knowledge of core food science concepts.
	1. Identify core concepts in food chemistry and analysis, food safety and microbiology, and food processing and engineering.
	2. Demonstrate a clear understanding of the factors that impact the safety, quality, and nutritional value of foods.
2. Critical thinking.
	1. Through individual research projects, students will apply the scientific method to solve problems in food science
	2. Students will be able to effectively evaluate and critique professional papers and reports in the field of food science and nutrition
3. Communication.
	1. Students will be able to communicate scientific and technical knowledge in food science to professional audiences using written, visual, and oral means.
4. Problem Solving.
	1. Students will function effectively in the food and allied industries to solve practical, real world problems

**Methods of Evaluation:**

 Weekly quizzes 14% 60 Points

 Homework/assignments 16% 40 Points

 Wikipedia 25% 100 Points

 Exams (2 x 100 points) 30% 200 Points

 Final Exam 15% 100 Points

 500 Points

Final grades will be computed on a percent basis:

 Total Points Earned x 100 = %

 500

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- <69.9 F

Please note that University policy is that no grade below "C+" is acceptable toward a degree.

**Weekly quizzes:**

Quizzes will be given weekly during the first 5-10 minutes of Tuesday (in some cases it might be Thursday, the exact day will be announced in class the previous week). No make-ups will be given, so please come to class on time. The lowest quiz grade can be dropped. Quizzes will cover assigned reading or materials covered in class the previous week.

**Research projects/reviews**

Individual and group research projects/review papers will be assigned over the course of the semester to highlight interesting research or new technologies. A series of questions designed to facilitate comprehension and critical evaluation of the article/technology will be assigned as individual projects followed by peer review by two classmates, and in-class discussions.

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| Date | Topic |
| Week 1: 1/31, 2/2 | Introduction to Food Processing and Preservation, Causes of Spoilage, Hurdle Technology |
| Week 2: 2/6, 2/8 | Thermal Processing Technologies |
| Week 3: 2/13, 2/15 | Heat Sterilization |
| Week 4: 2/20, 2/22 | Aseptic Processing, Acidified Foods |
| Week 5: 2/27, **3/1** | **Exam 1** |
| Week 5: 3/6, 3/8 | New Technologies, Cold Plasma, Ohmic Heating, |
| Week 6: 3/13, 3/15 | IR, MW, RF |
| **Week 7: 3/20 Spring Break** |  |
| Week 8: 3/27, 3/29 | Principles of Dehydration, Networking Night |
| Week 9: 4/3, 4/5 | Dehydration Technologies |
| Week 10: 4/10, **4/12** | **Exam 2** |
| Week 11: 4/17, 4/19 | Irradiation |
| Week 12: 4/24, 4/26 | Sustainable Food Processing |
| Week 13: 5/1, 5/3 | Extrusion |
| Week 14: 5/8, 5/10 | Refrigeration, Freezing, Concentration and Membrane Processing |
| **Week 15: Finals 5/17** | **4:15-6:45 pm** |

**Class Policies:**

* You will need to access course material available in the "My Chapman" portal of the Blackboard (BB) system. Lecture notes, homework assignments and announcements will be available through the course BB site. Please visit the Help Desk in the Beckman computer center to get your login information and learn how to access the system.
* No make-up assignments or exams allowed unless you have a valid excuse determined by instructor and verified by written notice (i.e. doctor’s letter).
* Homework and assignments are due as scheduled at the beginning of the regular class period or by the indicated due date. Late projects or exercises will not be accepted.
* If English is not your first language, please make sure you have all assignments reviewed prior to submission for gross grammar and spelling mistakes.
* Please do not use cell phones, iPads or other electronic devices during class. If you plan to use a laptop, please limit computer use for class purposes only.
* Students who wish to drop are responsible for filling out the drop form. If no drop form is filled out, students who do not show up will fail the class.

**Academic integrity:**

Students are responsible for being familiar with and adhering to the student code of conduct. It is available at: <http://www.chapman.edu/studlife/conduct/current/conduct.pdf>
Violations of academic integrity include, but are not limited to, the following: cheating on an examination, assignment, or quiz; plagiarism on any paper or report; falsifying data on research or a report; presentation of forged documents; misrepresentation of information in oral, online, or written form.  Such violations will result in stiff penalties to be decided on a case by case basis in consultation with faculty members within the department.  Students *will be required to attend* the faculty consultation session. Penalties may include expulsion.

**Students with Disabilities**:

In compliance with ADA guidelines, students who have any condition, either permanent or temporary, that might affect their ability to perform in this class are encouraged to inform the instructor at the beginning of the term. The University, through the Disability Services Office, will work with the appropriate faculty member who is asked to provide the accommodations for a student in determining what accommodations are suitable based on the documentation and the individual student needs. The granting of any accommodation will not be retroactive and cannot jeopardize the academic standards or integrity of the course. Services for students with disabilities are available at the Center for Academic Success (CAS) - 1st Floor, Roosevelt Hall, 714-997-6828.  Please contact this office if you want extra help or if you have special learning or access needs.

**Equity and Diversity**

Chapman University is committed to ensuring equality and valuing diversity. Students and professors are reminded to show respect at all times as outlined in Chapman’s Harassment and Discrimination Policy: <http://tinyurl.com/CUHarassment-Discrimination>. Any violations of this policy should be discussed with the professor, the Dean of Students and/or otherwise reported in accordance with this policy.