

Food Science 4720 Food Chemistry

Instructor: Dr. Dan Rule

Office: 119 Animal Science

Email: dcrule@uwyo.edu

Phone: 307-766-3404

Office hours: Monday, Wednesday, Friday, 9:00 to 10:00 or by appointment.

Prerequisite: Basic knowledge of chemistry beyond Chem. 1000 (ANSC 2010, Organic Chem., General Chem., Biochem, etc.)

Nature of the course. Food Chemistry is what the title states. Food is a complex mixture of chemicals that the human body must digest, absorb, transport, and use for energy, synthesis, and storage of excess energy substrates. The course will explore in great depth the chemistry of the nutrients that occur in natural as well as processed foods, and the changes that occur in the chemical makeup of the nutrients during processing to include cooking.

This course is offered for senior level credit and for graduate level credit. Students wishing to earn credits towards their graduate degree as an undergraduate senior must indicate this intent in advance. Please check with your advisor. For students wishing to earn graduate credit additional depth of study will be required. To accomplish this advanced study, these students will address a topic of relevance to Food Chemistry and advance our knowledge beyond what is discussed in class. These students will write a short paper, six to eight pages in length, with references added to this length. The paper text can include tables and figures as visual aids only and not be a significant substitution for meaningful text presentation and discussion. During the last week of the semester these students will prepare a PowerPoint presentation on their paper in seminar fashion.

Text: The primary text will be **Fennema's Food Chemistry (4th edition)**. Secondary texts will include **The Chemistry of Foods (Jan Velisek)** and **Food. The Chemistry of its Components (Tom Coultate, 6th edition)**.

Grading: Same old stuff. 90, 80, 70, 60, <50 with plus-minus grading. Grades will be based on exam scores. There will be no quizzes to keep you on your toes; this I will expect of you when you start the course. At the time of writing this course syllabus, which coincides with development of course materials, the plan will be to administer exams following each section. The time necessary to complete each section will require flexibility. Therefore, exams will be scheduled during the course and not in advance as is traditionally done. Exam format will require students to explain the chemistry and the various reactions the may occur in foods. There will be a final exam that will require students to draw upon the knowledge gained during the entire course so as to explain the various chemical interactions involved in food preparation (processing, cooking, etc.).

Each exam score will be normalized to 100 points.

The final exam will be worth 200 points.

For graduate credit, the total will include an additional 100 points for the paper and presentation.

The final exam is scheduled for: Monday May 7, 8:00-10:00.

Other matters of importance: No cell phones! (Notice I didn't say "please"). I will not compete with cell phones or tolerate this disturbance.

Punctuality. 8:00 classes suck; I get that. Get over it and get to class in time. I can discuss individually with any students who might need to jettison their seat a bit early to accommodate trans-campus jogs for a 9:00 class on main campus.

Missing class: If you miss class, you are responsible for the missed material. I will assist you to the extent of indicating where the discussion left off, but I do not plan to teach a second section. I will of course discuss any questions but I ask that you visit with me outside of class to make up for your absence.

Most of the PowerPoint slides are uploaded to WyoCourses now. I continue to develop this course in real time during the semester so I will announce in class and via email when modifications occur. I suggest that you follow along the lectures using a tablet or laptop with the slides up, or with printed slides if this mode suits you. Fennema's will be the resource that you will likely purchase (it is cheaper than Vilesek's book, but more detailed than Coultate's, which is the cheapest). If a career in Food Science is your goal, I suggest you buy all three; they will be long-lasting references that you will no doubt need to refer to time and time again.

Topics in order: As Time Permits

1. Water
2. Carbohydrates
3. Proteins and amino acids
4. Lipids
5. Vitamins
6. Minerals
7. Flavors and additives