

# NDL 129: The Chemistry of Cooking

## Course syllabus and policies

January 2007

MTWRF 10:30 – 12:20 pm

TW 12:30 – 3:20 pm

Nobel Hall room 121(lecture)

Dr. Brenda Kelly	Dr. Brandy Russell
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Office hours: M, R 1:30 – 3:30 pm or by appt	Office hours: M 9 – 10 am, W 3:30 – 4:30 pm, R 1:30 – 3:30 pm or by appt
See our course page at <a href="http://moodle.gac.edu">moodle.gac.edu</a>	

**Introduction:** This course addresses the chemical processes involved in cooking. Students will learn about chemical oxidation, fermentation, and the role of proteins, fats, sugars, and leavening agents in food, among other topics. Students will perform food chemistry-based experiments both in the kitchen and chemistry laboratory. Course work will include class participation, three papers, laboratory notebooks, quizzes, and presentations. An independent group laboratory or kitchen project will be the basis for several assignments. A site visit to a nearby company will highlight the value and application of topics discussed.

**Required materials:** Bound lab notebook. If you already own goggles, please bring them; otherwise we will loan you a pair.

**Attendance and participation:** Class time is flexible and will be used for lectures, demonstrations, experiments, and workshops. Class is scheduled from 10:30 -12:30 on MRF, and from 10:30 – 3:30 on TW; there will be a lunch break on Tuesdays and Wednesdays at a convenient time. Your attendance and active participation in all portions of the class and lab are expected, and account for 20% of your final grade. We expect that you will attend all class sessions; if you become too ill to attend lab/class or have some other emergency, contact us as soon as possible to discuss your options.

**Laboratory projects:** A significant component of this course will be based in the chemistry laboratory or kitchen. You will complete five laboratory experiments from given protocols in small groups during the first 2 ½ weeks of the course. You will maintain a laboratory notebook for all of these experiments. You should write in your notebook *while* you are doing the experiment, although some advance preparation can save you time during the experiment. You will be graded on your participation, a weekly check of your laboratory notebook, and one formal written laboratory report in the style of a scientific journal article.

During the latter half of the course, you (in a small group) will complete an experimental (lab- or kitchen-based) project of your choice relating to food chemistry. Several of the graded

assignments will relate to this project: an early presentation on your project plans, a written experimental proposal, and a final written report and presentation to convey your project results.

**Classroom meetings:** In order to maximize the value of our class time, we will assign regular readings to be done in advance of class meetings. In addition to lectures and discussions of readings, class time will be used for workshops on experimental design, proposal writing, and oral presentations in order to help you complete the course assignments. Weekly quizzes will be given to assess your understanding of the material covered in class.

**Grade:** Grading in this course is on the ABCDF scale. Grades will be based on in-class quizzes, the laboratory notebook, participation, and the oral and written assignments. The letter grade breakdown is shown below.

A	94-100%
A-	90-93%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D	60-69%
F	< 60%

<i>Quizzes:</i>	15%
<i>Laboratory notebook:</i>	15%
<i>Participation:</i>	20%
<i>Written papers:</i>	30%
<i>Oral/poster presentation:</i>	20%

**Honor code:** As members of the Gustavus Adolphus College community of scholars, we have all agreed to abide by an excellent honor code, which you signed upon admission to the college. If you have forgotten the details of this code, please refer to the Academic Bulletin.

*“On my honor, I pledge that I have not given, received, nor tolerated others’ use of unauthorized aid in completing this work.”*

In laboratory, you are required to use only your own data, or that of your group (when appropriate). It will also be a violation to use any part of a laboratory report written by another group member or group, unless instructed by your lab instructor. You are encouraged to discuss your laboratory results and write-ups with fellow students in your group and others, as long as you submit your own original report (or group report as appropriate).

An integral part of the honor code is non-tolerance of violations. Under our code, students are not expected to police others’ actions. Rather, you agree to report violations of which you become aware. Failure to do so will constitute an honor code violation in this class.

Any student found in violation of the academic honesty policy and honor code will receive a grade of 0 for that quiz, lab report, or final exam. In addition, the Dean will be notified of the nature of the offense. A second offense will result in an F for the course. If you have any questions about these policies, please come see us.

***Accommodations:*** If you have specific physical, psychiatric, or learning disabilities and require accommodations to help you fulfill course expectations, please let us know during the first week of class so that your learning needs may be appropriately met. You will need to provide documentation of your disability to Laurie Bickett in the Academic Advising Center. Discussions will remain confidential.

If you have any food allergies, please let us know as soon as possible. You will not be required to eat any foods, but if your allergies would prevent you from touching or being in the same room with specific foods, we need to know for planning purposes.

***Class schedule:*** Below is a rough outline of the topics that will be discussed in lecture. The schedule is **very** tentative. The most updated version of the schedule will always be posted at our Moodle page ([moodle.gac.edu](http://moodle.gac.edu)).

### **Week 1**

*Lectures:* Introduction to basic food molecules, structural changes in these molecules during cooking

*Workshops:* Experimental design, proposal writing

*Labs:* Mini experiments about chemistry in cooking

### **Week 2**

*Lectures:* Oxidation, browning, food color changes during cooking

*Workshops:* literature searching

*Other:* Proposal presentations

*Labs:* Oxidation, bread

### **Week 3**

*Lectures:* Fermentation, molecular gastronomy

*Other:* Field trip

*Labs:* Food color, group projects

### **Week 4**

*Workshops:* Scientific writing, scientific presentations

*Other:* Project presentations

*Labs:* Group projects