

Chemistry 1903: Freshman Seminar-Chemistry in the Kitchen
Fall Semester 2023

Christopher J. Douglas (Chris)
Office: Kolthoff Hall 568C

Class Sections, Rooms, and Times:

Chem 1903-001: Kolthoff Hall 139, Wednesday 2:30-5:00 PM

Chem 1903-002: Kolthoff Hall 136, Thursday 2:30-5:00 PM

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CHEMISTRY IN THE KITCHEN

Class description: This seminar will look at the chemistry behind cooking, baking, food, flavor, and taste. In this course, we'll cover topics such as coffee roasting, gluten formation, caramelization, extracting natural flavors from food sources, the science of ice cream, the origins of heat/spice, among others. We will discuss some of the fundamental processes and chemical transformations that occur when we step into the kitchen. In addition to chemistry, this course will touch on interdisciplinary concepts from biochemistry, neuroscience, materials science, and physics.

Office hours: By appointment. I am always happy to set up a meeting to talk about anything in the course or at the University of Minnesota in general! To set up a meeting, please email me at cdouglas@umn.edu at least two days before you'd like to meet.

Attendance & Participation: These are very important in this class! You are responsible for all material and reading covered. Attendance forms a portion of your grade. Participate actively in class and *avoid being on your phone during class*. Asking questions, contributing to discussions, doing hands-on activities all count towards your participation grade.

Component	Points	Weight
Attendance (1) & Participation (2)	39 (3 pts per class)	39%
Minute Papers (1) + Weekly Quiz (2)	39 (3 pts per class)	39%
In-Class Group Presentation	22 (1 per semester)	22%

Minute Papers & Weekly Quiz: Every week, upload a concise summary (minute paper) via Canvas, describing the major topics discussed in that class and readings. These summaries should be between 50 and 150 words and are due at 5pm on Friday. Also, a post-class Quiz on the topics from class and the assigned reading will be due at the same time. They will typically have two or four questions each. There is a bonus point available for doing the pre-class survey before the first day of class.

In-Class Group Presentation, with food tasting: Groups will be responsible for bringing in the *results of a cooking/baking experiment*, presenting the background information, and discussing their experimental design on an assigned topic. Presentations will be approximately 30 minutes long. More details will be discussed in class and provided via Canvas.

Letter grades: Please refer to the Undergraduate Catalog at <http://www.catalogs.umn.edu/ug/> for details on the University's grading policy. In this class the following **grade line maxima** will be applied for letter grades: A = 90, A- = 85, B+ = 80, B = 75, B- = 70, C+ = 65, C = 60, C- = 55, D = 50, F = < 50.

One important caveat: More than two unexcused absences will result in a failing grade.

Students with Disabilities: Students with disabilities that affect their ability to participate fully in class or to meet all course requirements are encouraged to bring this to the attention of Prof. Douglas as soon as possible so that appropriate arrangements can be made. You will need a letter from the Office of Disability Services (612-626-1333).

Scholastic Dishonesty: Scholastic dishonesty is any conduct described as follows (from the CLA Classroom Grading and Examinations Procedures): "Scholastic dishonesty is any act that violates the rights of another student with respect to academic work or that involves misrepresentation of a student's own work. Scholastic dishonesty includes (but is not limited to) cheating on assignments or examinations; plagiarizing (misrepresenting as one's own anything done by another); submitting the same or substantially similar papers for more than one course without consent of all instructors concerned; depriving another of necessary course materials; sabotaging another's work." If a student is guilty of scholastic dishonesty, the instructor will assign a grade of zero on the work involved and will report the matter to the Office for Student Conduct and Academic Integrity.

(<http://www1.umn.edu/oscai/conduct/student/index.html>).

Other important university policies: University policies on student conduct, personal electronic devices, makeup work, grading, sexual harassment, students with disabilities, mental health, and more can be found at: <http://policy.umn.edu/education/syllabusrequirements-appa>. If you have any questions, or feel you may need resources related to any of these policies, please contact Prof. Douglas as soon as possible.

September

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4 <i>Labor Day Holiday</i>	5 First Day of F23 Semester <i>Chem 1903-001&2 •Pre-Class Survey Due 9PM</i>	6 <i>Chem 1903-001 @ 2:30PM</i> <i>Ice-Breakers & Ice Cream</i>	7 <i>Chem 1903-002 @ 2:30PM</i> <i>Ice-Breakers & Ice Cream</i>	8 End Week 1 <i>Chem 1903-001&2 Post-Class Quiz Due</i>	9
10	11	12	13 <i>Chem 1903-001 @ 2:30PM</i> <i>Flavors & the Perception of Taste</i>	14 <i>Chem 1903-002 @ 2:30PM</i> <i>Flavors & the Perception of Taste</i>	15 End Week 2 <i>Chem 1903-001&2 Post-Class Quiz Due</i>	16
17	18	19	20 <i>Chem 1903-001 @ 2:30PM</i> <i>Releasing Flavors from Ingredients</i>	21 <i>Chem 1903-002 @ 2:30PM</i> <i>Releasing Flavors from Ingredients</i>	22 End Week 3 <i>Chem 1903-001&2 Post-Class Quiz Due</i>	23
24	25	26	27 <i>Chem 1903-001 @ 2:30PM</i> <i>Preserving Food & Food Preservatives</i>	28 <i>Chem 1903-002 @ 2:30PM</i> <i>Preserving Food & Food Preservatives</i>	29 End Week 4 <i>Chem 1903-001&2 Post-Class Quiz Due</i>	30

October

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4 <i>Chem 1903-001</i> <i>@ 2:30PM</i> <i>Coffee&Caffeine</i> Student Presentation	5 <i>Chem 1903-002</i> <i>@ 2:30PM</i> <i>Coffee&Caffeine</i> Student Presentation	6 End Week 5 <i>Chem 1903-001&2</i> Post-Class Quiz Due	7
8	9	10	11 <i>Chem 1903-001</i> <i>@ 2:30PM</i> <i>Hot & Spicey</i> Student Presentation	12 <i>Chem 1903-002</i> <i>@ 2:30PM</i> <i>Hot & Spicey</i> Student Presentation	13 End Week 6 <i>Chem 1903-001&2</i> Post-Class Quiz Due	14
15	16	17	18 <i>Chem 1903-001</i> <i>@ 2:30PM</i> <i>Alt-Meat</i> Potential Field Trip & Student Presentation	19 <i>Chem 1903-002</i> <i>@ 2:30PM</i> <i>Alt-Meat</i> Potential Field Trip & Student Presentation	20 End Week 7 <i>Chem 1903-001&2</i> Post-Class Quiz Due	21
22	23	24	25 <i>Chem 1903-001</i> <i>@ 2:30PM</i> <i>Caramelization</i> Student Presentation	26 <i>Chem 1903-002</i> <i>@ 2:30PM</i> <i>Caramelization</i> Student Presentation	27 End Week 8 <i>Chem 1903-001&2</i> Post-Class Quiz Due	28
29	30	31 Halloween	1 <i>Chem 1903-001</i> <i>@ 2:30PM</i> <i>Gluten</i> Field Trip After Student Presentation	2 <i>Chem 1903-002</i> <i>@ 2:30PM</i> <i>Gluten</i> Field Trip After Student Presentation	3 End Week 9 <i>Chem 1903-001&2</i> Post-Class Quiz Due	4

November

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 <i>Chem 1903-001</i> <i>@ 2:30PM</i> <i>Gluten</i> Field Trip After Student Presentation	2 <i>Chem 1903-002</i> <i>@ 2:30PM</i> <i>Gluten</i> Field Trip After Student Presentation	3 End Week 9 <i>Chem 1903-001&2</i> Post-Class Quiz Due	4
5	6	7	8 <i>Chem 1903-001</i> <i>@ 2:30PM</i> <i>Chirality in the Kitchen</i>	9 <i>Chem 1903-002</i> <i>@ 2:30PM</i> <i>Chirality in the Kitchen</i>	10 End Week 10 <i>Chem 1903-001&2</i> Post-Class Quiz Due	11
12	13	14	15 CJD Travel Sub TBD	16 CJD Travel Sub TBD	17 End Week 11 <i>Chem 1903-001&2</i> Post-Class Quiz Due	18
19	20	21	22 <i>Thanksgiving</i> <i>Chem 1903 Class Canceled</i>	23 <i>Thanksgiving</i> <i>University Closed</i>	24 <i>Native American Heritage Day</i> <i>University Closed</i>	25
26	27	28	29 <i>Chem 1903-001</i> <i>@ 2:30PM</i> <i>Fats in Cooking Student Presentation</i>	30 <i>Chem 1903-002</i> <i>@ 2:30PM</i> <i>Fats in Cooking Student Presentation</i>	1 End Week 12 <i>Chem 1903-001&2</i> Post-Class Quiz Due	2

December

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	29 <i>Chem 1903-001 @ 2:30PM</i> <i>Fats in Cooking Student Presentation</i>	30 <i>Chem 1903-002 @ 2:30PM</i> <i>Fats in Cooking Student Presentation</i>	1 End Week 12 <i>Chem 1903-001&2 Post-Class Quiz Due</i> Student Rating Of Teaching	2
3	4	5	6 <i>Chem 1903-001 @ 2:30PM Chocolate Science</i>	7 <i>Chem 1903-002 @ 2:30PM Chocolate Science</i>	8 End Week 13 <i>Chem 1903-001&2 Post-Class Quiz Due</i> Student Rating Of Teaching	9
10	11	12	13 End of instruction Bonus Class?	14 Study Day	15 Finals Week	16 Finals Week
17 Study Day	18 Finals Week	19 Finals Week	20 Finals Week	21 Finals Week	22 End of Term	23
24	25	26 <i>University Closed</i>	27	28	29	30/31