

2020-9 NFS386H1F Food Chemistry

1) Course Description:

This course deals with the chemical composition of food; physical, chemical and biochemical reactions and the impact of these reactions on food quality during postharvest/post-mortem processing, storage and utilization.

Prerequisite: CHM138H/CHM139H/CHM135H/CHM136H or equivalent 1st year university chemistry course

Recommended preparation: NFS284H

2) Learning objectives:

By the end of this course you will be able to:

- describe the relationship between the chemical composition of food and food quality
- explain why certain ingredients are used in foods
- explain the rationale for certain food processes.

3) Instructor contact information:

Debbie Gurfinkel:

e-mail: debbie.gurfinkel@utoronto.ca

Office Hours: For the duration of the COVID-19 pandemic, it is anticipated that only virtual office hours will be possible. Please check contact information on the course website for more information on how to set up an appointment.

4) Course Location, Time, Website, Notifications:

Course Delivery: Online-asynchronous. Course materials, mainly in the form of pre-recorded lectures and YouTube videos will be posted online on a weekly basis, for you to view at a time of your choice. At the end of each week, there will be a short quiz on the week's materials. The quiz will help students to learn the course content and to keep students to a regular viewing schedule.

Course website: Available on Quercus

Notifications: Announcements are posted on the course website and it is the student's responsibility to read these regularly and to regularly check the course website for new content, upcoming due dates, and the release of grades. It is strongly recommended that students leave their Quercus notifications on, to be automatically be advised of Quercus announcements, posting of new course content, upcoming due dates, the releasing of grades and other important course information.

5) Textbooks:

There is no required textbook for this course. Some basic texts that you might find useful, especially for your assignment, are available online from the library:

Belitz HD, Grosch W, Schieberle P. 2008. Food Chemistry. Springer-Verlag.
<https://link-springer-com.myaccess.library.utoronto.ca/book/10.1007%2F978-3-540-69934-7>

Clark, S ; Jung, S ; Lamsal, B. 2014. Food processing: principles and applications. Wiley Blackwell.
<http://books.scholarsportal.info.myaccess.library.utoronto.ca/viewdoc.html?id=/ebooks/ebooks3/wiley/2014-07-31/1/9781118846315>

Coulter, T. P. (2009). Food - The Chemistry of its Components (5th Edition). Royal Society of Chemistry. Online version available at:
<http://app.knovel.com/hotlink/toc/id:kpFTCCE001/food-chemistry-its-components>

Hui Y. H. (ed). (2006). Food biochemistry and food processing 1st ed. Blackwell Publishing Professional.
<http://books.scholarsportal.info.myaccess.library.utoronto.ca/viewdoc.html?id=/ebooks/ebooks2/wiley/2011-12-13/1/9780470277577>

Nielsen, S. S. 2010. Food analysis. Springer.
<http://books.scholarsportal.info.myaccess.library.utoronto.ca/viewdoc.html?id=/ebooks/ebooks2/springer/2011-04-28/5/9781441914781>

Ramaswamy, H. S and Marcotte, M. 2006. Food processing: principles and applications. CRC Press.
<http://books.scholarsportal.info.myaccess.library.utoronto.ca/viewdoc.html?id=/ebooks/ebooks2/taylorandfrancis/2013-03-25/2/9780203485248>

Vaclavik VA, Christian EW. 2014. Essentials of Food Science. Springer
<https://books-scholarsportal-info.myaccess.library.utoronto.ca/en/read?id=/ebooks/ebooks3/springer/2014-04-01/1/9781461491385>

The library has also created a resource page for this course that lists encyclopedias and dictionaries that may be helpful:
<https://guides.library.utoronto.ca/c.php?g=250612&p=5012907>

In addition, print books available at short term loan in the Gerstein library include:

- Damodaran and others. 2008. Fennema's Food Chemistry 4th ed. Boca Raton CRC Press.
- Wong DWS 1989. Mechanism and theory in food chemistry. New York. Van Nostrand Reinhold.
- Murano, P. S. Understanding Food Science and Technology. Selected chapters. Custom Publication.

6) Course Outline:

Week Beginning	Topic
Sept 14 Week 1	Course Overview; Common chemical reactions in food; Sensory Evaluation; Food Processing
Sept 21 Week 2	Weekly Quiz 1 due Mon Sept 21 at 9 AM Water and Discussion of Assignments
Sept 28 Week 3	Weekly Quiz 2 due Mon Sept 28 at 9 AM Carbohydrate Chemistry: Monosaccharides, disaccharides, artificial sweeteners, polyols, polysaccharides Assignment Question: due online: Wed Sept 30 at 9 AM.
Oct 5 Week 4	Weekly Quiz 3 due Mon Oct 5 at 9 AM TEST 1 (multiple choice-open book) Timed term test available from Tues Oct 6 at 9 AM to Wed Oct 7 at 9 AM. Test 1 covers material from week 1, 2 (water only), and chemistry reading. 20 MCQ questions; 1 hour
Oct 12 Week 5	Carbohydrate Chemistry concluded Annotated bibliography due online Wed Oct 14 at 9 AM
Oct 19 Week 6	Weekly Quiz 4 due Mon Oct 19 at 9 AM Lipid chemistry: fatty acid chemistry; commercially-important fats and oils; manufacture of regular and calorie-reduced margarines; oxidation and rancidity; emulsions and emulsifiers; salad dressing; fat replacers Science Writing Quiz due online Oct 21 at 9 AM
Oct 26 Week 7	Weekly Quiz 5 due Mon Oct 26 at 9 AM Lipids, concluded
Nov 2 Week 8	Weekly Quiz 6 due Mon Nov 2 at 9 AM TEST 2 (multiple choice -open book) Timed term test available from Tues Nov 3 at 9 AM to Wed Nov 4 at 9 AM. Test 2 covers material from week 3, 5, 6 (90% of questions) and week 1,2, and chemistry reading (10% of questions). 20 MCQ questions; 1 hour
Nov 9 Week 9	November break –NO CLASS
Nov 16 Week 10	Protein chemistry: amino acid chemistry; peptides; flavour enhancers; hydrolyzed vegetable protein; browning reactions; milk proteins; casein and casein micelles; whey proteins; fluid milk and pasteurization; yogurt and cheese; egg proteins; sweet proteins Research paper due online Nov 18 at 9 AM.
Nov 23 Week 11	Weekly Quiz 7 due Mon Nov 23 at 9 AM Protein chemistry, concluded Meat products: post-mortem changes; myoglobin pigments and the curing of meats; comminuted meat products
Nov 30 Week 12	Weekly Quiz 8 due Mon Nov 30 at 9 AM Plant products: major cereal grains; legumes; vegetable pigments and flavouring compounds; fruits and the ripening process; coffee and tea
Dec 7 Week 13	Weekly Quiz 9 due Mon Dec 7 at 9 AM Technologies in the vitamin and mineral fortification of food
Final Assessment	TEST 3 Test 3 covers weeks 7, 10, 11, 12, 13 (80% of questions) and weeks 1-6 (20% of questions). 40 MCQ questions; 2 hours

7) Assessments:

Assessment	Weight (%)	Due Date
Weekly Quiz 1*	1	Mon Sept 21 (9 AM)
Weekly Quiz 2*	1	Mon Sept 28 (9 AM)
Weekly Quiz 3*	1	Mon Oct 5 (9 AM)
Weekly Quiz 4*	1	Mon Oct 19 (9 AM)
Weekly Quiz 5*	1	Mon Oct 26 (9 AM)
Weekly Quiz 6*	1	Mon Nov 2 (9 AM)
Weekly Quiz 7*	1	Mon Nov 23 (9 AM)
Weekly Quiz 8*	1	Mon Nov 30 (9 AM)
Weekly Quiz 9*	1	Mon Dec 7 (9 AM)
Assignment Question	2	Wed Sept 30 (9 AM)
Annotated bibliography	4	Wed Oct 14 (9 AM)
Test 1*** (Including Food Chem Reading#)	14	Wed Oct 7 (9 AM)
Scientific writing quiz**	1	Wed Oct 21 (9 AM)
Test 2***	15	Wed Nov 4 (9 AM)
Research Paper	30	Wed Nov 18 (9 AM)
Test 3***	25	Dec final assessment period
Total	100	

*Weekly quizzes for each module are available as soon as the weekly module is posted and ends on the due date at the stated time. There is no time limit for the weekly quizzes.
**Available from first day of classes and ends on the due date.
***Tests have a time limit and are available for 24 hours, before the due date. Once they are available, they can be started any time within that the 24-hour period but will be concluded automatically at the end of the time limit. Be sure to start the test at a time that allows you to have the maximum time available. For example, if a test has a one-hour time limit and is due at 9 AM, you must start the test no later than 8 AM to have a full hour.
#See Chem Food Reading Link on Quercus. Students are assigned a chemistry journal article to read; questions about the paper will be on test 1.

8) About tests and final assessment format-Open book on Quercus-MCQ

The tests and final assessment open-book multiple choice. The tests in this course are multiple choice format and will be conducted on Quercus. They are timed tests and open book, which means that you can refer to your course materials during the test. To prepare for your tests you should concentrate on understanding the course content and study sufficiently to be able to recall most of the course information, in a way that is no different from a conventional closed-book test. The advantage of the open-book exam is that you have the ability to double check information and you won't blow a question just because you can't recall a specific detail. But to exploit this advantage fully, you have to know your work well enough to answer most questions without having to look things up and to organize your course material in a way that will allow you to find information quickly. Don't get lulled into a false sense of security. You won't have time to check every single question; you still need to know the course material going into the test.

9) Turnitin

"Normally students will be required to submit their assignments to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their assignments to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site."

All students are expected to either submit to Turnitin, which is voluntary, or provide an alternative. On Quercus, online submissions will automatically be submitted to Turnitin, but you will have to agree to the Turnitin license agreement. For those who do not submit to Turnitin, as an alternative you will be expected to meet with Dr Gurfinkel for a short **oral test** during which you will be asked questions about the writing of the assignment and its content. Your assignment grade may be changed based on how well you answer these questions.

Dr. Gurfinkel reviews the Turnitin submissions and will e-mail students if there are any concerns about their writing. Often this is no more than a discussion of how to properly paraphrase and/or cite references, but the deduction of marks may also result. Failure to respond to such an e-mail **will** result in the deduction of assignment marks.

If a serious case of plagiarism is suspected, the student's assignment will be forwarded to the Office of Student Academic Integrity for review and possible sanction.

LAST MINUTE POLICY CHANGE: Please see the last page of the syllabus which reflects a recent UT policy change. Students should declare absences on ACORN. Such a declaration will be considered a compelling reason for assignment extensions and for adjustments for missed tests, as described below.

10) Late assignments

NO ASSIGNMENT WILL BE ACCEPTED after the due date and time for online submission except for compelling reasons such as illness, personal distress, family emergency or other unforeseen circumstance. Please contact Dr G by e-mail (debbie.gurfinkel@utoronto.ca) to request an extension, prior to the due date, if possible. A very brief explanation of why you are requesting an extension is required. This can be a written explanation from you or a medical certificate: <http://www.illnessverification.utoronto.ca/index.php> Alternatively, verbal explanations can also be provided in virtual face-to-face discussion. E-mail Dr G to set up a virtual appointment. All information is treated as confidential. Students dealing with intense or ongoing personal distress or chronic illness, who may need special and continuing accommodation are advised to discuss their situation with their college registrar and consider contacting Accessibility Services (See item #16 below)

Please note that poor time management, having several assignments due at the same time, having to study for term tests, etc are generally NOT compelling reasons for an extension. Extensions, for such reasons, are granted only in rare situations. Students are expected to complete their assignments as best they can, hand them in on time, even if incomplete, and accept that they may not get as high a grade as they would like.

If you feel you have a compelling reason that cannot be easily documented or are uncertain if your reasons are compelling, you should ideally discuss this with Dr G before the assignment due date. If this

is not possible then, **FIRST**, hand-in as much of the assignment as you possibly can on the due date and **THEN** contact Dr G to discuss your situation.

Accessibility Services: If you are registered with Accessibility Services, extensions are provided in accordance with the terms of your letter of accommodation. (Also see #16)

11) Assignment re-reads:

If you have concerns about the grading of assignments, a re-read can be requested. Instructions on how to submit re-read requests will be provided during the term.

12) Missed test (#1 & 2).

Except for compelling reasons, such as illness, personal distress or similar unforeseeable circumstances, all students will be given a grade of **ZERO** if they miss a test. There are **NO MAKE-UPS**. If you miss a test for legitimate reasons, your test scores will be re-weighted to the test you did write. For example, if you miss test 1, but wrote test 2, at the end of term a mark for test 1, equal to that of test 2 will be awarded, effectively reweighting your test score across test 2. You are required to provide a very brief explanation for your absence. This can be a written explanation from you or a medical certificate

<http://www.illnessverification.utoronto.ca/index.php> . Alternatively, verbal explanations can also be provided in virtual face-to-face discussion. E-mail Dr G to set up an appointment. All information is treated as confidential. Students dealing with intense or ongoing personal distress or chronic illness, who may need special and continuing accommodation are advised to discuss their situation with their college registrar and consider contacting Accessibility Services (See item #16 below)

13) Missed final assessment:

Test 3 will be available during the final assessment period. The date of the test will be determined later in the term. If you miss the test for compelling reasons, a make-up option will be offered.

14) Lecture material, audio recordings, and intellectual property

Lecture presentations and course materials are the intellectual property of the instructor. All students enrolled in NFS386 are permitted to use the material, for personal study only. The distribution, transmission, reproduction or re-posting of the NFS386 course materials, including audio and video recordings, in whole or part, is NOT permitted without the consent of the instructor.

15) Academic Integrity

Students are expected to conduct themselves with academic integrity. The Code of Behaviour clearly describes activities that are considered academic misconduct:

<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>

Students are urged to regularly review the code as ignorance of the rules is not an acceptable excuse. For more information, also see <http://www.artsci.utoronto.ca/osai> and <http://academicintegrity.utoronto.ca>.

16) Accessibility Needs:

Students with diverse learning styles and needs are welcome in this course. If you have an acute or ongoing disability issue or accommodation need, you should register with Accessibility Services (AS) at the beginning of the academic year by visiting <http://www.studentlife.utoronto.ca/as/new-registration>. Without registration, you will not be able to verify your situation with your instructors, and instructors will not be advised about your accommodation needs. AS will assess your situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. Remember that the process of accommodation is private: AS will not share details of your needs or condition with any instructor, and your instructors will not reveal that you are registered with AS.

17) Help with Academic Skills:

Academic Success Centre: The Academic Success Centre provides workshops, peer mentoring, and other resources to help all students improve their academic skills. Check out the available services at: <http://www.asc.utoronto.ca/>

English Language Learning: Provides support to students for whom English is a second language. It also supports native speakers who would like to improve their language skills. Check out available services at: <http://www.artsci.utoronto.ca/current/advising/ell>

Writing Centres: Writing Centres provide assistance with writing assignments for all students. Check out available services at: <http://www.writing.utoronto.ca/writing-centres>

18) Adapting to Online Learning:

Many students will find online learning challenging. Face-to-face classes have “built-in” opportunities for social interaction with peers and instructors that are difficult to duplicate in the online environment. It is not uncommon for students to feel isolated when taking online classes and COVID-19 restrictions will not doubt compound these feelings. The link below was prepared before the pandemic, but nonetheless highlights the strategies that you can employ to overcome challenges and enhance your online experience from having proper technical requirements to managing scheduling and staying motivated: <https://onlinelearning.utoronto.ca/is-online-learning-for-me/>

Change of Policy for Verification of Illness (VOI) and Other Documented Absences for 2020-21

For this year, the [University has announced](#) that students will not require a Verification of Illness (VOI) form. The updated FAQ for students reads as follows:

What should I do if I can't attend class (in-person or remote) and it is affecting my academic work?

Students who are absent from class for any reason (e.g., COVID, other illness or injury, family situation) and who require consideration for missed academic work should report their absence through the online absence declaration. The declaration is available on [ACORN](#) under the Profile and Settings menu. Students should also advise their instructor of their absence.

Resources & supports

If you or someone you know is in distress and there is an immediate risk, call 911.

The following includes supports available to students on all three campuses:

- [U of T St. George \(Downtown Toronto\)](#)
- [U of T Scarborough](#)
- [U of T Mississauga](#)

Additionally, students have access to [U of T My Student Support Program](#) (My SSP) | 1-844-451-9700 24/7. Outside of North America, call 001-416-380-6578.

Culturally-competent mental health and counseling services in 146 languages for all U of T students.

For reference, when students log into the Absence Declaration in [ACORN](#), the top of the screen displays:



After clicking on the Absence Declaration tool above, the following is displayed:

Absence Declaration

Declare New Absences

i You should use this system to formally declare an absence from academic participation in the University if you require consideration for missed academic work based on the procedures specific to your faculty or campus. Please note:

- In addition to this declaration, you are responsible for contacting your instructors to request the accommodations you are seeking.
- You are also responsible for familiarizing yourself with the procedures specific to your faculty or campus.

Date of Absence

You can record absences for up to 14 consecutive days, one of which must be today (if you are still absent) or yesterday (if you have returned). If you need to record an absence outside of this range, please contact your registrar's office.

1	yyyy-mm-dd	8	yyyy-mm-dd
2	yyyy-mm-dd	9	yyyy-mm-dd
3	yyyy-mm-dd	10	yyyy-mm-dd
4	yyyy-mm-dd	11	yyyy-mm-dd
5	yyyy-mm-dd	12	yyyy-mm-dd
6	yyyy-mm-dd	13	yyyy-mm-dd
7	yyyy-mm-dd	14	yyyy-mm-dd

Consent to Release COVID-19 Medical Information

The University requires information about students who are asked to self-isolate for monitoring purposes. Please complete this consent form to allow us to access this information [\(f\)](#).

Declarations

I hereby declare that it has been necessary for me to be absent from the University for the period identified above.

By making this declaration I am affirming these statements to be true and that I understand that my declaration is submitted for the purpose of receiving academic accommodation. I also understand and acknowledge that it is my responsibility to complete the requirements of the course and to confirm any necessary academic accommodation arrangements upon my return as directed by my instructor and the policies of my Campus or Faculty.

I understand and acknowledge that making a false declaration would constitute academic misconduct and could be subject to sanctions under the Code of Behaviour on Academic Matters [\(f\)](#).

I have completed the Consent to Release COVID-19 Medical Information, if applicable, and I understand the above declarations.