

FNH200



Exploring Our Foods

FNH 200 942 July/August 2024
Faculty of Land and Food Systems,
University of BC

Dr. Judy C. K. Chan (she/her)

Welcome to Exploring Our Foods, FNH 200 942 July/August 2024!

We all eat, possibly multiple times a day! Have you ever wondered how egg white turns white when heated, why canned foods last years, who ensures all Canadians have access to a safe and healthy food system? In FNH 200, through lots of teamwork, we will explore the science behind foods we eat and enjoy. I hope that by the end of the summer, with my guidance, you will become educated consumers with the ability to make informed decisions about controversial issues around foods you enjoy in your everyday life.



Have an idea? Question?
Drop me a line!

Exploring Time:

Tues and Thurs:
9 to 11:50 am PDT

Details on page 3

Meetings on Zoom



judy.chan@ubc.ca

Please add 'FNH 200' in the subject heading

I aim to respond to all email within 24 hours, except on the weekend (when I'm a 100% mom, daughter, auntie, sister, and wife). I'm most active with email early in the morning and late at night. By the way, I stop responding to content related questions by 6 pm the night before midterms and final exam.



Learning Objectives:

By the end of this course, as an engaged learner, you will be able to:

- ✓ Describe colloidal dispersions important to food quality and sensory perception
- ✓ Describe the role of chemical reactions, enzymes and microorganisms in food spoilage, food preservation and food borne disease
- ✓ Describe food processing/preservation methods and packaging systems, including their application in the conversion of raw materials into food products
- ✓ Develop personal food selection and food handling habits that will minimize risk of contracting foodborne or water borne diseases
- ✓ Articulate a personal set of values related to your decisions pertaining to selection of food products for both your personal and your family's consumption
- ✓ Demonstrate an ability to critically evaluate the validity of information that commonly appears in media

Textbook:

No textbook needed; all examinable information can be viewed on Canvas

Open version of course content is also available on:

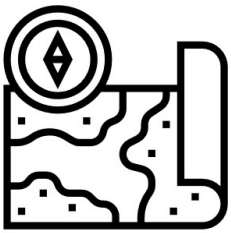
[Wiki.ubc.ca/Course:FNH200](https://wiki.ubc.ca/Course:FNH200)



Your local grocery stores contain a wealth of information relevant to FNH 200. Do visit them often.

Please set aside CDN \$ 20 to 50 to purchase and sample foods relevant to course materials to enhance your learning. I plan to have a couple food sampling parties/lectures on July 4 and 23.





Course Overview:

In FNH 200, there are 13 lessons, in varying lengths.

Foundation

Lesson 01

Food Science and Canadian Food System



Lesson 02

Chemical and Physical Properties of Foods



Lesson 03

Fat and Sugar Substitutes



Lesson 04

Food Standards, Regulations, and Guides



Preservation

Lesson 05

Lesson 06

Thermal



Lesson 07

Low Temperature



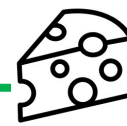
Lesson 08

Dehydration



Lesson 09

Biotechnology



Lesson 10

Irradiation



Healthy & Safe Future

Lesson 11

Affects on Nutrient Retention



Lesson 12

Toxicants in Foods and Foodborne Diseases



Lesson 13

Trends in Food for Nutrition and Health



TEAMWORK



Team Contract



Teamwork Time



Peer Evaluation

Working in teams is a major component of this course. I am a strong believer that people learn better in a collaborative environment where we **can bring out the best of our diverse knowledge and skills.**

I strive to create teams with students from different disciplines. Once the teams are formed, you will work as a team on a couple of assignments, a final project, as well as for the 2-stage midterms and final exam.

You may choose your own teammates to form teams of four to five. Pairs and triads of students are welcome; I will add a couple members to your preferred pairs or triads to create a full team, aiming for diverse academic background. Due to the online nature of this session, I will set up a discussion thread for students who may want to **form teams based on your geographical locations, summer courses, interests, etc.**

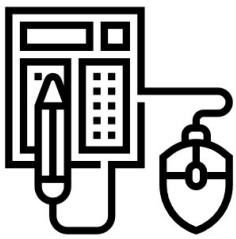


My Teaching Team:
Kiana Gibson
Chantelle Twynstra
Priyal Tailor

Please let me know your team formation by 9 am on Monday, July 8, by email (with all members properly carbon copied.) I will then start creating teams before our dedicated team meeting time on July 9.

I have been adapting teamwork in my teaching for over 10 years. This year, I would like to conduct some systematic analyses on your team experience expressed on pre-course survey, relevant questions on team assignments and projects, to inform how I can better support teamwork in the future. Please discuss your concern about the use of your data and your privacy with me.

| | TUESDAY, July 2 | THURSDAY, July 4 | |
|-----------------------|--|--|------------------------|
| 8:30 to 9 am | Office/Student Hour | Office/Student Hour | |
| 9 to 9:50 am | Online (recorded)! Intro and Syllabus | In-person, optional (recorded)! Lesson 2 | |
| 10 to 10:50 am | Online (recorded)! Lesson 1 | In-person, optional (recorded)! Lesson 2 | |
| 11 to 11:50 am | Assignment 1 – Group (Random) Activity | Assignment 1 – Group (Random) Activity | |
| 12 to 12:30 pm | Office/Student Hour | Office/Student Hour | |
| | TUESDAY, July 9 | THURSDAY, July 11 | |
| 8:30 to 9 am | Office/Student Hour | Office/Student Hour | |
| 9 to 9:50 am | Online (recorded)! Lesson 2 | Online (recorded)! Lesson 4 | |
| 10 to 10:50 am | Online (recorded)! Lesson 3 | Online (recorded)! Lesson 4 | |
| 11 to 11:50 am | TEAM MEETING – Contract, Assignment 2 | TEAM Meeting – Assignment 2, Project topic | |
| 12 to 12:30 pm | Office/Student Hour | Office/Student Hour | |
| | TUESDAY, July 16 | THURSDAY, July 18 | |
| Start b/w 6 and 10 am | Midterm 1, Stage 1, Individual | 8:30 to 9 am | Office/Student Hour |
| Finish by 10:30 am | Midterm 1, Stage 2, Team, Start with team | 9 to 9:50 am | Online (recorded)! L 6 |
| Till 11 am | TEAM Meeting – Assignment 2, Project topic | 10 to 10:50 am | Online (recorded)! L 7 |
| 11 to 11:50 am | Online (recorded)! Lesson 5 | 11 to 11:50 am | TEAM Meeting |
| 12 to 12:30 pm | Office/Student Hour | 12 to 12:50 pm | Office/Student Hour |
| | TUESDAY, July 23 | THURSDAY, July 25 | |
| 8:30 to 9 am | Office/Student Hour | Office/Student Hour | |
| 9 to 9:50 am | In-person, optional (recorded)! Lesson 7 | Online (recorded)! Lesson 9 | |
| 10 to 10:50 am | In-person, optional (recorded)! Lesson 8 | Online (recorded)! Lesson 9 | |
| 11 to 11:50 am | TEAM MEETING – Clear Project Outline | TEAM Meeting – Task Sharing, Peer Eval | |
| 12 to 12:30 pm | Office/Student Hour | Office/Student Hour | |
| | TUESDAY, July 30 | THURSDAY, August 1 | |
| Start b/w 6 and 10 am | Midterm 2, Stage 1, Individual | 8:30 to 9 am | TEAM Meeting |
| Finish by 10:30 am | Midterm 2, Stage 2, Team, Start with team | 9 to 9:50 am | Online (recorded) L10 |
| Till 11 am | TEAM Meeting – Project | 10 to 10:50 am | Online (recorded) L11 |
| 11 to 11:50 am | Online (recorded)! Lesson 10 | 11 to 11:50 am | TEAM Meeting |
| 12 to 12:30 pm | Office/Student Hour | 12 to 12:30 pm | Office/Student Hour |
| | TUESDAY, August 6 | THURSDAY, August 8 | |
| 8:30 to 9 am | International TEAM Meeting Hour | International TEAM Meeting Hour | |
| 9 to 9:50 am | Online (recorded)! Lesson 12 | Online (recorded)! Lesson 13 | |
| 10 to 10:50 am | Online (recorded)! Lesson 12 | Online (recorded)! Review | |
| 11 to 11:50 am | TEAM MEETING – Completing, Reflection | TEAM Meeting – Completing, Peer Eval | |
| 12 to 12:50 pm | Student Hour | Student Hour | |



Assessments, default weights shown, flexible ranges in brackets when available

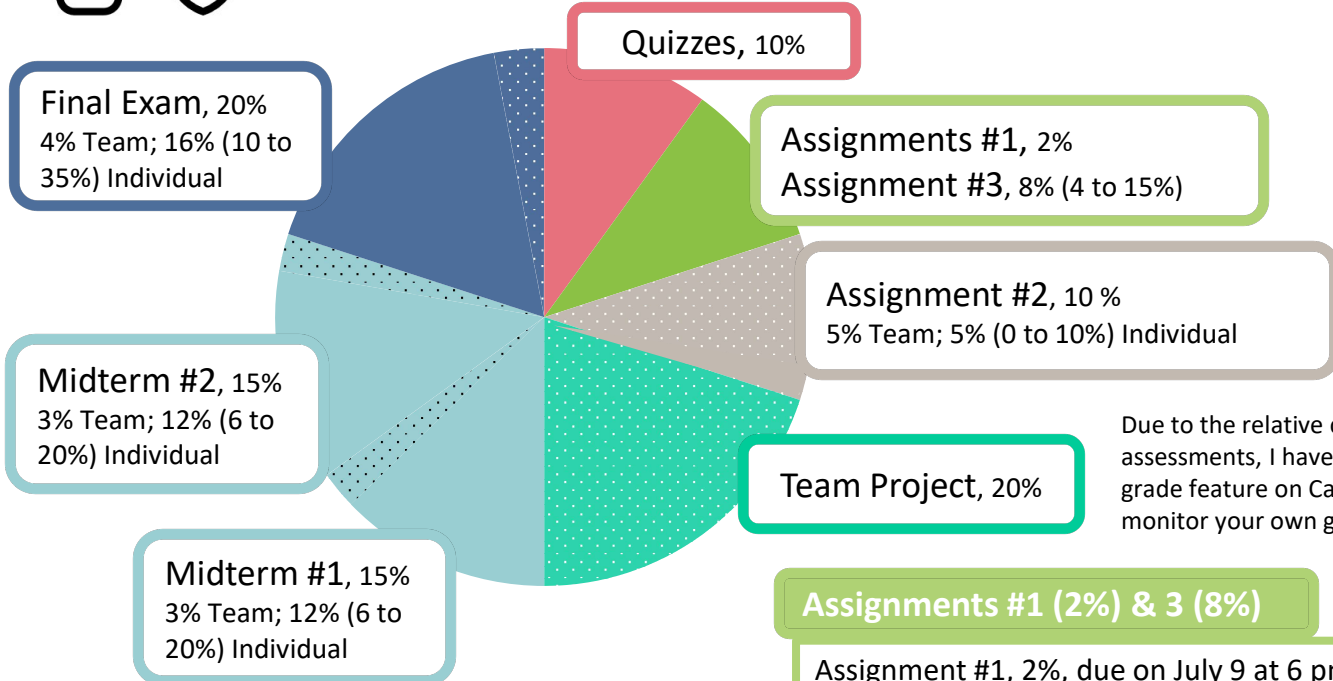
To help you learn and let you showcase what you learned



Solid colour: individual effort



Dotted colour: team effort



Due to the relative complexity of all assessments, I have turned off the **final** grade feature on Canvas. Please monitor your own grade progress.

Quizzes, 10%

For each lesson from Lessons 01 to 13, there will be an associated quiz on Canvas. You will have unlimited attempts and I will keep the highest score.

I like to encourage you to make your first attempt prior to the beginning of each lesson. Quiz questions and distractors are designed to guide you through important concepts in each lesson.

Team Project, 20%

Option A: A research project on a food you like
Option B: An interview with a professional working in the food industry

Aside from the final report, grades will also be awarded based on your team contract, proposal, reflection, contribution to our learning, etc.

All members in the team should contribute their unique talents towards the project. Unfortunately, if your team members feel that you contribute less than average (<70% on peer evaluation), your project grade may be affected. In extreme case, a mark of zero may be given.

Assignments #1 (2%) & 3 (8%)

Assignment #1, 2%, due on July 9 at 6 pm, helps you set some informal learning goals.
Assignment #3, 8%, due on August 12 at 12 noon, helps you recognize how much food science you have gained.

Assignment #2, Team, 10%

Team Component, 5%, due on July 16 at 6 pm: you and your team will show how much you learn about labels on and ingredients in foods of your choice.
Individual Component, 5%, due on July 18 at 6 pm: you will justify your food choice based on evidence gathered by your team and your personal experience.

Midterms, 15%, 15%; Final, 20%

Midterm #1, July 16; #2, July 30; Final, TBD

Midterms are all multiple choice questions (mcq). The final is mostly mcq with some longer answer questions. These will be conducted as two-stage exams, where your individual effort will count towards 85% of the midterm/final while the rest will be based on your team effort. The midterms and final will be opened for about 5 hours, you will decide with your teammates the most convenient time to complete them.

A Letter to FNH 200 Students



Dear Students in FNH 200 942 2024,

Thank you very much again for the many of you who filled out a survey in June and shared with me your learning preferences online. I have carefully reviewed your comments and those from all students. I recognize that my teaching plan may not work with everyone in all situations, but I sincerely hope that you feel comfortable reaching out to me whenever needed.

I'm here for you and your learning!

Now, I would like to get into some 'business' of learning in FNH 200 942 😊

I value peer-to-peer learning. I strive to build supportive structures to help you work with a group of strangers for six weeks. I hope that you can view and treat your teammates as **your study buddies**, whom you can trust and seek clarifications of course content and process when needed. Likewise, I hope you can also support each other, both academically and emotionally. For instance, let me know if you notice a teammate is falling behind in an unhealthy way so that I can intervene with help from professionals at UBC. Let's all learn together!



Attendance of our synchronous class time is optional. Our synchronous meetings (see page 3) will be recorded and available on Canvas. I will do my best to keep our lectures and synchronous discussions as linear as possible to help with your viewing and reviewing.

Attendance of our in-person food sampling days is optional.

Contributions to your team is valued. I would strongly encourage you to make use of the group working time, 11 to 11:50 am PDT during the first week, to connect with your classmates, and during the second week to connect with your assigned teammates. Once you establish trust and mutual agreement with your team, you (as a team) may choose to how best to collaborate and learn together when you all have busy life.



Late assignments (and projects (My TAs are super flexible!)) will be accepted until 12 noon (PDT) on Monday, August 12. All assignments and projects are designed to guide you through the course content and help you prepare for your midterms and final; therefore, completing them by the published due dates is beneficial. These published due dates also help our TAs and me manage our busy schedule. If you need to submit your work late (or if you simply forget about the work), a mark of ZERO (don't panic!) will be noted on Canvas as a reminder to you. If you submit your work after the published due date, please understand that it will also take the TAs and me extra time to complete the grading.

Recent developments in **Generative Artificial Intelligence (GAI) tools** are changing how we learn. I attempted to complete FNH 200 assignments using GAI and I am impressed with what they generated on some aspects. Its scientific accuracy and attention to Canadian context has improved remarkably since last summer. While I encourage you to use GAI as a learning companion, please do not solely rely on GAI to help you complete your assignments. GAI may help and can certainly hinder learning; I am eager to learn from you too. More guidance on the use of GAI will be provided with each assignments.



Above: An image generated by DALL-E, 'Digitized apple in a lab'

All contributing team members will earn the same mark on the team project (20% of course grade). You will have an opportunity to assess each other based on work ethics, listening skills, organization skills, and share of workload. All contributing team member (> 70% on peer evaluation) will earn the same mark. Members who choose not to contribute or contribute in a negative way (<70%) will receive a project mark adjusted based on the average peer evaluation. In some cases, a mark of ZERO will be assigned.



Please respect your sources of information and acknowledge them by mentioning them in your reference sections of your reports. Your resources should be reliable and official, such as government websites and professional associations. You may want to make references to your favourite Youtubers, vloggers, TikTokers, etc, but you should critically consider the validity of your sources. On the other hand, I value anecdotal stories and experience from wise elders. When appropriate, please share.

Prepare a memory aide for your midterms and final. I had allowed the use of memory aides (aka cheat sheets) in in-person, paper-based exams in the past. Many students commended on the process of creating a memory aide really helped them understand, digest, and synthesize course content. While our midterms and final will be open book and open 'internet', having a self-prepared outline will save you time instead of relying on the 'Ctrl' + 'F' feature on your devices during tightly timed exams.



I'm a part-time, contract instructor who teaches once a year. I started teaching FNH 200 online in 2020 after teaching face-to-face for many years. I feel that many of you have more experience learning online than me teaching online 😊 If you notice areas of improvement, please let me know using the QR code on p. 1.

I look forward to exploring food sciences with you all. Online teaching and learning enables us all to have a glimpse of foods from different parts of the globe! No matter why you are taking FNH 200 this summer, I hope you will find joy exploring the very magical sciences behind foods, something we all eat everyday!

By the way, learning is important, but please look after yourself both physically and mentally. If you need to walk away during our synchronous meeting for a cup of tea, just go ahead! If your internet becomes unstable in the middle of a midterm, let's make it up a couple of hours later. (There are endless unforeseeable challenges, let's figure it out together when your learning is interrupted. 😊)

I look forward to meeting you all on July 2, as early as 8:30 am PDT for students wanting to chat, or simply prefer meeting earlier. Official 'class' will start online and be recorded from 9 to 10:50 am PDT. Dedicated group and team group time is from 11 to 11:50 am almost every class.

Regards,
Judy, she/her

- A professional during the day, a mom, daughter, wife, sister, and auntie in the evening and on the weekend
- Love foods, love sciences of foods, love eating foods, but can't cook
- Born in Hong Kong, came to Vancouver as an ESL student in high school, studied at UBC
- All icons on this syllabus are from: <https://thenounproject.com/>; avatar created with <https://getavataaars.com/>
- Teaching from my home in South Vancouver, tradition homeland of people from səliiwətaʔt təməxʷ (Tsleil-Waututh), xʷməθkʷəy̓əm, Stz'uminus, and S'ólh Téméxw (Stó:lō) first nations; as a first generation settler in Vancouver in the 90s, I didn't know much about Indigenous History in Canada until around 2010. At that time, my daughter was starting 'daycare'. Imagining that she may be taken away from me as children taken away to attend residential schools ached my heart. I continue to learn 'good' Indigenous history and wish no other children will be taken away from their families ever in any part of the globe.



Institute of Food Technologists (IFT)

UBC's Food Science Program is one of few in Canada that are approved by the Institute of Food Technologists (IFT), an internationally recognized leader in undergraduate education standards for degrees in Food Science. Programs with this approval badge are recognized as delivering a comprehensive Food Science education that covers 55 essential learning outcomes (ELOs) established by the IFT organization. In FNH 200, we **begin to introduce** some of these learning outcomes, as highlighted, for students interested in further exploration of food sciences.

Institute of Food Technologists Essential Learning Objectives (IFT ELOs)

Food chemistry (FC)

- FC.1. Discuss the major chemical reactions that limit shelf life of foods.
- FC.2. Explain the chemistry underlying the properties and reactions of various food components.
- FC.3. Apply food chemistry principles used to control reactions in foods.
- FC.4. Demonstrate laboratory techniques common to basic and applied food chemistry.
- FC.5. Demonstrate practical proficiency in a food analysis laboratory.
- FC.6. Explain the principles behind analytical techniques associated with food.
- FC.7. Evaluate the appropriate analytical technique when presented with a practical problem.
- FC.8. Design an appropriate analytical approach to solve a practical problem.

Food microbiology (FM)

- FM.1. Identify relevant beneficial, pathogenic, and spoilage microorganisms in foods and the conditions under which they grow.
- FM.2. Describe the conditions under which relevant pathogens are destroyed or controlled in foods.
- FM.3. Apply laboratory techniques to identify microorganisms in foods.
- FM.4. Explain the principles involved in food preservation via fermentation processes.
- FM.5. Discuss the role and significance of adaptation and environmental factors (e.g., water activity, pH, temperature) on growth response and inactivation of microorganisms in various environments.
- FM.6. Choose relevant laboratory techniques to identify microorganisms in foods.

Food safety (FS)

- FS.1. Identify potential hazards and food safety issues in specific foods.
- FS.2. Describe routes of physical, chemical, and biological contamination of foods.
- FS.3. Discuss methods for controlling physical, chemical and biological hazards.
- FS.4. Evaluate the conditions, including sanitation practices, under which relevant pathogenic microorganisms are commonly controlled in foods.
- FS.5. Select appropriate environmental sampling techniques.
- FS.6. Design a food safety plan for the manufacture of a specific food.

Food engineering and processing (FE)

- FE.1. Define principles of food engineering (mass and heat transfer, fluid flow, thermodynamics).
- FE.2. Formulate mass and energy balances for a given food manufacturing process.
- FE.3. Explain the source and variability of raw food materials and their impact on food processing operations.
- FE.4. Design processing methods that make safe, high-quality foods.
- FE.5. Use unit operations to produce a given food product in a laboratory or pilot plant.

- FE.6. Explain the effects of preservation and processing methods on product quality.
- FE.7. List properties and uses of various packaging materials and methods.
- FE.8. Describe principles and practices of cleaning and sanitation in food processing facilities.
- FE.9. Define principles and methods of water and waste management.

Sensory science (SS)

- SS.1. Discuss the physiological and psychological basis for sensory evaluation.
- SS.2. Apply experimental designs and statistical methods to sensory studies.
- SS.3. Select sensory methodologies to solve specific problems in food.

Quality assurance (QA)

- QA.1. Define food quality and food safety terms.
- QA.2. Apply principles of quality assurance and control.
- QA.3. Develop standards and specifications for a given food product.
- QA.4. Evaluate food quality assessment systems (e.g. statistical process control).

Food laws and regulations (FL)

- FL.1. Recall government regulatory frameworks required for the manufacture and sale of food products.
- FL.2. Describe the processes involved in formulating food policy.
- FL.3. Locate sources of food laws and regulations.
- FL.4. Examine issues related to food laws and regulations.

Data and Statistical Analysis (DS)

- DS.1. Use statistical principles in food science applications.
- DS.2. Employ appropriate data collection and analysis technologies.
- DS.3. Construct visual representation of data.

Critical thinking and problem solving (CT)

- CT.1. Locate evidence-based scientific information resources.
- CT.2. Apply critical thinking skills to solve problems.
- CT.3. Apply principles of food science in practical, real-world situations and problems.
- CT.4. Select appropriate analytical techniques when presented with a practical problem.
- CT.5. Evaluate scientific information.

Food Science Communication (CM)

- CM.1. Write relevant technical documents.
- CM.2. Create oral presentations.
- CM.3. Assemble food science information for a variety of audiences.

Professionalism and leadership (PL)

- PL.1. Demonstrate the ability to work independently and in teams.
- PL.2. Discriminate tasks to achieve a given outcome.
- PL.3. Describe social and cultural competence relative to diversity and inclusion.
- PL.4. Discuss examples of ethical issues in food science