FNH 425 Food Science Laboratory III Syllabus

Course Details

Course	FNH 425 [0-3-0]
Prerequisites	FNH 325, FNH 326
Term/year	Winter term 1 (Sept 2020 – Dec 2020)
Class day/time	Fridays 1 - 5 pm
Class location	Online
Instructor	Dr. Patricia Hingston
Email	Patricia.hingston@ubc.ca however, please contact through Canvas mail
Office	Room 223, MacMillan Building
Office hours	Fridays 2 – 4 pm (sign up through Canvas)
TAs	Amelie Zhang, Ronit Mandal
TA contact	Please contact through Canvas mail
Syllabus version	Aug 25, 2020

Course Objectives

The objectives of this course are to provide students with an opportunity to acquire a great depth of knowledge on a topic of interest to the food industry, master their professional and scientific writing skills, work as a team, consider their career goals, and to make contacts/connections with members of the food industry.

Learning Outcomes

Upon completion of this course, you will be able to:

1. Locate, evaluate and incorporate scientific literature into written and oral forms of communication
2. Analyze and interpret literature findings
3. Prepare a literature review on a topic of interest to the food industry
4. Provide constructive feedback to peers
5. Use peer and instructor feedback to improve your scientific writing
6. Create oral presentations that communicate scientific findings in an organized and clear manner
7. Work effectively both individually and in teams
8. Interact efficiently with industry partners
9. Manage your time effectively to complete tasks on time
10. Select suitable career options based on your strengths and interests

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. Further information about the IFT ELOs is available as a brief report. ELOs highlighted below in blue are covered in this course and those highlighted in green may also be covered depending on the industry project you are assigned to.

Institute of Food Technologists Essential Learning Outcomes (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

Course Format

At the beginning of the year you will be asked to form small groups to work with for the term. You will then read through a list of industry projects and decide which ones your group are most interested in. Sign-up for projects will be on a first come basis. There will be two synchronous class sessions at the beginning of the term where we will cover the fundamentals of literature searching and scientific writing. There will also be one guest lecture on *Sustainability in the Food Industry*, and a synchronous class session at the end of year where we will listen to groups present their literature findings. The remainder of the course will be conducted asynchronously. For more information on course activities see *Learning Activities* below, as well as the *Course Schedule*.

Learning Activities

Course activity	Description
Progress Blog	When you only have one large project to work on in a course, it can sometimes be difficult to manage your time effectively. To help you stay on task and progress throughout the course, you will be required to keep a research blog. Here you will document all of the activities that your group members engage in. Each week you will submit the link to your blog for review through Canvas. You will be evaluated based on how much progress you have made each week.
Literature Review Progress Submission	This is another measure to ensure that you do not leave all of your writing to the last minute. Your report does not need to be perfect condition for this submission, but there should be evidence of writing and literature review. See the rubric for more details on how you will be assessed.
First Draft of Literature Review	The first draft of your literature review is expected to be completed to the best of your ability. Once you submit through Canvas, two of your classmates will review your report and provide you feedback so that you have an opportunity to make positive changes before submitting your final report. Your instructor and TAs will also provide feedback and assign your group a grade using the assignment rubric.
Peer Review of Literature Report	Each student will review two group's literature review reports. This is to provide you with the opportunity to both learn from and help others improve their reports.
Final version of Literature Review	Your final version of your literature review is weighted heavier than your first draft and the grading scheme includes how much feedback you have incorporated from your peer review.
Reflections	It is scientifically proven that learning is enhanced when we reflect on what we have learned, how far we have come, and how we can improve. Accordingly, there will be a few occasions where you will be asked to reflect on your performance and growth in the course. There will also be a few required discussion posts that you will need to reply to.
Presentation	Near the end of the term you will give a **15-20 min** group presentation on your literature review topic. Groups will be required to submit a presentation outline and a copy of their slides for review in advance to their presentation. The presentation will be recorded and sent to your industry partner to view. It should cover the rationale of the research project and outline the main findings and conclusions. The presentations will be performed live in breakout groups during a synchronous class session and students will be required to ask questions and evaluate the presentations in their breakout groups. The instructor- and TA-assigned grades will account for 70% of each group's presentation grade and student-assigned grades will account for the remaining 30%. You will also be required to provide feedback to other groups from outside your breakroom room, by reviewing their presentations on CLASS.

Slide Submission	Prior to your presentation date, you will be required to submit your slides for review. This is help ensure that you do not leave them to the last minute, and that you have time to make changes based on the instructor's feedback.
Peer Feedback on Presentations	Learning how to provide constructive feedback to others is an essential life skill. Accordingly, you will be required to provide verbal feedback to groups who presented in your breakout group, and written feedback to 2 additional groups using the CLASS platform.
Career Assignment	The purpose of this short assignment is for you to explore food science career options that align with your skill sets and interests. For this assignment, you will be using a quiz recently developed by the Food Science Department at Nottingham University in the UK. This assignment will de due towards the end of the term but can be completed at any time!
Professional development bonus marks	Networking is extremely important for undergraduate students. This is how you make connections with people in the food industry, government, and academia who can provide you with valuable advice and assist you in applying for graduate school or finding employment. Networking and professional development are also great ways to expand your food science knowledge and help you become familiar with different work cultures and career opportunities. To encourage you to step outside of your comfort zone, form new connections, and expand your mind, I will add 0.5% to your course grade for attending up to two networking or knowledge acquisition events (total grade increase of 1% possible). To obtain these bonus marks, you must submit a one-page summary for each event you attend that describes how it has helped you expand your network and/or increased your food science knowledge. A template is posted to the course Canvas page for you to use as are links to some upcoming opportunities. One of the opportunities I am offering, is participating in a *Food Science Mentoring program* where you will have the option of mentoring 1 or 2 third year Food Science students.

Course Readings

There is no required textbook for this course.

Learning Resources

If you require assistance gaining access to or navigating one of the online learning resources or would like additional support regarding online learning in general, the UBC Keep Learning website is a great resource for students: https://keeplearning.ubc.ca/

Course Schedule

Week	Synchronous Sessions	Important Activities and Due Dates
Introduction		• Complete class introduction (due Sept 11, 1 pm; 12; 14) • Complete student learning preference survey (Sept 11, 1 pm)

Week 1:
(Sept 11 - 17)
	Fri Sept 11, 1 - 3 pm
	1. Course Overview
	2. Sourcing and Citing Literature
		• Ask classmates questions (due Sept 12, 1 pm)
		• Reply to classmate questions (due Sept 14, 1 pm)
		• Read the course syllabus (due Sept 11)
		• Complete the Syllabus Quiz (due Sept 15, 1 pm)
		• Select group members to work with on literature review
		  ○ Review literature project descriptions (Links to an external site.), rank your group's preferences
		  ○ Sign up for project to work on (Links to an external site.) (first come basis) (Opens Mon Sept 14, 6 pm)

Week 2:
(Sept 18 - 24)
		• Conduct literature search
		• Reach out to industry partner
		  ○ Introduce yourself
		  ○ Ask clarification questions
		• Submit research blog (due Sept 18, 1 pm)

Week 3: (Sept 25 -Oct 1)	**Fri Sept 25**, 1 - 3 pm 1. Scientific Writing 2. Group work on literature review outline	• Conduct literature search and begin to fill in parts of report • Submit research blog (due Sept 25, 1 pm)
Week 4: (Oct 2 - 8)	**Fri Oct 2**, 1 - 3 pm Guest Speaker **Alberto Mendoza** - Industry expert on sustainability in the food sector	• Complete pre-sustainability lecture reflection (due Sept 29, 5 pm) • Complete post-sustainability lecture reflection (due Oct 5, 10 pm) • Submit research blog (Oct 2, 1 pm)
Week 5: (Oct 9 - 15)		• Literature review progress (due Oct 9, 10 pm) • Submit research blog (due Oct 9, 1 pm)
Week 6: (Oct 16 - 22)		• Submit research blog (due Oct 16, 1 pm)
Week 7: (Oct 23 - 29)		• First draft of literature review (due Oct 23, 10 pm) • Submit research blog (due Oct 23, 1 pm)
Week 8: (Oct 30 - Nov 5)		• 2 peer reviews of first drafts (due Oct 30, 10 pm) • Submit research blog (due Oct 30, 1 pm)
Week 9: (Nov 6 - 12)		• Submit research blog (due Nov 6, 1 pm)
Week 10: (Nov 13 - 19)		• Final version of literature review (due Nov 13, 10 pm)
Week 11: (Nov 20 - 26)		• Presentation slides submission (due Nov 20, 1 pm)
Week 12: (Nov 27 - Dec 3)	**Fri Nov 27**, 1 - 4 pm Group presentations	• Career assignment (due Nov 27, 10 pm) • Presentation self-reflection (due Dec 3, 10 pm) • Peer feedback on presentations (due Dec 3, 10 pm) • End of term reflection (due Dec 3, 10 pm) • Submit professional development bonus marks (Dec 10, 1 pm)

Course Assessment

Course Activity	Group or Individual	Weight (%)
Research Progress Blog (8)	Group	7.5
Literature Review Progress Submission	Group	5
First Draft of Literature Review	Group	20
Peer Review of First Draft (2)	Individual	6
Final Version of Literature Review	Group	25
Presentation Slide Submission	Group	5
Presentation	Group	20
Peer Feedback	Individual	5
Career Assignment	Individual	5
Course Reflections/Discussions (5)	Individual	6.5

Late assignments will be deducted 20% per day for up to 3 days. After 3 days, you will receive a grade of 0.

Course Communication

The instructor will answer e-mails and discussion board posts between 9 am – 5 pm Mon – Fri. Please post questions pertaining to course activities on the designated discussion boards. The instructor or a TA will answer usually within the same day, excluding weekends. It is beneficial to use the discussion boards as much as possible as other students often have similar questions, so your inquiry can help the whole class learn.

Learning Analytics

Learning analytics includes the collection and analysis of data about learners to improve teaching and learning. This course will be using the following learning technologies: Canvas including programs embedded within Canvas. Many of these tools capture data about your activity and provide information that can be used to improve the quality of teaching and learning. In this course, I plan to use analytics data to:

- View overall class progress
- Track your progress in order to provide you with personalized feedback
- Review statistics on course content being accessed to support improvements in the course
- Track participation in discussion forums

Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. All UBC students are expected to behave as honest and responsible members of an academic community. At the most basic level, this **means submitting only original work done by you and acknowledging all sources** of information or ideas and attributing them to others as required. This also means **you should not cheat, copy, or mislead others about what is your work.**

It is the student's obligation to learn, understand and follow the standards for academic honesty. Students must be aware that standards at the University of British Columbia may be different from those in secondary schools or at other institutions.

Violations of academic integrity lead to the breakdown of the academic enterprise, and therefore serious actions are taken. Plagiarism or cheating may result in a mark of zero on an assignment, exam, or course. More serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Academic misconduct may result in a one-year suspension from the University and a notation of academic discipline on the student's record.

The UBC library has a useful Academic Integrity website that explains what plagiarism is and how to avoid it. If a student is in any doubt as to the standard of academic honesty in a particular course or assignment, then the student must consult with the instructor as soon as possible. A more detailed description of academic integrity, including the University's policies and procedures, may be found in the Academic Calendar.

University Policies

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on **the UBC Senate website.**

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