

FNH 309 - Food Process Science

UBC Academic Calendar Entry 2014/15

FNH 309 (3) Food Process Science. Preservation of tissue and fluid food systems by selected physical and chemical treatments with emphasis on product-process interactions. [3-0-1].

Course Overview

The overall objective of this Food Process Science course is to provide students with the fundamental food processing concepts, principles, and skills necessary to understand the outcomes of commercial food processes as well as to design simple food process systems of their own. The course will provide breadth in that it will consider water activity, packaging, and physical principles that apply to food processing. It will also provide greater depth in the application and preservation effects of dehydration, microwave processing, irradiation, and other novel technologies. Because of the practical need for quantitative prediction of process outcomes, topics are examined in mathematical as well as descriptive terms.

Classes: Rm. 160, H.R. MacMillan Building
M 9:00 - 9:50 am
W 9:00– 9:50 am
F 9:00 - 9:50 am and 12:00 – 12:50 pm

Instructor: Dr. Gary Sandberg
Gary_Sandberg@bcit.ca

Office: TBA

T.A.: Mohammed Islam

*All course content-related and homework-related questions to your instructor and/or T.A. should be posted to the **Connect discussion board** (for all to see and learn from!). In the event you need to send a message to your instructor directly/privately, please send to: Gary_Sandberg@bcit.ca

Evaluation

Midterm Exam	23%
Assignments* (5 @ 3% each)	15%
Group Project Poster & Abstract**	15%
Final Exam***	<u>47%</u>
TOTAL	100%

* All assignments must be completed and submitted individually (see Plagiarism Notice).

**One poster and one abstract is to be submitted on behalf of the group (see Plagiarism Notice))

*** **A Final Exam mark of $\geq 50\%$ must be achieved to pass the course.** The final exam will test approximately 1/4 pre-midterm & 3/4 post-midterm content.

Required Materials

Lesson slideshows, assignments, & links to *required* UBC Library e-readings will be posted on Connect. You are responsible for printing materials from Connect if you wish to bring them to class in paper format.

Fellows, P. (2009). *Food Processing Technology: Principles and Practice*. VCH Publishers. Available as e-book via Connect link to UBC Library.

Assignments

Five assignments are included in this course; **they will be posted in the Connect course page.**

- Assignments must be completed and submitted individually
- Assignments are to be completed by-hand (as answers are calculation and graph-based)
- **Assignments are to be handed in to course T.A. by 12:50 pm at the classroom as per dates designated on the attached course schedule.**

Group Project (Poster Display & Abstract)

The **Group Project topics will be posted in Connect after the SSC course drop/ withdrawal date; at that time you will need to join one topic ('Group')**. *NOTE: Group/topic choice will be on a first-come-first-served basis.* A 'Group-only' discussion forum and wiki will be provided to each group on Connect.

- Group Poster Display date/time based on Group number, as per attached course schedule.
- Group Poster Abstract is to be provided in hard-copy to Instructor at date/time of Group Poster Display.

Plagiarism Notice

Direct copying and submission of other students' work, whether from the same year or from a previous year, constitutes plagiarism and is subject to the UBC Student Conduct and Discipline Policy < <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,0,0>>.

Course Schedule - Winter/Spring 2014

Jan-05 L1 - Course Introduction & Food Degradation vs. Preservation	Jan-9 L2- Water & Water Activity in Foods L3 - Moisture Sorption Isotherms
Jan-12 L4 - Predicting Water Activity	Jan-16 <i>TA Tutorial (9:00-9:50) - Prep. for Assignment 1 (Jan. 14)</i>
Jan-19 L5- Water Activity & Food Stability	Jan-23 L6 - Predicting Aw Equilibrium & Aw by Solutes <i>TA Tutorial (9:00-9:50) - Prep. for Assignment 2 (Jan. 21)</i> Assignment 1 due, 1:50 pm
Jan-26 L7- Food Dehydration: Psychrometrics & Drying Curves	Jan-30 L8 - Food Dehydration: Calculating Food Dehydration Rate <i>TA Tutorial (9:00-9:50) - Prep. for A3, A1 handed back (Jan. 28)</i> Assignment 2 due, 1:50 pm
Feb-2 L9 - Food Dehydration: Intermediate Moisture Foods	Feb-6 L10 - Food Dehydration: Technologies <i>TA Tutorial (9:00-9:50) - Assignment 2 handed back (Feb.4)</i> Assignment 3 due, 1:50 pm Instructor - Midterm Review
Feb-11 <i>TA - Assignment 3 handed back (9:00-9:30)</i>	Feb-13 Midterm Exam - includes Lessons 1-10 Group Project Sign-Up deadline
Feb-16 <i>Midterm Break</i>	Feb-20 <i>Midterm Break</i>
Feb-23 L11 - Introduction to Food Packaging L12 - Food Packaging Materials & Strength	Feb-27 L12 - cont'd Midterm handed back
Mar-2 L13 - Food Packaging Plastics: Recycling & Safety	Mar-6 L14 - Packaging Permeability & Shelf-Life Determination <i>TA Tutorial (9:00-9:50) - Prep. for Assignment 4 (Mar. 4)</i>
Mar-9 L15 - Food Irradiation	Mar-13 L16 - Microwave Technology: Theory & "Mysteries Solved" <i>TA Tutorial (9:00-9:50) - Prep. for Assignment 5(Mar. 11)</i> Assignment 4 due, 1:50 pm
Mar-16 L17 - Microwave Technology: Applications L18 - High Hydrostatic Pressure Processing (HPPP)	Mar-20 L18 - cont'd <i>TA Tutorial (9:00-9:50) - Assignment 4 handed back(Mar. 19)</i> Assignment 5 due, 1:50 pm
Mar-23 Group Poster Display & Abstract Handout Groups 1-5 (12:00-12:50 pm) Groups 6-10 (1:00-1:50 pm)	Mar-27 Group Poster Display & Abstract Handout Groups 11-15 (12:00-12:50 pm) <i>TA Tutorial (9:00-9:30) - Assignment 5 handed back (Mar.25)</i>

<p>Mar-30 L19 - Novel Food Processing Technologies: Pulsed Electric Field, Oscillating Magnetic Field, Pulsed Light/UV, Ultrasound</p>	<p>Apr-2 (April 3 is Good Friday) L19 - Novel Food Processing Technologies: Pulsed Electric Field, Oscillating Magnetic Field, Pulsed Light/UV, Ultrasound</p>
<p>Apr-6 (Easter Monday) No class</p>	<p>Apr-10 L19 cont'd (if needed). Final Exam review</p>