



NUTR*3390 Applied Nutritional and Nutraceutical Sciences I

Fall 2018
Section(s): C01

Department of Human Health and Nutritional Sciences

Credit Weight: 0.75

Version 1.00 - August 30, 2018

1 Course Details

1.1 Calendar Description

This course will introduce and develop key concepts of the applied aspects of the Nutritional and Nutraceutical Sciences. Enrichment of foods with health protectant chemicals, establishing biomarkers and risk indicators of disease, testing of bioavailability/efficacy to support basic health claims, health assessment and nutrigenomic analysis as adjuvants in the effective use of functional foods and nutraceuticals, and regulatory and marketing/consumer issues are topics that will be addressed.

Pre-Requisite(s): NUTR*3210

Restriction(s): Registration in the B.Sc. NANS major or minor and the B.Sc. FFAN minor.

1.2 Course Description

The course is designed to explore, and provide experiential learning opportunities in, the two major areas of Nutritional and Nutraceutical Sciences - product formulation/development and product testing of safety, efficacy and effectiveness. The course also focuses on the analytical techniques which support these areas.

1.3 Timetable

Lecture	Mon / Wed / Fri 10:30-11:20	GRHM Hall 2310
Lab 1	Tues. 2:30 - 5:20	FS-Annex 146
Lab 2	Wed. 1:30 - 4:20	FS-Annex 146

1.4 Final Exam

None

2 Instructional Support

2.1 Instructional Support

Instructor: Dr. W.J. Bettger (wbettger@uoguelph.ca)

Teaching Assistants: Katarina Doma MSc (kdoma@mail.uoguelph.ca)

Jess Burns MSc (jmacki06@mail.uoguelph.ca)

Office Hours: by appointment (e-mail)

3 Learning Resources

3.1 Resources

No textbook required.

4 Learning Outcomes

4.1 Learning Outcomes

Learning Outcomes of NUTR*3390

A. General Skills

1. Problem Solving & Critical Thinking

- Critically evaluate ideas and arguments by gathering and integrating relevant information, assessing its credibility, and synthesizing evidence to formulate a position.
- Identify problems and independently propose solutions using creative approaches, acquired through interdisciplinary experiences, and a depth and breadth of knowledge/expertise.

2. Communication

- Accurately and effectively communicate ideas, arguments and analyses, to a range of audiences, in graphic, oral and written form.

3. Professional and Ethical Behaviour

- Demonstrate personal and professional integrity by respectfully considering diverse points of view and the intellectual contribution of others, and by demonstrating a commitment to honesty and equity, and awareness of sustainability, in scientific practice and society at large.
- Collaborate effectively as part of a team by demonstrating mutual respect, leadership, and an ability to set goals and manage tasks and timelines.
- Plan for professional growth and personal development within and beyond the undergraduate program.

B. Degree Related Skills & Knowledge

1. Scientific Method

- Apply scientific methods and processes by formulating questions, designing investigations and synthesizing data to draw conclusions and make scientifically-based decisions.

2. Breadth & Depth of Understanding in a Particular Scientific Discipline

- Apply the core concepts of math, physics, chemistry and biology to Nutritional and Nutraceutical Sciences.
- Demonstrate knowledge of the ethical, economic, commercial and social implications of scientific discovery and technological innovation.
- Interpret current scientific concepts and gaps in knowledge (and methods) in light of the

historical development of the discipline of Nutritional and Nutraceutical Sciences.

- Apply an integrated and broad foundation in life sciences to problems related to human nutrition, nutri-pharmacology, nutri-toxicology and health.
- Demonstrate knowledge of the impact of human nutrition, nutri-pharmacology and nutri-toxicology on health and performance, and provide mechanistic explanations for associated biological events at the molecular, cellular and whole organism levels of organization.
- Demonstrate an understanding of the science of prospective health; the pivotal role of individual nutrigenomic and nutri-epigenetic analyses and the critical role of evidence-based, lifestyle medicine in the effective application of this prospective health approach to healthcare.
- Define and analyze the interactions of nutrition and exercise on the metabolic control of health and disease.

3. Scientific Technology & Techniques in a Scientific Discipline

- Critically analyze experimental design, data analysis and interpretation in human nutrition, nutri-pharmacology and nutri-toxicology research.
- Demonstrate proficiency in the formulation and development of a functional food or nutraceutical product.
- Design, analyze and interpret results from a human clinical trial using a functional food or nutraceutical as the experimental intervention.

Upon completion of this course, a student will be able to:

- apply the integrated knowledge of their University degree and write both a formal essay and an (public domain) editorial on a topic relevant to Nutritional and Nutraceutical Sciences.

-critically analyze published research on a randomized controlled human clinical trial and subsequently, design, present and orally defend a follow-up experiment.

- work effectively as a workplace-relevant team to conceptualize, design, prototype, and present (public exposition) a functional food or nutraceutical product. The product exposition will also include creation and presentation of the product packaging and a marketing strategy.

- apply their knowledge and understanding of Nutritional and Nutraceutical Sciences career pathways to develop a personal and professional development plan for the remainder of their university undergraduate degree program.

5 Teaching and Learning Activities

5.1 Activities

Monday Discussions/Demonstrations: Week 1 to Week 12 - Special Topics in FFN Product Design and Development

Wednesday and Friday: Discussions/Demonstrations: Week 1 to Week 12 – Special Topics in Product Testing for Safety, Efficacy and Effectiveness

Lab Schedule: Week 1 - 4 Skills and Attributes of Career Development / Consultations for the Major Projects

Week 5 - 6 Human Nutrition/Natural Health Product Studies

Week 7 - 8 Sensory Analysis

Week 9 - 10 Regulatory Affairs

Week 11 - 12 Health Assessment and Diagnostics

6 Assessments

6.1 Marking Schemes & Distributions

Course Evaluation:

Students will be evaluated in the course based on their performance on three major projects, a series of self-reflections and a final integrating writing assignment. Project #1 is the development of a functional food or cosmeceutical product along with an effective delivery system (for details see handout #1). Project #2 is a Power Point-based 15 minute oral presentation on the testing of a functional food, nutraceutical or cosmeceutical product for safety, efficacy or effectiveness (for details see handout #2). Project #3 is an opinion/editorial article written about a current issue in nutritional and nutraceutical sciences (see handout #3 for details). Self-reflections will be focused on professional development and career planning and will be extensions of the laboratory exercises and activities. The final integrating writing assignment in the course, which will be in the form of short answer/short essay, will extend lecture and lab material and will be a take home assignment (see handout #4 for details). The weighting of the marks will be Project #1, 40%, Project #2, 20%, Project #3, 20%, self-reflections, 10% and the integrating writing assignment, 10%.

Schedule of Assignments and Evaluations (link to Learning Outcomes)

Project #1 Group Product Development Project - Wed. Nov. 21 (A1,2,3,B1,2,3)

Project #2 Power Point-based Oral Presentation - Mon. Nov.5 (A1,2,B1,2,3)

Project #3 Editorial Article- First Submission - Wed. Oct. 10, Second Submission (revised after edits) - Wed. Oct. 31

(A1,2,3, B1,2)

Self-Reflections on Professional Development - Fri. Sept. 28, Fri. Oct. 26 and Wed. Nov. 28
(A1,A2,B2)

Final Integrating Writing Assignment - Mon. Dec. 10 (A1,2,3,B1,2,3)

7 University Statements

7.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

7.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The regulations and procedures for [Academic Consideration](#) are detailed in the Undergraduate Calendar.

7.3 Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for [Dropping Courses](#) are available in the Undergraduate Calendar.

7.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

7.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance, and not later than the 40th Class Day.

More information: www.uoguelph.ca/sas

7.6 Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The [Academic Misconduct Policy](#) is detailed in the Undergraduate Calendar.

7.7 Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

7.8 Resources

The [Academic Calendars](#) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.
