



*School of Arts & Science*

DEPARTMENT OF CHEMISTRY & GEOSCIENCE

**Chemistry 117**  
**INTRODUCTION TO NUTRITION**

*Winter Semester 2012*

**COURSE OUTLINE**

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This course concerns fundamental aspects of nutrition in relation to optimal health. Topics include: the nature and nutritional significance of dietary proteins, lipids (fats and oils), carbohydrates, vitamins and minerals, energy metabolism, dietary standards, food additives, and the relationship of nutrition to exercise, cardiovascular disease, obesity, and aging.

*Please note: This outline will not be kept indefinitely. It is recommended students keep it for their records.*

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**1. Instructor Information**

- (a) Instructor    Jamie Doran, Ph.D.
- (b) Office hours    Monday, 1:30 to 2:20 pm  
                          Tuesday, 11:30 to 1:20 pm  
                          Wednesday, 1:30 to 2:20 pm  
                          Thursday, 1:30 to 2:20 pm  
                          Friday, 1:30 to 2:20 pm

*Everyone is welcome whenever my office door is open.*

*Appointments may be made to meet at times other than those listed above.*

*Office hours will be extended prior to exams.*

- (c) Location    Room 350C, Fisher Building, Lansdowne Campus
- (d) Phone        250.370.3441
- (e) E-mail        jdoran@camosun.ca

## 2. Intended Learning Outcomes

*At the end of the course students will be able to:*

1. Explain the fundamental roles and importance of dietary proteins, lipids, carbohydrates, vitamins and minerals and be able to make basic decisions about relevant aspects of their personal diets.
2. Evaluate information concerning the fundamental aspects of diet, including certain dietary supplements, and relate this information to human health.

## 3. Required Materials

### (a) Text

*Nutrition: A Functional Approach*. Second Canadian Edition. 2010.

Au. J. Thompson, M. Manore & J. Sheeshka.

Pearson-Benjamin Cummings & Pearson Education Canada, Toronto.

Textbooks are available from the Lansdowne Campus Book Store.

A copy is available in the reserve library at the Lansdowne Campus.

### (b) Course package

*“Chem 117 \* Introduction to Nutrition: Course Study Guides, Chapter Outlines & All the Practice Questions & Answers You Could Want to Make the Course Enjoyable, and for Easily & Optimally Using the Textbook, Nutrition - A Functional Approach. Second Canadian Edition, 2010.”* is also available from the Lansdowne Campus Book Store. This 175 page course package is required material that will guide your reading and study efforts in a most efficient manner; effectively facilitating the growth your knowledge base in nutrition while it helps you to build confidence in tackling the complex field of nutrition in an introductory, yet fairly substantial, manner. Each study guide includes an assigned reading list for the chapter, a listing of the most salient figures and tables, a list the relevant discipline-specific vocabulary, and a large set of practice questions in various formats (and, in most cases, their answers).

### (c) Supplementary materials

Articles from scientific and medical primary journals, review publications and newsletters, including opinion papers on controversial topics and ‘myths’ concerning nutrition, will provided as required or requested to maintain an up-to-date curriculum and to promote the critical thinking which must accompany consideration of human nutrition.

Nutrition is both a complex subject and a relatively new field of science in which the knowledge base is rapidly advancing. Hence, it is not uncommon for current reports in nutrition to provide incomplete, conflicting and/or controversial views.

#### 4. Course Content and Schedule

Credits	3 credits
In-class workload	4 hours per week <ul style="list-style-type: none"><li>• Four 50-minute lectures per week.</li></ul>
Out-of-class workload	4 hours per week
Number of weeks	14 weeks
Pre-requisite courses	Chemistry 11 Biology 11 or 12 English 12 or assessment

#### Course times and locations

<u>Lectures</u>	Monday, 12:30 - 1:20 PM Fisher Building, Room F360
	Wednesday, 12:30 - 1:20 PM Fisher Building, Room F360
	Thursday, 12:30 - 1:20 PM Fisher Building, Room F338
	Friday, 12:30 - 1:20 PM Fisher Building, Room F306

#### Lecture Outline

To benefit most from the course, students should prepare for lectures by reading the relevant subject materials in the text book in advance. The chapter study guides in the course package provide a very detailed guide to encourage reading ahead and to make your reading efficient and effective.

##### I. Introduction - Nutrition & Health

*Chapter One*

- Nutrition and the roots of good health
- Classes of nutrients
- Nutrient intake in relation to energy intake
- Essential nutrients including vitamins and minerals
- DRI, RDA, AI, UL, EER & other measures of nutritional requirements
- Evidence-based medicine and related approaches to nutritional research
- Bases for the controversies in the field of nutrition
- Reliable sources of nutritional information

##### II. Diet & Nutrition

*Chapter Two*

- Bases of a nutritious diet
- Food labelling & interpretation
- Canadian & US dietary guidelines including dietary 'pyramids'
- DASH, Zone, Atkins, Orkins, Mediterranean and other dietary plans
- The obesity epidemic

### III. Digestion, Absorption and Elimination

*Chapter Three*

- Appetite vs. hunger
- Gastrointestinal function - digestion and absorption
- Gastrointestinal regulation including the brain-gut axis
- Gastrointestinal impairments & disease
- Probiotics: Are they useful?

### IV. Carbohydrate Nutrition

*Chapter Four*

- Types and sources of carbohydrates
- Carbohydrate metabolism & hormonal regulation
- Glycemic index and glycemic load
- Dietary carbohydrate intake & wellness
- Alternate sweeteners
- Diabetes & other diseases related to carbohydrate metabolism
- Nutritional strategies for exercising diabetic individuals
- Nutrition and exercise to relieve diabetics of insulin supplementation

### V. Lipid Nutrition

*Chapter Five*

- Biochemistry and dietary sources of lipids (fats & oils).
- 'The good, the bad, and the trans'
- 'Fats' as fuel for exercise.
- Essential omega-fats, and fat-soluble vitamins
- Dietary 'fat' intake for optimal wellness
- 'Fats' and risks for cardiovascular and other diseases
- Reversing poor conditions of cardiovascular health

### VI. Protein and Amino Acids

*Chapter Six*

- Essential and non-essential amino acids
- Protein biochemistry & dietary requirements
- Protein & amino acid supplements - truth & myths
- Protein metabolism and wellness
- Protein intake and optimal training effects
- Consideration of vegetarian diets
- Disorders and diseases related to protein intake
- High protein diets & potential weight loss

### VII. Fluid & Electrolyte Balance

*Chapter Seven*

- Functions of fluids and electrolytes
- Maintaining proper hydration
- Effects of hydration and dehydration on exercise and wellness
- Disorders related to fluid and electrolyte balance: dehydration, heat stroke, hypertension and others

- Sport beverages: Help or Hype?

#### VIII. Antioxidant Nutrients

*Chapter Eight*

- Chemistry and biochemistry of antioxidants
- Antioxidant vitamins (A,C,E) and minerals (e.g. selenium)
- Disorders related to oxidation: cancer, cardiovascular disease & vision impairment
- Are vitamin and mineral supplements necessary?

#### IX. Relationship of Nutrition to Bone Health

*Chapter*

*Nine*

- Chemistry and biochemistry of bone health
- Calcium, phosphorous, magnesium & vitamin D intakes
- Osteoporosis
- Nutrition in support of exercise to slow the progression of osteopenia and osteoporosis

#### X. Energy Metabolism & Blood Health

*Chapter Ten*

- Biochemistry & bioenergetics: Metabolism and exercise
- Energy demands of muscle activity and metabolism
- Blood glucose, and stored glycogen, and fats: regulation of bioenergetics
- Role of B vitamins and relevant essential elements in bioenergetics
- Dietary energy sources & supplements
- Assessing energy expenditure
- Nutrition and blood health
- Disorders of energy metabolism

#### XI. Weight Management

*Chapter Eleven*

- Healthy body weight(s) and composition(s)
- Various methods for estimation of percent body fat
- Nutrition and exercise to reverse obesity

#### XII. Nutrition and Exercise

*Chapter Twelve*

- Physical activity vs. exercise vs. fitness
- Nutrition, metabolism, bioenergetics & physical activity
- Optimal nutrition for exercise & athletics
- Nutritional & other supplements - A very critical examination.

The remaining four chapters in the text focus on eating disorders and disordered eating, life cycle nutrition, and food safety. The former two areas are covered in part within earlier chapters, and, in large part, can be readily expanded upon whenever students are interested although the psychology of eating disorders is beyond the scope of this course. Food safety is primarily a microbiological and toxicological subject that can be readily covered if interest exists.

## 5. Basis of Student Assessment (Weighting)

### (a) Assignments (combined value: 20% or 25% of final grade)

1. Detailed analysis and interpretation of a food label .....5%
2. One-day or three-day (or week-long\*) food journal & analyses.....5% (\*or 10%)
3. Critical analysis of a popular diet or supplement .....5%
4. Critical examination of a controversial topic in nutrition.....5%

The dates for submission of each assignment will be provided at appropriate times during the semester, in coordination with the coverage of relevant topics in lectures.

### (b) Term Tests (combined value: 40% of final grade)

#### Term Test #1

This test covers material from approximately the first third of the course. The delineation of material that you are responsible for will be provided about one week before the date of the test. This is a 50 min test that will be written on **Friday, February 10<sup>th</sup>**. The results of this test contribute to 20% of the final grade.

#### Term Test #2

This test covers relevant material from approximately the second third of the course. The delineation of material that you may be responsible for on this test will be provided in class about one week before the date of the exam. This is a 50 min test that will be written **Friday, March 16<sup>th</sup>**. The results of this test contribute to 20% of the final grade.

*If either or both of the term tests is missed due to illness or for any other justifiable reason (accompanied by appropriate documentation), a student may choose to write another version of that exam at a mutually agreeable time, or add the percentage value of that term exam (20%) to the percentage value of the final exam.*

### (c) Final Exam (value: 45% of final grade; 40% if a week-long food journal with analyses is produced)

The final exam grade contributes a value of 45% to the final grade. The emphasis is on material not covered previously the midterm exam, and on material that integrates the information from various sections of the course. The time and location of this 3 h final exam will be published by the College during the semester as indicated in the College Calendar.

Attendance at the final exam is mandatory. Appropriate documentation must accompany any explanation for absence.

## 6. Grading System

### Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

### Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at [camosun.ca](http://camosun.ca) or information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	<i>In progress:</i> A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	<i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy

E-1.5 at [camosun.ca](http://camosun.ca) for information on conversion to final grades, and for additional information on student record and transcript notations.

## 7. Recommended Materials or Services to Assist Students to Succeed Throughout the Course

The study guides provided in the course package will prove highly valuable. Handout materials will supplement information provided in lecture and in the textbook. In addition, the web links provided in the text, at the corresponding website, and in lecture will broadly expand the learning resources which further understanding and appreciation of the curriculum of this course. Practice problems provided in the course package, the text, and the corresponding website will highlight all salient material and create comfort and confidence with the curriculum.

### LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Registrar's Office or the College web site at <http://www.camosun.bc.ca>

*Please Note:*

*Students may not use recording devices in the classroom without the prior permission of the instructor. However, the instructor's permission is not required when the use of a recording device is sanctioned by the College's Resource Centre for Students with Disabilities in order to accommodate a student's disability and when the instructor has been provided with an instructor notification letter which specifies the use of a recording device. Recordings made in the classroom are for the approved student's personal use only, and distribution of recorded material is prohibited.*

### ACADEMIC CONDUCT POLICY

There is an Academic Conduct Policy. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.



[www.camosun.bc.ca/divisions/pres/policy/2-education/2-5.html](http://www.camosun.bc.ca/divisions/pres/policy/2-education/2-5.html)