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**ACKNOWLEDGEMENT**

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UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwm̓əθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.

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**COURSE INFORMATION**

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Course Title	Course Code Number	Credit Value
Fundamentals Of Nutrition	FNH 350 002	3

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**LECTURE TIME** Tuesday and Thursday, 9:30 – 11:00 am

**LOCATION** 2207 Main Mall, Earth Science Building (ESB), Room 1012

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**PREREQUISITES** You must have FNH 250 and one of BIOL 201, BIOC 202 as pre-requisites.

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**CONTACTS**

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We are here to support your learning; for confidential questions, you may contact Dr. Zahra Ezzat Zadeh at “zahra.ezzatzadeh@ubc.ca”. For questions related to the course content, please contact the teaching team (Dr. Zahra Ezzat Zadeh and Teaching Assistants).

Course Instructor(s)	Contact Details	Office Location	Office Hours
Dr. Zahra Ezzat Zadeh PhD, MS, RD.	zahra.ezzatzadeh@ubc.ca	FNH Room322	Tuesday 11:00 am-12:30 pm In person, directly after class; or on Zoom by appointment.

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**OTHER INSTRUCTIONAL STAFF**

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Teaching Assistants	Contact Details	Office Hours
Patricia Acosta PhD Student Human Nutrition		By appointment, in person or Zoom
Minh Nguyen Master Student Human Nutrition		By appointment, in person or Zoom
Sanaz Mehranfar PhD Student Human Nutrition		By appointment, in person or Zoom
Amelie Zhang PhD Student Human Nutrition		By appointment, in person or Zoom

This syllabus will be updated within the first two weeks of classes (see Canvas for updated information).

## COURSE CONTENT

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This course will cover the macronutrients (carbohydrates, lipids, and protein), fiber, and alcohol. We will also address energy metabolism. We will discuss the structure and function of the macronutrients and fiber; the digestion, absorption and metabolism of macronutrients, fiber, and alcohol; and the metabolic and health implications of excessive and inadequate intake of macronutrients and energy.

## LEARNING OUTCOMES/ COURSE OBJECTIVES

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Upon completion of this course, students should be able to:

1. Describe key features of the structure of various classes of macronutrients and of fiber.
2. List the functions and food sources of each of the macronutrients and fiber.
3. Explain the processes of digestion and absorption for the macronutrients, fiber and alcohol.
4. Describe the ways in which the macronutrients are transported, stored and metabolized by the body, as well as the means by which waste products of their metabolism are disposed of.
5. Describe the methods used to determine the human requirements for protein and energy.
6. List the factors affecting the requirements for protein and energy, and explain how these factors influence the requirements.
7. Describe the metabolic effects of consuming either excessive or inadequate amounts of the macronutrients, fiber and energy.
8. Describe the effects of feeding and fasting on metabolism.

## COURSE STRUCTURE AND PARTICIPATION

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This course is composed of Classes consist of lectures and one in-class discussion. You are encouraged to review the course notes before the class. If you wish, you may print the course notes. The course notes will be an outline of the slides used in the lecture and will be posted on CANVAS. Please see the course schedule for exact dates and topics. Class participation is encouraged. If you wish to do well in this course, it is important to attend and participate in all the lectures. Attendance is not participation; participation means “taking part” in class. If you miss a lecture, it is YOUR responsibility to obtain notes from another student in the class.

## LEARNING MATERIALS

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Canvas will be used as the online learning platform for the course. Outline course notes will be posted on CANVAS for you to review before each class and as option to easier follow the class. You are responsible for all materials covered in the class, whether it is included in the notes or not.

### REQUIRED LEARNING MATERIALS:

- **TEXTBOOK:** Gropper SS, Smith JL, Carr TP (2021). **Advanced Nutrition and Human Metabolism**. 8<sup>th</sup> Edition. Cengage Learning. This textbook is highly recommended. Copies of this text are available in Woodward Library and for purchase in the UBC bookstore.
- **Sources for additional readings:** Frayn KN, Evans R (2019). **Metabolic Regulation – A Human Perspective** (4<sup>th</sup> Edition. Wiley); Copies of this text are available in the Reference Section for Nutrition, Woodward Library.
- **Readings for course discussions** will include journal articles. Web-links for access to the

journal articles will be posted on CANVAS prior to the scheduled course discussions.

### LEARNING RESOURCES

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1. UBC library, including both print and online collections (<https://www.library.ubc.ca/>)
2. PubMed (<https://www.ncbi.nlm.nih.gov/pubmed>)

### COURSE ASSESSMENTS

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Midterm exam (Thursday, March 6 <sup>th</sup> , 2025)	26%
Final exam (TBA)	40%
In-class Quizzes on Canvas (in total 4; each worth 5%, except Quiz 1 – worth 8%)	23%
In-class Discussion (in-class activity)	3%
Take-home Projects (in total 2; 3% each)	6%
Class participation (80%, assessed by iClicker)	2%

Format of the four quizzes (held in class using CANVAS online quiz platform) is multiple-choice, true/false and short-answer questions. Students will be required to complete each quiz in class.

Midterm and final examinations will cover materials posted on CANVAS as well as those presented and discussed in class. The midterm and final exam will be composed of multiple-choice, true/false, and short/long-answer questions, and will be held in person.

Make-up exams (midterm or final) will only be given to students, according to the university policies, with a valid excuse. Normally, the student must take the make-up exam within one week of the missed exam.

**CLICKER REQUIREMENT:** During Lectures, Clicker questions will be presented and the iClicker application will be used to register students' responses.

### EXPECTATIONS OF STUDENTS IN THE COURSE:

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1. Attend class. You are expected to come prepared to listen, take notes and participate in class.
2. Review the course material and related course chapters of the textbook. Test yourself. Looking at the material multiple times and trying to recall (not just read) will help solidify your understanding.
3. Use the resources available to you (instructor, textbook, Canvas site) to enhance your learning experience. ASK QUESTIONS if you do not understand something.
4. Do your own work and acknowledge other's ideas. Academic honesty is a core value of scholarship and is taken extremely seriously in this course. Failure to follow the appropriate policies, principles, rules, and guidelines of the University with respect to academic honesty

may result in disciplinary action. All potential cases of academic misconduct will be investigated using the protocol established by the Faculty of Land and Food Systems.

5. Find ways to apply the concepts to your own lives and connect them with concepts learned in other courses. Being invested in the course will help you learn and increase motivation for studying.
6. If you have a complaint about the course, PLEASE DISCUSS IT WITH ME. Constructive suggestions are welcome.

### ASSISTANCE AVAILABLE TO STUDENTS

You are strongly encouraged to meet with the instructor if you have questions, comments, or suggestions for the course. You may also post questions about course material on the CANVAS discussion board for your fellow students; note that the instructor will not be available on the discussion board to answer your questions.

### SCHEDULE OF TOPICS

Week	L#	Date	Topic	Readings; Textbook
Week 1	1	January 7	Introduction and Review of Gastrointestinal Tract and Related Organs	Chapter 2
	2	Jan 9	Carbohydrates: Functions, Classes, Structures, Food sources and Digestion	Chapter 3
Week 2	3	Jan 14	Carbohydrates: Absorption, Glucose Transport, Glucose Control	Chapter 3
	4	Jan 16	Carbohydrate Metabolism: Glycolysis, Tricarboxylic Acid Cycle	Chapter 3
Week 3	5	Jan 21	Carbohydrate Metabolism: HMP shunt, Gluconeogenesis, Glycogenolysis, Glycogenesis	Chapter 3
	6	Jan 23	Carbohydrate metabolism at Fasting and Fed State	Chapter 3
Week 4	7	Jan 28	Fiber: Definition, Properties, Physiological Effects, Role in Chronic Disease	Chapter 4
	8	Jan 30	Lipids: Properties, Classification, and Digestion	Chapter 5
Week 5		February 4	<b>Quiz 1</b>	
	9	Feb 6	Lipids: Absorption, Lipoprotein, Transport	Chapter 5
Week 6	10	Feb 11	Lipids: Effect of dietary and lifestyle factors on blood lipid profile and health benefits of omega-3-fatty acids	Chapter 5 <i>Project 1 Due</i>
	11	Feb 13	Lipids: Lipid Metabolism at Fed and Fasting State	Chapter 5
Week 7		Feb 17-21	BREAK	

Week 8	12	Feb 25	Alcohol	Chapter 5
	14 15	Feb 27	Protein: Function, Structure, and Digestion Absorption and Intestinal Amino Acids Metabolism	Chapter 6
Week 9	13	March 4	<b>Quiz 2</b> Review for Midterm Exam	
		<b>March 6</b>	<b>Midterm Exam</b>	<b>Lectures 1-12</b>
Week 10	16	March 11	Protein: Anabolism and Catabolism	Chapter 6
	17 18	March 13	Protein: Protein: Quality, Assessment, Requirements	Chapter 6 <i>Project 2 announced</i>
Week 11	18	March 18	<b>Quiz 3</b> Protein: Protein Requirements (con)	Chapter 6
	19	March 20	Integrated Metabolism Part I	Chapters 7
Week 12	20	March 25	Integrated Metabolism Part II	Chapter 7
	21	March 27	Energy: Energy Balance and Imbalance and Body composition	Chapter 8
Week 13		April 1	<b>Quiz 4</b> In-class Course Discussion	
	22	April 3	Energy: Components of Energy Expenditure and Methods for assessment of energy expenditure	Chapter 8
Week 14	23	April 8	Final Review	<i>Project 2 Due</i>
			<b>Final Exam (Comprehensive)</b>	<b>All Lectures (Comprehensive Exam)</b>

**This Course Schedule is dynamic and may change.** Readings, due dates, etc. may be amended throughout the semester. **An updated Course Schedule will be posted to Canvas on an ongoing basis.** Please check it frequently.

#### POLICIES AND RESOURCES TO SUPPORT STUDENT SUCCESS

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 at the following link: <https://senate.ubc.ca/policies-resources-support-student-success>

## ACADEMIC INTEGRITY

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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 (on Academic Honesty and Standards), may be found in the [Academic Calendar](#). All course work is required to be submitted to Turnitin.com for review.

## UNIVERSITY POLICIES

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Details of the policies and how to access support are available on [the UBC Senate website](#).

## COPY RIGHT

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