



understand the major nutritional problems that affect individuals and populations from conception and throughout the life cycle; and understand the scientific basis for nutritional recommendations brought before the scientific and lay communities.

### **Course Objectives/Outcomes:**

By the end of this course, students will:

- Categorize the accepted name(s) of each macronutrient and micronutrient ; their common food sources; recommended intake; major functions and biochemical role in the body
  - For each nutrient, be able to explain their digestion, mode of absorption, transport, and excretion from the body.
  - Explain the health effects associated with a deficiency or toxicity of each nutrient, and any potential major public health problems
  - Be able to summarize the dietary recommendations of the major groups/organizations in the United States that recommend what to include in a healthy diet
  - Be able to discriminate between sound and questionable nutrition information sources.
  - Assess their own dietary habits and physical activity levels
  - Compare and contrast their own dietary intake with nutritional recommendations
  - Be able to identify sources of the nutrients in their own diet
  - Know how to critically evaluate the quality of their own diet
  - Evaluate the quality and health implications of the class' average nutrient intake
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### **Textbook and Software:**

**STUDENTS ARE STRONGLY ENCOURAGED TO PURCHASE THE REQUIRED TEXTBOOK AND SOFTWARE BEFORE THE CLASS STARTS.**

The print, rental, and e-book versions of the text are available on many websites (new and used). The software is available for purchase directly from the publisher at [www.cengagebrain.com](http://www.cengagebrain.com).

**Required text - Wardlaw's Perspectives in Nutrition** (McGraw-Hill, 10<sup>th</sup> edition, 2016), by Byrd-Bredbenner et al. (hardcover **ISBN 9781259918377**, looseleaf **ISBN 9781259918384**, ebook **ISBN 9780078021411**). The 9<sup>th</sup> edition of this text is also acceptable. When ordering the print version of the text, keep in mind that it may take up to 2 weeks for shipping. (In the event that your textbook does not arrive by the start of class, please note that Chapters 1-3 of the 10<sup>th</sup> edition may be available online via Canvas with the instructor's permission).

**NOTE:** You are welcome to purchase the newly released 11<sup>th</sup> edition, but it is very expensive and few used copies are available yet (hardcover **ISBN 9781259709982**, looseleaf **ISBN 9781260163933**, ebook **ISBN 9781260501100**).

## **Required software (2 programs) -**

- 1.) **Diet and Wellness Plus** (web-based software program from CengageBrain) will be used for analyzing your 3-day diet record. The program is available in an online version to which you will have instant access (do not purchase the printed card with an access code). You may purchase either the [2-semester instant access \(ISBN 9781285856209\)](#) or a [1-semester access for less money \(ISBN 9781285856216\)](#) using these links. **Earlier versions of this software are unacceptable for this course.**

### **IMPORTANT NOTES ABOUT DIET AND WELLNESS PLUS:**

- Please consider cost-sharing the access code for this software with your fellow students. Each access code allows up to 10 student profiles. Feel free to post your request to share on Cafe McKay, the general class discussion forum on the Canvas course site. Instructions for sharing can also be found on Cafe McKay and under Announcements on the Canvas course site.
- **DO NOT** purchase a used access code for this software unless you know when it expires.
- **You do NOT need to enter a course number or course key to use this software.**
- Students must have access to Diet and Wellness Plus in time to complete Part 1 of the Diet Record assignment, which is due at the end of Week 2.

## 2.) **\*Poll Everywhere (FREE in-class response system)**

Poll Everywhere is a classroom response system that your instructor will use to ask questions during lectures and see the classroom's responses in real-time. Please follow the instructions below prior to the first class and **bring a web-enabled device to every class** so you can participate.

### **Setting up your Poll Everywhere Account**

**Use your Tufts credentials to log into Poll Everywhere.** When you go to <http://www.polleverywhere.com> click "Login" and enter your tufts email address. You will then see a pop-up directing you to click a link to login with your Tufts credentials. After logging in you'll be taken to the Poll Everywhere site.

### **Using Poll Everywhere in class**

Poll Everywhere can be accessed from any web-browser or from the Poll Everywhere mobile app (iOS and Android). For the best experience use the mobile app on your smartphone or tablet. For more information see the getting started guide:

<http://tuftsedtech.screenstepslive.com/s/19028/m/73482/l/812155-student-getting-started-guide>

**IMPORTANT NOTES ABOUT USING POLL EVERYWHERE:**

- **Always log in to Poll Everywhere before you participate.** If you do not log in your participation will not be associated with your name, and you will not get credit.
  - In the classroom, **always connect your device to the "Tufts\_Secure" wireless network** for a fast and secure connection. For more information visit: <https://it.tufts.edu/securewireless>.
  - If you run into any problems with Poll Everywhere please contact [edtech@tufts.edu](mailto:edtech@tufts.edu).
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**Assignments, Exams and Grade Evaluation:**

**Grade Evaluation:**

Assignment	Weight
Reflective Journal Entries (1 per chapter)	10%
In-Class Activities/Questions (Poll Everywhere)	5%
Presentation	10%
Weekly Quizzes (15)	15%
Exam I	15%
Exams II and III (10% each)	20%
Diet Record Project (Parts 1-5)	25%

**Grading Scale:**

A+ = 98.50 - 100

A = 92.50 - 98.49

A- = 90.00 - 92.49

B+ = 87.50 - 89.99

B = 82.50 - 87.49

B- = 80.00 - 82.49

(No credit for course if grade is below a B-, per Friedman School policy)

**Assignments, Exams and Activities:**

Assignments for this course include required readings, in-class participation (via Poll Everywhere and in-class activities), quizzes and reflective journal entries for each chapter, 1 presentation, 3 in-class exams, and a 5 part diet record project. Detailed instructions for each of these assignments are provided on the course website in Canvas, the Tufts learning management system.

**There are NO opportunities for extra credit work in this course.**

*Assignment dues dates/times*

**Due dates for all assignments are listed in this syllabus under the section labeled Lecture & Assignment Schedule below, and on the course site in Canvas.** Students are responsible for knowing these due dates, and adhering to them. All assignments, including quizzes, journal entries, and diet project parts, unless otherwise noted must be submitted on their specified due date no later than 11:59PM ET (Boston time). Points will be deducted from all late assignments unless prior arrangements have been made with the instructor.

**Assignments submitted after the posted due date/time will be assessed a 5 point per day penalty effective immediately after the deadline. To avoid a late penalty, you **MUST** email, text, or call the instructor at any time **PRIOR** to the posted due date/time to request an extension, and cc your TA.**

*Required readings, online lectures, and supplemental materials*

Students are required to complete all **required readings and view all online lectures PRIOR** to attending **EACH CLASS** (see Canvas course site for readings and online lectures). Materials from the readings and online lectures will be discussed during each class, and

**\*\*\*YOU MUST COME TO EACH CLASS PREPARED TO PARTICIPATE.\*\*\***

Supplemental readings, although not required, are highly recommended. Lecture outlines and lecture slides are provided for each chapter to enhance your learning experience. **You will find the lecture outlines and the learning objectives particularly helpful when preparing for exams.**

All readings, lectures, outlines, and supplemental materials can be found on the Canvas course site under **Modules**.

*Reflective journal entries*

**After each chapter/lecture** students will be asked to reflect upon the information presented with a 3-2-1 **journal entry**. This 3-2-1 journal entry requires you to write out the following for each assigned chapter: **3 things you learned that you can use in the real world OR in your chosen/intended field of study, 2 questions you still have, and 1 thing you thought was most interesting (or challenged your previous beliefs)**. In general, each entry will be due the evening prior to the following lecture (see the course schedule for exact due dates). Each journal entry should be properly labeled by chapter and date. Each journal entry is worth ~0.6% of your course grade. [Please review these examples before submitting your first journal entry.](#)

*Quizzes*

Graded **chapter quizzes** are provided to enhance your learning experience, and assess your understanding of the materials presented by highlighting concepts/issues of importance. **After each chapter/lecture**, students must complete a quiz based on the materials presented in the assigned chapter/lecture. Each quiz will be open for only one week starting just prior to the lecture corresponding to the respective chapter, and must be completed no later than the evening

prior to the following lecture. Students can take each quiz up to 2 times during this period, and your final score will be the average of the 2 attempts. Students may opt to take the quiz only once if they are confident of their answers. Feedback on the quiz questions will not be provided until after the due date. That is, students will not know whether their answers were correct or incorrect until the quiz has closed. All quizzes are open-book and timed (20 minutes per quiz). Each quiz is worth 1% of your course grade.

#### \*In-class questions

We will be using **Poll Everywhere**, which is an automated classroom response system to provide an opportunity for you to answer questions in class using a web-enabled device. (To access please refer to instructions above under **Textbook and Software**). Questions will be presented during class, and each individual will be able to choose an answer that will be recorded by my computer. Your participation in these exercises (whether or not you get the correct answer) will contribute towards your final grade. You are required to complete 80% of the questions asked in class from **Sept 3 through Dec 10** to receive full credit.

**Credit will not be given for absence due to illness or personal reasons, and you CANNOT make up missed questions.**

**Poll Everywhere** will be used during every class, and you are responsible for bringing your own device to each class. To use this system in class, students can use any modern web-enabled device, i.e., smartphone, tablet, or laptop (preferred). If you do not have one of these devices to use in class this semester, please email the instructor during the first week of class.

#### Presentation

To help synthesize their knowledge, and become more familiar with the nutrition science research literature, each student will be required to prepare a research poster summarizing the **evidence-based** health effects of an assigned food. Students will be given the opportunity to select their assigned food from a list provided by the instructor during the second week of class. A draft of their poster will be subject to peer review a week prior to their presentation. Detailed instructions will be provided on the Canvas course site. Please refer to the [general grading rubric](#) for this assignment. The purpose of this assignment is to ensure students meet the following course goals: 1) learn the components of a healthy diet and their health implications; 2) understand the major nutritional problems that affect individuals and populations from conception and throughout the life cycle; and 3) understand the scientific basis for nutritional recommendations.

#### Diet record project

For the **diet record project**, students will be asked to *a*) observe and record their own dietary habits for 3 days, and *b*) enter the data they have collected into the required software program, Diet and Wellness Plus, generate a 3-day average report, and *c*) provide a multi-part written assessment of their diet based on the information generated in this report that addresses specific questions posed by the instructor. This assignment is divided into 5 parts, due at specified intervals corresponding with the materials presented throughout the course. **Part 1 is due at the end of week 2** and will require students to record their own dietary intake for 3 days, and

generate a 3-day average intake report using Diet and Wellness Plus. Each part is worth 5% of your course grade. Please refer to the [general grading rubric](#) for this assignment, and to the **specific grading criteria** provided in the instructions for each part.

### Exams

Students must complete all 3 in-class exams. Each exam will be based on the materials presented in the required readings and lectures. Unlike the weekly quizzes, **each exam will require you to write comprehensive answers demonstrating your knowledge of and ability to apply the materials presented in this course.** All exams are closed-book/note, and your written answers must be in your own words. Please review the Tufts policies on plagiarism prior to taking each exam (links to these policies are provided under the **Academic Conduct** section below).

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### **Technical Support:**

Online course support is provided by Friedman support staff and/or IT Support. *Please do not contact faculty or TAs for technical support.*

- **Telephone:** (617) 627-3376
- **Email:** [canvas@tufts.edu](mailto:canvas@tufts.edu)
- **Hours:** 24 hours a day, seven days a week.

When reporting a problem, please include:

- The name and number of your course (e.g. "NUTR 202")
- Your operating system and browser
- A detailed description of the problem

This information will expedite the troubleshooting process. If you are sending a support request via email, please use your Tufts email address.

**Many problems with Canvas are a result of using an unsupported browser.** Please make sure you are using an up-to-date version of Firefox, Safari, Chrome, Edge, or Internet Explorer.

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### **Class Policies and Expectations:**

Students will have only one (1) opportunity to complete each assignment and exam.

**Students who are unable to complete an assignment on time for any reason should notify the instructor by email (preferred), text message or phone call PRIOR to the deadline** to request an extension and avoid the late penalty. Please also cc your TA, and indicate how much additional time you need (within reason). We will do our best to accommodate your needs.

Instructors and other university personnel may request that students submit written assignments to plagiarism prevention resources, websites, or other authoritative databanks, such as (but not

limited to) “turnitin.com,” or a similar site. These services compare student-produced documents with web content, newspapers, journals & magazines, books, student essays, and other data to determine the originality of student work.

**Students are expected to complete all assignments on their own**, i.e., without assistance from other students, faculty, etc., unless otherwise noted. All outside documents used in the preparation of students’ work must be properly referenced. (References to the textbook are not required).

### **Academic Conduct:**

Each student is responsible for upholding the highest standards of academic integrity, as specified in the Friedman School’s Policies and Procedures manual (<http://nutrition.tufts.edu/student/documents>) and Tufts University policies (<http://students.tufts.edu/student-affairs/student-life-policies/academic-integrity-policy>). It is the responsibility of each student to understand and comply with these standards, as violations will be sanctioned by penalties ranging from failure on an assignment and the course to dismissal from the school.

### **Communication Policy:**

**All communications will be sent to your Tufts email address - please check it at least once a day.** Please use "Cafe McKay," the online class discussion forum on Canvas, to post questions to your fellow students, or the instructor, about course-related issues that might also be of interest to your classmates. **Students should check this discussion board frequently** to seek out information for themselves before contacting the instructor. The answers to your questions may have already been posted by your peers, or the instructor. If you cannot find your answer on "Cafe McKay," or prefer privacy, **feel free to contact the instructor or TAs via email.** Please do not wait until the last minute if your question is urgent. Faculty will respond within 24 hours (please note my response time is often much sooner than this).

### **Accommodation of Disabilities:**

Tufts University is committed to providing equal access and support to all students through the provision of reasonable accommodations so that each student may access their curricula and achieve their personal and academic potential. If you have a disability that requires reasonable accommodations, please contact the Friedman School Assistant Dean of Student Affairs at 617-636-6719 to make arrangements for determination of appropriate accommodations. Please be aware that accommodations cannot be enacted retroactively, making timeliness a critical aspect for their provision.

### **INFORMATION FOR MPH STUDENTS ONLY - Public Health Nutrition Competencies:**

*This course delivers one of the foundational NUTRITION CONCENTRATION competencies for the MPH degree. You cannot pass this course unless you successfully complete and pass (B- grade or higher) all the series of competency-linked assignment(s). You will be expected to keep track of the grades on your competency-linked assignments. If you do not get a passing grade on any of the competency-based assignments, please arrange to meet with your instructor to discuss next steps.*

Competency	Evaluative instrument
Describe the components of a healthy diet and the national dietary and physical activity recommendations for healthy eating and physical activity	Passing grade on each part of the Diet Project (Parts 1-5)

### Lecture & Assignment Schedule:

\*This schedule is subject to modification at the instructor's discretion

DATE	ROOM	WEEK	TOPIC	ASSIGNMENT DUE DATES
Sept 3	Jaharis156	1a	Introduction to Course	Discussion 1 Posting - Sept 6, 1:30pm
Sept 6	Jaharis156	1b	Nutrition Overview	Ch 1 quiz, journal entry - Sept 9
Sept 10	Jaharis156	2	Basis of a Healthy Diet	
Sept 13	Jaharis156		Basis of a Healthy Diet, con't	Ch 2 quiz, journal entry - Sept 16 Diet project, part I - Sept 16
Sept 17	Jaharis156	3a	Digestion	Ch 4 quiz, journal entry - Sept 19 Discussion 2 Posting - Sept 20, 1:30pm
Sept 20	Jaharis156	3b	Carbohydrates	Ch 5 quiz, journal entry - Sept 23 Diet Project, part II - Sept 23
Sept 24	<b>Sackler 316</b>	4a	Lipids	Ch 6 quiz, journal entry - Sept 26
Sept 27	<b>Jaharis 105</b>	4b	Proteins	Ch 7 quiz, journal entry - Sept 30
Oct 1	<b>Sackler 507</b>	5a	Exam I	In-class, 1.5 hours
<b>Oct 4</b>	--		<b>NO CLASS</b>	<b>White House Conference (50th Anniv.)</b>
Oct 8	Jaharis156	5b	Energy Metabolism	Ch 9 journal entry - Oct 10
Oct 11	Jaharis156	6a	Alcohol	Ch 8 journal entry - Oct 17 Ch 8, 9 quiz (1)- Oct 17 Diet Project, part III - Oct 17
<b>Oct 15</b>	--		<b>NO CLASS</b>	<b>Substitute Monday schedule on Tuesday</b>
Oct 18	Jaharis156	6b	Energy Balance/Weight Management	Discussion 3 Posting - Oct 25, 1:30pm
<b>Oct 22</b>	--		<b>NO CLASS</b>	<b>Food Innovation Summit &amp; Reception</b>
Oct 25	Jaharis156	7a	Energy Balance/Wt Mgt, con't	Ch 10 quiz, journal entry - Oct 28
Oct 29	Jaharis156	7b	Exam II	In-class, 1.5 hours

				Discussion 4 Posting - Nov 1, 1:30pm
Nov 1	Jaharis156	8a	Fat-Soluble Vitamins	Ch 12 quiz, journal entry - Nov 4
Nov 5	Jaharis156	8b	Water-Soluble Vitamins I	
Nov 8	Jaharis156	9a	Water-Soluble Vitamins II	Ch 13 quiz, journal entry - Nov 11
Nov 12	Jaharis156	9b	Water & Major Minerals I	Discussion 5 Posting - Nov 15, 1:30pm
Nov 15	Jaharis156	10	Major Minerals II	Ch 14 quiz, journal entry - Nov 18
Nov 19	Jaharis156	11a	Trace Minerals	Ch 15 quiz, journal entry - Nov 21
Nov 22	Jaharis156	11b	Exam III	In-class, 1.5 hours
Nov 26	Jaharis156	12	Lifecycle Nutrition I (online) In-class activity	Ch 16 quiz, journal entry - Dec 2 Presentation Group I draft -Dec 2
<b>Nov 29</b>	<b>--</b>		<b>NO CLASS - Thanksgiving Break</b>	
Dec 3	Jaharis156	13a	Lifecycle Nutrition II (online) <b>In-class activity (mandatory)</b>	Ch 17 quiz, journal entry - Dec 5 Presentation Group II draft - Dec 5 Diet project, part IV - Dec 5
Dec 6	Jaharis156	13b	Lifecycle Nutrition III (online) <b>In-class activity (mandatory)</b>	Ch 18 quiz, journal entry - Dec 9
Dec 10	Jaharis156	14a	Diet, Health & Disease (online) Presentation Session I (in class)	LAST quiz, journal entry - Dec 12
Dec 13	Jaharis156	14b	Presentation Session II (in class)	
Dec 17 and 20	--	15	<b>NO CLASS</b>	Diet project, part V - <b>Dec 20</b>

### **Readings, Learning Objectives, & Activities**

For the most up to date information regarding assigned readings, instructions, and due dates please check the **Canvas** course site. Click on the link labeled **Modules** to access the readings, online lectures, and assignments for each week.

### **IMPORTANT ASSIGNMENT NOTE: 3-Day Diet Record, Part 1 (Due end of Week 2)**

- You may begin collecting your own diet and activity data for the Diet Record Project as soon as you have access to the course site on Canvas. Instructions for Part 1, due at the end of Week 2, can be found under the Assignments link on the Canvas course site.
- Students must have access to the required software, Diet and Wellness Plus in order to complete Part 1 of this assignment, due at the end of Week 2.
- You may begin working on Parts 2-5 as soon as you have completed Part 1.

### **Week 1 Lecture: Nutrition Overview**

### **Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Be able to define “nutrition” and “essential nutrients.”
- Describe the six major classes of nutrients and their basic chemical structures.
- Describe foods in terms of their energy values, including alcohol.
- Explain the role of national nutrition surveys (NHANES)
- Describe the typical American diet.
- Summarize the ABCDEFs of nutrition assessment, and their limitations.
- Explain the scientific method.
- Differentiate between the different types of study designs
- Be able to identify the red flags of poor nutrition advice.
- Identify reliable sources of nutrition information.

### **Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

## **Week 2 Lecture: Basis of a Healthy Diet**

### **Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Describe the characteristics of a healthful diet, i.e., the diet planning principles.
- Define nutrient density, and identify nutrient dense foods from each food group.
- Name and define the four sets of dietary standards of the DRIs.
- Describe how the DRIs are determined and how/when each is used.
- Compare the DV to DRI and explain how they are used Nutrition Facts Panels.
- Interpret the nutrition information provided on food packaging labels.
- Describe the different types of claims allowed on food labels.
- Summarize the purpose of the Dietary Guidelines for Americans.
- Describe the components of the current USDA Food Guide Graphic.

### **Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

## **Week 3 Lectures: Digestion and Absorption**

### **Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Describe the overall physiological processes of digestion and absorption, including the roles played by the organs of the gastrointestinal tract and the related accessory organs: liver, gallbladder, and pancreas.
- Describe, in detail, the digestion of a meal containing all 3 macronutrients.
- Describe the differences between the digestion and absorption of the fat- vs.

- water-soluble nutrients, and be able to outline each step in the process.
- Identify the enzymes and hormones that act in the digestion of the various nutrients, and indicate how they work.
  - Summarize the major nutrition-related gastrointestinal health problems and typical approaches to treatment.

**Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

**Lecture: Carbohydrates**

**Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Describe the differences and similarities among mono-, di-, oligo-, and polysaccharides and identify food sources of each.
- Explain the functions of simple and complex carbohydrates.
- Describe the digestion and absorption of carbohydrates.
- Discuss the role of fiber in human nutrition.
- Discuss the problems that can occur with carbohydrate digestion and absorption.
- Know the recommended intake of dietary carbohydrate.
- Explain the role of insulin and glucagon in the regulation of blood glucose.

**Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

**Week 4 Lectures: Lipids**

**Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Describe the structure of saturated, monounsaturated, and polyunsaturated fatty acids and identify the fatty acids that are considered essential.
- Describe the structure of triglycerides and phospholipids and explain their biological significance.
- Summarize the role of cholesterol in human nutrition.
- Explain the effects of omega-3 and omega-6 fatty acids on cell function and health.
- Describe the functions of dietary fat and body fat.
- Explain the digestion and absorption of dietary fat, including the role of bile.
- Describe the transport of lipids in the blood and throughout the body, and the role of each lipoprotein.
- Identify food sources of dietary cholesterol, saturated fat, mono- and polyunsaturated fats.
- Discuss the origin and food sources of trans fatty acids and their effect on health.

### **Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

### **Lecture: Proteins**

#### **Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Describe the chemical structure of amino acids and proteins.
- Identify the amino acids that are essential in the diet.
- Describe the special category of conditionally essential, or indispensable, amino acids.
- Summarize the process of protein synthesis.
- Describe deamination and transamination.
- Explain the difference between high-quality and lower-quality proteins, their specific food sources, and the concept of a limiting amino acid.
- Summarize protein digestion and absorption.
- Specify the physiological functions of protein.

#### **Required readings:**

- Please refer to the Canvas course site for complete list and links

### **EXAM I**

#### **Week 5 Lecture: Energy Metabolism**

#### **Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Define *anabolic* and *catabolic reactions*, and give an example of each
- Define ATP, and describe its 3 major functions in the body.
- Besides ATP, list the other 2 compounds produced in cells after food is completely metabolized.
- Identify where energy metabolism occurs in the cell.
- Identify the 3 major metabolic pathways through which the macronutrients are converted into energy.
- Examine the general differences in the breakdown of carbohydrates, fats, and proteins to usable energy components (ATP).
- Define *ketosis* and describe the conditions in which it occurs.
- Outline the metabolic consequences of consuming an excessive amount of any macronutrient (in excess of the body's energy/calorie needs)
- Describe the fate of each macronutrient during short-term and prolonged fasting (starvation).

#### **Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

## Week 6 Lectures: Alcohol

### **Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Define *moderate alcohol consumption* for both men and women
- Define *one drink* when referring to an alcoholic beverage
- Briefly describe the process of alcohol absorption and metabolism, including the role of the enzyme alcohol dehydrogenase and the microsomal ethanol oxidizing system (MEOS).
- List the potential health benefits associated with moderate alcohol consumption
- List the nutrients that are most likely to be deficient in a diet of a person who abuses alcohol.
- Define *Wernicke-Korsakoff Syndrome*
- Summarize the negative health effects of alcohol abuse, i.e., how alcohol damages body organs, such as the liver, heart, and brain.
- Define *fatty liver disease, cirrhosis*
- Describe the impact of alcohol consumption during pregnancy.

### **Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

## Week 6 & 7 Lecture: Energy Balance and Weight Control

### **Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Define energy balance, and discuss how changes in energy balance affect body weight
- Describe the major components of "energy in" vs. "energy out"
- Define & state the relative contributions of the 3 major components of energy expenditure (basal metabolism, physical activity, thermic effect of food)
- List several factors that can affect BMR.
- List the variables required to calculate your estimated energy requirements (EER).
- Define BMI, describe its limitations, and summarize how BMI is used to define underweight, healthy weight, overweight, and obesity.
- Describe the common methods used to assess body composition, i.e., proportion of fat mass to lean mass (muscle), and their limitations.
- Explain the health risks of too little and too much body fat, with an emphasis on central obesity and its associated health risks.
- Discuss the prevalence of overweight and obesity among American adults.
- Describe how fat cells develop, and the role of LPL in fat storage.
- Discuss how genetics, environment, and the regulation of hunger and satiety contribute to the development of overweight and obesity.

- List the health risks associated with fad diets, weight loss products, prescription drugs and surgical interventions in treating obesity.
- Discuss the role of diet, physical activity, and behavior change as keys to managing body weight.
- Summarize the characteristics of a sound eating plan for weight management.

**Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

**EXAM II**

**Week 8 Lecture: Fat-Soluble Vitamins**

**Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Summarize the general differences between macronutrients (carbohydrates, lipids, proteins) and micronutrients (vitamins and minerals)
- List the fat-soluble and water-soluble vitamins, and describe how solubility affects the absorption, transport, storage, and excretion of each type of vitamin.
- Identify the roles of vitamin A in the body, and describe the effects of vitamin A deficiency and toxicity.
- List the major food sources of vitamin A (preformed) and beta-carotene.
- Describe the uses of vitamin D in the body, and the effects of deficiency and toxicity of this vitamin.
- Identify the major food and non-food sources of vitamin D.
- Identify the role of vitamin E in the body and the effects of vitamin E deficiency and toxicity.
- List the major food sources of vitamin E.
- Identify the major role of vitamin K in the body, and the effects of vitamin K deficiency and toxicity.
- List food and non-food sources of vitamin K.
- Define the term *antioxidant*, and name the vitamins that act as antioxidants in the body.
- Identify the population group or groups at risk for fat-soluble vitamin deficiencies.

**Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

**Weeks 8 & 9 Lecture: Water-Soluble Vitamins**

**Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- List the B vitamins, and identify the major functions of each vitamin in the body.
- List the major food sources of each of the B vitamins.

- Identify the major deficiency disease(s) associated with each B vitamin
- Describe the digestion and absorption of vitamin B12 from food
- List the major uses of vitamin C in the body
- Identify the signs and symptoms of vitamin C deficiency and toxicity
- List the major food sources of vitamin C
- Describe the population group or groups at risk for water-soluble vitamin deficiencies.

**Required readings:**

- Please refer to the Canvas course site for complete list and links

**Weeks 9 & 10 Lecture: Major Minerals and Water**

**Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Describe the absorption, storage, and risks of toxicity of the major minerals.
- List the functions of each major mineral.
- Identify food sources and state the recommended intake of each of the major minerals.
- Describe the major mineral deficiency and toxicity conditions.
- Identify the population group or groups at risk for major mineral deficiencies.
- Describe the general difference between minerals and vitamins
- Describe the general difference between the major minerals and trace minerals
- Describe the role of calcium in the body and the factors that enhance or limit its absorption in the intestines
- List the hormones needed to maintain blood calcium levels, and describe how calcium homeostasis is maintained
- Identify food sources of calcium, and describe the effects of calcium deficiency
- Identify the risk factors for the development of *osteoporosis* and the roles of physical activity and calcium intake.
- Identify the major roles of phosphorus in the body, and food sources in the diet
- Identify the role of magnesium in the body, and major food sources
- Define *electrolyte*, list the 3 major electrolyte minerals, and describe their common functions
- Identify the role of sodium in the body, the effects of excessive intake, and major food sources
- Identify the role of potassium in the body, the effects of inadequate intake, and major food sources.
- Describe the food components of the DASH diet, the minerals provided by each food component, and specify who might benefit from such a diet.
- Identify the major role of chloride during digestion.
- Discuss the reasons why a protein-adequate diet can meet the body's need for sulfur
- Describe the population group or groups at risk for major mineral deficiencies.

- Summarize the key roles of water in the body.
- Discuss the daily water needs of humans.
- Define water balance and its components.

**Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

**Week 11 Lecture: Trace Minerals**

**Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Define trace mineral.
- List the primary functions and deficiency/toxicity issues for each trace mineral.
- Describe, in general, how trace minerals are absorbed, transported, and excreted.
- Identify foods that are concentrated sources of each trace mineral.
- Identify the population group or groups at risk for trace mineral deficiencies.
- Identify the major functions of iron in the body
- Compare the availability of iron from plant vs. animal sources
- Describe the role of zinc in the body, major food sources, and consequences of a zinc deficiency
- Discuss the mucosal block theory
- Describe the role of copper in the body
- Identify and describe the potential consequences of trace mineral interactions (i.e., iron, zinc, copper)
- Describe the effects of insufficient and excess iodine intake.
- Describe the use of chromium in the body and its relationship to diabetes.
- Describe the use of selenium in the body and the role of selenium in cancer protection and as an antioxidant.
- Explain the use of fluoride in the body and its role in dental caries prevention.

**Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

**EXAM III**

**Week 12 Lecture: Lifecycle Nutrition I**

**Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Explain why a nutritionally adequate diet is important long before a pregnancy is established.
- Describe prenatal growth and development.
- Define *placenta*, *critical period*, *NTD*, and *spina bifida*.

- Explain the role of folate during the early stages of fetal development
- Describe the relationship between maternal weight gain during pregnancy and infant birthweight
- Discuss the increased nutrient needs of the mother during pregnancy including total calories and specific micronutrients required for blood production, cell growth, and bone development.
- Discuss the effect of nutrition on pregnancy and its outcome.
- Summarize the nutrient needs of the mother during lactation
- Summarize the physiology of the letdown reflex.
- Outline the benefits of breastfeeding for both the infant and mother
- Discuss the need for additional calories and fluids during lactation, and list the habits that are incompatible with lactation.
- Define *fetal alcohol syndrome*.

**Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

**Week 13 Lectures: Lifecycle Nutrition II**

**Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Discuss how an infant's calorie needs differ from an adult's needs.
- Explain the consequences of under-nutrition or over-nutrition at different stages of growth and development.
- Describe how to assess the growth and nutritional status of infants and children
- Discuss the 2 dietary practices that have the most significant effect on an infant's nutritional health, i.e., the milk an infant receives, and the age at which solid foods are introduced
- Describe and compare the nutrient needs of infants, children, and adolescents
- Describe the nutritional problems that may occur during the growing years (obesity in particular) and their potential impact on future health

**Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

**Lecture: Lifecycle Nutrition III**

**Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Discuss the physical changes of the aging process and nutritional implications.
- Describe the role of physical activity during aging.
- Summarize the nutrients of concern for aging adults, i.e., identify the nutrients for

which there are different requirements in older adults

- Outline food-related factors that can predict malnutrition in older adults.
- Identify the commonly used drugs that adversely react with nutrients, and explain the potential consequences of these interactions.

**Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links

**Week 14 Lecture: Diet, Health, & Disease**

**Lecture Learning Objectives:**

By the end of this lecture, students should be able to:

- Identify the important lifestyle factors (modifiable and non-modifiable) that promote health and disease
- Describe the development, risk factors, and specific nutrition recommendations for each of the major chronic diseases discussed (CVD, hypertension, diabetes, and cancer)
- Compare the two major forms of diabetes mellitus
- Define the role of nutrition in the metabolic syndrome
- Describe how nutrition impacts the immune system
- Discuss the potential impact of adhering to the *Dietary Guidelines for Americans* and the food guide graphics, *MyPyramid/MyPlate*, on chronic disease risk.

**Required readings and Assignments:**

- Please refer to the Canvas course site for complete list and links