

BIBC 120: Nutrition

Winter Quarter 2018

Instructor: Aaron Coleman, Ph.D.
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Office Hours: York Hall 3080A (my office) and York 2300 (conference room); we will move to the conference room to accommodate larger numbers.
Tuesday 4:30 – 5:30 PM and Wednesday 1 – 2 PM

Course Objectives: This course will examine the anatomical, physiologic, and biochemical basis for human nutrition. We will follow how nutrients are extracted and absorbed from food via the digestive process, investigate how different nutrients are integrated into our metabolism, and examine the biochemical roles of various nutrients in maintaining health. The first overarching goal of the class will be to relate how the diet choices we make in our everyday lives affect our physiology and metabolism at the biochemical level. Part of this will be to understand the various disease states that are either the result of malnutrition, or that are caused by physiologic/genetic factors and that can lead to a malnourished state. We will examine some of the current research being done to understand the etiology of these disease states.

The second overarching goal of the class is to provide you with the tools necessary to critically evaluate nutritional claims. We are a society bombarded with claims about the health effects of various diets and nutritional supplements from both credible and non-credible sources. Sorting out scientifically valid information from marketing and media hype requires the knowledge described above, and the ability to assess the credibility of various sources.

Required Textbook: M. McGuire and K.A. Beerman. Nutritional Sciences: From Fundamentals to Food, 3rd Edition, 2013. Cengage Learning. ISBN: 978-0-8400-5820-1. You will automatically have access to the eBook on TritonEd through RedShelf, a distributor of online textbooks that has a special arrangement with the UCSD Bookstore. This access will be free for the first two weeks of the quarter. After two weeks, your student account will be charged \$61.49 for access through the remainder of the quarter. **If you do not want to purchase access past week 2, you must actively opt out by Friday of week 2, otherwise your account will be charged.** Instructions for opting out are given on the RedShelf page on TritonEd.

Additional Reading: There will be some additional reading assignments from journal articles and internet sources (see lecture schedule). You will be able to access these articles through TritonEd.

Discussion Sections: Discussion sections will begin in week 2 of the quarter. While section attendance is not mandatory, it is recommended that you attend the discussion section in which you are enrolled. There will be one or two days where you will need to attend your designated section (see class schedule on the last page of the syllabus), so be sure your schedule does not conflict with your ability to attend section. The IAs for each section will allow students from other sections to attend up to the seating capacity of the room. Students enrolled in other sections will be asked to leave to make

room for students enrolled in that section, and this policy will be strictly enforced. Your graded midterm exam will be handed back in the section for which you are enrolled. You will go over one of the assigned journal articles in discussion sections, and you will also use this time to talk about your ideas for the Nutritional Claim assignment. Any remaining time will be used for reviewing concepts from lecture.

Exams and Grade Assignments: Your grade will be determined from a midterm exam, a final exam, and the nutritional claim assignment.

Exam	Date	Point Value
Midterm Exam	Saturday, Feb 10th	450
Final Exam	Monday, March 19 th	450
Nutritional Claim Assignment	due Monday, Feb 19 th	100
Point Total		1000

The final exam will be comprehensive. If your score on the final exam is higher than your score on the midterm exam, your final exam score will be given 50% more weight (675 points) and your midterm exam will be weighed 50% less (225 points). Make-up exams will not be given, except in case of illness that is documented by a note from a physician. Grades will be based on the following un-curved scale. The grade cutoffs may be adjusted downward at the instructor's discretion.

905-1000	A	760-779	C+
895-904	A-	695-759	C
880-894	B+	675-694	C-
800-879	B	590-674	D
780-799	B-	0-589	F

Week	Lecture Topics	Assigned Reading course text (McGuire)
1	Course introduction and nutritional science definitions Dietary Reference Intakes and food labels Assessing nutritional claims	Chap. 1, all Chap. 2, 38 – 64
2	Overview of the digestive system Digestion and absorption of carbohydrates lactase persistence and lactose intolerance	Chap. 3, 81 – 101; 106 – 111 (skip section on neural and hormonal regulation, p. 86) Chap. 4, 115 – 134
3	Digestion and absorption of proteins Gluten	Chap. 5, 163 – 166; 176 - 179
	Discussion Sections: Discuss ideas for nutritional claim assignment	
4	Digestion and absorption of lipids; Lipoproteins Fiber and the role of the gut microbiota	Chap. 6, 219 – 245
	Additional required reading: 1) Walsh <i>et al.</i> , 2014. Beneficial Modulation of the Gut Microbiota; 2) Ridaura, <i>et al.</i> , 2013. Gut microbiota from twins discordant for obesity modulate metabolism in mice.	
	Discussion Sections: Discuss Ridaura article	
5	Health effects of carbohydrates, insulin and glucagon regulation of blood glucose, diabetes, glycemic index	Chap. 4, 135 – 144 and pages 147 – 157
	Discussion Sections: Review for exam Midterm Exam Saturday, Feb 10 th , 10 – 12 noon	Review if necessary: Chap. 7, 279 – 299 Chap. 5, 184 – 187
6	Health effects of lipids; trans fats, saturated fats, mono and poly-unsaturated fats	Chap. 6, 246 – 251 and pages 254 - 263
	Additional required reading: Harvard School of Public Health Articles on dietary fats; see TritonEd.	
7	Health effects of proteins, protein quality, protein malnutrition	Chap. 5, 187 – 195
	Nutritional Claim Assignment due Monday, Feb 19 th , 11:59 pm	
8	Energy balance, hormonal regulation of satiety, dieting	Chap. 8, 323 – 336, 340 – 358
9	Water soluble vitamins; vitamin B ₁₂ , vitamin C	Chap. 10, 419 – 423
	Fat soluble vitamins; vitamin D	Chap. 11, 461 – 470
10	GMO foods; vitamin A deficiency and “golden rice.” Sodium and fluid balance (time allowing)	Chap. 12, 518 - 523