Tentative Course Outline and Schedule
HUN 6235 Macronutrients in Human Nutrition
A team-taught course
Fall 2025 (3 credits)
Mondays and Wednesdays, 3:00 to 4:55 PM (periods 8 & 9) in MAEB 0234

Note: This course will be using a modified weekly schedule with the number of contact hours averaging three per week.

COURSE LEADER and INSTRUCTOR:

Cora Best, Ph.D., R.D.N.
Food Science and Human Nutrition Department

FSHN Building, Room 449
Phone: 352-294-3751
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Office Hours: Tuesdays 3:30 to 5:00 p.m. (by appointment)

COURSE INSTRUCTORS:	OFFICE HOURS:
Dr. Zhiyong Cheng (z.cheng@ufl.edu)	Thursdays 2 to 3 p.m. or other times by appointment
Dr. Wendy Dahl (wdahl@ufl.edu)	Tuesdays 3 to 5 p.m.
Dr. Peggy Borum (prb@ufl.edu	Wednesday 2 to 3 p.m. and Sunday 3 to 4 p.m. in zoom room https://uflphi.zoom.us/j/4742141397 or in person by appointment.

COURSE DESCRIPTION:

This course will discuss digestion, absorption, and metabolism of carbohydrates, proteins, lipids, and fiber in health and disease. The macronutrients will be discussed as individual dietary components and as parts of dietary patterns. Corequisite or prerequisite: BCH6206 Advanced Metabolism.

COURSE OBJECTIVES: After completing this course, students will be able to

1. Discuss the structures of the digestive tract and the digestive and absorptive processes.
2. Explain the role of the endocrine system in the regulation of macronutrient metabolism.
3. Evaluate current literature related to macronutrient digestion, absorption, and metabolism to recommend optimal dietary intakes or patterns for the maintenance of health and reduction of disease risk.
4. Use relevant resources for literature review and appropriate evidence to defend positions related to current nutrition controversies.

TEXT AND MATERIALS:

Advanced Nutrition and Human Metabolism by Gropper, Smith, & Carr, 7th or 8th edition (Required). Additional resources are provided on e-Learning in Canvas: http://elearning.ufl.edu. E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail athelpdesk@ufl.edu.

COURSE ACTIVITIES:

- Quizzes – In an effort to help you prepare for graduate level material presented in this course, you will be assigned readings prior to each major topic and quizzed on the material. A total of five quizzes will be administered through Canvas. Quizzes will be timed. Once you open a quiz it must be completed in 10 minutes (quizzes 1 to 4) or 20 minutes (quiz 5).
- Class participation – Attendance is expected/required for all classes. At the end of the semester, you will score your attendance/participation using the included rubric. The instructor will then use that information to assign a final score.
- Assessments (see below section)

E-LEARNING (CANVAS):

Access to e-Learning requires a Gatorlink account. To establish a Gatorlink account, go to http://www.gatorlink.ufl.edu/. Once you have created an account, access the e-learning homepage at http://elearning.ufl.edu/. Some assessments will be administered through Canvas during class, and you must bring a device to class to access Canvas on those days.

GRADING: See rubrics below for participation and assignments.

• Quizzes (5 quizzes worth 10 points each)	50
• Participation (see attendance/participation rubric)	100
• Topic Assessments (50 points each: GI, protein, CHO, fiber, lipid, Dietary Guidelines and patterns, and AI-augmented nutrition communication)	350
Total points	500

A = 470 to 500; A- = 450 to < 470; B+ = 435 to < 450; B = 420 to < 435; B- 400 to < 420; C+ = 385 to < 400; C = 370 to < 385; C- = 350 to < 370; D+ = 335 to < 350; D = 320 to < 335; D- = 305 to < 320; F = < 305

TENTATIVE SCHEDULE:

Date	Topic
Mon. Aug 25	Best: Introduction to course and review of the syllabus and gastrointestinal physiology. Read chapter 2 on the digestive system prior to Mon. Sept. 8th
Wed. Aug 27	Best: Gastrointestinal physiology – macronutrient digestion and absorption
Mon. Sept. 1	Labor Day holiday – no class
Wed. Sept. 3	Best: Gastrointestinal physiology – mucosal immunology
Mon. Sept. 8	Cheng: CHO metabolism and endocrine regulation – an overview. Read CHO chapter to prepare for class and **take quiz before the start of class**.
Wed. Sept. 10	Cheng: Glycemic control
Mon. Sept. 15	Cheng: Diabetes
Wed. Sept. 17	Cheng: Group project presentation
Mon. Sept. 22	Best: Proteins and amino acids in clinical nutrition – Read assigned pages from Gropper textbook to prepare for class and **take quiz before start of class.**
Wed. Sept. 24	Best: Proteins and amino acids in clinical nutrition
Mon. Sept. 29	Best: Proteins and amino acids in clinical nutrition. Proteins assignment completed during class.
Wed. Oct. 1	Open
Mon. Oct. 6	**Exam** over the following topics: GI physiology, macronutrient digestion and absorption, mucosal immunology, and proteins. Please complete during class time on Canvas.
Wed. Oct. 8	Dahl: Dietary fiber in clinical nutrition - Read fiber chapter to prepare for class and **take quiz before the start of class**.
Mon. Oct. 13	Introduction to final assessment: AI-augmented nutrition communication
Wed. Oct. 15	Dahl: Dietary fiber controversies
Mon. Oct. 20	Dahl: Dietary fiber controversies
Wed. Oct. 22	Borum: Read article *Nonalcoholic Fatty Liver Disease and Omega-3 Fatty Acids: Mechanisms and Clinical Use* - Annu Rev Nur 2023. Read lipid chapter to prepare for class and **take quiz before the start of class**.
Mon. Oct. 27	Borum: Read article *The Role of Artificial Intelligence in Deciphering Diet-Disease Relationships: Case Studies* - Annu Rev Nutr 2023
Wed. Oct. 29	Borum: Read article *Metabolic and Signaling Roles of Ketone Bodies in Health and Disease* - Annu Rev Nutr 2021
Mon. Nov. 3	Borum: - Discuss your patient's consults
Wed. Nov. 5	Best: Dietary Guidelines and patterns related to chronic disease risk. **Complete reading and take quiz before the start of class**
Mon. Nov. 10	Student presentations: Dietary patterns
Wed. Nov. 12	Student presentations: Dietary patterns
Mon. Nov. 17	Final assessment working session
Wed. Nov. 19	Final assessment working session
Mon. Nov. 24	Thanksgiving Break – no class
Wed. Nov. 26	Thanksgiving Break – no class
Mon. Dec. 1	Final assessment working session; participation score due in Canvas by 11:59 P.M. Eastern
Wed. Dec. 3	No class; final assessment due in Canvas by 11:59 P.M. Eastern

ASSESSMENTS

GI Physiology, Macronutrient Digestion and Absorption, and Mucosal Immunology – Dr. Best (50 points or 10% of grade)

Please review lecture notes and assigned chapter. As your assessment, you will be given case scenarios and asked to synthesize information on these topics to answer questions. This exam will be administered on Monday, October 6th.

CHO & Endocrine Regulation - Dr. Cheng (50 points or 10% of grade)

The assignment for the CHO & Endocrine Regulation session will be a group project/presentation. At the first class of CHO session, the assignment topics will be provided by the instructor and randomly assigned to groups (3-4 students/group). There will be a short window of time for groups to trade topics among themselves and for group members to switch groups to better align with the topic for their group. Presentations must be 15-18 minutes in length and will be followed by 5-7 minutes of questions. The presentations must be the product of group work with all members contributing equally.

Grading Rubrics for the CHO assignment (project presentation).

Criteria	Ratings		Pts
All aspects of the assignment were addressed.	5.0 pts Full Marks	0.0 pts No Marks	
The presentation was well prepared and logically organized.	8.0 pts Full Marks	0.0 pts No Marks	
Presentation and content had obvious creativity, depth, and details.	8.0 pts Full Marks	0.0 pts No Marks	
Sources of support were current and strong, and the topic was well researched.	8.0 pts Full Marks	0.0 pts No Marks	
Major points and conclusions were clear and understood by the audience.	8.0 pts Full Marks	0.0 pts No Marks	
In answering questions, the group demonstrated understanding of their presented material and ability to integrate or extend beyond their presentation.	8.0 pts Full Marks	0.0 pts No Marks	
Speakers had strong presence and contributing equally to the presentation.	5.0 pts Full Marks	0.0 pts No Marks	
			Total Points: 50.0

Proteins and Amino Acids – Dr. Best (50 points or 10% of grade)

Prior to class, please read the following pages:

Topic	Pages in print book 7th edition
Essentiality	178
Sources of amino acids	178 - 179
Digestion	179 - 181
Absorption	181-183
Disposal of Ammonia	187-189
Protein synthesis	201 – 202
Interorgan flow of amino acids and organ-specific metabolism	218-229
Catabolism of tissue proteins	229 - 230
Protein quality and protein and amino acid needs	233 - 240

For your assignment, you will listen to the following podcast: "*#224 – Dietary protein: amount needed, ideal timing, quality, and more | Don Layman, Ph.D.*" on Peter Attia's The Drive podcast, which provides an overview of hot topics in protein nutrition.
- Podcast link: https://peterattiamd.com/donlayman/
    - Can also be found on Apple Podcasts and Spotify

You will also read the primary publication of the EFFORT Protein trial, an international, multicenter, pragmatic randomized trial of high- versus usual-dose protein in critically ill patients with high nutritional risk.
- Heyland (2023). The Lancet. Volume 401, Issue 10376, 18–24 February 2023, Pages 568-576. https://doi.org/10.1016/S0140-6736(22)02469-2

As your assessment, you will work independently to answer questions within Canvas in the final hour of class on Sept. 29th. You will be allowed to refer to the source podcast and paper. However, it will be impossible to answer all questions correctly within the time allowed unless you listen to the podcast and read the paper in advance and, ideally, take notes that you can use during class. **You must bring your laptop computer and (if you want to refer to the podcast) headphones to class on Sept 29th**. This portion of your assessment will total 25 points. No rubric is provided as the answers will be straightforward to grade as either correct or incorrect. The remaining 25 points of your grade will be from exam questions. This exam will be administered on Monday, October 9th.

Dietary Fiber Controversies - Dr. Dahl (50 points or 10% of grade)

This assignment is to be completed in pairs (randomly assigned). Dietary fiber controversy questions will be posted on Canvas. Your assignment is to identify 4 original research papers published in the last 10 years that inform your answer to the assigned controversy question (no narrative reviews but systematic reviews with meta-analyses are allowed). Prepare a ~20-minute PowerPoint presentation on your evidence on the controversy. Each presentation will be followed by questions. Presentations will be scheduled for Wednesday, October 15th, and Monday, October 20th. On the day you are not presenting, you will be expected to pose one question to any of your peer presenters.

Grading Rubric for the Dietary Fiber Controversy presentation.
(Note: 5 points will be deducted if a question is not posed to peer presenters.)

Criteria	Scoring		Points
The presentation was generally well-prepared and logically organized; the research literature is cited on slides.	5 pts	0 pts	
Evidence descriptions of the four original research papers addressing the controversy were clear, concise, and accurate.	15 pts	0 pts	
A definitive conclusion statement answering the controversy question and based on research is made.	10 pts	0 pts	
Logic and critical thinking were demonstrated.	10 pts	0 pts	
Response to questions demonstrated an understanding of the research presented and knowledge limits, if applicable.	10 pts	0 pts	
		Total Points: 50.0	

Nutritional Aspects of Lipid Metabolism - Dr. Borum (50 points or 10% of grade)

For this assignment you are providing educational consults to an attending physician whose patient has a lipid-related dietary question at 3 visits. You need to provide a document written at two different educational levels. First write the document for the physician and then write the document for the physician to give to the patient. Remember that each patient is unique, and your information is only useful to the patient if the patient can use it. The patient may recognize that the internet has good, bad, and ugly information and it can be difficult to distinguish among them. The patient depends on you to provide good information that that is the best available. The attending is a physician scientist who is big on practicing evidence-based medicine and has really gotten into precision medicine. The attending physician says that the reference list better include the latest references and the explanation should be concise and almost case report publication ready.

Example of Patient Scenarios

Visit 1 - Year 2025:
50-year-old male – "My older brother just died of a massive heart attack at 62 years of age and our dad died of what was probably a heart attack at 48 years of age. It is really strange because a couple or so years back he said some kind of a liver doctor told him he had some new kind of liver thing that the doctor was seeing more and more of all the time. But he never said anything about having to see a heart doctor. Well doc, I want to play with my grand babies as they grow up. So, I came to you to be checked out."
Clinic note from visit shows – Fatty liver disease - Physician requests a dietary consult from you.

Visit 2 - Year 2027:
52 year old male returns – "Good to see you again doc. I know I have postponed this visit several times, but things are going good. I have been following your dietary advice as much as I can. There have been some big changes, but good changes. I got a couple promotions and now have a desk job with a salary instead of hourly pay. There are a lot of good things about it, but I seem to have to work more hours and am dog tired when I get home. Have not had time for as much running or basketball as I used to do. My wife says it has not hurt my appetite. I do watch more TV and snack a lot."
Clinic note from visit shows – Not much change in fatty liver, but BMI has increased from 26 to 30. Physician requests a dietary consult from you.

Visit 3 – Year 2029:

54 year old male returns – "Hey doc, I know you are going to tell me that my weight is going in the wrong direction. Sometimes, I have willpower, but it is hard. Somebody is always bringing in good eats and leaving them by the coffee in the break room. But I think I have found a solution for me. A new intern at the office who is obviously very athletic, is training for an iron man thing. He told ne about this keto diet and showed me where I could order a drink that is just straight ketones. My sister went on a keto diet last year and really looks good now. I figure if I add in the ketone drink, it will work even better for me. What do you think?"

Clinic note from visit shows – BMI of 33, fasting glucose of 130 mg/dl. Physician requests a dietary consult from you including information on appropriateness of a ketogenic diet in this patient.

Grading Rubric

	Ranking Range		Points
Information for patient is clear and concise	10.0 pts Full marks	0.0 pts No marks	
Information for patient is practical	6.0 pts Full marks	0.0 pts No marks	
Information for patient is evidence based	6.0 pts Full marks	0.0 pts No marks	
Information for attending is clear and concise	10.0 pts Full marks	0.0 pts No marks	
Information for attending is evidence based	6.0 pts Full marks	0.0 pts No marks	
References are appropriate and of high quality	6.0 pts Full marks	0.0 pts No marks	
Elements of precision medicine have been addressed	6.0 pts Full marks	0.0 pts No marks	
Total points: 50			

Assignment for Dietary Guidelines and Patterns Related to Chronic Disease Risk – Dr. Best (50 points or 10% of grade)

The objectives of this assignment are to: (1) Discuss the purpose of the Dietary Guidelines for Americans (DGA), (2) Describe the process by which the DGA are established, and (3) Recommend a dietary pattern for a particular chronic disease.

Dr. Best will randomly assign a diet pattern and group membership. In groups of two, you will prepare a 15-minute presentation with 5 to 10 minutes for questions. You will discuss the historical background related to your diet pattern; what foods (or eating times) are included and excluded from the diet pattern; provide evidence to support your diet pattern and one chronic disease risk; and explain dietetic practice points

Grading Rubric

Criteria	Possible Points
Information in the 15-minute presentation is logical in sequence with not too much text on each slide.	10
Historical background of the diet pattern is discussed	5
Foods (or eating times) to be included or excluded are presented	5
The highest quality evidence available on the diet pattern and one chronic disease risk is presented. Data are presented in tables or figures and referenced on the slide	20
Dietetic practice points are addressed	5
Responses to questions demonstrated an understanding of the topic	5
Total	50

Assignment: AI-augmented Nutrition Communication – Dr. Best (50 points or 10% of grade)

This group assignment asks you to explore how AI tools can support critical thinking, communication, and collaboration in nutrition and dietetics. You will evaluate competing perspectives on a nutrition issue (students will draw for teams and issues), and you will practice translating complex scientific concepts for a broad audience. You will use AI to generate and refine content and reflect on the implications of AI-augmented work.

Learning Objectives
- Understand some capabilities and limitations of contemporary AI tools in nutrition evidence synthesis & analysis and science communication
- Practice critical evaluation of AI-generated content
- Develop plain-language communication skills
- Reflect on professional role and skills in an AI-augmented landscape

Complete instructions will be provided in a separate document located within the Canvas files

AI-augmented Science Communication rubric:

Component	Exceeds Expectations	Meets Expectations	Needs Improvement	Possible Points
AI Output Analysis & Critique	Insightful, critical evaluation of AI output; identifies nuanced strengths/limitations; integrates evidence and course concepts. (7-10 pts)	Adequate evaluation of AI output; identifies basic strengths/limitations; some integration of course concepts. (3-6 pts)	Superficial or incomplete critique; lacks depth or relevance to course concepts. (0–2 pts)	10
Community-facing Article	Compelling, well-structured article co-created with AI; demonstrates strong synthesis, voice, and relevance to community. AI prompts and output documented (7–10 pts)	Clear article with logical structure and relevance; some prompts and synthesis with AI documented (3–6 pts)	Disorganized or generic; limited integration of AI or unclear relevance to community; prompts not documented (0–2 pts)	10
Reflection Essay	Deep, thoughtful reflection on AI collaboration; explores personal learning, ethical considerations, and future applications. (7–10 pts)	Adequate reflection on AI use and learning; touches on ethics and future use. (3–6 pts)	Vague or surface-level reflection; lacks insight or connection to learning objectives. (0–2 pts)	10
Group Presentation	Engaging, well-coordinated presentation; clearly explains AI-human collaboration and key findings; strong visuals and delivery. (7–10 pts)	Clear presentation with basic coordination and explanation; some visual or delivery issues. (3–6 pts)	Disjointed or unclear presentation; weak explanation of AI use or poor delivery. (0–2 pts)	10

Peer Evaluations (*see* below)	Rated highly by peers for communication, attendance, responsibility, and attitude. (9–10 pts)	Generally positive peer ratings with minor concerns. (7–8 pts)	Low or inconsistent peer ratings; concerns about participation or professionalism. (0–6 pts)	10

Peer teamwork evaluations for AI assignment: The average score from your peers will be determined as follows:

Peer being evaluated:_____ by:_____(initials)	Possible Points	Assigned Points
Communication – communicates effectively and in a timely manner (0=not effective or timely, 2=very effective or timely)	2.0	
Attendance – has attended all planning and preparation meetings and has been on time (0=very poor attendance and always late, 2=great attendance and on time)	2.0	
Responsibility – has assumed equal responsibility for their share of the project (0=others have had to assume these responsibilities, 4=completed their share of the responsibilities)	4.0	
Attitude – has maintained a positive attitude during the project (0=very poor attitude, 2=very positive attitude)	2.0	
Total	10.0	

Attendance/Participation Rubric

Please use this rubric to score your attendance/participation in this course and provide an explanation for the score you've determined. The instructor will then use this information assign your final attendance and participation grade. *Adopted from Carnegie Mellon – Participation Rubric 11/19/14 https://www.cmu.edu/teaching/assessment/examples/courselevel-bycollege/cfa/tools/participationrubric-cfa.pdf*

Criteria	Unsatisfactory-Beginning	Developing	Accomplished	Exemplary	Total
	0-16 points	**17-19 points**	**20-22 points**	**23-25 points**	**/25**
Attendance	3 or more unexcused absences	2 unexcused absences	1 unexcused absence	Attended all class sessions or received approval for all necessary absences	
	0-16 points	**17-19 points**	**20-22 points**	**23-25 points**	**/25**
Frequency	Student does not initiate contribution & needs instructor to solicit input.	Student initiates contribution at least in half of the class sessions	Student initiates contribution once in each recitation.	Student initiates contributions more than once in each class session.	
	0-16 points	**17-19 points**	**20-22 points**	**23-25 points**	**/25**
Quality	Comments are uninformative, lacking in appropriate terminology. Heavy reliance on opinion & personal taste, e.g., "I love it", "I hate it", "It's bad" etc.	Comments are sometimes constructive, with occasional signs of insight. Student does not use appropriate terminology; comments not always relevant to the discussion.	Comments mostly insightful & constructive; mostly uses appropriate terminology. Occasionally comments are too general or not relevant to the discussion.	Comments always insightful & constructive; uses appropriate terminology. Comments balanced between general impressions, opinions & specific, thoughtful criticisms or contributions.	
	0-16 points	**17-19 points**	**20-22 points**	**23-25 points**	**/25**
Listening	Does not listen to others; regularly talks while others speak or does not pay attention while others speak; detracts from discussion; sleeps, etc.	Student is often inattentive and needs reminder of focus of class. Occasionally makes disruptive comments while others are speaking.	Student is mostly attentive when others present ideas, materials, as indicated by comments that reflect & build on others' remarks.	Student listens attentively when others present materials, perspectives, as indicated by comments that build on others' remarks, i.e., student hears what others say & contributes to the dialogue.	
				TOTAL	**/100 (20% of grade)**

Explanation:

ACADEMIC POLICIES AND RESOURCES

Please visit the following website to review UF's academic policies, which you are expected to follow. The link also directs you to academic and wellness resources to support your success:

https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/