

## **2024 NS3150: Obesity and the Regulation of Body Weight Syllabus**

**Course title:** Obesity and the Regulation of Body Weight

**Term:** Spring 2024

**Description:** Division of Nutritional Sciences, NS3150/Pysch3150

**Location/time:** Uris Hall G01: Time: Tuesday/Thursday 2:55-4:10pm

**Instructor:** Daniel Berry, PhD; email: [dcb37@cornell.edu](mailto:dcb37@cornell.edu); Office: 307 Biotechnology building

**General Class Email:** [ns3150cornell@gmail.com](mailto:ns3150cornell@gmail.com)

**Course Staff/Teaching Assistants:**

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**Office Hours:** If you have general questions about the course, please email [ns3150cornell@gmail.com](mailto:ns3150cornell@gmail.com). For specific comments or questions, the best way to contact the TA's is by email ([ns3150cornell@gmail.com](mailto:ns3150cornell@gmail.com)) or directly if need be. Please include the course name and number in the email subject line. For specific comments or questions that requires my attention, please contact me by email ([dcb37@cornell.edu](mailto:dcb37@cornell.edu)). In your emails, please address me as Prof. Berry. We will check and respond to course emails every weekday (M-F) morning, but not on the weekends. We do not hold typical office hours. This because we (course instructor team and you) all have busy academic schedules, and we want EVERYONE to have opportunities to meet with us! So, please reach out to schedule meetings with the TA's or me. We are here to help you learn, and we encourage you to ask questions early and often when the material or assignments are unclear.

**Credit Hours:** 3 credit hours

**Prerequisites:** Enrolled students must have previously taken at least NS 1150, NS 1220, or one semester Intro Biology lecture (BIOMG 1350, BIOG 1440, or equivalent). It is also required that students have taken or taking concurrently Biochemistry (NS 3200, BIOMG 3300). This course moves quickly as it draws upon knowledge from required courses in nutrition, nutritional biochemistry, and biology principles.

**Major/minor/concentration requirements:** This course serves as an elective for NS majors, Biology majors with a concentration in human nutrition, and Psychology majors.

**Course Materials:** No coursebook or other materials required. The course will be based on lecture presentations and discussions. Class handouts, lecture slides, and lecture recordings will be posted on Canvas.

**Course Description:**

Obesity is a complex biological and socioeconomical problem that is multifaceted within each of these broad descriptions. This course provides a comprehensive overview of various influencers and effectors of obesity and body weight regulation. We will examine energy expenditure, genetics, environment, organ physiology, neurological control of hunger, food choice structure, eating behavior, and health disparities. Additionally, this course will examine biomedical and surgical intervention of obesity and associated sequelae. The course is designed to contain lectures with presentation of primary literature driven by class discussion. We will also have guest lectures to discuss specific topics on obesity and the regulation of body weight!

We will use the Canvas course site for all aspects of this online course. Students are expected to check the Canvas course site regularly for:

- Course syllabus
- Course announcements & assignments
- Discussion boards
- Quizzes, assignment submissions, and grades
- Exams

Updates to assignments and the syllabus will be posted on the Canvas course site and announcements will be sent. To ensure you receive the maximum credit for your work, follow any rubrics, templates, or guidelines that are provided.

**Course Format:** In-person only. Class will be lecture and discussion based and will meet twice per week for 75 min for 28 periods during the semester. All lectures, except the review session, will be recorded using the Zoom platform.

**Student learning outcomes:**

At the end of this semester, you will be able to:

- Interpret and recognize the multifactorial factors responsible for the obesity public health problem.
- Understand arguments for and against on how human obesity has rapidly risen in the past 40-50 yrs.
- Effectively communicate the involvement of energetics, genetics, and environmental factors contributing to obesity and metabolic disease.
- Demonstrate an integrative understanding of adipose tissue biology and function in mammals.
- Synthesize factual knowledge into a conceptual framework for understanding how adipose tissue regulates physiology and pathophysiological states (type 2 diabetes, fatty liver disease, and cardiometabolic disease).
- Describe, synthesize, and present factual knowledge on potential therapeutic and population efforts to reverse or combat obesity.

**Course learning outcomes:**

- Understand how energetics, genetics, and the environment control weight.
- Complexity between taste, brain, and gut sensing.

- Explore unique pharmacological, dietary, psych/soc, surgical, and environmental manipulation to counteract obesogenic cues.
- Recognize that fat or adipose tissue is now considered the body's largest endocrine organ with multiple locations that regulate many major physiologic and metabolic responses such as appetite, reproduction, glucose and fat metabolism and sensing, and thermogenesis.

## EXPECTATIONS AND RESOURCES FOR STUDENT SUCCESS

### **Inclusivity:**

Cornell University (as an institution) and I (as a human being and instructor of this course) am committed to full inclusion in education for all persons. Please feel free to let me know if there are circumstances affecting your ability to participate in class and exams. If not, then no accommodations can be provided after missing an exam or a class assignment.

Some resources that might be of use include:

- Office of Student Disability Services: <https://sds.cornell.edu>
- Cornell Health CAPS (Counseling & Psychological Services): <https://health.cornell.edu/services/counseling-psychiatry>
- Undocumented/DACA Student support: See the list of campus resources at <https://dos.cornell.edu/undocumented-daca-support/undergraduate-admissions-financial-aid>

**Diversity, Inclusion, and equity statement:** As people who study scientific knowledge and communication, we take seriously the practices of dialogical communication that include welcoming, listening to, and understanding all voices and perspectives, respecting and valuing differences of opinion and experience, and encouraging exploration of new and old ways of thinking--a process that lies at the heart of intellectual inquiry. Theory and practice work dialectically, so together we take responsibility to ensure communication that respects diversity, strives for equity, and is inclusive. Please bring forward any situations where voices are not being heard.

### **Expectations:**

To be successful in this course, I ask that you focus on five key things.

1. Prepare. This course asks that you prepare for class and review content on a weekly basis. I will guide your learning and facilitate discussion. Individual participation assignments are additional opportunities to practice applying what you know.
2. Actively participate. To succeed in this class, you must be focused and involved, offering your comments, questions, feedback, and answers. Please participate in class discussions! To spur interest and debate for discussions, you will have the opportunity to participate in class discussions to earn ¼ (.25) point towards Prelims. No matter how many times you talk or how comprehensive your response is you will only receive the ¼ credit/class (total: ¼pt/diem).

3. Take steps to avoid distractions. During class discussions, please turn off your cell phone and other electronic devices so you can focus on discussion.
4. Be respectful. In this course, we will be exposed to a variety of sensitive viewpoints, values, and opinions that may differ from our own. All students in this class should feel comfortable expressing their viewpoints and concerns. We are each an important part of creating the atmosphere that makes this possible.
5. Act with integrity. Your instructors and fellow students expect you to choose to act with integrity in all your classes, including this one. For clarification, see the [Essential Guide to Academic Integrity](#).

**Course Support:**

Please schedule meetings with TA's if you have questions about course content or course details. We will hold a review session held during class time to cover content and questions you might have about the upcoming exam. Please come prepared with questions and comments. No extra credit will be given, and the review session will not be recorded.

**Mental Health:**

If you are feeling overwhelmed, or are worried about a friend, please reach out to one of your instructors or your academic advisor. We can try to help or we can put you in touch with someone who can help. Cornell has trained counselors available to listen and help: [Empathy, Assistance, and Referral Service](#) (213 Willard Straight Hall, 607-255-3277), [Cornell Health's Counseling and Psychological Services](#) (CAPS, 607-255-5155), and [Let's Talk](#). The [Learning Strategies Center](#) offers a range of academic resources.

**Participation:**

In every class, we will spend approximately half the time on discussion. Class discussion is a vital learning component of this course, and it is important that everyone attends every class session to form a vibrant learning community. While attendance is not mandatory, it is highly recommended. To help boost attendance and to spur debate for discussions, you will have the opportunity to participate in class discussions to earn  $\frac{1}{4}$  (.25) point towards Prelims. No matter how many times you talk or how comprehensive your response is you will only receive the  $\frac{1}{4}$  credit/class (total:  $\frac{1}{4}$ pt/diem). I know and understand that speaking in front of a group of your peers can be stressful and anxiety provoking for some folks. But class discussion is not about being right or wrong, it is about deliberating ideas/hypotheses and concepts to frame your learning and achieving course success.

**Academic Integrity and Plagiarism:**

Each student in this course is expected to abide by the Cornell University Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student's own work.

Students agree that by taking this course, all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such

papers. Use of the Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site.

**Attendance:** Attendance is not mandatory but recommended. All lectures will be recorded; however, because the lecture is discussion based the audience questions and comments will mostly like be inaudible.

### **Circulating or Selling Class Materials**

All materials of this course are copyrighted, and it is prohibited to circulate or sell to commercial vendors the course materials, including syllabus, exams, lecture notes, images, presentations, and student papers. Such unauthorized behavior constitutes academic misconduct. Video and/or audio recording of class lectures and review sessions without my permission in advance is prohibited. If you have an accommodation letter from Student Disability Services, please make available as such as possible and if need be, an appointment to discuss.

### **Accommodation:**

Students needing accommodations: Your access in this course is important to me. Please request your accommodation letter early in the semester, or as soon as you become registered with SDS, so that we have adequate time to arrange your approved academic accommodations. Please email: ([ns3150cornell@gmail.com](mailto:ns3150cornell@gmail.com)). For students requiring accommodations for testing, we will be using the Alternative Testing Program coordinated by the SDS office. This service provides centralized testing support for students with SDS-approved exam accommodations in participating courses.

### **Academic Integrity, Academic Freedom, and Building Trust in the Classroom**

Each person in this class is expected to respect the principles of academic freedom for instructors and classmates and will maintain the privacy of the classroom environment, as outlined in [Cornell's S20 Commitment to Academic Integrity, Equitable Instruction, Trust, and Respect](#)[Links to an external site.](#)

**This commitment to building respect and trust in the classroom means members of this class will not:** record, photograph, or share online any interactions that involve classmates or any member of the teaching team. Students will also respect the intellectual property rights of the instructor and will not share or otherwise make accessible any course materials to anyone not enrolled in the course, without the instructor's written permission.

This policy is not meant to restrict students' ability to use classroom recordings in ways beneficial to their learning. Students who may benefit from recorded lectures and lecture playback, including students who use English as an additional language or who have accommodations from SDS, should speak to the course instructor to maintain transparency and trust in the classroom. Students approved to record lectures are expected to maintain the respect and privacy of the learning environment, as stated above.

Students will also not enable anyone not enrolled in the course to participate in any activity that is associated with the course.

Exceptions to this require the instructor's written permission.

## **ASSIGNMENTS AND EXAMS**

**Assignments:** We will have 4 class assignments that will help facilitate preparation for the exams. Each assignment will be composed of no more than 3 questions, which will be structured like exam questions. The answers will be graded for participation, not for correctness since mistakes are a crucial part of learning. Completing all 4 assignments, you will receive 10% participation towards your final grade. You will be allowed to miss one assignment without it affecting your participation grade. We will post the answers to the assignment after submission.

### **Exams:**

#### **March 5 and April 25**

Prelim 1 and 2 will be in-person and administered on Canvas. You will need an electronic device (ideally a computer). Unfortunately, Uris GO1 has limited outlets to charge devices; thus, electronic devices should be fully charged prior to the exam. At the end of the exam, you must present your Cornell ID to a TA proctor or myself.

Exams will be out of 100 pts and each exam is 30% of your final grade.

Exam Format: In-person during class period. 3 comprehensive questions and a combination of 25 short answer, multiple choice, or true/false questions. Exams will be administered on canvas. You will need a computer or tablet device and please make sure it is charged!!!

Exam Review Session: The class prior to the exam date will be used to ask questions and discuss topics. Because this review session is to help you prepare for the exam, I ask that you come prepared with questions or concerns about content. Of note, the review session is not recorded.

### ***Exam Makeup Policy:***

Since we have a large number of students in the class and a limited number of exams, I kindly ask that you respect the no makeup exam policy, unless the requests align with Cornell University Exam Policy (<https://registrar.cornell.edu/calendars-exams/final-exam-policies>). If you do have a conflict, I kindly ask that these requests be submitted as soon as possible but no less than two weeks prior to the test date.

### **Final Group Project:**

For your group project, teams of two students will investigate any topic we have covered in class and develop a detailed proposal about the significance of the topic and the future research and clinical direction. The project template is posted on Canvas. An assignment rubric is posted below and within Canvas. By Feb. 22 you will need to submit a team contract and plan (see form posted in Canvas) that outlines your goals for the project, the role of each team member, and your expectations for team behavior (i.e. communication,

meeting times, handling conflict). A topic draft of the proposal is due on April 15. The final proposal is due on May TBD.

Because the group project will be due on the final exam date schedule by the University, we will not be providing extensions. If a conflict or circumstance does occur, please email me immediately to coordinate a possible solution.

The project will be **30%** of your final grade.

**Using the following format:**

1. Four pages (limit)
2. 1.5 lines spaced
3. 0.75 margins (left-right; top-bottom)
4. Justify text
5. Arial; Georgia; or Times New Roman Font
6. 12 Font size
7. Header contains (last, first name)
8. Footer contains page number

**Title page** (is not counted in the page limit) as follows.

1. Title
2. Your name
3. Date

**Use the following sections:**

1. Significance:
  - a. Background and major health problem
  - b. Critical barrier in the field
2. Perspective
  - a. The research needed in the field
  - b. Potential clinical outlook/utility

**Reference Page:** (not counted in the four pages)

Must have 10 citations

Use APA Citation Formatting

Within Text example:

(Author's last name, First/Middle initial, Date).

Reference sheet Example:

Cunningham SA, Kramer MR, Narayan KM. Incidence of childhood obesity in the United States. N Engl J Med. 2014;370(5):403-11. doi: 10.1056/NEJMoa1309753. PubMed PMID: 24476431.

**Project Rubric:**

1. Is the obesity or obesity-related public health problem clearly defined?
2. Is the background sufficient to understand the problem?
3. Is the research direction clearly delineated, and is the rational, and potential clinical utility identified.

## Generative Artificial Intelligence (AI) Tools:

The use of generative artificial intelligence (AI) tools is permitted. If used at all, generative AI requires proper attribution for any generated work. As AI-generated materials are not retrievable by graders—and there is not a person to whom the work can be attributed—students should attribute directly quoted text to the creator of the generative AI tool used (e.g., cite OpenAI when directly quoting ChatGPT). This attribution should be used for both in-text citations and your reference list. **Be reminded that AI tools are not always factually correct; thus all queries and responses should be validated.**

### Reference

OpenAI. (2023). ChatGPT (Aug 10 GPT-3.5 version) [Large language model]. <https://chat.openai.com>

For full details on how to properly cite AI-generated work, please see the APA Style article, [How to Cite ChatGPT](#).

Regardless of whether or not the use of generative AI is permitted or prohibited for an assignment, it is critical that you adhere to our communicated course policy (and [Cornell's policy](#)) on academic integrity. If you are unsure of any policy or any assignment-specific directions—including whether or not a tool is considered generative AI—please consult the instructor prior to using the technology or completing your assignment."

## Grading Practices & Policies

**Grading Scale:** This course is not curved, and grades will be rounded to nearest whole number.

97 - 100%	A+		77 - 79%	C+
93 - 96%	A		73 - 76%	C
90 - 92%	A-		70 - 72%	C-
87 - 89%	B+		67 - 69%	D+
83 - 86%	B		63 - 66%	D
80 - 82%	B-		60 - 62%	D-
			59 - 0%	F

## Course Topics:

Jan 23	Intro (Berry)
Jan 25	What and how we talk about obesity (Berry)
Jan 30	Thermodynamics (Berry)
Feb 1	Energy regulation (TA-Siwen Xue)
Feb 6	Energy metabolism (Berry)



Feb 8	The Environment (Berry)
Feb 13	Genes (Berry)
Feb 15	Taste-gut-brain mechanisms (Berry)
Feb 20	Regulating body weight (Levitsky)
Feb 22	Food Choice/structure (Sobal)
Feb 27	No Class-February break
Feb 29	Review
March 5	<b>Prelim 1</b>
March 7	Adipose tissue (Berry)
March 12	Adipose Stem Cells (Berry)
March 14	Adipokines (Berry)
March 19	Adipose tissue inflammation (Berry)
March 21	Insulin resistance and type 2 diabetes (Berry)
March 26	Trace minerals-insulin and adipose responses (Aydemir)
March 28	Co-morbidities (Berry)
April 2	No Class-Spring Break
April 4	No Class-Spring Break
April 9	Thermogenic adipose tissue (Berry)
April 11	Gastric bypass and metabolic consequences (TA)
April 16	Covid-19 and metabolic disease (TA)
April 18	Gut microbiota (Poole)
April 23	Review
April 25	<b>Prelim 2</b>
April 30	Diets (Berry)
May 2	Health Disparities (Figueroa)
May 7	Obesity therapies-is it possible? (Berry)