

Biology 37 Course Goals, Format & Expectations

REQUIRED READING ON DAY 1 OF COURSE

Course Topics

[Topic 1: History & Overview of Human Endocrine System](#)

[Topic 2 : Hormone Receptors; Nuclear Receptors](#)

[Lecture 3: Hormone Receptors: Cell-Surface Receptors](#)

[X-Hour: Problem Solving in Endocrinology](#)

[Topic 4: The Pituitary & Hypothalamus](#)

[Topic 5: Hypothalamic/Pituitary/Gonadal Axis](#)

[X-Hour: Problem-Solving: A Mystery Case](#)

[Topic 6: Sex Steroids, Pregnancy & Lactation](#)

[Topic 7: The Adrenal Cortex](#)

[X-Hour: Mystery Case](#)

[Topic 8: Sexual Differentiation and Puberty](#)

[Topic 9: Growth Hormone & Growth Factors](#)

[Topic 10: Thyroid Hormones](#)

[Topic 11: Calcium-Regulating Hormones: PTH & Vitamin D](#)

[Topic 12: Hormone Production by "Non-Endocrine" Tissue](#)

[Topic 13: Fuel Homeostasis & Pancreatic Hormones](#)

[X-Hour: 2 Mystery Cases](#)

[Topic 14: Diabetes Mellitus:History/Molecular Pathogenesis](#)

[Topic 15: Body Weight:Obesity & Type 2 Diabetes Mellitus](#)

[Topic 16: Body Weight: Anorexia Nervosa](#)

[Topic 17: Neoplasia & Immunoendocrinopathy](#)

[Topic 18: What is a Hormone Anyway?](#)

I. General Course Goals

- To provide a broad overview of the endocrine signaling system and its function/dysfunction in humans
- To integrate aspects of molecular endocrinology and cellular biochemistry with *in vivo* physiology and pathophysiology
- To illustrate how the study of the molecular genetics, cell biology, biochemistry and pathobiology of an endocrine disorder reveals insights into the molecular/cellular mechanisms and physiology of normal endocrine function
- To introduce students to the biomedical literature and to learn some techniques of clinical/molecular investigation in a hypothesis-based, problem-solving paradigm

II. Course Format

The course will consist of 18 topics with lectures & paper discussions for each. **However, these will NOT be in real-time, but recorded and posted on our Canvas site. We will also use the X-hours for learning problem-solving skills, “solving” mystery cases, “live” patient presentations and hosting visiting faculty. These X-hours will be conducted via Zoom in real-time, but will also be recorded. These X-hours will not introduce any new course content, but have great value for the approach to course material and your development of analytical skills.**

On our Canvas site, navigating from the Syllabus page, there are several links to explore. Two of the most important are:

Course Topic Pages: There is a separate page for each course topic (1-18) Each page contains the following (already uploaded):

1. Links to pre-recorded lectures and paper discussions related to that topic (these lectures were mostly recorded in the s19 offering of Bio37, so you will hear students as well. Skip through any announcements).
2. Powerpoint (PP) slides for each lecture which are annotated (use 'Notes Page' view in PP 'View' menu) and PP slides of paper discussion
3. A lecture outline
4. A preview podcast for the reading on that topic (and PP slides used in that podcast)
5. Links to the readings. **Note that for each reading assignments, there are 2-3 for each topic. For the papers where RED FONT used, students need read ONLY the paper's abstract, though are encouraged to read the whole thing!**
6. For some topics, **optional**, but interesting readings or video links

Course Aids & Help Documents Page: On this page you will find summary slides of all the lectures on a particular topic which indicate the major points (and serve as a study guide for lecture content) and slide set called "Thinking Backwards" (indicate the thinking process around each of the papers we will read). There is also a PP set on "What the Major Hormones Do". These latter slides summarize the information about each of the major hormones to be studied does. This page also contains some "tips" documents for course success. Well worth reading the latter which include tips as to how to read the course paper assignments.

III. Course Schedule & Calendar

The course schedule is the Calendar at the bottom of the Syllabus page on the Canvas site. Note that I have grouped the lecture on a topic with lecture addressing the reading for that topic, merely to indicate their pairing, not necessarily the time they should be viewed. **However, it is worth setting aside a standard time (say, the J block (formerly 10A) 10A 10:20 AM-12:10 PM Tuesday/Thursday) for viewing/reading, so that you regiment yourself. There are separate pre-recordings for each. Students should view the topic lecture pre-recording first, then do the reading (using preview podcast & the study guide as aids) & then view the pre-recording of the lecture discussion at another time. We will use all the X-hours and will decide on a time for those that fits best with the geographic distribution and course schedules of the class (technically it is J-X (4-5 PM Friday), but we could decide on another time.**

IV. Required Readings/Study Guides

One to three manuscripts from the biomedical literature are assigned to correspond to the topics 1-17. For each set, a study guide is included. **The study guide is an important component to draw attention to the key points and to ask questions to guide your reading and study. The style of the questions there may also reflect the style of some quiz questions and the problem sets.** These papers have been chosen for their seminal nature and, most importantly, their integration of molecular and physiologic information. All are based on a central aspect of endocrine physiology or pathophysiology in humans and are meant to illustrate important principles of endocrinology and the techniques used to discover them. Student should do the best they can in the initial reading of these papers and utilize other resources, (e.g. reference texts, medical dictionary) as necessary, to address unfamiliar details. A discussion as to an overall approach to reading papers is included at the end of Topic 2 Lecture (**review the document posted on our web site ('Syllabus'>>'Course Aids and Help'>>'How to Read Papers in Bio 37')**). All readings are also previewed in a short "preview podcast" on the web site; worth listening to that before you begin to read.

The **principles** that these manuscripts illustrate and the general content (not picky details) of each will be represented in the quizzes and problem sets; the **study guides** are good clues as to the nature of these principles & to potential questions. The papers also illustrate a number of **techniques** used in the analysis of the endocrine system and you will need to be familiar with these, but not all the details of them (What does the technique measure? How would I interpret data obtained with the technique?).

Simply said, you will have more success in the class & get more out of our course if you actually do the reading! Re-reading the papers and working with the study guide after listening to my discussion is an excellent idea! "Sticky" details of each reading can be reviewed during X-hours, Zoom office hours or individual on-line chats.

A list of the readings is included in another link from the Syllabus page; link to individual ones from the respective topic page. All the papers are available as .pdf files there. Some have supplemental data which should also be looked at on-line. Note (as above): for some papers (see reading list), you need only read the paper abstract in preparation for the paper discussion (these indicated in **RED FONT**), though you are encouraged to read the whole thing!

V. Course Quizzes, Problem Sets, Participation and Grading

There are NO midterm or final exams in this course. There are three grading elements.

A. Quizzes: There will be a weekly on-line quiz beginning at end of Week 2 (total of 8 quizzes) accessible in the 'Assignments' link in the course menu. **In Week 1, I will upload a practice quiz, so that everyone gets familiar with the format.** Quizzes will be posted on the date indicated on the course schedule (either a Saturday or Friday), due 2 days later (48 hours to complete). Each quiz will consist of 10 single-answer multiple choice or matching questions worth 1 point each (**10 points per quiz; 80 points total**). All quizzes can be taken "open book" (though not in consultation with anyone else verbally or by messaging) and you will have 2 attempts (40 min per attempt) to complete them during this 48 hour period. After your first attempt, you will learn which you answered correctly/incorrectly. You can then study in-between before your 2nd attempt. Note, however, that the quiz will disappear at the due date/time from the web site, *even if you are in the middle of taking it*, so plan in advance. Your highest score will be recorded as your grade and then the answers will be revealed after the due time. Study in advance is strongly encouraged. **Regardless of the number of questions answered correctly, it is expected that ALL EIGHT quizzes will be completed to satisfy the course requirement. Any deviation from these policies must be discussed (e.g illness, internet access issues) with Professor Witters IN ADVANCE, i.e. not after the due date/time.**

B. Problem Sets Three (3) problem sets (**20 points each; 60 points total**) are assigned during the course, as indicated on the course schedule. They will be posted on the course web site ('Assignments') on the date indicated and will be due 72 hours later. Completed problem sets are to be submitted digitally as a .doc or .docx file through the course web site. Each problem set will consist of one or more problems, characterized by a description of a subject or family with an endocrine disorder and some preliminary laboratory data. The general assignment in each instance will be to:

- State a hypothesis (or alternative hypotheses) that best explain the abnormal state at a physiologic & cellular/ molecular level
- Detail an experimental approach as to how you would confirm your hypothesis(es) and the anticipated results of such experiments that would allow such a determination.

For all three problem sets, they are also ‘open book’ and students may freely discuss the problem with any member of the class, but NO others. However, each student must independently prepare their own submission and may not share drafts of their submission with anyone else (class member or others). In all instances, students are expected to adhere strictly to the Dartmouth Honor Principle. All students are expected to complete all three problem sets to satisfy the course requirement, irrespective of the time of submission. Late submission will result in a deduction of 1% per hour (i.e. 24% for being one day late, for example). Any deviation from these policies must be discussed (e.g illness, internet access issues) with Professor Witters IN ADVANCE, i.e. not after the due date/time.

C. Course Participation: In addition to the 80 possible points from the 8 quizzes and 60 points from the Problem Sets, students may earn up to **15 additional course points** by **ongoing “participation”** in the class. There are lots of ways to do this and any student doesn’t have to do all of them; even participating regularly in one of them is sufficient to participation points. **I just want to see evidence that folks are not just listening to the recordings, taking the quizzes and completing problem sets. I will put a special emphasis on how an individual student’s participation helps everyone else in the class.** Opportunities to participate include asking questions (or posting interesting info) on Piazza, asking questions/making comments during any Zoom sessions (including X-hours & group office hours) or by attending privately arranged “office hours” (Zoom). **I will miss not interacting directly with you this term, so hope all of you will take advantage of all of my “on-line presence” this term both for your learning of the course material, but also so I get to know each one of you and can help you in other ways.**

D. Course Grading The course grade will be determined by (1) required completion of **all** course assignments and (2) the number of accumulated course points. The policy of the Biology Department is that a minimum of 50% of total possible points must be earned to achieve a passing grade (77.5/155). Anyone with $\geq 90\%$ of possible points (139.5/155) will receive “some kind of A”; it is possible for this “cutoff” to be lower this term, but it will not be higher. Historically, the median grade in this course has been in the B+ range, but well could be higher this term, given the small size of the class, its interactive design and the current registrants. **All grading is done by me. Graded problem sets will be returned through the Canvas site. Note: You will have one week after I announce their availability to request any re-grading. After that, grades are then final.**

Breakdown of course points (total 155 possible):

8 quizzes	80 points (10 points each)
3 problem sets	60 points (20 points each)
Course participation	15 points

VI. Course Text, Readings, Reserve Books, Web Sites, Lecture Capture & Lecture Tools

A. Course Texts: I am not recommending or requiring a course text. There are reference texts available on-line as eResources that can be linked to from our web page (‘Syllabus’>>’Useful Textbooks & Web Links’).

B. Manuscript Readings are available on the Canvas site as .pdf files. Some have supplemental data through links on the course web site. Each required paper is accompanied by a study guide also on the web site, highlighting some areas to concentrate on and questions to consider during your reading. These study guides are VERY VALUABLE to use in your integration of course material and may contain material that is “fair game” for course quizzes/problem sets. Use of reference texts, medical dictionaries and other supplementary sources is encouraged; vocabulary may be an issue during reading and these other sources could prove helpful. **Listening to the “preview podcast” before reading the paper is a great way to orient yourself before working with the papers & the study guide.** We will review in class a strategy for reading/studying papers at end of Topic Lecture 2 (Hour 2) (see document “How to Read Papers in Bio37” in ‘Syllabus’>>’Course Aids & Help Documents’ section of web site).

C. Valuable Reference Materials: eBooks & Dana Library Research Guide

There are several other excellent reference books available as eBooks you can link to it via ‘Useful Textbooks & Web Links’ of our web site (‘Syllabus’). The Williams' Textbook of Endocrinology, 14th edition can be linked to directly from this page. Another helpful text (Jameson & DeGroot) is also available as an e-Book. Note also a link from the Syllabus page to a Dana ‘Library Research Guide’ to assist you in literature searching.

D. Valuable Web Sites (links on course web site in ‘Useful Textbooks & Web Links’ (‘Syllabus’ page))

There are a number of very useful web sites for this course. Please let me know if you find other sites that you think would be useful for this course.

E. Course Web Site

<http://canvas.dartmouth.edu>

Please set up your desired contact information now, as I will be using this mode through “Announcements” to communicate with you during the course. To do this, click on ‘Account’ in upper left green bar → ‘Settings’. Under ‘Notifications’ in menu, I recommend choosing ‘Notify me right away’, so you receive any announcements promptly. To choose this, click that check mark in the ‘Announcement’ line. **Also register for Piazza, the course Q&A module.** If you have registered for Piazza in another course, you shouldn’t have to do it again. If not, you will be asked to create a password (don’t use your Net ID or Dartmouth PW). This will be a one-time request and, once registered, you will be able to access from Canvas menu without having to enter the PW again. **To protect your privacy for this registration (which I would strongly encourage), please look at a document (accessible from ‘Syllabus’ page of web site).** Check with me if you have a problem accessing.

Please take a tour of the Canvas site to see how it is organized. The site is organized with a ‘Syllabus’ page (which has several links to general course pages and course aids), a ‘Calendar’, individual pages devoted to each course topic (each of which, in turn, contains pre-recorded lecture & reading discussion links, preview podcasts, .pdf files of the readings (and study guides for them), Powerpoint slides), an ‘Assignments’ section for quizzes, ‘Course Aids & Help Documents’ with topic summary PP slides and tips documents, a ‘Piazza’ section for asking questions and posting interesting material, and a ‘Grades’ section. Links to the X-hour Zoom Q&A/problem solving sessions materials and its recording can be found linking from the ‘Syllabus’ page to ‘Zoom X-Hours: Problem Solving and Patient Visits’. I am also recording all the Zoom group office hours and there is a link to that page (no recording of individual office hours). There is also a ‘Chat’ section that we may use for text chats, as needed/scheduled, during the term.

Note that many of the topic lecture PP slides are annotated, so in ‘Notes’ view (choose from PP menu) to see highlights of main points. All are already up-loaded for the term.

F. Lecture Capture/Podcasts

We will be using pre-recorded topic lecture & paper discussions this term. These recordings are mostly from the s19 offering of this class (also used in s20) which was virtually identical to what I had planned for this fall. Skip over any announcements; many of them begin with an announcement slide or two. You will also hear questions from the class which may have some value. The video will capture my computer screen. Any laser pointing will not be seen. Links to these files will be posted on each ‘‘Course Topics’’ page. Each ‘Course Topics’ page will also contain a ‘‘preview podcasts’’ to orient you to the reading assignment.

G. Zoom: Setting Up Your Account and Use

We will be using Zoom for our X-hours, for group office hours and, in some instances for individual office hours. I will send you a link for each of these meetings through ‘Announcements’ on the Canvas site or directly to you.

Likely you are all by now familiar with Zoom. To use Dartmouth Zoom, you need to claim your account. To do this: Go to <https://dartmouth.zoom.us>, click **Sign in** and enter your Dartmouth NetID and password. Once this step is completed, your account is activated. **Bookmark this webpage. This is where you will sign into your account and access other resources.** On that page, then click on ‘Download Desktop Client’ and then download ‘Zoom Client for Meetings’. Then find the Zoom icon in your Applications folder and place in your apps bar (for another convenient way to launch). Note also the Zoom homepage has a good FAQ page and Help Center. **Note: each Zoom link will have a REQUIRED password and you MUST access from your Dartmouth Zoom account (not any personal one). We will use the Week 1 X-hour to check out this and other technologies we will use in the course.**

H. Poll Everywhere Audience Response System

This term we will also be using a learning element, Poll Everywhere. This platform is an interactive program that allows extended faculty-student engagement, providing, among other things, platforms for asking/answering questions. You will be able to use it with your laptop, pad or phone. We will have a demo to show you how this works and how we will use it during our first scheduled X-hour while ‘‘Zooming’’. You can answer questions either through your phone, laptop or the [PollEverywhere app](#).

VII. Office Hours

Office hours, **offered 7 days a week generally**, will be announced via Canvas Announcements. We will do two types: (1) A daily group Zoom Q&A session (weekdays evenings EDT; weekends afternoons EDT) that anyone can drop into (come with questions; we will also use one of these sessions each week to review the prior weekend’s quiz or problem set) and (2) individual Zoom sessions to be scheduled with me. For the latter, you are encouraged to ask questions, review material, discuss papers or just chat about life, your path forward, questions about COVID-19, politics, art history, the cosmos, music/movie favorites, etc! It is very important to me to interact with all of you during this tough time. **Every one of you is important to me regardless of your background in biology & your present/future plans. I value very much these interactions and want to get to know you all better even under these difficult circumstances!**

Office hours also offer you the opportunity of being PROACTIVE AND CURIOUS in your approach to your education, even if you feel in command of the material we are covering, is important. **If you don’t feel in command, don’t wait till you ‘‘see how you do’’ on the 1st quiz to be posted the 2nd week of the term or the first problem set.**

VIII. Dartmouth Academic Honor Principle

The Dartmouth College Student Handbook states: "Fundamental to the principle of independent learning are the requirements of honesty and integrity in the performance of academic assignments, both in the classroom and outside. Dartmouth operates on the principle of academic honor, without proctoring of examinations. Any student who submits work which is not his or her own, or who commits other acts of academic dishonesty, violates the purposes of the College and is subject to disciplinary actions, up to and including suspension or separation.

Review the Academic Honor Principle. Review at: <https://students.dartmouth.edu/judicial-affairs/policy/academic-honor-principle>

Review Section V above as to the “ground rules” regarding the open book nature of quizzes/problem sets, collaboration on problem sets (only with classmates) and submission of answers to those problem sets. No contact with anyone else outside of our class either verbally or in writing is permitted. Specific instructions for their completion will be reiterated upon posting of the quizzes and problem sets.

Honesty is the foundation of the academic pursuit of knowledge. In recognition of this, I will not overlook any violations of the Academic Honor Principle. Indeed, the Faculty Handbook of Dartmouth College states explicitly that College Faculty is obligated to report potential violations of the Academic Honor Principle to the Dartmouth College Committee on Standards.

X. Religious Observances

Some students may wish to take part in religious observances that occur during this academic term. If you have a religious observance that conflicts with your completion of course quizzes or problem sets, please contact me IN ADVANCE to discuss appropriate accommodations.

XI. Commitments Toward Your Success in This Course

I am committed to your successful achievement of your goals in this course. **Please reach out to me for any concerns or questions this term; I am here to help you!** I also understand that you will encounter challenges during the term. Resources are available to help you. These may include:

- **Accessibility support.** Students with disabilities, including chronic diseases, learning/performance challenges, and/or mental health, but also this term challenges you are facing at home (e.g. internet access, illness) are encouraged to discuss with me appropriate supports that might be helpful to them and how we might make some adjustments in the on-line quizzes. **Please do this as early as you are aware.**

In order to formalize any disability-related accommodations you will receive, you **must consult** the Student Accessibility Services (SAS) office by phone (603-646-9900) or email (Student.Accessibility.Services@Dartmouth.edu). Please link to [Student Accessibility Services](#) for more information. You have my cooperation and support in assuring equitable access and all inquiries and discussions will remain confidential. **Once SAS has authorized services, students must share a formal communication from SAS with me in a conversation during on-line office hours (i.e. not sufficient simply to e-mail me the authorization).** It is **very important that we then continue to communicate** over the term to assure that your needs are being met. Receiving

accommodations **does not** relieve you of the responsibility of communicating with me about any deviations from course requirements **before the fact**.

- **Mental health and wellbeing support.** The academic environment at Dartmouth is challenging, our terms are intensive, and classes are not the only demanding part of your life, as will be very likely during this term. There are a number of resources available to you, even if you not on campus, to support your wellness, including: your undergraduate dean (<http://www.dartmouth.edu/~upperde/>), the Counseling Center (<http://www.dartmouth.edu/~chd/>), and the Student Wellness Center (<http://www.dartmouth.edu/~healthed/>). **I care about each of you, so feel free to raise these issues with me in our private conversations. As a physician, I have a commitment to your privacy and confidentiality as part of my professional credo.**