

Course Overview

Course title: Human Genetics

Course number: BIO 235

Course description: Genetic concepts using human examples, including the molecular and cellular basis of inheritance, patterns of inheritance, basic pedigree analysis, mutation, single-gene and polygenic diseases, and an introduction to genetic biotechnology.

Prerequisite(s): BIO 233 or instructor consent

In this course, we will study a variety of simple and complex (multi-factorial) human genetic diseases. We will also examine areas (such as cancer) in which inheritance and the environmental factors are mixed together, as well as modern technological applications of genetics (genetic testing, gene therapy, forensic identification, etc.). As the study of human genetics has always been controversial, we will spend some time discussing ethics.

Instructor Contact Information

Name: Dr. Travis Lund

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Office hours: TBD and available by appointment

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Textbook

Required Textbook: Cummings, Michael, *Human Heredity: Principles and Issues*, 11th edition, 2016 (OR 10th edition, 2014). Print or digital versions are both acceptable. The textbook is available through the [Oregon Tech Bookstore](#).

Proctor Information

This course requires proctoring of a midterm and a final exam. This term, we will use the online ProctorU service. For more detailed information, please access the **Proctor selection form** in the “**First Steps**” module of our Canvas course.

Course Content Outline

BIO 235 is organized into ten week-long content modules, with assessments (quizzes or exams) scheduled every two weeks. Below is a general overview of the course content and timeline. Specific due dates for this particular academic term are listed in the **Course Summary** at the bottom of the **Syllabus** tab in Canvas. (Note that chapters in parenthesis will be covered more briefly by limiting ourselves to certain sections of the chapter.)

| Week | Chapter | Topic |
|--|---------|------------------------------|
| 1 | 1, 2 | Introduction and review |
| 2 | 3 | Mendelian inheritance |
| Quiz 1 (Chapters 1-3: Introduction & foundations) | | |
| 3 | 4 | Pedigree analysis |
| 4 | 5 | Complex traits |
| Quiz 2 (Chapters 4-5: Transmission genetics) | | |
| 5 | 6 | Cytogenetics |
| 6 | (8) 9 | From DNA to proteins |
| Writing Assignment: OMIM Report | | |
| MIDTERM (Proctored; cumulative over chapters 1-6 & 8-9) | | |
| 7 | (10) 11 | Altered genes |
| 8 | 12 | Cancer genetics |
| Quiz 3 (Chapters 10-12: Altered genes and cancer) | | |
| 9 | (13-16) | Topics in molecular genetics |
| 10 | (7, 19) | Genetics of sex and race |
| Writing Assignment: Genetics in the News | | |
| Quiz 4 (Chapters 7, 13-16, 19: Special topics) | | |
| Final Exam (Proctored; cumulative over all content to date) | | |

Submitting Work

All coursework must be submitted via Canvas. Items are always due by 11:59pm Pacific time of the date listed, unless otherwise indicated. Submissions should often be made as attached files (.doc .docx and .pdf formats are all accepted).

Late Submissions: All late submissions will have points deducted for each day that they are late past the indicated deadline (~25% per day). Submissions more than 4 days late will only be accepted at the discretion of the instructor.

Overview of Course Components

During each **module** of the course, you will typically encounter the following **optional** and **required** course components. For best success in this course, it is *recommended* to complete most or all of them, particularly for content that you find more challenging. However, note that some components are **optional** and are simply available to you to aid in your studying as needed.

- **(Optional) Warm-ups:** *Get a quick introduction and mental warm-up on the module's content by testing yourself with a few true/false questions.*
- **(REQUIRED) Read textbook chapters:** The readings are always essential for full coverage of the module's content!
- **(Optional) Watch lectures:** *The recorded lectures augment the textbook readings by explaining the most complicated topics or adding context to the most interesting topics. They are **highly recommended** for the best understanding of the content.... but since they do not repeat every single detail from the textbook, they do not substitute for reading the assigned chapters!*
- **(REQUIRED) Discussion board posts:** Read the module's case study and post your response to the assigned questions. (*Follow-up* comments/discussion are **not** required, but I'd highly encourage you to read your fellow students' responses, and strike up conversations as you have time and interest!)
- **(Optional) Practice problems:** *Additional optional question sets are available for you to practice the module's content before assignments, quizzes, and tests.*
- **(REQUIRED) Assignments:** Answer various questions about the module's content.

In addition to these recurring weekly course components, there are also periodic required **quizzes**, **exams**, and **writing assignments** distributed at various times throughout the term:

- The four **quizzes** are un-proctored, open-book/open-note, **timed** assessments of the content covered since the last quiz. Your lowest quiz score will automatically be dropped, keeping your highest three scores.
- The **midterm exam** and **final exam** are **proctored, closed-book/closed-note, timed, cumulative** assessments of all content covered up to that point in the course.
- In a couple instances, discussion topics are replaced or augmented by special **writing assignments**.

Grading Policy

Point distribution: Your grade in this course will be calculated as follows. (The following point distribution is subject to minor adjustments if necessary.)

| Assignment Title and Description | Points |
|--|--------|
| "First Steps" items | 10 |
| Assignments: 10 @ 30 points each | 300 |
| Quizzes: 3 highest @ 80 points each | 240 |
| Midterm Exam (proctored) | 100 |
| Final Exam (proctored) | 200 |
| Discussion posts: 8 @ 10 points each | 80 |
| Written Assignment 1: OMIM Report | 20 |
| Written Assignment 2: Genetics in the News | 50 |
| TOTAL | 1,000 |

Grade scale:

| Points | Percentage | Grade |
|---------------|-----------------|-------|
| 900 and above | 90.0% and above | A |
| 800 to 899 | 80.0 to 89.9% | B |
| 700 to 799 | 70.0 to 79.9% | C |
| 600 to 699 | 60.0 to 69.9% | D |
| 599 and fewer | 59.9% and below | F |

Grade disputes: If you feel that that you have been unfairly graded or that I made an error in grade calculation/entry, **please** let me know! Unless it's a clear error (such as me adding up points wrong – it does happen!), you may be asked to put in writing why you believe you should receive the points in question.