



Biol 111/111L General Biology II class and lab

Fall 2025

Credits: 3 credit class + 1 credit lab

Class Days & Time:

Mondays & Wednesdays class 9am -10.15am / Friday lab 1pm to 3.45pm

Instructor's Name: Bob Kao

Classroom: Rau 1701 class / Arts and Sciences room 2375 lab

Phone Availability 206-535-8547

Office Location: or Meeting Space Arts and Science 2333

Text Availability 206-535-8547

Office Hours: [HU student hours Fall 2025 here](#)

E-mail: kao_r@heritage.edu

Course Description

A continuation of the major ideas and processes of modern biological science at the molecular, cellular, and organismal levels, and a survey of the animal systems, using the human as the primary example.

Prerequisite: BIOL 110 or permission of the Program Chair. Prerequisite(s): BIOL 110.

Land Acknowledgement

Heritage University occupies its home on the traditional lands of the Yakama People. These ancestral homelands are the Yakama, Palouse, Piquouse, Wenatshapam, Klikatat, Klinquit, Kow- was-say-ee, Li-ay-was, Skin-pah, Wish-ham, Shyiks, Ochechotes, Kah-milt-pa, and Se-ap-cat, who today are represented by the Confederated Tribes and Bands of the Yakama Nation [TREATY OF 1855] and, whose relationship with this land continues to this day. Heritage University, grounded in the vision of the two Yakama women founders, respects Indigenous peoples as traditional guardians of the lands and the enduring relationship that exists between Indigenous peoples and their traditional territories. We offer gratitude for the land itself, for those who have stewarded it for generations, and for the opportunity to study, learn, work, and be in community on this land. We acknowledge that our University's history, like many others, is fundamentally tied to the first colonial developments in the Yakima Valley. Finally, we respectfully acknowledge and honor past, present, and future Indigenous students who will journey through this home called Heritage University.

Learner Outcomes, Heritage Outcomes, Performance Indicators

What will I do in this class? (Performance Indicators/Behaviors)	What knowledge/skills will I gain? (Course-Specific Learner Outcomes /Competencies)	How does this work apply to my major or program of study? (Program and/or GUCR Student Learning Outcomes)
Analyzing and evaluating data from published original research in class and lab activities, and homework.	Develop research question based on own or other's observations.	Question Formulation: Pose testable questions and hypotheses to address gaps in knowledge.

	Design controlled experiment plans for analyzing data.	Study Design: Plan, evaluate, and implement scientific investigations. GUCR Learning outcome: Intellectual and Practical Skills, Students ask questions, demonstrate their ability to think systematically, and answer their questions by analyzing literature or conducting investigations.
	Analyze data.	Data interpretation and evaluation: Interpret, evaluate, and draw conclusions from data in order to make evidence-based arguments about the natural world.
Analyzing and evaluating data from published original research in class and lab activities, and homework.	Develop research question based on own or other's observations.	Question Formulation: Pose testable questions and hypotheses to address gaps in knowledge.

Texts, Materials, and Technology

Text(s): Campbell Biology Author(s): Reece, Jane B.; Urry, Lisa A.; Cain, Michael L.; Wasserman, Steven A.; Minorsky, Peter V.; Jackson, Robert B.

Edition: and/or Publication Date: 12th edition, ISBN-13: 978-0-13-518874-3, ISBN-10: 0-13-518874-1

Edition/Copyright: 12th edition (note: 10th or 11th edition also okay too) Publisher: Pearson Education

[HU Bio111 homework chapter quizzes and mini portfolio assignments or quizfolios page Fall 2025](#)

Supplements: Videos from PanOpto, [HHMI BioInteractive](#), and [iBiology](#) lectures will supplement the textbook readings. iBiology and BioInteractive science videos on biology research and short pre-recorded PanOpto lectures and additional videos will be emailed and posted on our course website on MyHeritage for previewing before class or lab.

Technology: Access to a laptop (PC, MacBook, etc.) or desktop and reliable internet access will be needed. Laptops can be checked out from the library (Unfortunately, iPads, tablets, and chrome books are not laptops. See Staff in the Donald K. North Library to check out a laptop). Our Learning Management System (LMS) called MyHeritage will be used to communicate ideas/instructions and to upload assignments. Your faculty member will help you.

Assignments and Grading

Assignment Title/Type Points/Percentage of Course Grade (ex. paper, exam, group project)

Assessment and Grading Procedures for BIOL 111 and Lab:

Percentage/weighting of each type of assessment: exams, quizzes, homework, presentations, essays/reports:

Percentage/weighting assessments for General Biology BIOL 111 Class Grading:

20% Team Research Proposal Presentation
 20% Team Research Proposal Write up
 20% Cumulative Unit Exams
 20% Quizzes-Mini portfolios (homework Quizfolios)
20%, In-class worksheets
 100% Total Percentage Class Grade

Percentage/weighting assessments for General Biology 111 Laboratory Grading:

50%, Lab worksheets
50%, Lab Discussion
 100% Total Percentage Lab Grade

Rubrics will be emailed and provided on our course and lab website for our semester class and lab settings.

Note: There will be two (2) cumulative unit exams during the semester in addition to the final exam. Students may choose up to both of the midterm cumulative exams for exam recapture to get half of the points added & lowest midterm will be dropped at the end of the semester. At the end of the semester, midterm scores scores (including optional exam recaptures) will be factored into the 20% of cumulative unit exams. In the exam recaptures, reflect on why you had missed the question, and revise your original answer and state in your own words the best answer. To help improve cumulative exam grade, it is strongly advised that students complete optional exam recaptures before the upcoming exam. Half of the points missed will be added onto original score, and are due by the last day of class. For example, a 60% original score will be given 20 percentage points, which will be given an exam recapture percentage of 80%.

Grade Scale:

92-100% = A	80-81.9% = B-	68-69.9% = D+
90-91.9% = A-	78-79.9% = C+	62-67.9% = D
88-89.9% = B+	72-77.9% = C	60-61.9% = D-
82-87.9% = B	70-71.9% = C-	<60% = F

For evaluating final written proposals, a four point scale rubric will be posted on our course website, and handed out to all students. The following four point scale/letter grade conversion will be used:

Four Point Scale	Percentage Grade/ Letter Grade	Description
3.8-4.0	92-100% / A	Highly Developed
3.5-3.7	90-91.9% / A-	
3.2-3.4	88-89.9% / B+	
2.9-3.1	82- 87.9% / B	Developed
2.6-2.8	80-81.9% / B-	
2.4-2.6	78-79.9% / C+	
2.1-2.3	72-77.9% / C	
1.8-2.0	70-71.9% / C-	Emerging
1.5-1.7	68-69.9% / D+	
1.2-1.4	62-67.9% / D	
0.6-1.1	60-61.9% / D-	Initial
0-0.5	<60% / F	

Course Guidelines and Expectations

➤ Description of course expectations

We will begin with our community of scholars class and lab discussions with community and team building to create an inclusive and equitable learning environment for all undergraduate scholars in our class and lab this semester. *I believe in your success, and I will advocate for you and your success.*

➤ Description of Assignment Types

To help every student succeed in our course and lab, the instructor will integrate classroom discussions, problem-solving, and lab worksheet assignments around a community of learners. In general, weekly homework will be assigned after class on Wednesday, and are due at the start of class on Monday. If there is an upcoming cumulative unit exam, modifications of assignments and due dates are stated in the daily course schedule. Weekly assigned quiz-folios (quizzes-mini portfolios) and in-class worksheets assigned during class are aimed to help students clarify misconceptions on biology concepts, and labs are designed to reinforce concepts from assigned readings and in-class discussions. Mini-portfolios and in-class discussions and lab will help students formulate their final team original research proposal due at the end of the semester. An example research proposal and rubric will be provided midway during the semester. There will be community-building activities during the first few minutes when we start online classes and labs and flexibility will be provided whether you choose to use video or audio. To facilitate class and lab discussions, we will use Padlet (a link will be provided in our weekly learning guide) and folder link to weekly handouts provided in learning guide and in email reminders.

Weekly learning guide with learning objectives and assignments, class and lab worksheet handouts, class notes, and online videos are found on our MyHeritage course website: [Main Page | BIOL 111 0 - General Biology II | My Heritage, Fall 2025 class and lab](#)

reminder: Log into MyHeritage before using links

The schedule for the semester may be subjected to changes due to circumstances that may arise during the course and lab. The instructor will make announcements in class and via email and course website for all students when changes occur.

For our HU community of scholars labs, we will work in collaboration with our HU colleagues in the process of inquiry in biology and Dr. Bob Kao will provide mentoring, advocacy, and support for each HU undergraduate scholar. In order to maintain health and safety for our HU community, you are invited to wear your mask during our in-person class and lab this semester. Gloves, goggles, masks, and sanitation wipes will be provided during our lab times and lab safety guide will be provided to ensure health and safety for all our HU undergraduates scholars this semester.

As outlined in the daily course schedule, cumulative unit exams at the learning levels of application, analysis, synthesis, and evaluation will be periodically given throughout the semester to check for mastery of course learning objectives, and are based on in-class discussions, homework, lab section assignments, and question prompts in the learning portfolios. An opportunity for extra credit assignment is listed below in section five of our syllabus.

Take home exams format:

Our exams will be take home exam format using honor system and no need to use video or audio settings on zoom. If you need testing accommodations, please let Dr Bob Kao know a week in advance and accommodations will be provided. You may use only one page front and back 8.5x11 inch note sheet (handwritten or typed), and needs to be scanned & sent via email using camscanner.com or a clear photo image if handwritten, or if typed send via email. I will send via email of word file of our exam about 30 minutes before start time of our exam. For example, we will take our midterm exams during our lab time, (2 hours 45 minutes), and if you need testing accommodation or if you would like to have a printout copy of the exam, please let Dr. Bob Kao know if possible a week in advance and Dr. Kao will provide accommodations. If you need printout of our exam, please let Dr. Kao know, and a printout will be provided on the day of our exam.

Once you had received word file of our exam, please confirm via email at kao_r@heritage.edu, or text me at 206-535-8547 and include your name so I know you had received exam. Once you have completed exam, you may type our in your own words your responses in word file of take home exam, or handwritten and then scanned using camscanner using 'batch' option or photo and sent via email to me at kao_r@heritage.edu or send link via gmail for example. If you do not have access to file transfer, please let me know and I can help setup a shared dropbox folder link for you so you can upload your completed exam. Email or text me that you have completed your exam.

Our final exam day will be announced around midway through our semester, and we will use our final exam day for any additional final team presentations.

➤ **Designated style determined by department, i.e. APA, MLA, CSE, for formal/research papers.**

Final team research proposal will contain the following sections in paragraph form: Research title; Introduction; Long-term goal; Research Question; Central Hypothesis; Experimental Approach and Potential Outcomes; Future Directions; Reference section. Note: In each specific aim section, there will be in paragraph section containing the following: specific aim

heading; proposed experimental methods to address specific aim hypothesis; possible and alternative outcomes from experiments; and heading for future directions.

Each member of the team submits their team research proposal in their own words.

An example will be shown in class. Expected final research proposal length is between two to three pages (not including references section).

Format: One inch margins using 11 point Times New Roman font.

Reference section (not counted towards 3 page limit): Please use American Medical Association (AMA) citation format, and refer to the following link to help you electronically create in-text citations and bibliography: <https://www.refme.com/us/citation-generator/ama/>

Course Schedule

- Content to be covered and mode, (lecture, class discussion, reports, or other), *please see next page for our class and lab calendar*
- Assignment due dates, *please see next page for our class and lab calendar for due dates of assignments.*
- **Assessment Procedures:** To help every student prepare for cumulative exams, students are encouraged to work on study guides provided during class. Exams are graded and returned within 1-2 weeks, and students may select them for exam recapture. Weekly homework and portfolio assignments and in-class worksheets and lab worksheets are crucial and lab reports will be graded, and instructor feedback provided for each student. Students' original research proposals are graded according to rubric under week 15 handout folder. There are no recaptures for research proposals, but students are encouraged to show working drafts to Dr Bob Kao, and he will provide feedback.

Section 9: General Biology II, BIOL 111 & 111L Schedule

Week	Topic Module	Monday Class	Wednesday Class	Friday Lab Topics	Assignment Reminders:
1	Process of Inquiry: From Molecules, Cells, to Organ Function	<u>Aug.25th :</u> Launching/Surveys/ Virtual Tea-Coffee sign-ups Handout Week 1	<u>Aug.27th :</u> Discussions & Group Analysis of Data	<u>Aug.29th :</u> Biological Exploration & Scientific Inquiry using Model Organisms	Launching/Surveys/ Tea-Coffee sign-ups Handout Week 1 Learning guide; Group Discussions/launch into Week 2 Quiz-folio 1 Assigned (due Sept 3rd) Chapters 1 &2
2	Molecular Tetris: Building Blocks of Life	<u>Sept. 1st :</u> Labor Day, No Class	<u>Sept 3rd :</u> Handout Week 2 Learning Guide, Discussions & Group Analysis of Data	<u>Sept. 5th:</u> Discussions & Group Analysis of Data	Group Discussions/launch into Week 3 Quiz-folio 2 Assigned (due Sept. 8th) Selected Chapters 3 to 5, 17, 20 Research video on lactase persistence & Video article on Gaucher Disease
3	Molecular Movement, Flow, and Function	<u>Sept. 8th :</u> Handout Week 3 Learning Guide	<u>Sept 10th :</u> Discussions & Group Analysis of Data Enzymes: Structure & Function	<u>Sept. 12th :</u> Lactase Data Analysis Lab and Planning for Team Research Proposals	Discussions & Group Analysis of Data Launch into Week 4 Quiz-folio 3 Assigned (due Sept 15th) Chapters 8 & 9
4	Structure and Function of Molecules & Metabolism	<u>Sept 15th :</u> Discussions & Group Analysis of Data Handout Week 4 Learning Guide	<u>Sept 17th :</u> Discussions & Group Analysis of Data	<u>Sept 19th :</u> Lactase Data Analysis Lab and Planning for Team Research Proposals	Discussions & Group Analysis of Data Launch into Week 5 Quiz-folio 4 Assigned (due Sept 22nd) Chapters 10 & Selected sections of Chapters 35, 38, 39.
5		<u>Sept 22nd :</u> Discussions & Group Analysis of Data Handout Week 5 Learning Guide	<u>Sept 24th:</u> Review Concepts Workshop Study for Exam 1	<u>Sept 26th:</u> Photosynthesis Inquiry Lab & Review Concepts (Pre-read Chapter 52 on Ecology and the Biosphere). (continue team proposals)	Review Concepts Workshop Study for Exam 1

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Week	Topic Module	Monday Class	Wednesday Class	Friday Lab Topics	Assignment Reminders:
6	Inside-Outside: Molecular Zip Codes & Signaling	<u>Sept 29th :</u> Review Concepts for Exam 1 Handout Week 6 Learning Guide	<u>Oct 1st:</u> Introduction and discussions on Cell Biology and Signaling	<u>Oct 3rd:</u> No Lab, HU faculty assessment day	Study for Exam 1
7		<u>Oct. 6th :</u> Handout Week 7 Learning Guide	<u>Oct. 8th :</u> Discussions & Group Analysis of Data	<u>Oct. 10th :</u> Take home Exam 1	Discussions and Data Analysis Quiz-folio 5 Assigned (due Oct 13th) Chapters 6 & 7 (Review concepts from Chapters 17 & 20)
8		<u>Oct. 13th:</u> Discussions & Group Analysis of Data Handout Week 8 Learning Guide Study Guide for Exam 2 provided in class	<u>Oct. 15th :</u> Discussions & Group Analysis of Data	<u>Oct. 17th :</u> Photosynthesis Lab Inquiry team project	Discussions & Group Analysis of Data Launch into Week 8 Quiz-folio 6 Assigned (due Oct. 20th) Chapters 11, 12, and 16 Figures 16.2, 16.10 through 16.13. Review concepts from Chapters 6 &7
9		<u>Oct. 20th:</u> Discussions & Group Analysis of Data Handout Week 8 Learning Guide	<u>Oct. 22nd:</u> Discussions & Group Analysis of Data	<u>Oct. 24th :</u> Photosynthesis Lab Inquiry team project	Review Concepts Quiz-folio 7 Assigned (due Oct 27th) Chapters 40-43 Readings <i>Concept Review for Exam 2</i>

Section 9: General Biology II, BIOL 111 & 111L Schedule

Week	Topic Module	Monday Class	Wednesday Class	Friday Lab Topics	Assignment Reminders:
10	Blood, Circulation, and the Immune System	<u>Oct. 27th</u> : Quizfolio 7 due in class Handout Week 10 Learning Guide	<u>Oct. 29th</u> : Concept Review	<u>Oct 31st</u> : Team Research Proposals	Quiz-folio 8 Assigned (due Nov 3rd) Chapter 44 (Review concepts from chapters 40-42) <i>Concept Review for Exam 2</i>
11	Hearts and Kidneys	<u>Nov 3rd</u> : Discussions & Group Analysis of Data Handout Week 11 Learning Guide	<u>Nov. 5th</u> : Concept Review	<u>Nov.7th</u> : Team Research Proposals	Quiz-folio 9 Assigned (due Nov. 10th) Selected sections of Chapters 13, 45 & 46 <i>Concept Review for Exam 2</i>
12	Genetic Inheritance and Reproduction	<u>Nov.10th</u> : Concept review Discussions & Group Analysis of Data	<u>Nov. 12th</u> : Discussions & Group Analysis of Data Handout Week 12 Learning Guide	<u>Nov. 14th</u> : Team Research Proposals and Projects	Discussions & Group Analysis of Data Launch into Week 12 Quiz-folio 10 Assigned (Due Nov 17th) Selected sections from Chapters 48-50.
13	Nerves & Muscle Cell Function	<u>Nov. 17th</u> : Discussions & Group Analysis of Data Handout Week 13 Learning Guide	<u>Nov. 19th</u> : Concept Review Workshop	<u>Nov. 21st</u> : Team Research Proposals and Projects	Discussions & Group Analysis of Data Reminder: Study for Exam 2
14	Molecules, Cells, Organs Integration Module	<u>Nov. 24th</u> : Concept Review for Exam2.	<u>Nov. 26th</u> : No Bio111 Class	<u>Nov. 28th</u> : Thanksgiving Holiday, No Class	Thanksgiving Holiday; No Class Review for exam 2 Prepare for Final Team Presentations
15		<u>Dec 1st</u> : Final Team Prep on Presentations/Concept Synthesis	<u>Dec 3rd</u> : Final Team Presentations	<u>Dec. 5th</u> : Exam 2 take home	

Attendance

In order to help each student succeed in our class this fall semester, in-class worksheets will be assigned and graded after each class section. It is expected that all students attend and come on time for all classes and labs. Through instructor-led facilitation of group discussions, these in-class worksheets help to reinforce class discussion concepts, and will help clarify misconceptions about terms and concepts. In addition, assigned lab worksheets will also help reinforce concepts discussed in class, as well as application and synthesis of genetic topics discussed in class.

If there is an unavoidable medical or personal emergency, please email or contact Dr Bob Kao at kao_r@heritage.edu or at 206-535-8547 before class or lab that you will miss class, and we will arrange the make-up assignment. Lowest homework, in-class or lab worksheets, and lowest midterm will be dropped before computing the final grades for class. Please note that all cumulative midterms (including recaptures of midterms) and final research proposal will all be factored into final course grade. There are no recaptures accepted for final research proposal.

Regular attendance and participation in classes is expected and considered essential for successful academic work. Heritage regularly updates its full attendance policy available in the current catalog: [Attendance Policy](#). Remember that Heritage University Student Affairs is ready to help solve problems that interfere with attending class. Email them at studentaffairs@heritage.edu (copy into your email provider).

Reasonable Accommodation for Religious Holidays

Consistent with Heritage University's mission and values and pursuant to RCW 28B.137.010 as amended, and Substitute Senate Bill 5166, HU allows student reasonable absences for reasons of faith or for organized activities conducted under the auspices of a religious denomination, church, or religious organization. The student requesting an excused absence for reasons of faith must submit the Request for Absence for Reasons of Faith Form to their instructor(s) at least two (2) weeks prior to the beginning of the semester in which the absence is anticipated to occur. The form is located on the Student Forms page under the Students Tab in MyHeritage. Full policy and procedures are located in the current catalog under Academic Policies, Attendance.

Support and Resources

Tutoring at the Academic Skills Center *reminder: Log into MyHeritage before using links*

The ASC has in-person and online appointments, drop-in services also both in-person and online. To view our schedule, or make an in-person or online appointment, visit the ASC page on MyHeritage under Student Services. To learn more about any of these services, call the ASC at (509) 865-8517 or email us ASC@heritage.edu

Library

The librarians are here to assist you! Use the online chat: [HU Library Website](#). For research and general assistance, feel free to stop by, call a reference librarian at (509) 865-8520, or email Library@heritage.edu

Credit Hour Requirements

Federal regulations require that all courses follow the Heritage University definition of a credit hour as described in HU Policy. For the current policy, see the catalog: [credit hour policy](#)

Online Course Exchange Appeals Process

Online Course Exchange students who wish to appeal an instructor's or facilitator's decision or request assistance with academic issues (such as requesting an incomplete or an extension) should contact HU's Online Course Exchange Liaison at Acadeum@heritage.edu.

Academic Honesty

Heritage University students have the responsibility to adhere to academic honesty in all their educational endeavors. Faculty has the responsibility to model academic honesty and to prevent, detect, and confront students who violate it. See [Academic Honesty Policy](#) and [Academic Honesty Procedure Diagram](#)

Campus Security & Safety

In an emergency, call 911. If you need campus security assistance between 8 a.m. and 5 p.m. , please call 509-865-8555 or ext. 8555 from any campus landline or email: CampusSecurity@heritage.edu. For a list of Campus Security services and Crisis Response Steps, see the [Safety and Security webpage](#)

Accommodations

For information about student disability services on campus, please visit the [Office of Disability Services \(ADA\) | Heritage University](#) webpage; or email Officeofdisabilityservices@heritage.edu

Safe Attendance Reminder

Heritage University is committed to providing a safe and healthy environment for all students, staff, and faculty. Our goal is to mitigate the potential for transmission of communicable diseases, including COVID-19, in our environment.

Anyone experiencing symptoms of viral illness, such as fever or chills, cough, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, or diarrhea, should stay home and see medical attention. Anyone known to have a close exposure to COVID-19 should wear a mask and follow [CDC guidelines](#) for isolation and precautions.

In addition, Heritage University community members must be prepared to “Mask When Asked.” Individuals can require that people who enter their offices wear masks. Faculty can require that students mask in their classrooms. Students who need to have their classmates mask can request that themselves or speak to the Vice President for Student Affairs to ask for support. Our collective commitment to health and wellbeing of all members of the community is essential and appreciated.