

**University of the Philippines Manila
College of Arts and Sciences
Department of Biology**

**BIOLOGY 110 COURSE SYLLABUS
First Semester AY 2024-2025**

COURSE DESCRIPTION

A comprehensive approach to the principles of biology.

COURSE GOAL

To instill knowledge in biology and to prepare students for advanced biology courses and science in general.

COURSE LEARNING OUTCOMES

After completing this course, the student should be able to:

1. integrate the fundamental concepts in the core areas of Biology – anatomy, physiology, genetics, ecology, systematics and evolution.
2. evaluate the concept “unity in diversity” among organisms.
3. correlate physiological concepts with selected clinical applications
4. exhibit an appreciation for the interrelationships that exist among organisms and their environment.
5. demonstrate ethical behavior in handling organisms.
6. critique published biological literature based on their knowledge of the scientific approach.

PROGRAM LEARNING OUTCOMES

PLO1. Develop a mindset for lifelong learning in pursuit of excellence with a global perspective

PLO2. Demonstrate adaptability, professionalism, and ethical behavior in the workplace

PLO3. Foster social and environmental responsibility to build a healthy community.

PLO4. Demonstrate knowledge and comprehension in the core areas of biology at varying scales.

PLO5. Apply critical, analytical, integrative, and creative thinking to biological problems

PLO6. Apply the scientific method to design and ethically conduct biological research

PLO7. Effectively communicate biological ideas in both written and oral form, and through the use of various media.1.

COURSE OUTLINE

LECTURE TOPICS	LABORATORY ACTIVITIES
I. The components of a cell, particularly the plasma membrane, altogether comprise basic life functions. A. Membrane transport mechanisms B. Cell-to-cell communication C. Membrane potentials	1: Writing a Scientific Report 2: Cell Transport 3: Membrane Potential 4: Hunting Genes
II. The continuity of life is based on heritable information in the form of DNA A. The Cell Cycle B. The Central Dogma C. Gene technology 1. Genetic engineering 2. Cloning techniques and PCR 3. Other applications	5: DNA Extraction 6: Virtual in vitro gene amplification FIRST LABORATORY EXAM

<p>III. All organisms are characterized by a definite functional morphology</p> <ul style="list-style-type: none"> A. Prokaryotes and protists B. Plants and major tissues C. Animals and major tissues <p>IV. Feedback mechanisms regulate biological systems.</p> <ul style="list-style-type: none"> A. Regulation and feedback mechanisms B. Mechanisms of organ function in plants and animals <ul style="list-style-type: none"> 1. Plant hormones 2. Animal organ systems <p>V. Organisms, as integral parts of natural populations, communities and ecosystems, interact with environmental biotic and abiotic factors.</p> <ul style="list-style-type: none"> A. Ecosystem function (Energy flow and trophic levels) B. Community ecology (Community Structure and succession) C. Population ecology (Demographics and species interactions) <p>VI. Biological evolution accounts for the unity and diversity of life</p> <ul style="list-style-type: none"> A. Evolution by Natural Selection B. Systematics and taxonomic classification 	<p>7: Plant tissues</p> <p>8: Plant Organs (Plant sample dissection)</p> <p>9: Plant Responses to Stimuli (Inform students to grow their plants 2 weeks before the experiment)</p> <p>SECOND LABORATORY EXAM</p> <p>10: Animal Tissues</p> <p>11: Animal Organs (Frog dissection)</p> <p>12: Animal Responses to Stimuli</p> <p>THIRD LABORATORY EXAM</p> <p>13: Herbivory</p> <p>14: Symbiotic relationship of Legumes and Rhizobium sp</p> <p>15: Age pyramid</p> <p>16: Biodiversity and Evolution</p> <p>FOURTH LABORATORY EXAM</p>
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Note: On the first class meeting in both the lecture and the laboratory, the instructor-in-charge will hold an orientation to the course for the students.

MODE OF DELIVERY

The course will be conducted in regular face-to-face class meetings. Virtual or asynchronous classes via online conference platforms are an alternative in instances of inclement weather conditions and other off-campus events. Learning materials to be provided by the instructor-in-charge will be provided via a preferred Learning Management System (CANVAS, uVLE or Google classroom).

COURSE REQUIREMENTS

A. Lecture component (60% of final course grade)

1. **Quizzes (15%).** All quizzes based on the covered lecture topics will be announced.

2. **Group assignments (5%).** This requirement will involve dividing the class into groups of four to five members each, to submit outputs which will include homework output, case studies, group discussion and class presentations. The particulars of each activity will be discussed or posted by the instructor-in-charge who will also set the deadline for the submission of the outputs. The contributing members for each group output will be given the same grade for their submission while non-participating members will be given no grade.

3. **Critique paper (10%).** Members of a class group will work on a written critique of an approved scientific research article. The instructor-in-charge will provide the particulars (e.g., guide

or sample paper and output rubric) for the writing of the critique paper according to a provided schedule of group meetings.

4. **Oral presentation (10%).** Each lecture group will also conduct an oral presentation of their approved research article prior to the submission of the critique paper. The oral presentation will focus on the content of the research article and will also be evaluated by another pre-assigned lecture group using a set criteria to be provided by the instructor-in-charge.

5. **Long examinations (60%).** There will be three departmental lecture examinations which are scheduled on the dates given below.

October 5, 2024 for the topics of Units I and II

November 9, 2024 for the topics of Units III and IV

December 7, 2024 for the topics of Units V and VI

B. Laboratory component (40% of final course grade)

The details on the following requirements will be discussed by the lab instructor on the first laboratory class meeting.

1. **Four laboratory exams** -- 60%

2. **Quizzes** -- 20%

3. **Worksheets/Oral and written reports** -- 15%

4. **Lab performance (Skills/Aptitude/Attendance)** -- 5%

COURSE POLICIES:

A. SUMMATIVE ASSESSMENTS

All examinations are departmental and the test dates are scheduled and announced at the beginning of the semester. Rescheduling of the exams will only be conducted in cases of extreme weather conditions and non-working holiday declarations.

1. **Missed examinations.** Any student who misses taking any exam (in the lecture or laboratory) for will automatically take the Final Examination at the end of the semester, provided that the student presents the valid documentation (e.g., formal letter from the program adviser) not later than one week from the student's return from absence. The grade of the Final Exam will take the place of the missed exam. If the student's absence is not excused, the student receives a score of zero for the missed exam.

A make-up test may be given to a student only in situations when physical illness or mental incapacity is the clinically diagnosed reason for having missed taking a prescheduled long examination. The student must submit to the faculty-in-charge a signed official letter from his/her unit head/program adviser within one week of the administered exam. The letter should confirm the failure to take the missed exam for a medical reason and endorse the taking of a make-up test by the student. As per department policy, however, there is no make-up test for missed quizzes.

2. **Final Examination.** A comprehensive final examination covering lessons from both the lecture and laboratory course components will be given at the end of the semester. A final exam will be required of a student who (a) missed any of the lecture or laboratory exams and/or (b) received a grade of less than 60% in either or both of the lecture and laboratory components of the course.

The computation of the course grade for final exam takers is as follows:

$$80\% \text{ pre-final grade} + 20\% \text{ final exam score} = \text{Final course grade}$$

A student should obtain a grade of 60% or better to pass the course, while a grade of below 54% will mean that the student has failed the course and will be required to re-enroll in the course. If a student earns a grade of 54 to 59%, then he/she will be given a grade of 4, for which the student has to take a removal examination, after which the student can be given a grade of only 3 (Passed) or 5 (Failed).

B. SCHOLASTIC INTEGRITY

1. The Department of Biology rules on scholastic integrity will be strictly enforced. However, these will not be prejudiced to any disciplinary action that might be imposed by college authorities. Any form of cheating during online exams and plagiarism will result in a grade of 5.0 for that course. The student cannot avoid getting a 5.0 by dropping the course.

2. The students must observe fair use of copyrighted materials, including the recorded classroom/online sessions.

a. RESPONSIBLE USE OF SOCIAL MEDIA

Students are requested to practice digital citizenship at all times. This is when a person uses the internet in a legal, safe, ethical and responsible way. Digital citizenship means behaving lawfully, protecting privacy, managing reputation, and thinking about how online activities affect other people, and the wider online community. As a policy, there will be consequences right away if there are any social media mishaps. Accountability is the key. As adult individuals, social media must be used responsibly. Establishing digital boundaries and open communication from the start could help both the instructors and students prevent unnecessary posting of something that might cost legal actions, if done irresponsibly.

b. ETHICAL FRAMEWORK FOR CHATGPT

The advent of ChatGPT provides opportunities for the best use of knowledge to achieve desired outcomes. However, the artificial intelligence (AI) could inadvertently violate the copyright-protected content of another. Students should be aware of such abuse of AI technology. Only spell-checking, grammar-correcting, and similarity-detection software are allowed in written reports. Any and all use must be declared (including the name of the software) in the methods section of the text. Furthermore, a monitoring system and/or software (Turnitin™) provided by the University is utilized to check the integrity of student-submitted outputs if:

- b1) there is infringement on copyrighted property;
- b2) the content of the output submitted is similar to other elements that possess trademark protection;
- b3) the recommendations indicated in a written output are inaccurate; and
- b4) there may be inadvertent involvement in a breach of confidentiality.

C. PASSING THE COURSE

In order to pass this course, the student should meet all the following conditions:

- 1. Has satisfied all the course requirements in both lecture and laboratory parts.
- 2. Has a final grade of 3.0 or better, and
- 3. Has passed in both lecture and laboratory components of the course (has a grade of 3.0 or better in each component).

GRADING SCALE

93 - 100 = 1.00	70 - 74 = 2.50
90 - 92 = 1.25	65 - 69 = 2.75
87 - 89 = 1.50	60 - 64 = 3.00
84 - 86 = 1.75	54 - 59 = 4.00
80 - 83 = 2.00	Below 54 = 5.00
75 - 79 = 2.25	

UNIVERSITY POLICIES

A. ACADEMIC INTEGRITY. The rules on the academic integrity will be strictly enforced. However, these will not be prejudiced to any disciplinary action that might be imposed by college authorities. Any form of cheating during online exams and plagiarism merits a grade of 5.0 for that course. The student cannot avoid getting a 5.0 by dropping the course. At the start of any assignment, quiz or exam, the student would be reminded of this pledge:

“As a student of the University of the Philippines. I pledge to act ethically and uphold the value of honor and excellence. I understand that suspected misconduct on given assignments/quizzes/examinations will be reported to the Appropriate office and if established, will result in disciplinary action in accordance with University rules, policies and procedures. I may work with others only to the extent allowed by the Instructor.”

B. COPYRIGHT NOTICE. The students must observe fair use of copyrighted materials. Based on the OVPAA Memorandum No. 2020-105:

“This Material (including course packs, guide, including the recorded synchronous sessions via Zoom, GoogleMeet, etc) has been reproduced and communicated to you by or on behalf of University of the Philippines pursuant to PART IV: The Law on Copyright of Republic Act (RA) 8293 or the Intellectual Property Code of the Philippines.

“The University does not authorize you to reproduce or communicate this material. The Material may contain works that are subject to copyright protection under RA 8293. Any reproduction and/or communication of the material by you may be subject to copyright infringement and the copyright owners have the right to take legal action such infringement.”

C. DATA PRIVACY. The statement on the UP Privacy Policy Notice for Students can be accessed at <https://privacy.edu.ph/privacy-notices/ups-privacy-notice-for-students.html>.

The Acceptable Use Policy:

1. This policy may be agreed to by students when they access the respective Constituent University's Learning Management System (e.g. CRS or SAIS).

2. The [CU LMS is covered by the University of the Philippines' Acceptable Use Policy, which can be accessed at <https://upd.edu.ph/aup/>.

3. By logging into [CU LMS], the student agrees to the Acceptable Use Policy of the University.

RECOMMENDED REFERENCES:

Mader, S.S. and M. Windelspecht, 2020, Essentials of Biology Sixth ed. McGraw-Hill Companies, Inc. USA.

Mader, S.S. and M. Windelspecht, 2018, Human Biology Fifteenth ed. McGraw-Hill Education. USA

Raven, P.H., Johnson, G.B., Mason, K.A., Losos, J.B. and S.R. Singer, 2020, Biology Twelfth ed. McGraw-Hill Companies, Inc. USA.

Starr, C., Evers, C.A. and L. Starr, 2021, Biology: Today and Tomorrow with Physiology, Sixth ed. Brooks/Cole. USA.

Urey, L.A., Cain, M.L., Wasserman, S.A., Minorsky, P.V. and J.B. Reece, 2021, Campbell Biology, Twelfth ed. Pearson Education, Inc. USA. **(Primary textbook)**

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