



College of Humanities and Sciences

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1345 (Dept. of Integrated Humanities and Sciences)
1408 (Dept. of Chemistry)
1115 (Chemistry Lab) | 1405 (Biology & Physics Lab)

COURSE SYLLABUS

DEPARTMENT	:	Integrated Humanities and Sciences
COURSE CODE/TITLE	:	BIOL 110 - General Biology
NUMBER OF UNIT/S	:	3.0 units (2.0 units Lecture/ 1.0 Laboratory)
PRE-REQUISITE	:	none
ROOM	:	_____
INSTRUCTOR/PROFESSOR	:	_____
CONSULTATION TIME	:	_____

COURSE DESCRIPTION:

General Biology is a course designed to engage students to the fundamental concepts of the biological sciences, and its broad scope of subfields and disciplines. As this course aims to facilitate the mastery of theoretical perspectives of biology, each student is provided with appropriate learning strategies needed to integrate requisite topics for direct applied approaches.

In addition, exploration of the organization of life, from the molecular level through the higher levels of structure and function will enable students to appreciate the unity and diversity of all biological species as governed by evolution. Understanding the influencing interactions in Nature (inter- and intra-organisms) allows a broader recognition of man's stewardship in the environment as a whole.

LEARNING OUTCOMES:

- LO1. Higher levels of comprehension;
- LO2. Proficiency in communication;
- LO3: Understanding of basic concepts across the domains of knowledge;
- LO4. Critical, analytical and creative thinking;
- LO5: Application of different analytical modes in tackling problems methodologically;

- LO6: Capacity to reflect critically and shared concerns and think of innovative, creative solutions guided by ethical standards;
 LO7: Excellence in the application of computing and information technology to assist and facilitate research;
 LO8: Ability to solve problems (including real world problems); and
 LO9: Knowledge of basic work related skills.

LEARNING PLAN:

TOPICS	INTENDED LEARNING OBJECTIVES	TEACHING AND LEARNING ACTIVITIES	METHOD OF ASSESSMENT
<p>I. Chemical and Cellular Basis of Life A. Biology: B. The Science of life C. Chemical basis of life D. The nature of life E. Morphology and physiology of prokaryotic and eukaryotic cells; F. Transport mechanisms G. Cellular energy H. Cell division</p> <p>II. Unity in Diversity A. Evolution Taxonomy</p>	<p>Construct a hierarchy of biological organization, including levels characteristic of individual organisms and levels characteristic of ecological system. Integrate the relevance of chemistry in shaping the development of biology as a discipline. Describe the cell theory and relate it to the evolution of life. Compare and contrast the general characteristics of prokaryotic and eukaryotic cells and contrast plant and animal cells. Describe the importance of biological membranes, their functions to facilitate complex biological functions. Discuss the historical development of evolutionary theory.</p>	<p>Gospel reading, interactive lecture discussion, power point presentations and video presentation</p>	<p>Major examination, recitation, quizzes, seatwork, assignment and short-course paper</p>
FIRST COMPREHENSIVE ASSESSMENT			

TOPICS	INTENDED LEARNING OBJECTIVES	TEACHING AND LEARNING ACTIVITIES	METHOD OF ASSESSMENT
<p>III. Classification of Lower Forms of Organisms A. Bacteria and viruses B. Protists C. Fungi</p> <p>IV. Plant Structures and Functions D. Plant Organization E. Vegetative Parts F. Reproductive Parts G. Plant growth and Development</p> <p>V. Animal Histology</p> <p>VI. Organ Systems Integumentary System Muscular System Skeletal System</p>	<p>Describe the relationship of this diverse group to plants and animals and identify how they impact humans.</p> <p>Differentiate between sexual and asexual reproduction, understand the patterns of inheritance and the complex interplay of heredity.</p> <p>Understand the relationship and evolution among the lower life forms.</p> <p>Appreciate the significance of these organisms to human health and ecological importance.</p> <p>Compare the generalized life cycle of plants, discuss the features that distinguishes seedless plants to seed plants and the environmental adaptations made by plants.</p> <p>Comprehend how different organs are interrelated to other organs in performing specific bodily function (<i>i.e.</i> skin, muscles and skeleton).</p>	<p>Gospel reading, interactive lecture discussion, power point presentations and video presentation</p>	<p>Major examination, recitation, quizzes, seatwork, assignment and short-course paper</p>
SECOND COMPREHENSIVE ASSESSMENT			

TOPICS	INTENDED LEARNING OBJECTIVES	TEACHING AND LEARNING ACTIVITIES	METHOD OF ASSESSMENT
Respiratory System Digestive System Circulatory System Excretory System Endocrine System Nervous System Reproductive System VII. Genetics: Mendelian and Genetic engineering VIII. Ecology and levels of interaction IX. Ecosystems and biosphere	<p>Comprehend how different organs are interrelated to other organs in performing specific bodily function (<i>i.e.</i> lungs, stomach, intestines, liver, pancreas, kidney, brain, testis and ovary).</p> <p>Explain Mendel’s principles of how genes and chromosomes carry traits from one generation to another and the application of technology to the advancement of genetics.</p> <p>Summarize the concept of energy flow through the food web, elaborate the flow of energy, biomass and the important environmental factors affecting the planet.</p>	Gospel reading, interactive lecture discussion, power point presentations and video presentation	Major examination, recitation, quizzes, seatwork, assignment and short-course paper
THIRD COMPREHENSIVE ASSESSMENT			

Laboratory

TOPICS	INTENDED LEARNING OBJECTIVES	TEACHING AND LEARNING ACTIVITIES	METHOD OF ASSESSMENT
Basic Microscopy	Be familiar with the parts of a compound microscope and the functions of each. Learn to properly focus the specimen under different objectives and apply the use of different magnifications for observing specimens.	Pre-lab (discussion and explanation of the procedure; preparation of specimen & materials) Experimentation (identification of the different parts and functions of the microscope; preparation of specimen on the slide; observation of prepared slides) Post-lab (analysis and discussion of the results)	Laboratory Performance Laboratory Work Sheets Quiz (written and/or practical)
Calculation of specimen size	Properly calculate the measurement of a specimen using the principles of magnification and microscopy.	Pre-lab (discussion and explanation of the procedure; preparation of specimen & materials) Experimentation (identification of the different parts and functions of the microscope; preparation of specimen on the slide; observation of prepared slides) Post-lab (analysis and discussion of the results)	Laboratory Performance Laboratory Work Sheets Quiz (written and/or practical)
Comparison of plant and animal cell	Compare the structural similarities and differences of plant and animal cells based on size, shape, functions, and other sub cellular components.	Pre-lab (discussion and explanation of the procedure; preparation of specimen & materials) Experimentation (identification of the different parts and functions of the microscope; preparation of specimen on the slide; observation of prepared slides) Post-lab (analysis and discussion of the results)	Laboratory Performance Laboratory Work Sheets Quiz (written and/or practical)

Unicellular Organisms	Learn the criteria and rules that determine the classification of every organism on a taxonomical perspective. Compare and contrast structural characteristics of each of the organisms. Identify the respective classification of the observed specimens.	Pre-lab (discussion and explanation of the procedure; preparation of specimen & materials) Experimentation (identification of the different parts and functions of the microscope; preparation of specimen on the slide; observation of prepared slides) Post-lab (analysis and discussion of the results)	Laboratory Performance Laboratory Work Sheets Quiz (written and/or practical)
FIRST COMPREHENSIVE ASSESSMENT			

TOPICS	INTENDED LEARNING OBJECTIVES	TEACHING AND LEARNING ACTIVITIES	METHOD OF ASSESSMENT
Plant external anatomy	Know the externally visible parts of plant. Identify the locations and functions of the structural parts of a plant. Understand the difference between a compound and a simple leaf and several vegetative parts.	Pre-lab (discussion and explanation of the procedure; preparation of specimen & materials) Experimentation (identification of the different parts and functions of the microscope; preparation of specimen on the slide; observation of prepared slides) Post-lab (analysis and discussion of the results)	Laboratory Performance Laboratory Work Sheets Quiz (written and/or practical)
Plant histology	Understand the differences between the vegetative and structural anatomical parts of a plant.	Pre-lab (discussion and explanation of the procedure; preparation of specimen & materials) Experimentation (identification of the different parts and functions of the microscope; preparation of specimen on the slide; observation of prepared slides) Post-lab (analysis and discussion of the results)	Laboratory Performance Laboratory Work Sheets Quiz (written and/or practical)

Animal histology	Name the fundamental tissue types and the different subcategories for each. Identify the functions of these tissue types based on structure and systems' classification. Appropriately name the tissues from the prepared specimens.	Pre-lab (discussion and explanation of the procedure; preparation of specimen & materials) Experimentation (identification of the different parts and functions of the microscope; preparation of specimen on the slide; observation of prepared slides) Post-lab (analysis and discussion of the results)	Laboratory Performance Laboratory Work Sheets Quiz (written and/or practical)
SECOND COMPREHENSIVE ASSESSMENT			

TOPICS	INTENDED LEARNING OBJECTIVES	TEACHING AND LEARNING ACTIVITIES	METHOD OF ASSESSMENT
External anatomy of the frog	Identify the different external structures of the frog. Be familiar with the different anatomical orientations, directional terms and terminologies used in dissection.	Pre-lab (discussion and explanation of the procedure; preparation of specimen & materials) Experimentation (identification of the different parts and functions of the microscope; preparation of specimen on the slide; observation of prepared slides) Post-lab (analysis and discussion of the results)	Laboratory Performance Laboratory Work Sheets Quiz (written and/or practical)
Frog Musculoskeletal system	Identify the skeletal and muscular parts of a frog and know the function of each. Relate the similarity of frog musculoskeletal system to the physiology of man.	Pre-lab (discussion and explanation of the procedure; preparation of specimen & materials) Experimentation (identification of the different parts and functions of the microscope; preparation of specimen on the slide; observation of prepared slides) Post-lab (analysis and discussion of the results)	Laboratory Performance Laboratory Work Sheets Quiz (written and/or practical)

Internal organs of the frog	Identify the structural parts of a frog from different internal systems (e.g. urogenital and reproductive) and relate the similarities to human body systems.	Pre-lab (discussion and explanation of the procedure; preparation of specimen & materials) Experimentation (identification of the different parts and functions of the microscope; preparation of specimen on the slide; observation of prepared slides) Post-lab (analysis and discussion of the results)	Laboratory Performance Laboratory Work Sheets Quiz (written and/or practical)
Nervous System		Brain and spinal cord extraction Post-lab (analysis and discussion of the results)	Laboratory Performance Laboratory Work Sheets Quiz (written and/or practical)
Accomplishment of final course output			
THIRD COMPREHENSIVE ASSESSMENT			

REQUIREMENTS AND ASSESSMENTS

REQUIREMENTS	ASSESSMENTS
Quiz notebook (lecture and laboratory) Laboratory gown Laboratory module Laboratory hygiene kit Laboratory safety kit PC (netbook, notebook, tablet PC) Experiment-specific lab necessities*	Quizzes (pre-/-post, short, long and term) Oral examination (reporting, recitation and Term examination (Major exam) Seatwork Homework Skills-based performance examination Written reports (Scientific journal critique, Project proposal, laboratory reports)

FINAL COURSE OUTPUT:

Intervention-design coursework paper

Students are expected to select a particular, specific issue of medical or environmental, to individually assess, formulate potential course of action/intervention based from their learning on the topics and in context, presented in this course. The output can be of an inquiry-based approach that can be accomplished by a theoretically-designed experiment and can be performed upon the approval of their respective course instructor. Also, the use of appropriate solutions to address issues such as existing misconceptions, perceiving probable complications that can ultimately lead to the construction of an individual, community-oriented action confirmatory validates student preparedness to engage as in a more specialized scientific understanding or as a future health professional.

RUBRIC FOR ASSESSMENT:

INDICATOR	Advanced 5	Proficient 4	Approaching Proficiency 3	Developing 2	Beginning 1	Points
Execute and apply concepts, principles, and theories of the biology and the processes of scientific inquiry.	Comprehensively follows the sequential phases of the scientific method in constructing the intervention coursework. Presents a detailed and clear proposal. Discusses the concepts thoroughly and surpassing the prescribed focus areas.	Evidently follows the scientific method. Presents an organized presentation of the proposal. Clearly states the focused areas and applies the concepts and principle on the proposal.	Clearly states the scientific method. Observes the concepts, theories and principles but lacks effectual impact on the coursework.	Clearly states the scientific method however, shows inconsistency as well as the coursework loses basis on the concepts, principles and theories.	Fails to clearly state the scientific method as coherence in the coursework is not evident.	

<p>Identify key priorities for improvement of the issue currently discussed.</p>	<p>Issues are clarified and problems are relevantly addressed based upon the biological principles. The student is able to develop solutions and strategies that are strongly feasible and locally applicable.</p>	<p>Issues are clarified and problems are relatively addressed based upon the biological principles. The student is able to develop solutions and strategies that are potentially feasible though impertinently feasible.</p>	<p>Issues are stated as well as problems but shows lose relevance to biological principles. The student is able to give solutions and strategies that are schematically outlined but lacking in applicability.</p>	<p>Issues are stated but show no relevance to biological principles. The student fails to understand the problem and probable solutions are not provided.</p>	<p>Issues are poorly stated and biological principles seem inappropriate for the selection.</p>	
<p>Demonstrate decision-making skills and responsible behaviors in personal, school, and community contexts</p>	<p>Strongly generates plausible explanations from the data gathered and identifies trends and patterns appropriate for a community or in a national level.</p>	<p>Generates explanations from the gathered data and applies the observed trends for a specific problem in the community.</p>	<p>Gathers data but lacks interpretation that can be used for solving the problem at hand.</p>	<p>Gathers outdated data and shows little importance in addressing the issue.</p>	<p>Fails to establish data collection.</p>	

LEVELS OF ASSESSMENT:**LECTURE**

FORM OF ASSESSMENT	PERCENTAGE WEIGHT
<ul style="list-style-type: none">• Major Exam	50%
<ul style="list-style-type: none">• Long and short quizzes• Assignments/Seatworks• Recitation/Class Participation	30 10 10
OVERALL POINTS	100%

LABORATORY

FORM OF ASSESSMENT	PERCENTAGE WEIGHT
<ul style="list-style-type: none">• Major Exam (Practical/Written)	40%
<ul style="list-style-type: none">• Performance<ul style="list-style-type: none">IndividualGroup• Quizzes• Laboratory Activities	10 10 20 20
OVERALL POINTS	100%

COMPUTATION OF GRADES:

Each form of assessment will be computed as follows:

$$\text{ASSESSMENT SCORE} = \frac{\text{RAW SCORE}}{\text{TOTAL SCORE}} \times 50 + 50$$

Term Grade will be computed as follows:

$$\text{Term Grade: } 60\% \text{ Lecture Grade} + 40\% \text{ Laboratory Grade}$$

At the end of the course, the final course grade will be computed as follows:

$$\text{FINAL COURSE GRADE} = \left(\frac{\text{PRELIM GRADE} + \text{MIDTERM GRADE} + \text{FINAL GRADE}}{3} \times 0.9 \right) + (\text{FINAL COURSE OUTPUT SCORE} \times 0.1) = 100$$

RUBRIC FOR ASSESSMENT OF INDIVIDUAL PERFORMANCE

Indicator	Advanced 5	Proficient 4	Approaching Proficiency 3	Developing 2	Beginning 1	Score
A. Listens to the instructor giving pre-lab discussions	Listens attentively while the instructor is giving pre-lab discussions.	Doing other subject's requirement before listening to the instructions.	Doing other subject's requirement and is using gadget before taking time to listen to the instructions.	Doing other subject's requirement, is using gadget and talking to seatmate before taking time to listen to the instructions.	Fails to listen to the instructor giving pre-lab discussions.	
B. Brings laboratory ID and laboratory gown	Always brings laboratory ID and laboratory gown every meeting.	Forgets to bring the laboratory ID and laboratory gown once (1).	Forgets to bring the laboratory ID and laboratory gown twice (2).	Forgets to bring the laboratory ID and laboratory gown thrice (3).	Fails to bring the laboratory ID and laboratory gown every laboratory class.	
C. Handles material carefully	Always handles material carefully.	Forgets to handle the materials carefully, once (1).	Forgets to handle the materials carefully, twice (2).	Forgets to handle material carefully, thrice (3).	Fails to handle the materials carefully every laboratory class.	
D. Works with utmost care and seriousness	Always works with utmost care and seriousness.	Forgets to work with utmost care and seriousness, once (1).	Forgets to work with utmost care and seriousness, twice (2).	Forgets to work with utmost care and seriousness, thrice (3).	Fails to work with utmost care and seriousness every laboratory class.	
E. Works with group mates harmoniously	Always works with group mates harmoniously.	Forgets to work with group mates harmoniously, once (1).	Forgets to work with group mates harmoniously, twice (2).	Forgets to work with group mates harmoniously thrice (3).	Fails to work with group mates harmoniously every laboratory class.	
F. Returns the materials in good working condition	Always returns the materials in good working condition.	Forgets to return the materials in good working condition, once (1).	Forgets to return the materials in good working condition, twice (2).	Forgets to return the materials in good working condition thrice (3).	Fails to return the materials in good working condition every laboratory class.	

G. Submits individual worksheet/s on time	Always submits individual worksheet/s on time.	Forgets to submit individual worksheet/s on time, once (1).	Forgets to submit individual worksheet/s on time, twice (2).	Forgets to submit individual worksheet/s on time, thrice (3).	Fails to submit individual worksheet/s on time.	

RUBRIC FOR ASSESSMENT OF GROUP PERFORMANCE

Indicator	Advanced 5	Proficient 4	Approaching Proficiency 3	Developing 2	Beginning 1	Score
A. Materials for the Experiment/Exercise	All of the materials needed for the experiment are all secured.	Lacks one (1) material needed for the experiment/exercise	Lacks two (2) materials needed for the experiment/exercise.	Lacks three (3) materials needed for the experiment/exercise.	Fails to bring all of the materials needed for the experiment/exercise.	
B. Bringing of laboratory ID	All members of the group always have their laboratory ID in borrowing laboratory materials	One member of the group fails to bring his/her laboratory ID upon borrowing laboratory materials	Two members of the group fail to bring his/her laboratory ID upon borrowing laboratory materials	Three members of the group fail to bring his/her laboratory ID upon borrowing laboratory materials	All of the members of the group fail to bring his/her laboratory ID upon borrowing laboratory materials.	
C. Group member's cooperation	All members of the group cooperate in performing the experiment/exercise	One (1) member of the group chooses not to cooperate in performing the experiment/exercise	Two (2) members of the group choose not to cooperate in performing the experiment/exercise	Three (3) members of the group choose not to cooperate in performing the experiment/exercise	All of the members of the group don't cooperate in performing the experiment/exercise.	
D. Coming to school on time	All members of the group are always on time in arriving at the time of the class.	One (1) member of the group fails to arrive on time.	Two (2) members of the group fail to arrive on time.	Three (3) members of the group fail to arrive on time.	All members fail to arrive on time.	
E. Bringing of	All members of the	One member (1) of the	Two (2) members of	Three (3) members of the	All of the members of	

laboratory gown	group always bring their laboratory gown	group fails to bring his/her laboratory gown	the group fail to bring their laboratory gown.	group fail to bring their laboratory.	the group fail to bring their laboratory gown.	
F. Submission of Worksheet on time	All members of the group submit the worksheet on time	One (1) member of the group fails to submit the worksheet on time	Two (2) member of the group fail to submit the worksheet on time	Three (3) member of the group fail to submit the worksheet on time	All members of the group fail to submit the worksheet on time	

REFERENCES:

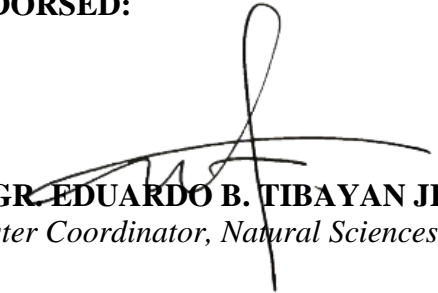
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COURSE POLICIES:

1. Students are allowed 20% of the total number of school days or 14 hours of absences inclusive of tardiness. All absences after that shall mean excessive absences, which will merit a grade of 0.00.
2. Home works will be due at the beginning of the class. No home works will be accepted thereafter.
3. The students will be given a score of zero (0) with corresponding grade of zero percent (0%) in a requirement which is not submitted on the prescribed time and date.
4. The students will be given a score of zero (0) with corresponding grade of zero percent (0%) in a quiz which is given during their absence.
5. Special major exams are scheduled one week after the administration of the major exams.
No special exams will be given thereafter EXCEPT IN SPECIAL SITUATIONS. Moreover, there are no special practical examination will be given to those who failed to take it on the scheduled date.
6. Students must be honest at all times; cheating and plagiarism in any form will merit a grade of 0.00.
7. Cellular/Mobile phones and the likes should always be in silent mode during class hours; the use of cellular phones is prohibited in class unless a special permission is sought. Tablets and laptops may be used to take down notes and may not be used to browse online resources at the time of discussion otherwise such devices will be confiscated throughout the duration of the class.
8. Any concerns (teaching, grades, interrelationship inside and relative to the class, etc.) should be properly addressed to the subject-teacher for appropriate action. Students may seek the help and guidance of their academic/registration adviser in resolving the issue with the subject-teacher.

All policies (attendance, tardiness, decorum, grievances, etc.) will be subject to the provisions of the latest revision of the Student Handbook.

ENDORSED:



ENGR. EDUARDO B. TIBAYAN JR., MSc, PhD
Cluster Coordinator, Natural Sciences

RECOMMENDED:



ILUMINADA A. RONIO, MSc
Department Chair, Integrated Humanities and Sciences

APPROVED:



MARGEL C. BONIFACIO, RCH, PhD
Dean