Course Acronym:	BIOL
Course Number:	120H
Descriptive Title:	Honors Evolution, Diversity, and Physiology
Division:	Natural Sciences
Department:	Biology
Course Disciplines:	Biological Sciences
Catalog Description:	This honors course, intended for students in the Honors Transfer Program, is a survey of eukaryotic organisms, their evolution and ecology. The student will have a thorough exposure to plant and animal anatomy and physiology, and will utilize animal dissection in the lab. Students will be expected to complete a project that includes hypothesis, prediction, experimentation, and presentation of results. This course is one of three courses in the biology series designed for biology majors, including those students planning to pursue a career in medicine, dentistry, or other life sciences. This course is enriched through extensive rigorous reading, writing, and research assignments. Note: Students may take either Biology 120 or Biology 120H. Duplicate credit will not be awarded for Biology 120 and Biology 120H.
Prerequisite:	Chemistry 4 or Chemistry 4H with a minimum grade of C in prerequisite or equivalent
Co-requisite:	
Recommended Preparation:	Biology 110 or Biology 110H and eligibility for English 1A
Enrollment Limitation:	
Hours Lecture (per week):	3
Hours Laboratory (per week):	6
Outside Study Hours:	6
Total Course Hours:	162
Course Units:	5
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	12/19/2016
Transfer UC:	Yes
Effective Date:	

General Education: ECC	Area 1 - Natural Sciences
Term:	
Other:	
CSU GE:	Area B2 - Physical Universe and its Life Forms: Life Science, Area B3 - Physical Universe and its Life Forms: Laborator Activity
Term:	
Other:	
IGETC:	Area 5B - Biological Science, Area 5C - course that incorporate a laboratory
Term:	
Other:	
Student Learning Outcomes:	**SLO #1 Scientific Method** The student will understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence. **SLO #2 Use of Microscope** The student will be able to use the compound and dissecting microscope to observe cells and microorganisms. **SLO #3 Content Knowledge (Energy Flow)** Students will use basic energy principles to explain the flow of energy in living systems, such as those that occur in the cellular metabolic pathways of photosynthesis and cell respiration, or the relationships observed between autotrophs and heterotrophs in ecosystems.
Course Objectives:	1. Characterize interactions among organisms and between organisms and environment. 2. Discriminate among population dynamics, community structure and ecosystem functions. 3. Outline major events in the evolutionary history of life. 4. Explain the principles and mechanisms of evolution at the micro and macro levels. 5. Compare and contrast representative phyla of supergroups of Eukarya (formerly protists). 6. Recognize the various protist, fungal, plant, and animal phyla viewed in the lab.

	7. Compare and contrast the life cycles of the fungal divisions. 8. Diagram and explain the alternation of generations in the life cycle of plants. 9. Identify samples of flower, fruit, and seed types. 10. Describe the various plant tissues and organs. 11. Explain water and food transport in plants. 12. Discuss the role of phytohormones in plant growth. 13. Identify and describe animal structures and relate them to functions.

Major Topics:	**A minimum of 80% of lab activities are hands-on experiences.**
	
	I. Evolution (6 hours, lecture)
	
	1. History of Life
	2. Natural Selection
	3. Systematics and Phylogeny
	
	II. Ecology (10 hours, lecture)
	
	1. Populations and communities
	2. Energy flow and natural resources
	    1. Carbon Cycle
	    2. Nitrogen Cycle
	    3. Water Cycle
	    4. Other nutrients
	3. Biomes
	4. Pollution
	
	III. "Protists" (4 hours, lecture)
	
	1. Supergroups within Eukarya
	    1. Diplomonads
	    2. Archaeplastida
	    3. Ophistokonta
	
	IV. Fungi (4 hours, lecture)
	
	1. Evolution
	2. Ecological variances
	3. Life cycles
	4. Spore types

5. Reproduction

V. Plants (14 hours, lecture)

1. Non-vascular and Seedless Plants
    1. Liverworts
    2. Hornworts
    3. Mosses
2. Vascular Seedless Plants
    1. *Selaginella*, Quillworts, and other Lycopods
    2. Ferns and Their Allies
3. Seed Plant Diversity, Ecology, and Reproduction
    1. Cycadophyta
    2. Gingkophyta
    3. Pinophyta
    4. Gnetophyta
    5. Anthophyta (Angiosperms)
4. Angiosperm Anatomy
5. Angiosperm Physiology

VI. Animals (16 hours, lecture)

1. Animal Tissues
    1. Ectoderm
    2. Mesoderm
    3. Endoderm
2. Animal Organ Systems
    1. Skin/Integument
    2. Cardiovascular
    3. Respiratory
    4. Skeletal
    5. Reproductive
    6. Excretory
    7. Digestive
    8. Endocrine
    9. Muscle
    10. Nervous

A minimum of 80% of lab activities are hands-on experiences

VII. Microscope (4 hours, lab)

1. Compound Microscope
    1. Letter "e"
    2. Silk fiber Slide
2. Dissecting Microscope

VIII. Research Methods (8 hours, lab)

1. Strategy
2. Research Projects
3. Data

	4. Preliminary Reports 5. Group Projects **IX. Ecology (14 hours, lab)** **X. Protists and Supergroups (7 hours, lab)** 1. Diplomonads 2. Alveolata 3. Ciliata 4. Amoebozoa 5. Archaeplastida 6. Opisthokonta **XI. Fungi (7 hours, lab)** 1. Ascomycota 2. Zygomycota 3. Chytridiomycota 4. Glomeromycota 5. Basidiomycota 6. Lichens 7. Mycorrhizal Assemblages **XII. Plants (28 hours, lab)** 1. Seed Plants 2. Plant anatomy 3. Plant physiology 4. Plant hormones 5. Stimuli response 6. Phytochemistry **XIII. Animals (40 hours, lab)** 1. Diversity of phyla and diplobastic or triploblastic tissue types. 2. Phylum overview (9 -15 phyla) 3. Phylum Porifera 4. Phylum Cnidaria 5. Phylum Platyhelminthes 6. Phylum Nematoda 7. Phylum Annelida 8. Phylum Mollusca 9. Phylum Arthropoda 10. Phylum Echinodermata 11. PhylumHemichordata 12. Phylum Chordata
Total Lecture Hours:	54
Total Laboratory Hours:	108
Total Hours:	162

Primary Method of Evaluation:	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	Identify the role of producers various consumers and decomposers in terrestrial and aquatic ecosystems. Write a 1-2 page paper with a minimum of 2 primary sources.
Critical Thinking Assignment 1:	Use lecture and laboratory to develop knowledge of evolutionary trends and comparative anatomy, such as among the two, three, or four chambered heart designs in vertebrate animals. Compare and contrast organ development and function in immature and adult stage of Amphibia and Mammals, particularly through dissection of frogs and fetal pigs. Write a 1-2 page paper with a minimum of 2 primary sources.
Critical Thinking Assignment 2:	Use the Natural Selection mechanism to help understand and explain the support of Evolution as a theory; use case study examples to provide support of Evolution and refute claims of "Darwin's Critics" in textbooks and/or supplemental handouts. 1. Write a minimum 3 page paper with a minimum of 3 primary sources. 2. Perform other examples of reading peer-reviewed journals, analyzing data, and short papers to synthesize conclusions.
Other Evaluation Methods:	Completion, Embedded Questions, Essay Exams, Fieldwork, Homework Problems, Laboratory Reports, Matching Items, Multiple Choice, Objective Exam, Quizzes, Reading Reports, Term or Other Papers, True/False, Written Homework
Instructional Methods:	Demonstration, Discussion, Field trips, Group Activities, Lab, Lecture, Multimedia presentations
If other:	Internet Presentation/Resources
Work Outside of Class:	Answer questions, Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting), Problem solving activity, Required reading, Study, Written work (such as essay/composition/report/analysis/research)
If Other:	Group laboratory project
Up-To-Date Representative Textbooks:	Peter J. Russell; Paul E. Hertz; Beverly McMillan, **Biology: The Dynamic Science**, 5th ed. 2021 Darrell Vodopich and Randy Moore, **Biology Laboratory Manual**, 12th Edition 2020
Alternative Textbooks:	
Required Supplementary Readings:	
Other Required Materials:	
Requisite:	Prerequisite
Category:	standard
Requisite course(s): List both prerequisites and corequisites in this box.	Chemistry-4 or Chemistry-4H or

Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	**Students will need to have a basic chemistry understanding.** CHEM 4/CHEM 4H - Utilize the language of chemistry, including vocabulary, symbols, formulas, and equations. CHEM 4/CHEM 4H- Compare and contrast physical properties, physical changes, chemical properties, and chemical changes.
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	Biology 110 or Biology 110H
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	**Ability to relate eukaryotic cellular structures with their functions.** BIOL 110/110H - Demonstrate general knowledge of eukaryotic cell anatomy, gene expression, metabolism, and division, including Mendelian genetics. **Provide an integrated overview and explain the importance of the flow of information from DNA to RNA to protein** BIOL 110/110H Explain in detail the processes of transcription and translation in cells.
Requisite Skill:	eligibility for English 1A
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	**It is advised that students are able to read and effectively analyze college level texts, and have the ability to write a paper that persuasively proves an original thesis. If students are eligible for English 1A they are more likely to be successful in this course.** **Students will have higher success if they can read and write at college level**. Summarize, analyze, evaluate, and synthesize college-level texts. Write a well-reasoned, well-supported expository essay that demonstrates application of the academic writing process.
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Thanh-Thuy Bui
Date:	12/10/2015
Original Board Approval Date:	12/19/2016
Last Reviewed and/or Revised by:	Karla Villatoro
Date:	05/20/2022
Last Board Approval Date:	06/20/2022