GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: BIO 4 DIVISION: 10 ALSO LISTED AS:

TERM EFFECTIVE: Fall 2021 CURRICULUM APPROVAL DATE: 06/8/2021

SHORT TITLE: GEN ZOOLOGY L/L

LONG TITLE: General Zoology

Units	Number of Weeks	Type	Contact Hours/Week	Total Contact Hours
4	18	Lecture:	3	54
		Lab:	3	54
		Other:	0	0
		Total:	6	108

Out of Class Hrs:	108.00
Total Learning Hrs:	216.00

COURSE DESCRIPTION:

General Zoology is designed for students exploring a career and majoring in Biology. This course uses the animal model to introduce the principles of evolutionary biology. Zoology explores animal diversity and considers the selection pressures of nature that direct animal form and function. Topics include mechanisms of evolution, animal life cycles, embryological development, comparative morphology and physiology, taxonomy and systematics, molecular and morphological phylogeny, ecological principles, organismal behavior and its place in the natural world. (C-ID BIOL 150) PREREQUISITE: MATH 240 or equivalent with a grade of 'C' or better. ADVISORY: CHEM 1A, BIO 1. High school-level reading and writing skills are strongly recommended.

PREREQUISITES:

Completion of MATH 240, as UG, with a grade of C or better.
OR
Score of 33 on Intermediate Algebra
OR
Score of 13 on Pre-Calculus
OR
Score of 2600 on Accuplacer Math
OR
Score of 2600 on MM CCCApply Math
OR
Score of 2600 on MM Placement Tool Math

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES

L - Standard Letter Grade

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

02 - Lecture and/or discussion
03 - Lecture/Laboratory
04 - Laboratory/Studio/Activity
04B - Laboratory - LEH 0.75
05 - Hybrid
71 - Dist. Ed Internet Simultaneous
72 - Dist. Ed Internet Delayed
73 - Dist. Ed Internet Delayed LAB
73B - Dist. Ed Internet LAB-LEH 0.75

STUDENT LEARNING OUTCOMES:

By the end of this course, a student should:

1. Describe mechanisms of evolutionary change including speciation.
2. Identify characteristics of major animal taxa and their phylogenetic relationships.
3. Identify and describe the diversity of animal structures and relate them to their functions.
4. Compare and contrast the differences in animal development and life cycles across the animal phyla.
5. Discuss the importance of habitat and sustainable ecology.
6. Apply scientific methodology and reasoning through active experimentation and experiences.
7. Develop basic laboratory and dissection skills.

COURSE CONTENT:

Curriculum Approval Date: 06/8/2021

LECTURE CONTENT:

4 LEC HOURS

CONTENT

- Introduction, properties of life, macromolecules in organisms, origins of life, theories

STUDENT PERFORMANCE - the student will be able to:

- Describe the properties of life
- Define natural selection
- List the 4 types of macromolecules in organisms and give examples
- Describe the origins of life, and the first organisms on. earth
- Define prokaryotic and eukaryotic organisms, and compare the two
- Define a the cell theory, and the evolutionary theory
- Explain the essential elements of life, major hypotheses for life? The history, mechanisms for the diversification of life, and macroevolution.
- Explain fundamental prokaryotic replication, metabolism, and cellular structure in relationship to evolution of diversity.

4 LEC HOURS

CONTENT

- cell structure and function, eukaryotic and prokaryotic cells, cell cycle, mitosis, meiosis, life cycles, homeostasis and mechanisms of evolution
- Describe the three general types of life cycle- zygotic, gametic and sporic
- Describe how organisms maintain homeostasis: water and ion balance, gas exchange, energy and nutrient acquisition, temperature regulation.
- Describe mechanisms of evolutionary change including micro-evolutionary forces that determine patterns of genetic diversity within species.

STUDENT PERFORMANCE - the student will be able to:

- Characterize cell structure and function in eukaryotes
- Identify eukaryotic organelles and list their functions
- Describe how cells divide, identifying and describing the stages of the eukaryotic cell cycle
- Describe meiosis, listing the various stages-
- Describe the different types of life cycles
- Describe examples of homeostasis
- Describe the mechanisms of evolutionary change

HOMEWORK

- read cell structure and function of eukaryotes, read cell cycle, mitosis and miosis
- provide evidence for evolution

COURSE CONTENT(CONTINUED):

LECTURE CONTENT(CONTINUED):

3 LEC HOURS

CONTENT

- classification and phylogeny

STUDENT PERFORMANCE - the student will be able to:

- Define systematics and taxonomy
- Describe the role Carolus Linnaeus had in the classification system
- Identify the different taxa in modern systematics
- Define the term species
- Describe how to construct and evolutionary tree
- Describe how cladograms are used in the classification system, listing and describing the different types of cladograms
- List and describe the 3 domains of life and the major kingdoms

HOMEWORK

- read systematics, taxonomy and construct an evolutionary tree and study lecture notes

3 LEC HOURS

CONTENT

- protozoans

STUDENT PERFORMANCE - the student will be able to:

- Describe the mechanisms of evolution
- Describe the characteristics of the protozoan
- Give examples of species that are protozoans
- Describe the different ways in which protozoa reproduce
- Describe three different types of symbiotic relationships
- Describe the ecology

HOMEWORK

- read Ch. 11 and study lecture notes

3 LEC HOURS

CONTENT

- Phyla Placozoa, Mesozoa, and Porifera

STUDENT PERFORMANCE - the student will be able to:

- Describe the mechanisms of evolution.
- Describe the meaning of the term metazoan, and list the three categories of metazoans
- List the different phyla that belong to the three different. categories of metazoans
- Describe features of the Phylum Placozoa
- Describe features of the Phylum Mesozoa
- Describe features of the Phylum Porifera
- Describe the structures possessed by organisms of Phylum Porifera, and name their function
- List the types of canal systems of Phylum Porifera
- Describe the feeding habits of Phylum Porifera
- Describe the ecology

HOMEWORK

- read Phylum Porifera and study lecture notes

COURSE CONTENT(CONTINUED):
LECTURE CONTENT(CONTINUED):
3 LEC HOURS
CONTENT
- Radiate animals
STUDENT PERFORMANCE - the student will be able to:
- Describe the mechanisms of evolution.
- Describe characteristics of the Phylum Cnidaria
- Define radial symmetry
- Describe what is meant by the term diploblastic
- Describe how Cnidaria capture and digest food
- Describe the functions of structures found in Phylum Cnidaria
- List the different classes of Cnidaria, and list features of each class
- Describe the ecology
- exam
HOMEWORK
- Read Phylum Cnidaria and study lecture notes
3 LEC HOURS
CONTENT
- diploblastic organisms and the platyhelminths
STUDENT PERFORMANCE - the student will be able to:
- Describe the mechanisms of evolution.
- Define the term "acoelomate, bilateral animals and describe features of such animals
- List the phyla that are acoelomate, bilateral animals
- Describe the term diploblastic
- Describe the process of nutrition and digestion that occurs in platyhelminths
- Describe the organ systems present and absent in platyhelminths
- Describe the different classes of. platyhelminths and compare to phyla covered to date
- Describe the ecology
HOMEWORK
- read Acoelomates, Phylum Platyhelminths, study lecture notes
3 LEC HOURS
CONTENT
- Phylum Nematoda
STUDENT PERFORMANCE - the student will be able to:
- Describe the mechanisms of evolution.
- Describe characteristics of pseudocoelomate animals
- Name the phyla that are pseudocoelomates
- Describe characteristics of, and structures found in Phylum Nematoda and Rotifera
- Describe the ecology
- quiz
HOMEWORK
- read pseudocoelomates and phylum Nematoda and study lecture notes

COURSE CONTENT(CONTINUED):
LECTURE CONTENT(CONTINUED):
3 LEC HOURS
CONTENT
-Phylum Mollusca
STUDENT PERFORMANCE - the student will be able to:
- Describe the mechanisms of evolution.
- Describe characteristics of molluscs
- Describe the structures of molluscs and list their functions
- Describe the different classes of molluscs
- List specific organisms that belong to the different classes of molluscs
- Describe the ecology
HOMEWORK
- Read Phylum Molluscs , study lecture notes
3 LEC HOURS
CONTENT
- Phylum Annelida
STUDENT PERFORMANCE - the student will be able to:
- Describe the mechanisms of evolution.
- List features common to annelids, and compare to that of the previously described phyla
- Describe the different organ systems present and absent in annelids
- Describe the different classes of annelids
- Describe the ecology
- exam
HOMEWORK
- Read Phyla Annelids, study lecture notes
3 LEC HOURS
CONTENT
- Subphylum Chelicerata, aquatic mandibulates
STUDENT PERFORMANCE- the student will be able to:
- Describe the mechanisms of evolution.
- Describe general features of arthropods
- List the different classes of arthropods and describe their difference
- Describe Subphyum Chelicerata, listing different structures found in these types of animals, and name the function of the structures
- Describe the aquatic mandibulates
- Describe specific organisms that are aquatic mandibulates
- Describe the ecology
HOMEWORK
- Read Subphylum Chelicerata, study lecture notes

COURSE CONTENT(CONTINUED):

LECTURE CONTENT(CONTINUED):

3 LEC HOURS

CONTENT

- Subphylum Uniramia

STUDENT PERFORMANCE - the student will be able to:

- Describe the mechanisms of evolution.
- Describe features of the terrestrial mandibulates
- Describe organisms that belong to the different classes of Subphylum Uniramia, naming their features and describing their function.
- Describe the different organ systems that are present, and list those that are absent
- Compare features of Uniramians to that of previously described phyla
- Name beneficial and harmful insects and elaborate on their effects on the lives of humans
- Describe the ecology
- quiz

HOMEWORK

- Read Phylum Uniramians, study lecture notes

3 LEC HOURS

CONTENT

- Phylum Echinodermata

STUDENT PERFORMANCE - the student will be able to:

- Describe the mechanisms of evolution.
- Describe features of the Phylum Echinodermata
- Describe the different classes of echinoderms, and compare them
- Give examples of organisms that belong to each class
- Describe the different organ systems that are present in echinoderms, and list those that are absent
- Describe the ecology

HOMEWORK

- read Phylum Echinodermata, study lecture notes

3 LEC HOURS

CONTENT

- Deuterostomes, urochordates and cephalochordates

STUDENT PERFORMANCE - the student will be able to:

- Describe the mechanisms of evolution.
- Describe features common to deuterostomes, naming and describing the different phyla that belong to such group
- Describe the ecology

HOMEWORK

- read Deuterostomes, take quiz

COURSE CONTENT(CONTINUED):
LECTURE CONTENT(CONTINUED):
4 LEC HOURS
CONTENT
- Phylum Chordata
STUDENT PERFORMANCE - the student will be able to:
- Describe the mechanisms of evolution.
- Describe features of Phylum Chordata. Compare these features to that of the previously described phyla
- List and describe the functions of structures found in organisms that belong to Phylum chordata.
- Describe the different organ systems that are present, and list those that are absent
- Describe the ecology
HOMEWORK
- Read Phylum Chordata study lecture notes
4 LEC HOURS
CONTENT
- Subphylum Vertebrata
-Reptiles, birds and mammals
STUDENT PERFORMANCE - the student will be able to:
- Describe features of Subphylum Vertebrata, and compare to that of previously described phyla.
- Describe the different organ systems that are present.
- Describe the different categories of vertebrates
- Describe the ecology
- quiz
HOMEWORK
- read organ systems and complete organ system quiz
2 HOURS
FINAL EXAM

COURSE CONTENT(CONTINUED):

LAB CONTENT:

3 LAB HOURS

CONTENT

-lab safety and emergency procedures

STUDENT PERFORMANCE - the student will be able to:

- Describe safety procedures in the lab

3 LAB HOURS

CONTENT

- microscopes

STUDENT PERFORMANCE - the student will be able to:

- Demonstrate the correct handling and usage of a compound microscope and dissecting microscope
- Identify the various structures and organelles of the eukaryotic cell as seen through the microscope
- Complete lab report

3 LAB HOURS

CONTENT

- Evaluate the ecological relationships of organisms at the population, community, and ecosystem level.

STUDENT PERFORMANCE - the student will be able to:

- Describe the ecological relationships of organisms at the population, community, and ecosystem level.
- Complete lab report

3 LAB HOURS

CONTENT

- protozoans

STUDENT PERFORMANCE - the student will be able to:

- - List and describe the structures and their functions of various protozoans
- Complete lab report

3 LAB HOURS

CONTENT

- Phylum Porifera

STUDENT PERFORMANCE - the student will be able to:

- List and describe the functions of various structures of organisms in Phylum Porifera
- Perform dissection
- Complete lab report

3 LAB HOURS

CONTENT

- Phylum Cnidaria

STUDENT PERFORMANCE - the student will be able to:

- List and describe the structures and their functions of various organisms in Phylum Cnidaria
- Perform dissection
- Complete lab report

3 LAB HOURS

CONTENT

- Phylum Platyhelminthes

STUDENT PERFORMANCE - the student will be able to:

- List and describe the structures and their functions of various organisms in Phylum Platyhelminthes
- Perform dissection
- Complete lab report

COURSE CONTENT(CONTINUED):
LAB CONTENT(CONTINUED):
3 LAB HOURS
CONTENT
- Phylum Nematoda
STUDENT PERFORMANCE - the student will be able to:
- List and describe the structures and their functions of various organisms in Phylum Nematoda
- Perform dissection
- Complete lab report
3 LAB HOURS
CONTENT
- lab practicum exam
STUDENT PERFORMANCE
- the student will write a Lab Practicum exam
3 LAB HOURS
CONTENT
- Phylum Annelida
STUDENT PERFORMANCE - the student will be able to:
- List and describe the structures and their functions of various organisms in Phylum Annelida
- Perform dissection
- Complete lab report
3 LAB HOURS
CONTENT
- Phylum Mollusca
STUDENT PERFORMANCE - the student will be able to:
- List and describe the structures and their functions of Phylum Mollusca
- Perform dissection
- Complete lab report
6 LAB HOURS
CONTENT
- Phylum Arthropoda
STUDENT PERFORMANCE - the student will be able to:
- List and describe the structures and their functions of Phylum Arthropoda
- Perform dissection
- Complete lab report
3 LAB HOURS
CONTENT
- Phylum Echinodermata
STUDENT PERFORMANCE - the student will be able to:
- List and describe the structures and their functions of various organisms in Phylum Echinodermata
- Perform dissection
- Complete lab report

COURSE CONTENT(CONTINUED):

LAB CONTENT(CONTINUED):

3 LAB HOURS

CONTENT

- Urochordates and Cephalochordates

STUDENT PERFORMANCE - the student will be able to:

- List and describe the structures found in various organisms that are urochordates and cephalochordates.
- Describe the functions of such structures.
- Compare these 2 groups to the phyla previously described.
- Describe the different organ systems that are present, and list those that are absent
- Perform dissection
- Complete lab report

3 LAB HOURS

CONTENT

- sharks, fresh water fish and amphibian

STUDENT PERFORMANCE - the student will be able to:

- List and describe the structures and their functions of sharks, fresh water fish
- List and describe the structures and their function of amphibians
- Perform dissection
- Complete lab report

6 LAB HOURS

CONTENT

- Mammals and lab practicum review
- lab practicum exam

STUDENT PERFORMANCE - the student will be able to:

- classify chordates mammals
- presentation of selected animals and or service learning projects
- the student will write a Lab practicum exam

METHODS OF INSTRUCTION:

Lecture presentation and Laboratory exposure to practical application. Use of computer, internet, video, document camera, board notes, 'outdoor classroom' projects, Service Learning/Experiential learning, discussion, and presentations from biological professionals. A variety of assessment techniques that include midterm and final examinations, research report, projects, homework problems, laboratory reports, laboratory practical.

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 40

Assignment Description:

Experiential learning activities such as insect collection and curation, literature research for presentations and lab reports.

Required Outside Hours: 68

Assignment Description:

Homework, problem sets, other assignments

METHODS OF EVALUATION:

Writing assignments

Percent of total grade: 10.00 %

Percent range of total grade: 10 % to 20 % Written Homework Lab Reports Essay Exams Term or Other Papers

Problem-solving assignments

Percent of total grade: 40.00 %

Percent range of total grade: 35 % to 40 % Homework Problems Field Work Lab Reports Quizzes Exams Other: service learning

Skill demonstrations

Percent of total grade: 10.00 %

Percent range of total grade: 10 % to 20 % Class Performance/s Field Work

Objective examinations

Percent of total grade: 40.00 %

Percent range of total grade: 30 % to 45 % Multiple Choice True/False Matching Items Completion Other: Essay

REPRESENTATIVE TEXTBOOKS:

Stephen A. Miller, and ?Todd A. Tupper?. . Zoology 11th edition. US: McGraw-Hill,2019.

2019. Zoology 11?th

ISBN: 9781260161991

Reading Level of Text, Grade: Reading level of text, Grade: 16 Verified by: Librarian

Required Other Texts and Materials

Stephen A. Miller, 2013. General Zoology Laboratory Manual 7th edition McGraw-Hill.

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:
- GAV B2
- GAV B3
- GAV Area 4 = Social & Behavior

CSU GE:
- CSU B2
- CSU B3

IGETC:
- IGETC 5B
- IGETC 5C

CSU TRANSFER:
- Transferable CSU

UC TRANSFER:
- Transferable UC

SUPPLEMENTAL DATA:

Basic Skills: N
Classification: Y
Noncredit Category: Y
Cooperative Education:
Program Status: 1 Program Applicable
Special Class Status: N
CAN: BIOL4
CAN Sequence: BIOL SEQ A
C-ID (BIOL 150)
Prior to College Level: Y
Non Credit Enhanced Funding: N
Funding Agency Code: Y
In-Service: N
Occupational Course: E
Course Control Number: CCC000275735
Sports/Physical Education Course: N
Taxonomy of Program: 040700