

- Name and describe the commonly observed Hawaiian animals, and list their respective distinguishing characteristics and their functions.

### **ZOOL 101 Principles of Zoology (3) KCC AA/DB (Inactive)**

*3 hours lecture per week*

*Recommended Preparation: CHEM 100 or higher.*

ZOOL 101 is an introductory course in the biology of animals. Topics covered will include basic chemistry, cell biology, genetics, evolution, diversity, systematics, ecology, reproduction, development, and animal morphology, physiology, and behavior.

Upon successful completion of ZOOL 101, the student should be able to:

- Describe the atomic and molecular bases of tissues.
- Draw an animal cell, label its parts and list their functions
- Solve monohybrid and multihybrid genetics problems involving complete dominance, codominance, multiple alleles, and sex-linked traits.
- Explain the basic principles of evolution, and the different forms that it takes.
- Connect the unique anatomical features of animals with their respective phyla and class, and list the functions of those anatomical features.
- Explain the principles of ecology, with a focus on consumers.
- Describe the animal organ systems, list their respective parts and their functions.
- Explain the principles of animal behavior.

### **ZOOL 101L Principles of Zoology Laboratory (1) (Inactive) KCC AA/DY**

*3 hours lab per week*

*Prerequisite(s): Credit or concurrent enrollment in ZOOL 101.*

## Z

### ZOOLOGY

#### **ZOOL 100 The Fauna of Hawai'i (3) KCC AA/DB (Inactive)**

*3 hours lecture per week*

ZOOL 100 is an introduction to Hawaiian fauna, covering such topics as the Hawaiian environment, dispersal mechanisms, establishment, evolution, endemism, extinction, conservation, and some traditional uses of animal products. The major animal groups to be studied include aquatic invertebrates, fishes, birds, selected terrestrial invertebrates, and mammals.

Upon successful completion of ZOOL 100, the student should be able to:

- Describe the general climate, geography, and microclimates in the Hawaiian archipelago.
- Draw the outline of O'ahu with major features labeled.
- Explain the mechanisms of dispersal and animal colonization.
- Explain the basic principles of evolution, endemism, extinction, and conservation.
- Connect the unique anatomical features of animals with their respective uses by humans.

The ZOOL 101L course includes laboratory observations, dissections, and experiments to illustrate basic principles of animal biology.

Upon successful completion of ZOOL 101L, the student should be able to:

- Describe and apply the scientific method as a mode of inquiry.
- Apply concepts presented in lecture to data collected in lab exercises.
- Demonstrate the proper use of dissecting tools, the microscope, stereo microscope, transect and quadrat, and other equipment as available.
- Demonstrate proper dissection procedures used for various available specimens.
- Identify structures and organs revealed by dissection.
- Correlate the anatomical patterns and functions presented in lecture with the structures of the dissection specimens.

### **ZOOL 141 Human Anatomy and Physiology I (3) KCC AA/DB and KCC AS/NS**

*3 hours lecture per week*

*Recommended Preparation: CHEM 100 or higher level chemistry or biochemistry; 100 level or higher course in biology or zoology.*

ZOOL 141, Human Anatomy and Physiology I, is a basic course in the structure and function of the human body which includes a study of its embryology, gross anatomy, microanatomy, physiology, pathology, and homeostatic relationships with regards to the following areas: body orientation, chemical level, cellular level, tissue level, integumentary, bone tissue, skeletal, joints, muscular tissue, muscular system, nervous tissue, spinal cord & nerves, brain, cranial nerves, neural integration and special senses.

Upon successful completion of ZOOL 141, the student should be able to:

- Recall the required anatomical structures of the body.
- Relate chemistry and biology knowledge to the function of the human body as a whole and each of the systems.
- Analyze the structure and function of the cells, tissues, and organ systems, and their interactions with each other and the environment.
- Explain the gross and cellular physiology of the systems.
- Describe the functional relationship between the systems.
- Discuss the negative and positive feedback control process in the systems.
- Identify the basic embryology of the systems.
- Discuss the maturation and aging process involving these systems.
- Discuss the various pathological diseases of the following systems.
- Relate metabolic processes to everyday activities such as eating, exercise, and sleep.
- Discuss newspaper articles related to subject matter.
- Discuss current research related to subject matter.
- Employ critical thinking and knowledge of common mechanisms of physiological operation to understand how systems function, how disease interferes with these processes, and how clinical intervention reestablishes homeostasis.

### **ZOOL 141L Human Anatomy and Physiology Laboratory I (1) KCC AA/DY**

*3 hours lab per week*

*Prerequisite(s): Credit or concurrent enrollment in ZOOL 141.*

*Recommended Preparation: CHEM 100 or higher level chemistry or biochemistry; 100 level or higher course in biology or zoology.*

*Comment: Special supplies (dissection kit, 3 pairs of latex gloves).*

ZOOL 141L, Human Anatomy and Physiology Laboratory I, is a basic lab course in the structure and function of the human body which includes a study and experimentation regarding embryology, gross anatomy, microanatomy, physiology, pathology, and homeostatic relationships with regards to the following areas: body orientation, chemical level, cellular level, tissue level, integumentary, bone tissue, skeletal, joints, muscular tissue, muscular system, nervous tissue, spinal cord & nerves, brain, cranial nerves, neural integration and special senses.

Upon successful completion of ZOOL 141L, the student should be able to:

- Describe general human gross, systemic, histological, and cellular anatomy through the use of models, computer images, palpation, observation, and dissections.
- Use basic chemical principles important to operations of the body.
- Use a microscope and prepare slides to observe, characterize, and identify cells of the body.
- Employ the scientific method to study, measure, analyze, understand, and report on physiological systems.
- Use a range of technological instruments/computers to measure and analyze physiological systems.
- Perform clinical tests to assess the condition of physical and physiological systems.
- Discuss current research related to subject matter.
- Employ critical thinking and knowledge of common mechanisms of physiological operation to understand how systems function, how disease interferes with these processes, and how clinical intervention reestablishes homeostasis.

**ZOOL 142 Human Anatomy and Physiology II (3)  
KCC AA/DB and KCC AS/NS**

*3 hours lecture per week*

*Prerequisite(s): ZOOL 141.*

*Recommended Preparation: CHEM 100 or higher level chemistry or biochemistry; 100 level or higher course in biology or zoology.*

ZOOL 142, Human Anatomy and Physiology II, is a basic course in the structure and function of the human body which includes a study of its embryology, gross anatomy, microanatomy, physiology, pathology, and homeostatic relationships with regards to the following areas: autonomic nervous, endocrine, blood, heart, vessels & hemodynamics, lymphatic & immune, respiratory, digestive, metabolism, urinary, fluids, electrolytes, acid/base homeostasis, reproductive, development and heredity.

Upon successful completion of ZOOL 142, the student should be able to:

- Recall the required anatomical structures of the body.
- Relate chemistry and biology knowledge to the function of the human body as a whole and each of the systems.
- Analyze the structure and function of the cells, tissues, and organ systems, and their interactions with each other and the environment.
- Explain the gross and cellular physiology of the systems.
- Describe the functional relationship between the systems.
- Discuss the negative and positive feedback control process in the systems.
- Identify the basic embryology of the systems.
- Discuss the maturation and aging process involving these systems.
- Discuss the various pathological diseases of the following systems.
- Relate metabolic processes to everyday activities such as eating, exercise, and sleep.
- Discuss newspaper articles related to subject matter.
- Discuss current research related to subject matter.
- Employ critical thinking and knowledge of common mechanisms of physiological operation to understand how systems function, how disease interferes with these processes, and how clinical intervention reestablishes homeostasis.

**ZOOL 142L Human Anatomy and Physiology Laboratory II (1) KCC AA/DY***3 hours lab per week**Prerequisite(s): Credit or concurrent enrollment in ZOOL 142.**Recommended Preparation: CHEM 100 or higher level chemistry or biochemistry; 100 level or higher course in biology or zoology.*

ZOOL 142L, Human Anatomy and Physiology Laboratory II, is a basic course in the structure and function of the human body which includes a study and experimentation regarding embryology, gross anatomy, microanatomy, physiology, pathology, and homeostatic relationships with regards to the following areas: autonomic nervous, endocrine, blood, heart, vessels & hemodynamics, lymphatic & immune, respiratory, digestive, metabolism, urinary, fluids, electrolytes, acid/base homeostasis, reproductive, development and heredity.

Upon successful completion of ZOOL 142L, the student should be able to:

- Describe general human gross, systemic, histological, and cellular anatomy through the use of models, computer images, palpation, observation, and dissections.
- Use basic chemical principles important to operations of the body.
- Use a microscope and prepare slides to observe, characterize, and identify cells of the body.
- Employ the scientific method to study, measure, analyze, understand, and report on physiological systems.
- Use a range of technological instruments/computers to measure and analyze physiological systems.
- Perform clinical tests to assess the condition of physical and physiological systems.
- Discuss current research related to subject matter
- Employ critical thinking and knowledge of common mechanisms of physiological operation to understand how systems function, how disease interferes with these

processes, and how clinical intervention reestablishes homeostasis.

**ZOOL 200 Marine Biology (2) KCC AA/DB and KCC AS/NS***2 hours lecture per week**Corequisite(s): ZOOL 200L.**Comment: Letter grade only. ZOOL 200 may not be audited. ZOOL 200 may not be taken credit/no credit.*

ZOOL 200 provides a comprehensive overview of marine life in Hawai'i and around the world inclusive of taxonomy, body structure and function, geographical distribution and ecological relationships. The physical and chemical natures of the varied marine environments are characterized and the inevitable human interactions and impact are examined.

Upon successful completion of ZOOL 200, the student should be able to:

- Demonstrate an understanding of the physical and chemical characteristics of the marine environment and how they impact marine life.
- Communicate knowledge of the diversity of marine organisms and what role these differences play in their survival.
- Exhibit an appreciation of the interaction between structure and function of marine life and how marine organisms are taxonomically related.
- Illustrate and provide examples of the ecological role of and relationships between marine organisms.
- Develop the interest in and underlying knowledge about the affects of human activities that alter the marine environment and how they impact marine life.
- As an individual citizen, should be able to locate and comprehend resources of information that aid in making informal decisions on marine-related issues.

- Express a fundamental knowledge of the basic approaches to scientific problem solving.

**ZOOL 200L Marine Biology Laboratory (1) KCC  
AA/DY**

*3 hours lab per week*

*Corequisite(s): ZOOL 200.*

*Comment: Letter grade only. ZOOL 200L may not be audited. ZOOL 200L may not be taken credit/no credit.*

The laboratory and field activities in ZOOL 200L provide an overview of marine life in Hawai'i inclusive of taxonomy, body structure and function, geographical distribution and ecological relationships. The physical and chemical natures of Hawai'i's varied marine environments are also examined.

Upon successful completion of ZOOL 200L, the student should be able to:

- List key characteristics of seawater and substrate; describe how they affect the distribution of marine life.
- Demonstrate the use of dichotomous keys to identify marine plants and animals.
- Recognize the diverse characteristics of marine plants and animals in Hawai'i by taxonomic classification (Phylum and in many cases Class).
- Develop proper field study techniques including collection, transect and quadrat sampling.
- Design and conduct valid scientific inquiry, including statement of problem and hypothesis, experimental procedures, collection and analysis of data, and drawing conclusions.