

COLLECTION DEVELOPMENT CRITERIA

Subject area: Biology
Academic year: 2009-2010
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General criteria

1. In general, purchase specialized works rather than textbooks.
2. In general, acquire titles, which have been published during the last three years.
3. Titles ordered by Coastal Studies Lab may be duplicated for the main library.

Specific criteria

Acquire materials on the following topics:

1. Materials requested for faculty research

2. General Biology

--biological chemistry, cell structure and function, photosynthesis and respiration, DNA structure and function, mitosis, meiosis, Mendelian genetics and evolution
--evolution and diversity of prokaryotes invertebrate and vertebrate animals; mechanisms of support and movement, digestion and nutrition, respiration, circulation, homeostasis, hormonal control, nervous control, sexual reproduction, development, behavior and ecology,
--cellular biology, protein synthesis, cellular reproduction, genetics and microbial genetics,
--reproduction and development, digestion and nutrition, transport, homeostasis, the nervous system, ecology and evolution
BIOL 1401, 1402, 1487, 1488 (Honors), 2201 (Special Problems)

3. Microbiology, Medical Microbiology and Immunology

--structure, growth, reproduction, metabolism, genetics and taxonomy of bacteria; a general survey of fungi, algae, protozoa and viruses and microbiology of soil, water, foods and industry. Laboratory work will include staining, growing, biochemistry, characterization and control of bacteria with a general survey of other microorganisms,
--microorganisms that cause disease and immune responses of the host to these pathogens. principles of immunology and selected infectious disease processes. Laboratory exercises will include a study of basic serologic procedures and cultural characteristics of related pathogenic microorganisms.
BIOL 3401, 3403

4. General Virology, Molecular Virology

--human, animal and plant virology, current research on the genome and replication of viruses, functions and regulations of viral genes, molecular mechanisms of virus-host and virus-vector interactions and novel molecular control strategies, prions and several sub-viral pathogens including viroids, virusoids and satellite RNA

--current research on the genome Organization and replication of viruses, functions and Regulations of viral genes, molecular mechanisms of virus host And virus-vector interactions, and novel molecular Control strategies. Students will be introduced to the history of virology, taxonomy of viruses, symptomatology, epidemiology, diseases and management of viral diseases

BIOL 4404, 6320

5. Genetics, Bacterial Genetics, Advanced Bacterial Genetics, Molecular Genetics

--Mendelian genetics, cell mechanics, sex determination, sex linkage, DNA structure and function, genetic linkage, crossing over, gene mapping, mutation, regulation of gene expression, chromosomal variations, population genetics and evolution.

-- bacterial genetics from both classical and molecular perspectives, transcription, translation, mutagenesis, transduction, transformation, conjugation and transposition, lab work, Northern blotting, DNA sequencing and the polymerase chain reaction.

-- bacterial strains are randomly mutagenized, mutants are analyzed, and the mutated gene is identified.

--modern concepts of genetics with emphasis on molecular-level investigations of DNA, gene

structure, transcription, translation and regulation as elucidated through gene cloning, recombinant DNA technology and biochemical genetics

BIOL 3413, 4417, 5317, 6316

6. Molecular Biology

--structure and function of biological macromolecules, structure of nucleic acids and proteins, DNA replication and repair, transcription, translation, bacteriophages, mobile genetic elements, genetic engineering and gene regulation.

BIOL 3415

7. Histology, Cell Biology

--structure and function of major tissue types and their cellular components.

The laboratory will provide an opportunity for firsthand experience in examining the microscopic structure of the major tissue types and their relationships in organ structure.

--cell structure and function with emphasis on bioenergetics, membranes, genes and genetic control, cell division and its regulation and cellular differentiation.

-- analysis of typical cellular structure and dynamics with emphasis on the anatomical and physiological mechanisms underlying the functioning of selected specialized cells.

BIOL 3405, 3412, 6313

8. Plant Morphology, Botany, Plant Taxonomy, Advanced Plant Systematics

--A study of the morphology, development and relationships of fungi, algae, liverworts, mosses, ferns, gymnosperms and angiosperms. Particular attention is given to the evolution of these groups.

--anatomy and physiology of plants, based on the study of higher plants, together with a correlative and comparative survey of the plant kingdom. Emphasis will be placed on the development and reproduction of plants and their relationships to man

--identification of vascular plants, with emphasis on native flowering plants

--literature and methods of experimental plant systematics, phylogenetic considerations, field and herbarium techniques and modern biosystematic approaches applied to selected taxa will be emphasized

BIOL 3408, 3410, 4314, 5314

9. Plant Physiology, Advanced Plant Physiology, Plant Pathology, Advanced Plant Pathology

--basic principles of the physiology, growth and development of plants

--physiology of plants, cell structure and function, nutrition, metabolism and factors influencing growth and development.

--causes, nature and control of plant diseases, emphasis on diseases of plants of economic importance

-- The causes, nature and control of plant diseases, principles of plant disease development

BIOL 4405, 5345, 4408, 5408

10. Marine Botany, Marine Plant Science

--common local marine flora including microscopic and macroscopic algae, sea grasses and terrestrial angiosperms

-- The common local marine flora including the microscopic and algal forms and aquatic angiosperms

BIOL 4410, 5410

11. Mycology

--fungal morphology and taxonomy, structure and function relationships, physiology and genetics, molecular biology, parasitism of animals and plants, applied and environmental mycology.

BIOL 4406

12. Invertebrate Zoology

--comparative morphology, evolution, systematics and natural history of the invertebrates

BIOL 3414

13. Entomology, Aquatic Entomology, Advanced Entomology, Advanced Aquatic Entomology

--insects and other arthropods of agricultural, medical and veterinary importance. Includes basic insect morphology, physiology, classification and pest management, insect identification, field trips

-- identification, taxonomy and ecology of aquatic insects. Emphasis will be on local aquatic environments, field trips and identification of specimens.

-- applied aspects of insect morphology, physiology, classification and pest management

-- aquatic insect identification, taxonomy, ecology and the use of aquatic insects in the bioassessment of water quality, The fauna of Lower Rio Grande freshwater environment will be emphasized

BIOL 4415, 4419, 5315, 5346

14. Animal Parasitology, Host-Parasite Relationships

--parasitic protozoa and worms (especially trematodes, cestodes, nematodes and acanthocephala).

-- analysis of the interrelationships between host and parasite, lab

BIOL 4407, 5307

15. Marine Zoology, Advanced Marine Zoology, Marine Biology

--the common marine animals, especially invertebrates in coastal waters. Particular attention is given to structural and physiological relationships. Strenuous field work

-- Structural, physiological and ecological relationships of common marine animals, stressing invertebrates of coastal waters

-- current topics in marine biology

BIOL 4402, 5452, 6302

16. Vertebrate Zoology, Vertebrate Anatomy

--structure, physiology and life histories of representative vertebrate types,

--Comparative studies of the morphological, embryological and physiological relationships among vertebrates, with inclusion of histological and paleontological information,

BIOL 2401, 2402

17. Ichthyology (Advanced)

--ecology, distribution, adaptations, physiology, systematics and evolution of freshwater and marine fishes, with an emphasis on local forms. Laboratories will stress identification and other practical applications of modern ichthyological techniques

BIOL 4304, 5304

18. Herpetology (Advanced)

--anatomy, evolution, distribution, systematics, ecology and physiology of amphibians and reptiles, primarily of North American species, with special emphasis on local forms
BIOL 4309, 5309

19. Ornithology, Advanced Ornithology

--Principles of avian classification, morphology and ecology, including migration, distribution and relationships to man.
-- avian biology with emphasis on taxonomy, behavior and ecology
BIOL 4412, 5312

20. Comparative Embryology, Neurobiology, Neurobiology Methods

--Developmental studies from the zygote through embryological stages (chiefly concerned with amphibians, birds and mammals).
--Studies of nervous systems, physiology of single neurons, neural bases of behavior in intact animals, with comparative methods, with examples drawn from a wide range of invertebrates and vertebrates,
--neural anatomy and physiology, including staining, labeling and extracellular and intracellular recording. Invertebrates are used as subjects.
BIOL 3407, 3310, 4422

21. Mammalogy, Advanced Mammalogy, Mammalian Physiology

--anatomy, evolution, distribution, systematics, ecology and physiology of mammals of North America, with special emphasis on local forms.
-- anatomy, evolution, distribution, systematics, ecology and physiology of mammals of North America, critical review of current literature and studies of recent advances in mammalogy
--physiological mechanisms of the organs and organ systems of mammals with emphasis on man, including muscle, nerve, digestive, urinary, respiratory, circulatory and reproductive systems. The laboratory will provide experiences with modern techniques
BIOL 4303, 5344, 3411

22. Anatomy and Physiology

--structure and function of the human body including cells, tissues and organs of the following systems: integumentary, skeletal, muscular, nervous system and special senses,
--endocrine, circulatory, respiratory, digestive, urinary and reproductive systems, metabolism, acid-base balance, development and heredity.
BIOL 2403, 2404

23. Systematic Zoology

Theory and methods of taxonomy, classification, phylogeny and biogeography as applied to animals.

BIOL 6304

24. Biological Evolution

--Genetic, ecological and paleontological aspects of evolution. Includes review of evolutionary history and thought, species concepts, speciation, and other evolutionary processes. Emphasis is on evolutionary mechanisms.

BIOL 3301

25. Environmental Biology, Ecology, Advanced Ecology, (Advanced) Ecological Physiology

--biological problems of population expansion, environmental destruction and resource conservation as they relate to man's past, present and future.

--basic environmental factors affecting plants and animals, and their relation to economic and conservation problems. Fieldwork.

-- Utilization of modern techniques to analyze interrelationships between plants, animals and the environment. Terrestrial and freshwater environments will be considered

--physiological adaptations of vertebrate animals to their environments. Emphasis is placed on the physiological basis of animal distribution and evolution

BIOL 2305, 3409, 6303, 4311, 5311

26. Environmental Toxicology, Advanced Environmental Toxicology

--interaction of environmental pollutants with living systems, toxicological evaluation of selected environmental chemicals

-- advanced treatment of physiological and systematic interactions of environmental pollutants with biological systems, f toxicological evaluations of selected chemicals.

BIOL 4416, 5316

27. Remote Sensing

--the use of electromagnetic radiation for monitoring environmental conditions and resources., operation of various remote sensors, collection of analog and digital data, and use of computer software for image processing, interpretation and integration of imagery into geographic information systems

BIOL 4403, 5403

28. Electron Microscopy (Advanced)

--scanning and transmission electron microscopy, principles of electron microscopes, cell ultrastructure, specimen preparation, microtomy, immunocytochemistry, operation of electron microscopes, darkroom techniques and graphic arts.

BIOL 4418, 5418

29. Biological Writing, Scientism

--Describes, analyzes, critiques and applies the biological writing styles, topics include vitas, professional letters, research/laboratory reports and research proposals, manuscript editing, literature searches and referencing, reviewing published research papers, and data analysis and interpretation.

-- characteristics of science and the relationship between modern science and culture, investigating how science actually proceeds, how it should ideally be carried out, the motivations and roles of the individuals involved, and their interaction with society as a whole.

BIOL 3302, 6319

30. Biology Seminar and Problems, Biology Graduate Seminar, Graduate Biological Research Problems

--current biological literature and the discussion of research in progress, special topics in biology

-- current biological research

-- research may be in the area of botany, Microbiology or zoology

BIOL 4100, 4201, 4202,, 6101, 6365

31. Biotechnology, Biometry

--computational methods, online databases and Internet resources present in the biological sciences, answer questions in biology ranging from organism development to human disease, answer questions in a wide variety of areas relating to cellular and molecular biology.

-- Statistical analysis and principles as applied to biological problems

BIOL 4420, 6305

32. Inquiry Based Science and Laboratory Techniques

--Designed for students interested in teaching secondary life sciences to provide additional preparation and skills to become an effective high school life sciences teacher. The course will emphasize the inquiry-based approach to science and cover mechanisms to apply this approach in lecture, lab and in assessment of content

BIOL 4315