



CATALOG YEAR 2015-2016

COLLEGE/SCHOOL/SECTION: COAS-Biology & Chemistry

Course: Add: ___ Delete: ___

(check all that apply) Change: Number ___ Title ___ SCH ___ Description **XX** Prerequisite **XX**

Response Required: New course will be part of major ___ minor ___ as a required ___ or elective ___ course

Response Required: New course will introduce ___, reinforce ___, or apply ___ concepts

Response Required: Grade Type ___ Normal (A-F) ___ CR/NC ___ P/F

Justification: As part of the development of the Core Curriculum, changes in course numbers were made to lower division courses. The prerequisites for the courses listed on the attached should reflect the changes in course numbers. References to former course numbers in course descriptions are also included as changes.

Approvals:

Signature

Date

Chair

Department Curriculum Committee

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College Curriculum Committee

Feb. 24/15

Dean

Provost

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BIOL 2421 (BIOL 2421) *General Microbiology*. Four semester hours. A survey of microbiology. Topics include structure, growth, reproduction, metabolism, genetics, and taxonomy of microorganisms; a survey of microorganisms of soil, water, foods, and industry. Prerequisites: BIOL 1406, BIOL ~~1411~~ **1311/1111** or BIOL 1413 and CHEM ~~1411~~ **1311/1111**. Lecture/laboratory. Lab fee: \$27.25.

BIOL 3403 *Human Anatomy*. Four semester hours.

A laboratory-based intensive study of the gross structure of organs and organ systems. Suggested for prehealth professional students. Prerequisites: BIOL **1406 1306/1106**, BIOL ~~1411~~ **1311/1111**, and BIOL 1413 or permission of instructor. Lecture/laboratory. Lab Fee: \$27.25.

BIOL 3406 *Evolution*. Four semester hours. (FL)

Genetic and ecological basis of evolutionary changes within populations of plants and animals. Historical, morphological, biochemical, behavioral, and biogeographical evidence will be considered. Prerequisite: BIOL **1406 1306/1106**, BIOL ~~1411~~ **1311/1111**, BIOL 1413 or BIOL 2421

BIOL 3407 *Animal Behavior*. Four semester hours. (FL)

An evolutionary perspective of behavioral diversity in animals. Topics covered will include the genetics of behavior and levels of selection, predator/prey interactions, mating systems, parental care, resource competition, feeding ecology, communication, social behavior and learning. Students will begin developing and testing their own hypotheses in animal behavior. Field work required. Prerequisite: BIOL **1406 1306/1106**, BIOL ~~1411~~ **1311/1111** or BIOL 1413. Lab Fee: \$27.25.

BIOL 3410 *Ecology*. Four semester hours. (SP)

A study of inter-relationships of plants and animals and their natural environment. Topics include distribution and abundance of plants and animals with respect to population, community, and ecosystem structure and function. Emphasis will be placed on local flora, and fauna. Extensive field work required. Prerequisite: BIOL **1406 1306/1106**, BIOL ~~1411~~ **1311/1111** or BIOL 1413. Required for biology majors. Lab fee: \$27.25.

BIOL 3412 *Cell Biology*. Four semester hours.

An introduction to the structure and function of eukaryotic cells. Emphasis is placed on the biochemical and biological characteristics of macromolecules and organelles. The major experimental tools used in modern cell biology are presented in the context of research. Topics include membranes, structure and function of proteins, energy conversion, the maintenance of cellular compartments, and transmembrane and cell-cell signaling. Prerequisites: BIOL **1406 1306/1106**, BIOL ~~1411~~ **1311/1111**, BIOL 1413 or BIOL 2421 and CHEM 2423 or permission of instructor. Lab fee: \$27.25.

BIOL 3413 *Introduction to Genetics*. Four semester hours.

A study of the basic principles of the science of heredity, with an emphasis in classical and molecular genetics. Classical and molecular approaches are discussed as applied to a range of organisms from bacteria to man. Prerequisites: BIOL **1406 1306/1106**, BIOL ~~1411~~ **1311/1111**, BIOL 1413 or BIOL 2421 and CHEM 2423 or permission of instructor. Lab fee: \$27.25.

BIOL 3414 *Invertebrate Zoology*. Four semester hours. (SP)

The class serves to give the student an appreciation for invertebrate form, function, natural history, evolution and systematics. Field work required. Prerequisite: BIOL **1406 1306/1106**, BIOL ~~1411~~ **1311/1111** or 1413 or permission of instructor. Lab fee: \$27.25.

BIOL 3416 *Introduction to Biological Statistics*. Four semester hours. An introduction to statistical methodology applied to biology. Topics covered include the scientific method, biological experimental design, data management, probability distributions, hypothesis testing, analysis of variance, regression analysis, correlation analysis, analysis of frequencies, and an introduction to multivariate analysis. A special emphasis will be given to the application of these techniques for the student's own research. Lecture/laboratory. Prerequisite: BIOL **1406 1306/1106**, BIOL ~~1411~~ **1311/1111**, 1412 or permission of instructor.

BIOL 3451 *Biochemistry I*. Four semester hours. (SP)

An introduction to modern biochemistry using fundamental chemical principles. Topics covered include proteins, carbohydrates, lipids, nucleic acids, bioenergetics, enzymology, and metabolism with an emphasis on interrelationships between metabolic pathways and regulation. Prerequisites: BIOL **1406 1306/1106** and CHEM 2423 or permission of instructor. Cross-listed with CHEM 3451. Credit cannot be given for both BIOL 3451 and CHEM 3451. Lab fee: \$27.25.

BIOL 4402 *Mammalogy*. Four semester hours. (FL)

A study of anatomy, evolution, distribution, systematics, ecology, and physiology of mammals, with special emphasis on local representatives. Prerequisite: BIOL ~~1406~~ **1306/1106** or 1413 or permission of instructor. Lab fee: \$27.25.

BIOL 4404 *Herpetology*. Four semester hours.

A study of the anatomy, evolution, distribution, systematics, ecology, and physiology of amphibians and reptiles; primarily North American species with special emphasis on local representatives. Prerequisite: BIOL ~~1406~~ **1306/1106** and BIOL 1413 or permission of instructor. Saturday field trips required. Lab fee: \$27.25.

BIOL 4408 *Entomology*. Four semester hours. (SP)

An introduction to the study of insects (and arachnids). Topics will include anatomy and physiology, evolution, ecology, and behavior. Special emphasis will be placed on insect diversity and identification of local families of insects (and arachnids). A collection of local representatives is required. Prerequisite: BIOL ~~1406~~ **1306/1106** or 1413 or permission of the instructor. Saturday field trips required. Lab Fee: \$27.25.

BIOL 4440 *Plant Systematics*. Four semester hours.

An introduction to plant systematics with an emphasis on flowering plants. Topics will include principles of classification, rules of nomenclature, plant identification and the use of keys, the evolutionary relationships among plant groups, species concepts, and experimental approaches to systematics. Prerequisite: BIOL ~~1411~~ **1311/1111** or permission of the instructor. Lab fee: \$27.25. (Cross-listed with BIOL 5440)

BIOL 4441 *Plant Physiological Ecology*. Four semester hours.

This course will examine plant physiological mechanisms that explain ecological patterns. Topics will include the physiological characteristics of plants (photosynthesis, energy balance, water relations, mineral nutrition, growth and development) and how those characteristics are adaptive to various environments. Prerequisite: BIOL ~~1411~~ **1311/1111** or permission of the instructor. (Cross-listed with BIOL 5441)

CHEM 1400 *Chemistry in the Environment*. Four semester hours. (SS)

A course designed for non-science majors interested in how chemistry impacts our day-to-day lives and the world around us. A variety of subjects, such as food preservatives, additives, cosmetics, energy alternatives, cleaning products, pesticides, pollution, and other everyday phenomenon may be covered from a basic chemical perspective. Fulfills the laboratory science core curriculum requirement. Can be used as preparation for CHEM ~~1411~~ **1311/1111** for those students with no prior chemistry background. Prerequisite: Cannot be taken after CHEM ~~1411~~ **1311/1111**. Lab fee: \$27.25.

CHEM 1412 (CHEM 1412) *General Chemistry II*. Four semester hours. (SP)

Covers gas laws, thermodynamics, kinetics and electrochemistry. The second half of a two-semester course. Three hours of laboratory per week. Prerequisite: CHEM ~~1411~~ **1311/1111**. Lab fee: \$27.25.

CHEM 3406 *Analytical Chemistry II*. Four semester hours.

A study of theory and application of modern instrumental methods of analysis, including UV-VIS, FT-IR, GC, NMR and potentiometric methods of titrimetry. Environmental analysis will be included. Prerequisite: CHEM ~~1411~~ **1311/1111**, CHEM 1412. Lab fee: \$27.25.