

# CLFS - CHEMICAL AND LIFE SCIENCES

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## CLFS608 Seminar in Current Topics in Chemical and Life Science (1-4 Credits)

Seminar in current topics in the Life Sciences. Contact Program Director or instructor before registering.

**Restriction:** Must be in Master of Chemical & Life Sciences (Master's) program; and permission of CMNS-Chemical & Life Sciences department.

**Repeatable to:** 6 credits if content differs.

**Formerly:** LFSC608.

## CLFS609 Special Topics (1-3 Credits)

Individual instruction course. Contact Program Director or instructor before registering.

**Prerequisite:** Two years of teaching experience; and CLFS510.

**Restriction:** Must be in Master of Chemical & Life Sciences (Master's) program; and permission of CMNS-Chemical & Life Sciences department.

**Repeatable to:** 6 credits if content differs.

**Formerly:** LFSC609.

## CLFS610 Natural Products Chemistry (3 Credits)

Foundations of natural products chemistry; how nature goes about making (biosynthesizing) these compounds and elements of enzymology and genomics relevant to production of these compounds; relevance of natural products chemistry as a driving force for drug discovery and innovation in biotechnology.

**Restriction:** Permission of CMNS-Chemical & Life Sciences department.

**Credit Only Granted for:** LFSC609D or LFSC610.

**Formerly:** LFSC609D.

## CLFS619 Special Topics in Chemistry (1-3 Credits)

Topics of current interest and special importance.

**Repeatable to:** 9 credits if content differs.

**Formerly:** LFSC619.

## CLFS620 Modern Molecular Genetics (3 Credits)

An overview of genetics including the genetic basis/components in prevalent diseases, genetically engineered organisms and foods, the importance of knowing the complete DNA sequence of organisms.

## CLFS630 Principles of Transmission Genetics: A Historical and Modern Perspective (3 Credits)

Examines the origins of modern genetics, model genetic systems, and the role of chromosomes in vertical transmission of genetic information from parent to offspring. Classical gene mapping, population genetics and the various applications of modern genetics will also be studied.

## CLFS640 Human Physiology (3 Credits)

Examination of the major organ system of the human body and of the neural and hormonal mechanisms responsible for their regulation and control.

**Prerequisite:** Two years of teaching experience; and CLFS510.

**Restriction:** Must be in Master of Chemical & Life Sciences (Master's) program; and permission of CMNS-Chemical & Life Sciences department.

## CLFS655 The Chemistry and Applications of Electrochemical Cells (3 Credits)

Chemistry of electrochemical cells including the thermodynamic basis for the production of electrical energy by cells, the chemical reactions utilized by the most common cells, the manufacture of cells, and the application of cells in energy production.

## CLFS660 Biodiversity and Conservation Biology (3 Credits)

Application of ecological and evolutionary principles to assess the impact of the human species on the environment and its inhabitants. Specific case studies are included to illustrate problems of biodiversity loss and actions required to reverse the trends.

## CLFS665 Ecology and Global Change (3 Credits)

Ecological concepts across scales ranging from the individual, to populations, communities, ecosystems, and landscapes will be presented. Global change issues will encompass alteration of atmospheric trace gases, biogeochemistry cycles, land use changes, and introduction of non-native species to new habitats.

**Credit Only Granted for:** LFSC609C or LFSC665.

**Formerly:** LFSC609C.

## CLFS680 Chemical Ecology (3 Credits)

An examination of the utilization of organic natural products by plants and animals for various life processes. Examples will include how materials are utilized for sexual selection, defense against predators, sexual attractants, and as natural herbicides and repellants.

## CLFS690 Biochemistry (3 Credits)

An advanced overview of general biochemistry including a study of protein structure and their physical properties; how these properties relate to catalysis, regulation of catalysis and metabolic chemistry with respect to their relationship to physiological conditions.

## CLFS710 Experimental Biology (6 Credits)

Participants develop skills in four areas of biological research while investigating a variety of biological systems. Those areas include: (1) iterative scientific methods, (2) basic laboratory techniques, (3) experimental design and analysis, and (4) critical evaluation of published research.

**Formerly:** LFSC710.

## CLFS725 Experimental Design (2 Credits)

Experimental design and statistics for science teachers that emphasizes the underlying structure of data and how this affects the quality and reliability of experiments. Examines the nature of data, the methods for designing rigorous experiments, important experimental design formats, and the relationships between data structure and analysis. Course work focuses on the design and analysis of original experiments for a series of research problems.

**Credit Only Granted for:** LFSC710, LFSC719, or LFSC725.

**Formerly:** LFSC719.

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## 500-level courses

### CLFS510 Concepts of Modern Biology (3 Credits)

Discussion of recent advancements in the biological sciences. Includes in depth treatment of the background information responsible for the advancements. Not acceptable for credit towards a degree.

**Prerequisite:** Permission of CMNS-Chemical & Life Sciences department.

### CLFS520 Concepts of Modern Chemistry (3 Credits)

Basic concepts and recent advances in the chemical sciences. It is designed to be a review of the first two years of college chemistry for the student pursuing the Master of Life Science degree with a concentration in chemistry. Also includes material preparatory for LFSC courses such as LFSC 690 and LFSC 655. A basic text supplemented by on line text, problems and links. (Not acceptable for credit towards a degree).