



# Department of Mathematics/Science

## Mission Statement

The Department's mission is to provide a quality educational experience for individual development.

## Mathematics

### MTH 0913 Introductory Mathematics (3-0-3)

A beginning math course which covers arithmetic including fractions, decimals, percentages, ratio and proportion. A student successfully completing this course with a grade of C or better may enter MTH 0953. **Fee \$115**

### MTH 0953 Elementary Algebra (3-0-3)

Elementary Algebra is a beginning algebra course. It is a prerequisite to Intermediate Algebra for those students who have not had high school Algebra I or whose algebraic skills dictate the need. Course content includes signed numbers, equations and inequalities, factoring, exponents, and graphing. **Prerequisite: MTH 0913 or appropriate placement test score. Fee \$115**

### MTH 1032 Measurements and Calculations (2-0-2)

This course is designed to prepare the student for science and technology courses. Topics included are: systems of measure and conversion between systems, dimensional analysis, exponential notation, logarithms, graphing, and scientific calculators. **Prerequisite: MTH 1053**

### MTH 1053 Intermediate Algebra (3-0-3)

Topics include exponents, radicals, rational expressions, polynomials, linear and quadratic equations, inequalities, absolute values, and graphing. **Prerequisite: MTH 0953 (Grade  $\geq$  C) or appropriate placement test score. Fee \$115.**

### MTH 1083 Technical Mathematics (3-0-3)

Selected topics in general mathematics, algebra, geometry, and trigonometry. The application of mathematical concepts to the solution of relevant technical problems will be emphasized. **Prerequisite: MTH 0953 (Grade  $\geq$  C) or placement test.**

### MTH 1113 College Algebra (3-0-3)

Study of functions including, but not limited to, absolute value, quadratic, polynomial, rational, logarithmic, and exponential; systems of equations; and matrices. **Prerequisite: MTH 1053 (Grade  $\geq$  C) or ACT Math Score  $\geq$  19 or comparable score on other placement test.**

### MTH 1123 College Trigonometry (3-0-3)

In preparation for calculus and general physics, this

course includes topics in advanced algebra and trigonometry. Offered Spring Semester. **Prerequisite: MTH 1113 or (Grade  $\geq$  C) or ACT Math Score  $\geq$  19 or comparable score on other placement test.**

### MTH 1013 College Mathematics (3-0-3)

This course is intended to examine algebraic topics and introduce students to areas in which mathematics play a vital role. Topics include equations, functions, systems of equation matrices, probability, descriptive statistics, and mathematics of finance.

**Prerequisite: MTH 1053 (Grade  $\geq$  C) or appropriate placement test score.**

### MTH 1224 Precalculus Mathematics (4-0-4)

This course is intended to prepare students for Calculus. Topics include algebraic concepts, trigonometry, conic sections, polar and parametric equations, sequences, and limits. **Prerequisite: MTH 1053 (Grade  $\geq$  C) or ACT Math Score  $\geq$  22 or comparable score on other placement test.**

### MTH 2103 Introduction to Statistics (3-0-3)

Algebra-based course involving the presentation and interpretation of data, probability, sampling, basic, inference, correlation, and regression, and analysis of variance. Will include the use of statistical software. **Prerequisite: MTH 1113 (Grade  $\geq$  C)**

### MTH 2114 Survey of Calculus (4-0-4)

Survey of the basic concepts of calculus, including limits, derivatives, exponential and logarithmic functions, integrals, and series and sequences for students in business, agriculture, and social science. **Prerequisite MTH 1113 (Grade  $\geq$  C) or ACT Math Score  $\geq$  22 or comparable score on other placement test.**

### MTH 2214 Calculus I (4-0-4)

First course in calculus, including topics of functions, limits, continuity, differentiation, antiderivatives, inverse functions, and introduction to integration. Offered Fall Semester. **Prerequisite: MTH 1123 (Grade  $\geq$  C) or MTH 1224 (Grade  $\geq$  C) or (ACT Math Score  $\geq$  24) or comparable score on other placement test.**

### MTH 2224 Calculus II (4-0-4)

Continuation of MTH 2214. Includes integration and applications, integration by parts, sequences and series, parametric equation, polar coordinates, conic sections. **Prerequisite: MTH 2214 (Grade  $\geq$  C)**

### MTH 2234 Calculus III (4-0-4)

Continuation of MTH 2224. The study of multi-dimensional integration, partial differentiation, vector functions,

and other topics. **Prerequisite: MTH 2224 (Grade  $\geq$  C)**

**MTH2303 Survey of Geometry (3-0-3)**

A geometry course designed for students needing an additional math elective or students desiring a geometry course for teacher certification. Topics covered include measurements of polygons, polyhedra and other shapes, formal euclidean geometry with congruence of triangles and quadrilaterals, similarity, circles, and tessellations.

**Prerequisite: MTH 1113**

**MTH 2403 Math I (3-0-3)**

An introduction to mathematical principles and concepts taught in schools. Sets, logic, and development of the real number system are covered. **Prerequisite: MTH 1113 (Grade  $\geq$  C)**

**MTH 2423 Math II (3-0-3)**

Topics include probability, statistics, concepts of measurement, introductory and coordinate geometry, constructions, congruence and similarity. **Prerequisite: MTH 2403 (Grade  $\geq$  C)**

## **Biology**

**BIO 1014 General Biology (3-2-4)**

Modern concepts of biological science are introduced in this course, including the nature of life, cell theory, cell chemistry, genetics, and other topics in biology. This course is designed for non-science majors. **A separately scheduled lab is required.**

**BIO 1614 General Zoology (3-2-4)**

A study of processes, organ systems, development, ecology, and phyla of animals. **A separately scheduled lab is required.**

**BIO 2014 Anatomy/Physiology for EMTs (3-2-4)**

A one-semester course reviewing the organs and systems of the human body. Emphasis is placed on gross anatomy of the body and general physiology of the organs and systems as they operate in a healthy individual. A grade of C or better must be received in this course to continue in the EMT program. This course is designed for an Allied Health program. **A separately scheduled lab is required.** Offered Fall Semester

**BIO 2114 Anatomy and Physiology I (3-2-4)**

This offering is designed to give students a functional knowledge of Human Anatomy and Physiology. Emphasis is placed on the norm but reference to an explanation of some pathologies is included. The first of a two-semester course will cover several of the human body's major anatomical systems and implications in health. **A separately scheduled lab is required.** Offered Fall semester and Summer Term I.

**BIO 2134 Anatomy and Physiology II (3-2-4)**

This is a continuation of Anatomy and Physiology I in which additional major anatomical systems and their basic functions will be covered. **A separately scheduled lab is required. Prerequisite: BIO 2114.** Offered Spring Semester and Summer Term II.

**BIO 2504 Microbiology (3-2-4)**

A study of the morphology, physiology, classification, and cultivation of bacteria, microscopic fungi, and other microorganisms. These will be related to the health of other organisms and the ecology of microorganisms. **A separately scheduled lab is required.**

**BIO 2614 Environmental Science (3-2-4)**

Course topics to include: concepts of ecology (ecosystems; environmental change; population growth and regulation), environmental quality and management (managing resources; air, land and water pollution; waste management), and problems and issues related to human population growth, food, and energy. **A separately scheduled lab is required. Prerequisite: BIO 1014 or higher.**

## **Chemistry**

**CHE 1013 Introduction to Chemistry (3-0-3)**

A general introduction and orientation to the fundamentals of chemistry. This course is designed to prepare students for higher level chemistry courses. Three hours of lecture per week. **Prerequisite: MTH 0953 (Grade  $\geq$  C) or equivalent**

**CHE 1024 General Education Chemistry (3-2-4)**

A survey of fundamental chemistry from the practical perspective, with emphasis on description and explanation of common phenomena. The course is designed for general education students with little or no science background. **A separately scheduled lab is required. Prerequisite: MTH 0953.**

**CHE 1214 College Chemistry I (3-3-4)**

A detailed study of fundamental principles of chemistry. This is the first of a series of courses intended for science majors. **A separately scheduled lab is required.** Offered Fall Semester. **Prerequisite: CHE 1013, HS Chemistry. Corequisite: MTH 1113**

**CHE 1234 College Chemistry II (3-3-4)**

A continuation of the study of the principles of chemistry with emphasis on inorganic chemistry and ionic equilibria. **A separately scheduled lab is required.** Offered Spring Semester. **Prerequisite: CHE 1214.**

**CHE 2214 Organic Chemistry I (3-3-4)**

A study of the structures, properties, and reactions of carbon compounds. **A separately scheduled lab is required. Prerequisite: CHE 1234**

**CHE 2234 Organic Chemistry II (3-3-4)**

A continuation of CHE 2214 with emphasis on additional functional groups. **A separately scheduled lab is required. Prerequisite: CHE 2214.**

## Physical Science

### **PHS 1014 Principles of Geology (3-2-4)**

A physical science course covering the origin of rocks, weathering, mass wasting, water, glaciation, volcanos, earthquakes, minerals, and classification of rocks.

**A separately scheduled lab is required. Prerequisite: MTH 1053**

### **PHS 1214 Physical Science (3-2-4)**

A survey of selected physical science topics will be presented. Various topics in measurement systems, basic mechanics, energy and heat, chemistry fundamentals, aspects of atmospheric science and of the basic solar system will be covered for general education students. **A separately scheduled lab is required. Prerequisite: MTH 1053 or equivalent ACT or ASSET score.**

## Physics

### **PHY 1004 Technical Physics (3-2-4)**

Selected topics in mechanics, heat, sound, electricity, and light. The practical implications of physical phenomena will be emphasized. Laboratory activities related to the principles discussed will be included. **A separately scheduled lab is required. Prerequisite: MTH 1083.**

### **PHY 2013 Survey of Physics for Radiologic Technology (3-0-3)**

This course is designed to provide the student with an understanding of the underlying physics principles of radiology. These principles include; mathematical concepts, temperature and heat, heat transfer, waves and sound, electric forces and fields, magnetism, electromagnetic waves, optics, nature of the atom, nuclear physics and radioactivity, and ionizing radiation and nuclear energy. These principles will provide the student with the tools necessary to understand how x-rays, ultrasound, CAT scans, and the other devices utilized in the field of radiology and why there are strict safety guidelines for the usage of this equipment

This course is a prerequisite for Radiologic Science- **RAD 1222 Prerequisite: MTH 1113 or MTH 1213**

### **PHY 2114 General Physics I (3-2-4)**

Topics in mechanics, heat, and sound are covered in this course. Designed for the non-engineering major. **A separately scheduled lab is required. Prerequisite: MTH 1113 or equivalent.**

### **PHY 2134 General Physics II (3-2-4)**

A continuation of PHY 2114 covering topics in electricity, magnetism, light, and modern physics. **A separately scheduled lab is required. Prerequisite: PHY 2114.**

## General Science

### **SCI 2403 Science for Teachers (3-0-3)**

An introduction to principles and concepts of science with methods for teaching school aged children. Emphasis will be on laboratory and demonstration techniques.

### **SCI 2801 Special Topics in Science (1-0-1)**

### **SCI 2802 (2-0-2)**

### **SCI 2803 (3-0-3)**

### **SCI 2804 (3-2-4)**

Courses may be presented in lecture format or lecture/lab format. Special Topics courses present topics at the discretion of the Department and will be offered when the need and/or interest is apparent.

## Agricultural, Food and Life Science

### **AGR 1012 Careers in Agricultural, Food & Life Science (2-0-2)**

Orientation to the broad spectrum of careers available in agricultural, food, and life sciences.

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### **AGM1613 Fundamentals of Agricultural Systems Technology (3-0-3)**

Introduction to basic physical concepts important in agricultural technical systems: applied mechanics, power and machinery management, structures and electrification, and soil and water conservation. **Prerequisite: MTH 1113**

## Agronomy

### **AGN 1203 Introduction to Plant Science (3-0-3)**

An introduction to basics of agricultural crop plant structure, growth, and production. (Same as HOR 1203)

### **AGN 2103 Crop Science (3-0-3)**

Principles of crop growth, development, and utilization and how these principles relate to production. Emphasis on major agronomic crop species.

**Prerequisite: AGN 1203 or HOR 1203**

## Animal Science

### **ASC 1003 Introductory Animal and Poultry Science (3-0-3)**

The importance of animal and poultry production in American agriculture. Principles of production and management of livestock, poultry and their products.

## Aquaculture and Fisheries

### **AQF 1101 Topics in Aquaculture and Fishes (1-0-1)**

An introductory course that covers the broad spectrum of general topics in the fields of aquaculture and fisheries biology.

**AQF 2343 Fisheries Techniques (3-0-3)**

An introduction to the ways in which fisheries data are collected. The course covers most of the techniques that a practicing career fishery manager is likely to encounter. Each technique will be described as well as its use, the major options for equipment types and procedures, and advantages and disadvantages. Data use and manipulation will be addressed.

**AQF 2353 Biology of Fishes (2-3-3)**

A course on the anatomy and physiology of fishes aimed at providing an understanding of how fish “work.” The class will emphasize those aspects with direct implications in aquaculture and in wild fish populations. The laboratory will include fish dissections and experiments in fish physiology. **Prerequisite: BIO 1014**

**AQF 2424 Aquaculture (3-3-4)**

An introduction to the principles and practices of aquatic animals and plant husbandry. Trips to fish farming, processing, and research facilities, and laboratory exercises in disease and water quality will be emphasized.

**AQF 2464 Ichthyology (3-2-4)**

An introductory course in the taxonomy and distribution of fishes with an emphasis on Arkansas fishes **Prerequisite: BIO 1614**

**Entomology****ENT 2003 Pest Management (3-0-3)**

An introduction to the basic principles of pest management as they relate to vertebrate animals, insects, plant disease, and weeds. Selected pests are studied with emphasis on current management approaches and alternative pest control. **Prerequisites: ASC 1003, POS 1003, and AGN 1203 or HOR 1203**

**Food Science****FSC 1011 Food Science Orientation (1-0-1)**

Introduces food science, its career opportunities, and the uniqueness of the program. Emphasizes the importance of science in processing and preservation of food and discusses current topics and issues. Provides basic information on food constituents, additives, labeling, environmental issues, food regulations, and food safety.

**FSC 1103 Introduction to Food Science (3-0-3)**

This course is designed to provide students with a general application and understanding of current issues associated with food products and food ingredients. Discussions will focus on controversial subjects involving food products, food additives, food safety and preservation techniques based on scientific principles and popular belief.

**FSC 2503 Food Safety and Sanitation (3-0-3)**

Principles of sanitation, cleaners and sanitizers, sanitary

equipment and plant design, and microbial growth and control in food processing operations.

**Forestry****FOR 1083 Humans and Forest Resources (3-0-3)**

Introduction to the history, policies, founders, controversies, uses, and management of forest resources.

**FOR 1061 Orientation to Forest and Wildlife****Management (1-0-1)**

An overview of the forestry and wildlife disciplines and their professional curricula.

**Horticulture****HOR 1103 Plants in the Home Environment (3-0-3)**

A course describing the aesthetic, nutritional, health value, and other importance of plants to humans. The course will highlight the use and importance of plants and gardening through the ages, study significant gardens to humankind, and introduce students to using plants to their benefit. The use of color, texture, aroma and flavor in the home and landscape will be presented. Basic home gardening, plant care, and use will be discussed and practiced.

**HOR 1203 Introduction to Plant Science (3-0-3)**

An introduction to basics of agricultural crop plant structure, growth and production. (Same as AGN 1203)

**HOR 2303 Introduction to Turfgrass (3-0-3)****Management**

An introductory course in turfgrass management emphasizing turfgrass growth, adaptation, and management. Methods for establishment, fertilization, mowing, cultivation, irrigation, and pest management are presented and their impact on culture of lawns, golf courses, athletic fields, and other managed turf areas discussed.

**Poultry Science****POS 1003 Introductory Animal and Poultry Science****(3-0-3)**

The importance of animal and poultry production in American agriculture. Principles of production and management of livestock, poultry and their products. (Same as ASC 1003)

**POS 2363 Breeder and Layer Management (2-3-3)**

Study of management practices used in production of adult chickens, turkeys, and other poultry with special emphasis on breeder and market egg production.

**A lab may be required. Prerequisite: POS 1003****POS 2353 Broiler and Turkey Production (3-2-3)**

Study of management practices used in production of young chickens, turkeys, and other poultry with special emphasis on broiler production. **A lab may be required.**

**Prerequisite: POS 1003**