

# NATURAL SCIENCE (806)

Information provided includes course descriptions by subject only. For complete 2022-2023 programs/academic plans, please refer to Academic Programs (<http://catalog.blackhawk.edu/academics/>).

## 806-108 Applied Anatomy and Physiology

**Credits:** 1-5

This course builds on a basic knowledge of skeletal, muscle and nervous systems and presents an in-depth study of their structure and functions. The integration of these systems to produce motion is studied. Critical thinking skills are encouraged as to analyze the relationships of these systems to normal movement, posture and gait. The development of observation and palpation skills is emphasized. Independent study of the pathophysiology of the major body systems is also included.

**Aid Code:** 10 - undefined.

**Restrictions:** Restricted to students admitted to Program.

**Pre-requisites:** (806-154 or 806-139 or 806-140) and (806-177 or 806-131 or 806-195)

Complete Course Listing

## 806-110 Forensic Science (Criminalistics)

**Credits:** 1-3

Forensic Science is a course designed to provide students of law enforcement with an appreciation of the capabilities and limitations of scientific analysis of crime scene evidence. All functions of a basic crime lab are discussed with emphasis on relating methods of analysis to the proper collection and packaging of evidence. Laboratory exercises are designed to expand upon and reinforce lecture material.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (COMPASS Reading Skills, 073 or ACT Reading, 16 or ASSET Reading Skills, 39 or AccuPlacer Reading Comp, 076 or Next Gen AccuPlacer Reading, 251 or Reading-Credit Level Met or SAT Reading, 330 or Test Waived-College Degree) or (838-104 or 838-104 or 801-195 or 801-136 or 801-196 or 801-198 or 804-133 or 806-112 or 806-118 or 806-134 or 806-139 or 806-154 or 806-177 or 806-186 or 806-194 or 806-199 or 809-103 or 809-166 or 809-172 or 809-188 or 809-195 or 809-143 or 809-196 or 809-198 or 809-199) and (COMPASS Reading Skills, 51 or ACT Reading, 12 or SAT Reading, 270 or AccuPlacer Reading Comp, 55 or Next Gen AccuPlacer Reading, 236)

**Co-requisites:** (838-104)

Complete Course Listing

## 806-112 Principles of Sustainability

**Credits:** 1-3

Prepares the student to develop sustainable literacy, analyze the interconnections among the physical and biological sciences and environmental systems, summarize the effects of sustainability on health and well-being, analyze connections among social, economic, and environmental systems, employ energy conservation strategies to reduce the use of fossil fuels, investigate alternative energy options, evaluate options to current waste disposal and recycling in the U.S., and analyze approaches used by your community to promote and implement sustainability.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (COMPASS Reading Skills, 073 or ACT Reading, 16 or ASSET Reading Skills, 39 or AccuPlacer Reading Comp, 076 or Next Gen AccuPlacer Reading, 251 or Reading-Credit Level Met or Test Waived-College Degree) or (838-104 or 838-104 or 801-195 or 801-136 or 801-196 or 801-198 or 804-133 or 806-110 or 806-118 or 806-134 or 806-139 or 806-154 or 806-177 or 806-186 or 806-194 or 806-199 or 809-103 or 809-166 or 809-172 or 809-188 or 809-195 or 809-143 or 809-196 or 809-198 or 809-199) and (COMPASS Reading Skills, 51 or ACT Reading, 12 or SAT Reading, 270 or AccuPlacer Reading Comp, 55 or Next Gen AccuPlacer Reading, 236)

**Co-requisites:** (838-104)

Complete Course Listing

## 806-114 General Biology

**Credits:** 1-4

Introduces general biological concepts and principles. Emphasis is on cell structure and function, genetics, evolution, and taxonomical relationships. Consideration is also given to diversity among the various kingdoms.

**Aid Code:** 10 - undefined.

Complete Course Listing

### 806-118 Metal Science

**Credits:** 1-3

This is a one-semester course in basic physics and metallurgy principles for the Technical College student. The course reviews accuracy and precision of measurements, introduces calculations with units and conversions within and between systems of measurements, formula rearranging, and applications in problem solving. Basic topics include properties of matter, metallurgy, material properties, material testing, force, motion (linear and circular), energy, power, and simple machines. The topics of heat, electricity, and magnetism are also introduced in the class. Emphasis is placed on the application of the laws and principles of physics to practical problems found in the machine shop and industry.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (COMPASS Reading Skills, 073 or ACT Reading, 16 or ASSET Reading Skills, 39 or AccuPlacer Reading Comp, 076 or Next Gen AccuPlacer Reading, 251 or SAT Reading, 330 or Reading-Credit Level Met or Test Waived-College Degree) and (COMPASS Reading Skills, 51 or ACT Reading, 12 or SAT Reading, 270 or ASSET Reading Skills, 55 or Next Gen AccuPlacer Reading, 236)

**Co-requisites:** (838-104)

Complete Course Listing

### 806-134 General Chemistry

**Credits:** 1-4

Covers the fundamentals of chemistry. Topics include the metric system, problem-solving, periodic relationships, chemical reactions, chemical equilibrium, properties of water; acids, bases, and salts; and gas laws.

**Aid Code:** 10 - undefined.

**Pre-requisites:** COMPASS Pre-Algebra Skills, 044 or ACT Math, 17 or ASSET Numerical Skills, 40 or Test Waived-College Degree or AccuPlacer Arithmetic, 089 or (AccuPlacer Arithmetic, 065 and AccuPlacer Elem Algebra, 030) and COMPASS Reading Skills, 073 or ACT Reading, 16 or ASSET Reading Skills, 39 or AccuPlacer Reading Comp, 076 or Next Gen AccuPlacer Reading, 251 or Test Waived-College Degree or 804-118 or 804-211 and COMPASS Reading Skills, 051 or ACT Reading, 12 or SAT Reading, 270 or AccuPlacer Reading Comp, 055 or (Next Gen AccuPlacer Reading, 236 and COMPASS Pre-Algebra Skills, 044) or ACT Math, 17 or ASSET Numerical Skills, 40 or Test Waived-College Degree or AccuPlacer Arithmetic, 089 or (AccuPlacer Arithmetic, 065 and AccuPlacer Elem Algebra, 030 and COMPASS Reading Skills, 073) or ACT Reading, 16 or ASSET Reading Skills, 39 or AccuPlacer Reading Comp, 076 or Next Gen AccuPlacer Reading, 251 or Test Waived-College Degree

Complete Course Listing

### 806-135E Applied Science ChallExam

**Credits:** 0

Complete Course Listing

### 806-139 Survey Of Physics

**Credits:** 3

This course emphasizes understanding basic physics concepts through laboratory investigation and applications. Topics include kinematics, dynamics, work, energy, power, temperature, heat, waves, electricity, magnetism, electromagnetic waves, optics, and atomic and nuclear physics.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (COMPASS Reading Skills, 073 or ACT Reading, 16 or ASSET Reading Skills, 39 or AccuPlacer Reading Comp, 076 or SAT Reading, 330 or Next Gen AccuPlacer Reading, 251 or Reading-Credit Level Met or Test Waived-College Degree) or (838-104 or 838-104 or 801-195 or 801-136 or 801-196 or 801-198 or 804-133 or 806-110 or 806-112 or 806-118 or 806-134 or 806-154 or 806-177 or 806-186 or 806-194 or 806-199 or 809-103 or 809-166 or 809-172 or 809-188 or 809-195 or 809-143 or 809-196 or 809-198 or 809-199) and (COMPASS Reading Skills, 51 or ACT Reading, 12 or SAT Reading, 270 or AccuPlacer Reading Comp, 055 or Next Gen AccuPlacer Reading, 236)

**Co-requisites:** (838-104)

Complete Course Listing

### 806-140 Physics

**Credits:** 1-3

This course is designed to acquaint the students with basic concepts of physics and their applications. Topics covered include algebra (a review), measurement, motion, forces, work, energy, power, simple machines, heat, and electricity. Laboratory exercises are designed to expand upon and reinforce lecture material.

**Aid Code:** 10 - undefined.

Complete Course Listing

### 806-152 Technical Science II

**Credits:** 1-3

This course is a continuation of Technical Science I with a study of heat, wave motion and sound, light and optics, and an introduction to electricity and magnetism. Sufficient mathematical treatment is given to the materials so the student can apply the principles in a quantitative manner. The laboratory work includes computer-aided study and the appropriate experiments to illustrate the application of the physical principles.

**Aid Code:** 10 - undefined.

**Pre-requisites:** 806 151

Complete Course Listing

**806-154 General Physics 1****Credits:** 4

Presents the applications and theory of basic physics principles. This course emphasizes problem-solving, laboratory investigation, and applications. Topics include unit conversion and analysis, vectors, translational and rotational kinematics, translational and rotational dynamics, heat and temperature, and harmonic motion and waves.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (804-197 or 804-114 or 804-115) or (ACT Reading, 16 and (COMPASS Reading Skills, 073 or ASSET Reading Skills, 39 or AccuPlacer Reading Comp, 076 or SAT Reading, 73 or Next Gen AccuPlacer Reading, 251 or Reading-Credit Level Met or Test Waived-College Degree) or (838-104) or (801-195 or 801-136 or 801-196 or 801-198 or 804-133 or 806-110 or 806-112 or 806-118 or 806-134 or 806-139 or 806-177 or 806-186 or 806-199 or 809-103 or 809-166 or 809-172 or 809-188 or 809-195 or 809-143 or 809-196 or 809-198 or 809-199) and (COMPASS Reading Skills, 51) or ACT Reading, 12 or SAT Reading, 270 or AccuPlacer Reading Comp, 55 or Next Gen AccuPlacer Reading, 236)

**Co-requisites:** (838-104)

Complete Course Listing

**806-172 Basic Nutritional Science****Credits:** 1-3

This course provides an introduction into the science of nutrition. Basics concepts related to digestion and metabolism are presented. The significance of carbohydrates, lipids, proteins and vitamins to the human organism are discussed. The relationship of proper nutrition to selected pathological conditions throughout the human lifecycle is presented. The concept of sustainability and environmentally - conscious food production are introduced.

**Aid Code:** 10 - undefined.

Complete Course Listing

**806-175 General Pathophysiology****Credits:** 1-3

This introductory course in pathophysiology covers topics related to alterations of homeostasis and the associated pathophysiological processes. The major emphasis will be on the physiological factors that underlie disease states. Course studies include the processes involved that generate illness; signs and symptoms of commonly occurring illness states and effects of disease processes on the cell. Review of normal homeostatic mechanisms is included. Study of the fundamental processes in relation to the pathophysiological processes can enable the students to apply this knowledge to clinical situations.

**Aid Code:** 10 - undefined.**Pre-requisites:** (806-179)**Co-requisites:** (838-104)

Complete Course Listing

**806-177 General Anatomy and Physiology****Credits:** 4

Examines basic concepts of human anatomy and physiology as they relate to health sciences. Using a body systems approach, the course emphasizes the interrelationships between structure and function at the gross and microscopic levels of organization of the entire human body. It is intended to prepare health care professionals who need to apply basic concepts of whole body anatomy and physiology to informed decision-making and professional communication with colleagues and patients.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (ASSET Reading Skills, 39 or COMPASS Reading Skills, 073 or ACT Reading, 16 or AccuPlacer Reading Comp, 076 or Next Gen AccuPlacer Reading, 251 or Reading-Credit Level Met or Test Waived-College Degree or 838-104 or 838-104 or 801-136 or 801-195 or 801-196 or 801-198 or 804-133 or 806-110 or 806-112 or 806-118 or 806-134 or 806-139 or 806-154 or 806-186 or 806-194 or 806-199 or 809-103 or 809-143 or 809-166 or 809-172 or 809-188 or 809-195 or 809-196 or 809-198 or 809-199)

Complete Course Listing

**806-177E General Anat&Phys ChallExam****Credits:** 1-4**Aid Code:** 10 - undefined.

Complete Course Listing

**806-179 Advanced Anatomy and Physiology****Credits:** 4

Advanced Anatomy and Physiology is the second semester in a two-semester sequence in which normal human anatomy and physiology are studied using a body systems approach with emphasis on the interrelationships between form and function at the gross and microscopic levels of organization. Instructional delivery within a classroom and laboratory setting. Experimentation within a science lab will include analysis of cellular metabolism, the individual components of body systems such as the nervous, neuro-muscular, cardiovascular, and urinary. Continued examination of homeostatic mechanisms and their relationship to fluid, electrolyte, acid-base balance and blood. Integration of genetics to human reproduction and development are also included in this course.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (806-195 or 806-177 or 806-131) and (Chemistry, 1.0 or 836-133 or 806-199 or 806-134 or 806-186)

**Co-requisites:** (838-104)

Complete Course Listing

### 806-186 Introduction to Biochemistry

Credits: 4

Provides students with skills and knowledge of organic and biological chemistry necessary for application within Nursing and other Allied Health careers. Emphasis is placed on recognizing the structure, physical properties and chemical reactions of organic molecules, body fluids, and acids. Additional emphasis is placed on biological functions and their relationships to enzymes, proteins, lipids, carbohydrates and DNA.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (Chemistry, 1 and COMPASS Reading Skills, 073 or ACT Reading, 16 or ASSET Reading Skills, 39 or SAT Reading, 330 or AccuPlacer Reading Comp, 076 or Next Gen AccuPlacer Reading, 251 or Test Waived-College Degree or Reading-Credit Level Met) and (Chemistry, 1 and ACT Math, 15 or SAT Mathematics, 340 or COMPASS Pre-Algebra Skills, 25 or AccuPlacer Arithmetic, 89 or Next Gen AccuPlacer Arithmetic, 243 or 834-109)

Complete Course Listing

### 806-189 Basic Anatomy

Credits: 1-3

Examines concepts of anatomy and physiology as they relate to health careers. Learners correlate anatomical and physiological terminology to all body systems.

**Aid Code:** 10 - undefined.

Complete Course Listing

### 806-194 Survey of Anatomy and Physiology

Credits: 1-3

This course is designed to provide a basic understanding of human anatomy, physiology, diseases, and terminology to assist with the transcription and coding of medical documents.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (COMPASS Reading Skills, 073 or ACT Reading, 16 or ASSET Reading Skills, 39 or AccuPlacer Reading Comp, 076 or Next Gen AccuPlacer Reading, 251 or SAT Reading, 330 or Reading-Credit Level Met or Test Waived-College Degree) or (838-104 or 838-104 or 801-195 or 801-136 or 801-196 or 801-198 or 804-133 or 806-110 or 806-112 or 806-118 or 806-134 or 806-139 or 806-154 or 806-177 or 806-186 or 806-199 or 809-103 or 809-166 or 809-172 or 809-188 or 809-195 or 809-143 or 809-196 or 809-198 or 809-199) and (COMPASS Reading Skills, 51) or (ACT Reading, 12 or SAT Reading, 270 or AccuPlacer Reading Comp, 55 or Next Gen AccuPlacer Reading, 236)

**Co-requisites:** (838-104)

Complete Course Listing

### 806-197 Microbiology

Credits: 4

This course examines microbial structure, metabolism, genetics, growth and the relationship between humans and microorganisms. Disease production, epidemiology, host defense mechanisms and the medical impact of microbes in the environment, industry, and biotechnology are also addressed.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (806-114 or 806-177 or 806-195 or 806-199)

Complete Course Listing

### 806-199 General, Organic and Biological Chemistry

Credits: 1-4

A one semester course covering the fundamental aspects of inorganic and organic chemistry. Topics include lab safety, measurement, elementary problem solving, atomic structure, periodicity, chemical bonding, types of chemical reactions, properties of water, acid, bases, and salts, types of solutions and calculations of concentrations, gas laws, oxidation-reduction concepts, ionization, pH and buffers, hydrocarbons, types of organic compounds and functional groups, biochemical compounds including lipids, carbohydrates, proteins, and nucleic acids.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (COMPASS Reading Skills, 073 or ACT Reading, 16 or ASSET Reading Skills, 39 or AccuPlacer Reading Comp, 076 or SAT Reading, 330 or Next Gen AccuPlacer Reading, 251 or Reading-Credit Level Met or Test Waived-College Degree) or (838-104 or 838-104 or 801-195 or 801-136 or 801-196 or 801-198 or 804-133 or 806-110 or 806-112 or 806-118 or 806-134 or 806-139 or 806-154 or 806-177 or 806-186 or 806-194 or 809-103 or 809-166 or 809-172 or 809-188 or 809-195 or 809-143 or 809-196 or 809-198 or 809-199) and (COMPASS Reading Skills, 51) or (ACT Reading, 12 or SAT Reading, 270 or ASSET Reading Skills, 55 or Next Gen AccuPlacer Reading, 236)

**Co-requisites:** (838-104)

Complete Course Listing

### 806-199E Gen, Organ & Bio Chem Challexam

Credits: 1-4

**Aid Code:** 10 - undefined.

Complete Course Listing

**806-315 Applied Science****Credits:** 1-2

This one semester course in basic physics principles reviews accuracy and precision of measurements and introduces calculations with units and conversions within and between systems of measurements. Formula rearranging and applications to problem solving are reviewed. Basic physics topics such as properties of matter, mechanical principles of force, motion (linear and circular), energy, power and machines, heat, electricity, and magnetism are also studied. Emphasis is placed on the applications of the laws and principles of physics to practical problems. The use of vectors is demonstrated in forces, velocities, and electrical transformers.

**Aid Code:** 31 - undefined.**Co-requisites:** (804-304 or 804-306)

Complete Course Listing

**806-333 Aviation Physics****Credits:** 1-2

This is a one-semester course in basic physics principles for aviation maintenance technicians. It includes a review of the units of measurement and conversions along with the properties of fluids. Mechanics (linear motion, equilibrium, energy, power, circular motion and machines), heat (temperature scales, specific heats and transfer), along with sound (wavelength, frequency, speed and intensity) are included. Special emphasis is given to problems applying these principles to the particular area of technology.

**Aid Code:** 32 - undefined.

Complete Course Listing

**806-400 Mechanical Principles****Credits:** 0.05-1.25**Aid Code:** 47 - undefined.

Complete Course Listing

**806-401 Light & Fiber Optics****Credits:** 0.05-1**Aid Code:** 47 - undefined.

Complete Course Listing

**806-402 Science Principles/Mach Tool****Credits:** 0.05-1.25**Aid Code:** 47 - undefined.

Complete Course Listing

**806-451 Technical Science-Appr****Credits:** 0.05-1**Aid Code:** 47 - undefined.

Complete Course Listing

**806-605 Astronomy****Credits:** 0.05-0.5**Aid Code:** 60 - undefined.

Complete Course Listing