

BIOLOGICAL SCIENCES-AS

Program Overview

Associate of Science in Biological Sciences

Student Learning Outcomes

This program provides graduates with the courses typically required for pre-professional students during their first two years of a bachelor's degree program.

This two-year Associate of Science pattern of study is designed to transfer to colleges and universities with four-year biology degrees.

Students will be able to:

- Communicate the nature of scientific knowledge and the scientific method and how they were developed.
- Associate biological structure and function.
- Relate molecular genetics and cell and organism function.
- Show how organisms are genetically related, interact on a population level, have evolved, and are evolving.

Attendance in Lab Science Courses

The following science courses have labs and are required to be completed for the AS in Biological Sciences:

BIOL 190, BIOL 191, BIOL 251, CHEM 121, CHEM 122, CHEM 241/241L, and CHEM 242/242L.

Each of these courses requires in-person labs. Depending on the course, the 3-hour labs may occur weekly, on weekends, or at a time from Monday through Friday anytime from 8 a.m.– 9:45 pm.

Due to GBC's personnel, equipment, and facilities, courses listed above which have the CHEM prefix have required labs that are only offered on the Elko and Pahrump campuses.

This means that AS in Biological Sciences students will be required to attend lab courses in Elko or Pahrump at least 1-2 days each week and that this is not an online degree. Please consult an advisor for the AS in Biological Sciences for the availability details of each individual science course.

General Education Requirements

Communications and Expressions

Written Communications (one course required)

ENG 101 Composition I **3 Credits**

Critical reading and writing of the expository essay. Emphasizes pre-writing, strategies for organization, and revision.

ENG 102 Composition II **3 Credits**

Continuation of English 101. Emphasizes writing from sources, argument, the investigative paper, and research techniques.

Oral Communications (once course required)

COM 113 Fund Speech Communication **3 Credits**

Principles and theories of speech communication. Participation in public speaking and interpersonal communication activities.

THTR 102 Introduction to Stage Voice **3 Credits**

Fundamentals of voice production including relaxation, alignment, breath, resonance, and articulation. Vocal health and the physiological aspects of voice/speech production. Students will complete performance projects.

THTR 221 Oral Interpretation **3 Credits**

Introduction to and practice of oral interpretation of literary and dramatic works from Shakespeare to contemporary writers and poets.

Evidence-Based Communications

ENG 102 Composition II **3 Credits**

Continuation of English 101. Emphasizes writing from sources, argument, the investigative paper, and research techniques.

Fine Arts (one course required)

ART 100 Visual Foundations **3 Credits**

A beginning art class that includes a survey of art and the basic components of design. The class explores visual concepts as they relate to the history of art through class presentations, discussions, and a variety of media. Students should plan for three hours of studio work outside the class.

ART 101 Drawing I **3 Credits**

A disciplined foundation in drawing concepts based on visual observation skills.

ART 107 Design Fundmntls I (2-D) **3 Credits**

Explores the fundamentals of design using various media focusing on 2-D design.

ENG 205 Intro to Creative Writing **3 Credits**

A creative writing course designed to introduce students to the production of fiction and poetry.

MUS 101 **Music Fundamentals** **3 Credits**

Notation, terminology, intervals, and scales. Designed to furnish a foundation for musicianship. Recommended for teachers in public schools and all others desiring a basic music background.

THTR 100 **Introduction to Theatre** **3 Credits**

A survey of the basic principles, facts, and theories providing an understanding of the art of theatre. Course also includes a special focus on the practical technical aspects of the theatre and on live theatre experiences.

THTR 105 **Introduction to Acting I** **3 Credits**

Examines acting fundamentals and focuses on development of vocal, physical, and creative tools to be used on stage.

THTR 121 **Stage Makeup** **3 Credits**

This course focuses on the history of makeup and basic approaches to applying make-up for the stage and screen. Make-up supplies will be studied, as well as techniques for corrective, old-age, character, stylized, and special effects makeup.

THTR 204 **Theatre Technology I** **3 Credits**

Lecture and discussion encompassing the philosophy and techniques of technical theatre.

WELD 200 **Metal Art** **3 Credits**

This course is designed to give the student the basic understanding of two dimensional 2D and three-dimensional 3D metal art. Also covered in this course we will discuss different Cutting, Welding and metal finishing techniques that are used in this discipline as it relates to metal art.

Logical and Scientific Reasoning

Mathematical Reasoning

MATH 181 **Calculus I** **4 Credits**

The fundamental concepts of analytic geometry and calculus functions, graphs, limits, derivatives, integrals, and certain applications. It is recommended that students have completed prerequisites within two years of enrolling in this course.

Scientific Reasoning

BIOL 190 **Intro Cell/Molecular Biology** **4 Credits**

Structure and function of cells. Major molecules of life; composition and physiology of cellular organelles; cell metabolism, reproduction, motility, and gene function of both plant and animal cells. Required for biology majors. Concurrent enrollment in a corresponding lab section is required for this course.

Scientific Data Interpretation

CHEM 121 **General Chemistry I** **4 Credits**

Fundamentals of chemistry including reaction stoichiometry, atomic structure, chemical bonding, molecular structure, states of matter, and thermochemistry.

Human Societies and Experience

American Constitutions and Institutions: HIST 101 and 102 or PSC 101

HIST 101 **U.S. History to 1877** **3 Credits**

Survey of U.S. political, social, economic, diplomatic, and cultural development from colonial times through Reconstruction. When taken with HIST 102 satisfies the GBC General Education American Constitutions and Institutions Requirement. HIST 101 and 102 need not be taken sequentially. Either class may be taken alone.

HIST 102 **U.S. History Since 1877** **3 Credits**

Survey of U.S. political, social, economic, diplomatic, and cultural development from 1877 to the present. Course satisfies the Nevada Constitution Requirement. When taken with HIST 101 satisfies the GBC General Education American Constitutions and Institutions Requirement. Can be used to satisfy the Nevada Constitution Requirement for out-of-state transfer students who have previously satisfied the United States Constitution Requirement. HIST 101 and 102 need not be taken sequentially. Either class may be taken alone.

PSC 101 **Intro American Politics** **3 Credits**

A survey of United States, national, state, and local governments with emphasis on the cultural aspects of the governing process. Satisfies the legislative requirement for the United States and Nevada Constitutions.

Structure of Societies (one course required) (*PSY 101 recommended for pre-medical related students*)

ANTH 101 **Intro Cultural Anthropology** **3 Credits**

Study of human cultures across the globe through examination of the basic principles underlying the organization of societies and the ways anthropologists analyze various parts of culture. Students will become familiar with the glue that holds all groups of people together, and how that glue can divide groups of people in profound ways.

CRJ 104 **Intro to Admin of Justice** **3 Credits**

American criminal justice system, its development, components, and processes. Includes consideration of crime and criminal justice as a formal area of study.

CRJ 270	Intro to Criminology	3 Credits
Examines how society interacts with crime and delinquency through the use of the criminal justice system. Studies effective interaction and communication between the general public and members of the criminal justice system. Emphasizes the understanding of criminal behavior from a sociological and psychological perspective.		
ECON 102	Prin of Microeconomics	3 Credits
Study of the causes and effects of individuals' choices among alternative uses of scarce resources. Topics include supply and demand analysis, price determination, theories of various market structures, competition and coordination, labor, the role of profit and interest, and government involvement in the economy.		
ECON 103	Principles of Macroeconomics	3 Credits
Basic price and quantity relationships, study of monetary systems and policy, inflation, production and growth, recession, unemployment, fiscal policy, supply and demand perspectives, international exchange, and governmental-market relationships.		
GEOG 106	Intro to Cultural Geography	3 Credits
Analyze the culture regions of the world including physical settings and cultural patterns including language, settlements, socioeconomic patterns, and historical patterns.		
HMS 200	Ethics in Human Services	3 Credits
Real life applications for personal and professional boundaries, beliefs, ethics, values, morals, and codes of conduct in human relationships using ethical decision-making, problem-solving, and critical-thinking activities are emphasized. This course may be repeated up to three times for continuing education credit. (Check with individual licensing boards prior to registering).		
PSY 101	Gen Psychology	3 Credits
Survey of the discipline introducing psychological theories, research methods, and principles of behavior.		
PSY 208	Psy of Human Relations	3 Credits
Explores the relationships between human beings and assists in the development of interpersonal communication skills which can be used personally and professionally.		
SOC 101	Prin of Sociology	3 Credits
Sociological principles underlying the development, structure, and function of culture including society, human groups, personality formation, and social change.		
Humanities (one course required)		
ART 160	Art Appreciation	3 Credits
Introduction to the visual arts, illustrating the place of art in its social and cultural setting.		
ART 260	Survey of Art History I	3 Credits
Presentation of the historical context of major and minor works of art from the ancient world to the Renaissance, art analysis, and criticism.		
ART 261	Survey of Art History II	3 Credits
A continuation of Survey of Art History I presenting major and minor works of art from the Renaissance to the present, art analysis, and criticism.		
ENG 203	Intro to Literary Study	3 Credits
Introduction to the elements of fiction, poetry, and drama used in the analysis of literature.		
ENG 223	Themes of Literature	3 Credits
Themes and ideas significant in literature.		
FIS 100	Introduction to Film	3 Credits
Introduction to the historical development of film as art. Considers the development of cinematic techniques (i.e., cinematography, editing, sound, etc.), cinematic genres (i.e., the western, romantic comedy, etc.) and narrative elements (i.e., plot, character, conflict, etc.) as exemplified by the work of major American and international directors.		
FREN 111	First Year French I	3-4 Credits
Development of language skills through practice in listening, speaking, reading, writing, and structural analysis. Language practice required.		
FREN 112	First Year French II	3-4 Credits
A continuation of FREN 111. Language practice required.		
HIST 208	World History I	3 Credits
Survey of world civilizations to 1600. Examines societies, cultures, and issues relative to Africa, the Americas, Asia, Europe, the Middle East and Oceania.		
HIST 209	World History II	3 Credits
Survey of world civilizations since 1600. Examines historical societies, cultures, and issues relative to Africa, the Americas, Asia, Europe, the Middle East, and Oceania.		

HUM 101 Intro to Humanities I 3 Credits

An introduction to humanities through a study of seven major arts including film, drama, music, literature, painting, sculpture, and architecture. Each of these arts is considered from the perspective of historical development, the elements used in creating works of art, meaning and form, and criticism and critical evaluation.

HUM 111 Gateway to the Humanities 3 Credits

Through five distinct modules, students discover answers to all of the following questions: What attributes are irreducibly human - that is, independent of gender, race, culture, society, nationality, or philosophy? How do human beings relate to one another? How do we humans express ourselves? In what ways do we limit ourselves? The student will explore: philosophy/religion; language/linguistics; history; art and architecture; law and ethics; and literature/performance. Students will seek out applications of the humanities to chosen disciplines.

HUM 210 Communicating Diversity 3 Credits

Communicating Diversity is a lower division course designed to familiarize students with the fundamentals of diversity and how those are expressed through communication. Students will develop a deep understanding of the way in which we communicate race, gender, class, sexual orientation, nationality, religion, and physical/mental ability and how it impacts our daily lives. This course will take an intersectional approach to understanding diversity and seek communication strategies for inclusivity. Emphasis will be placed on defining and developing the critical thinking skills necessary to push past oppression, marginalization, and other issues centralized around diverse populations. Students will be encouraged to investigate and discover diversity issues, solutions, and concepts at the local and global level using case studies, current events, and other significant moments in history.

MUS 121 Music Appreciation 3 Credits

The historical and cultural background of music and origins to the twentieth century.

MUS 125 History of Rock Music 3 Credits

The history and stylistic development of rock from its origins, through transitions, and subsequent revolutions.

PHIL 102 Critical Thinking 3 Credits

Covers non-symbolic introduction to logical thinking in everyday life, law, politics, science, advertising; common fallacies; and the uses of language, including techniques of persuasion.

PHIL 129 Intro to New Testament 3 Credits

Surveys New Testament books and related literature from a nondenominational perspective. Textual and literary criticism will be practiced, and the historical background of the authors and their writings will be considered.

SPAN 111 First Year Spanish I 3 Credits

Development of language skills through practice in listening, speaking, reading, writing, and structural analysis. Language practice required.

SPAN 112 First Yr Spanish II 3 Credits

A continuation of SPAN 111. Language practice required.

SPAN 211 Second Year Spanish I 3 Credits

Considers structural review, conversation and writing, and readings in modern literature.

Technological Proficiency (one course required)**GIS 109 Intro Geogrphc Info Syst 3 Credits**

An introduction to Geographic Information Systems (GIS) covering the basic concepts. Principles of cartography and spatial analysis are presented. The intent is to prepare the student for advanced training using specific GIS software.

CS 135 Computer Science I 3 Credits

This course is an introduction to modern problem solving and programming methods. Emphasis is placed on algorithm development. A special focus will be on procedural and data abstraction, emphasizing design, testing, and documentation.

Foundations**Mathematics****STAT 152 Intro to Statistics 3 Credits**

Includes descriptive statistics, probability models, random variables, statistical estimation and hypothesis testing, linear regression analysis, and other topics. Designed to show the dependence of statistics on probability. It is recommended that students have completed prerequisites within two years of enrolling in this course.

Sciences**BIOL 191 Intro Organismal Biology 4 Credits**

The study of the evolution, ecology, and diversity of life, both past and present. Required for biology majors, but will partially satisfy the science requirement for all associate's degrees. Concurrent enrollment in a corresponding lab section is required for this course.

Program Requirements

BIOL 251 General Microbiology**4 Credits**

A laboratory and lecture course emphasizing taxonomy, morphology, physiology, infectious diseases, and ecology of microorganisms in addition to skills in aseptic procedures, isolation, and identification. Open to all life science majors and allied health majors.

CHEM 122 General Chemistry II**4 Credits**

Fundamentals of chemistry including solutions, kinetics, equilibria, thermodynamics, electrochemistry, nuclear chemistry, and properties of inorganic and organic compounds. Also, introduction to qualitative analysis.

CHEM 241 Organic Chemistry I**3 Credits**

Intensive introduction to the theory of carbon chemistry with particular emphasis on understanding the relationship between the structure and behavior of organic molecules.

CHEM 241L Organic Chemistry Lab I**1 Credits**

Laboratory exercises in introductory organic chemistry. Stereochemistry, separation and purification techniques, micro-scale organic reaction procedures.

CHEM 242 Organic Chemistry II**3 Credits**

Continuation of CHEM 241 with emphasis on complex reactions and mechanisms, and introduction to advanced approaches for the synthesis of organic molecules.

CHEM 242L Organic Chemistry Lab II**1 Credits**

Laboratory exercises in intermediate organic chemistry with continued emphasis on micro-scale organic reaction procedures. Introduction to the identification of organic compounds using chemical and instrumental means (qualitative analysis).

Suggested Course Sequence**1st Semester - Fall**

Course Credits BIOL 190 4 CHEM 121 4 ENG 100 or 101 3-5 MATH 181 4 TOTAL 15-17

2nd Semester - Spring

Course Credits BIOL 191 4 CHEM 122 4 ENG 102 3 FINE ARTS* 3 STAT 152 3 TOTAL 17 *Choose with advisor

3rd Semester - Fall

Course Credits CHEM 241 3 CHEM 241L 1 TECHNOLOGY* 3 HUMANITIES* 3 COM 113 3 PSC 101 3 TOTAL 16 *Choose with advisor

4th Semester - Spring

Course Credits CHEM 242 3 CHEM 242L 1 BIOL 251 4 PROGRAM ELECTIVE* 3 STRUCTURE OF SOCIETIES* 3 TOTAL 14 *Choose with advisor