ECU COURSE CATALOG

BIOLOGY COURSES

BIOL-1114 General Biology 4 Credits
AN INTRODUCTION TO THE GENERAL CONCEPTS AND DISCOVERIES OF BIOLOGY INCLUDING CHEMISTRY, CELL BIOLOGY, ENERGETICS AND METABOLISM, GENETICS, PLANT AND ANIMAL PHYLOGENY, ECOLOGY, AND EVOLUTION. LECTURE-LABORATORY. Required Previous: Class Prerequisite(s): 19 on ACT-Science or SAT equivalent, PHSCI-0123, or Placement exam.

BIOL-1114L General Biology Laboratory 0 Credits
LAB COURSE FOR BIOL-1114.

BIOL-1214 General Botany 4 Credits
MORPHOLOGY, PHYSIOLOGY AND ECOLOGY OF THE SEED PLANTS WITH A BRIEF SURVEY OF THE PLANT KINGDOM. LECTURE, LABORATORY AND FIELD. Required Concurrent: Take BIOL-1214L

BIOL-1214L General Botany Laboratory 0 Credits
LAB COURSE FOR BIOL-1214.

BIOL-1314 General Zoology 4 Credits
A SURVEY OF MAJOR PHYLA OF THE ANIMAL KINGDOM, GENERAL MORPHOLOGY, LIFE HISTORIES, AND PRINCIPLES OF ANIMAL SYSTEMATICS. LECTURE AND LABORATORY. Required Concurrent: Take BIOL-1314L

BIOL-1314L General Zoology Laboratory 0 Credits
LAB COURSE FOR BIOL-1314.

BIOL-2002 Introductory Research Experience 2 Credits
DESIGNED TO BE AN INTRODUCTION TO RESEARCH IN THE BIOLOGICAL SCIENCES. MUST HAVE PERMISSION FROM RESEARCH MENTOR WITH WHOM STUDENT WILL WORK CLOSELY TO DEVELOP AN INDEPENDENT RESEARCH PROJECT. LABORATORY AND/OR FIELD. Required Previous: BIOL-1114 Must have permission from research mentor.

BIOL-2103 Horticulture 3 Credits
SURVEY AND PRACTICE OF THE HORTICULTURE DISCIPLINE INCLUDING PLANT GROWTH AND PROPAGATION FOR GREENHOUSE, AGRICULTURAL, LANDSCAPING, THERAPEUTIC AND HOBBYIST PRACTICES THROUGH LECTURE, LABORATORY AND FIELD DELIVERY. Required Previous: BIOL-1114 with a grade C or better.

BIOL-2113 Medical Terminology 3 Credits
A STUDY OF THE LANGUAGE OF MEDICINE INCLUDING WORD CONSTRUCTION, DEFINITIONS, AND USE OF TERMS RELATED TO ALL AREAS OF MEDICAL SCIENCES, HOSPITAL SERVICES AND THE ALLIED HEALTH SPECIALTIES.

BIOL-2184 Human Anatomy 4 Credits
AN INTRODUCTORY STUDY OF THE GROSS ANATOMY OF THE HUMAN BODY WITH AN INTRODUCTION TO MICROANATOMY. LABORATORY STUDIES OF THE HUMAN SKELETON, MODELS AND OTHER VISUAL MATERIALS. DISSECTION OF THE CAT WITH REFERENCE TO MAN. LECTURE AND LABORATORY. DEGREE CREDIT NOT ALLOWED IN BOTH 2184 AND 3615. Required Concurrent: Take BIOL-2184L

BIOL-2184L Human Anatomy Laboratory 0 Credits
LAB COURSE FOR BIOL-2184.

BIOL-2243 Introduction to Biotechnology 3 Credits
A SURVEY OF THE MOST ACTIVE AREAS IN THE FIELD OF BIOTECHNOLOGY. LECTURES WILL COVER TOPICS SUCH AS DNA MANIPULATION, PROTEIN ENGINEERING, LARGE-SCALE CULTIVATION OF MICROORGANISMS, STEM CELL RESEARCH, VACCINE AND MONOCLONAL ANTIBODY PRODUCTION, MOLECULAR MEDICINE, GENE THERAPY, AND GENETIC ENGINEERING IN PLANTS AND ANIMALS. Required Previous: BIOL-1114 or BIOL-1214 or BIOL-1314

BIOL-2344 General Microbiology 4 Credits
THE DISTRIBUTION, DISSEMINATION, CLASSIFICATION, AND IDENTIFICATION OF MICROORGANISMS, SPECIAL ATTENTION TO ORGANISMS CAUSING DISEASE AND TO IMMUNITY FROM THESE ORGANISMS. LECTURE AND LABORATORY. Required Concurrent: Take BIOL-2344L

BIOL-2344L General Microbiology Laboratory 0 Credits
LAB COURSE FOR BIOL-2344.

BIOL-2644 Invertebrate Zoology 4 Credits
GENERAL INVERTEBRATE ZOOLOGY, INCLUDING MORPHOLOGY, TAXONOMY AND LIFE HISTORIES OF REPRESENTATIVES OF THE INVERTEBRATE GROUPS. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-1314

BIOL-2773 Forensic Biology 3 Credits
A STUDY OF THE SCIENTIFIC METHOD AND BIOLOGICAL TECHNIQUES THAT ARE USED IN FORENSIC INVESTIGATION (CRIMINALISTICS). LECTURES AND LABORATORY SESSIONS WILL COVER THE METHODS OF FORENSIC INVESTIGATIONS WITH AN EMPHASIS ON THE EXAMINATION OF PHYSICAL EVIDENCE USED IN A COURT OF LAW. SPECIFIC TOPICS INCLUDE COMPARATIVE MICROSCOPY OF HAIR, TEXTILES, BLOOD, AND BULLETS, PROTEIN ANALYSIS USED TO DISTINGUISH AMONG SUSPECTS, ANALYTICAL METHODS USED TO IDENTIFY CERTAIN DRUGS, AND DNA ANALYSIS USED TO IDEN Required Previous: BIOL-1114 OR BIOL-1214 OR BIOL-1314

BIOL-2773L Forensic Biology Laboratory 0 Credits
LAB COURSE FOR BIOL-2773.

BIOL-2881 Special Studies in Biology (Subject named in title listing) 1 Credit
DIRECTED GROUP STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-2882 Special Studies in Biology (Subject named in title listing) 2 Credits
DIRECTED GROUP STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-2883 Special Studies in Biology (Subject named in title listing) 3 Credits
DIRECTED GROUP STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-2884 Special Studies in Biology (Subject named in title listing) 4 Credits
DIRECTED GROUP STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-3013 Research Methods and Bioethics 3 Credits
AN EXAMINATION OF THE METHODS AND TECHNIQUES THAT HAVE LED TO SIGNIFICANT DISCOVERIES AND THEMES IN MODERN BIOLOGICAL SCIENCES, RANGING FROM BIODIVERSITY AND EVOLUTION THROUGH CELL BIOLOGY AND GENETICS. TECHNIQUES IN THE CRITICAL EVALUATION OF SCIENTIFIC LITERATURE AND CURRENT ISSUES WILL BE INCLUDED THROUGHOUT THE COURSE, AS WELL AS THE ETHICAL ASPECTS OF DATA COLLECTION AND ANALYSES. CONSIDERATION OF SPECIFIC BIOMEDICAL ETHICS ISSUES WILL BE INCORPORATED INTO CLASS ACTIVITIES. Required Previous: BIOL-1214 or BIOL-1314

BIOL-3023 Animal Nutrition 3 Credits
THE NUTRIENTS REQUIRED BY ANIMALS, THEIR FUNCTIONS, AND THE INTERRELATIONSHIPS AND THE PROCESSES OF THEIR UTILIZATION. IN ADDITION, FEEDSTUFF COMPOSITION AND THEIR USE IN DIET AND RATION FORMULATION WILL BE COVERED. EMPHASIS WILL BE PLACED ON BOTH RUMINANT AND NON-RUMINANT SPECIES. Required Previous: BIOL-1114

BIOL-3034 Medical Botany 4 Credits
A SURVEY OF PLANTS AFFECTING HUMAN HEALTH INCLUDING HOW PLANTS WERE HISTORICALLY USED AND ARE CURRENTLY USED, WITH AN EMPHASIS ON BIOLOGICALLY ACTIVE CONSTITUENTS. Required Previous: BIOL-1214 with a grade of C or better.

BIOL-3034L Medical Botony Laboratory 0 Credits
LAB COURSE FOR BIOL-3034.

BIOL-3111 Peer-To-Peer Laboratory Experience 1 Credit
INTRODUCES THE STUDENT TO CLASSROOM DYNAMICS THROUGH PEER-TO-PEER EXPERIENCES IN A LABORATORY SETTING. STUDENTS WILL AID IN GENERAL PREPARATION AND COMPLETION OF LABORATORIES

THROUGHOUT THE SEMESTER, CRITICALLY EVALUATE PEER LABORATORY HANDOUTS, AND LEAD A LABORATORY DISCUSSION.

BIOL-3134 Field Zoology 4 Credits
AN INTRODUCTION TO LOCAL ANIMAL LIFE BASED UPON CLASSIFICATION, DISTRIBUTION, AND NATURAL HISTORY OF REPRESENTATIVES OF THE ANIMAL PHYLA OF THIS REGION. LECTURE, LABORATORY, AND FIELD. Required Concurrent: Take BIOL-3134L

BIOL-3134L Field Zoology Laboratory 0 Credits
LAB COURSE FOR BIOL-3134.

BIOL-3143 Ethnobotany 3 Credits
A SURVEY OF PLANT USE BY PEOPLE, INCLUDING SUCH TOPICS AS MEDICINAL, SOCIETAL, CULTURAL, AND ECONOMIC USES OF PLANTS FROM PRE-HISTORY TO CURRENT. Required Previous: BIOL-1114 or BIOL-1214

BIOL-3214 Field Ornithology 4 Credits
AN INTRODUCTION TO AVIAN BIOLOGY WITH EMPHASIS ON FIELD STUDY OF LIFE HISTORY, ECOLOGY, AND ETHOLOGY OF LOCAL BIRDS. LECTURE, LABORATORY AND INDEPENDENT FIELD PROJECTS. Required Previous: BIOL-1314

BIOL-3214L Field Ornithology Laboratory 0 Credits
LAB COURSE FOR BIOL-3214.

BIOL-3234 General Entomology 4 Credits
FUNDAMENTAL PRINCIPLES OF INSECT LIFE; CLASSIFICATION, LIFE HISTORIES AND ECONOMIC RELATIONS Required Concurrent: Take BIOL-3234L

BIOL-3234L General Entomology Laboratory 0 Credits
LAB COURSE FOR BIOL-3034.

BIOL-3245 Comparative Vertebrate Anatomy 5 Credits
COMPARISON OF ANATOMICAL STRUCTURE IN VERTEBRATE TYPES. LECTURE AND LABORATORY. Required Previous: BIOL-1314

BIOL-3245L Comparative Vertebrate Anatomy Laboratory 0 Credits
LAB COURSE FOR BIOL-3245.

BIOL-3254 Medical Entomology 4 Credits
A STUDY OF INSECTS AND OTHER ARTHROPODS WITH RELATION TO THEIR IMPORTANCE IN HUMAN MEDICINE. Required Previous: BIOL-1314

BIOL-3254L Medical Entomology Laboratory 0 Credits
LAB COURSE FOR BIOL-3245.

BIOL-3303 Stream Ecology and Stream Management 3 Credits
THE PHYSICAL, CHEMICAL, AND BIOLOGICAL CHARACTERISTICS OF STREAM ECOSYSTEMS WITH AN EMPHASIS ON ANTHROPOGENIC INFLUENCES ON THESE SYSTEMS. A REVIEW OF SELECTED STREAM MANAGEMENT PRACTICES USED TO MITIGATE THESE INFLUENCES THROUGH SELECTED CASE STUDIES OF MAJOR RIVER SYSTEMS FROM AROUND THE WORLD. LECTURE AND FIELD TRIPS TO LOCAL STREAM ECOSYSTEMS. Required Previous: BIOL-1214

BIOL-3314 Mammalogy 4 Credits
AN INTRODUCTION TO MAMMALIAN BIOLOGY, DIVERSITY, ANATOMY, EVOLUTIONARY HISTORY, SYSTEMATICS, AND ZOOGEOGRAPHY. LABORATORY EXERCISES WILL EMPHASIZE STRUCTURAL ANATOMY AND THE IDENTIFICATION AND NATURAL HISTORY OF OKLAHOMA MAMMALS. Required Previous: BIOL-1314

BIOL-3314L Mammalogy Laboratory 0 Credits
LAB COURSE FOR BIOL-3314.

BIOL-3324 Herpetology 4 Credits
AN INTRODUCTION TO THE BIOLOGY OF AMPHIBIANS AND REPTILES INCLUDING ANATOMY, DIVERSITY, EVOLUTIONARY RELATIONSHIPS, PHYSIOLOGY, SYSTEMATICS, AND ZOOGEOGRAPHY. LABORATORY EXERCISES WILL EMPHASIZE STRUCTURAL ANATOMY AND THE IDENTIFICATION AND NATURAL HISTORY OF OKLAHOMA REPTILES AND AMPHIBIANS. Required Previous: BIOL-1314

BIOL-3324L Herpetology Laboratory 0 Credits
LAB COURSE FOR BIOL-3324.

BIOL-3343 Experimental Molecular Biology 3 Credits
A STUDY OF THE EXPERIMENTAL APPROACH AND TECHNIQUES USED IN MOLECULAR BIOLOGY. EMPHASIS WILL BE PLACED ON THE EXTRACTION, ISOLATION, AND PURIFICATION OF PROTEINS AND NUCLEIC ACIDS OF BACTERIA, FUNGI, PLANTS, AND ANIMALS. Required Previous: BIOL-1314

BIOL-3434 Genetics 4 Credits
A STUDY OF BASIC PRINCIPLES IN INHERITANCE INCLUDING MENDELISM AND MOLECULAR MECHANISMS AND RECOMBINANT DNA TECHNOLOGY. LECTURE AND LAB. Required Concurrent: Take BIOL-3434L

BIOL-3434L Genetics Laboratory 0 Credits
LAB COURSE FOR BIOL-3434.

BIOL-3452 Advanced Genetics 2 Credits
CONTINUATION OF COURSE 3434. Required Previous: BIOL-3434

BIOL-3514 General Physiology 4 Credits
INCLUDES A STUDY OF THOSE PHYSIOLOGICAL PHENOMENA COMMON TO ALL LIVING ORGANISMS SUCH AS: OSMOREGULATION, FUNCTIONAL COMPOSITION, OXIDATIVE METABOLISM, METABOLIC CONTROL MECHANISMS, INTERNAL DISTRIBUTION SYSTEMS, NUTRITION, EXCRETION, INTEGRATION, AND BIOELECTRICITY. LECTURE AND LABORATORY. Required Concurrent: Take BIOL-3514L

BIOL-3514L General Physiology Labratory 0 Credits
LAB COURSE FOR BIOL-3514.

BIOL-3524 Mycology 4 Credits
A SURVEY OF FUNGI, INCLUDING THEIR EVOLUTION, MORPHOLOGY, AND ONTOGENY WITH MEDICINAL, AGRICULTURAL, AND ECONOMIC APPLICATIONS. WE WILL USE LECTURE, LABORATORY, AND FIELD TECHNIQUES TO EXPLORE THE FUNGAL WORLD. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-1114 or BIOL-1214 or BIOL-2344

BIOL-3553 Genomics and Bioinformatics 3 Credits
INTRODUCTION TO THE STUDY AND ANALYSIS OF GENOMES AND THE FUNCTIONS AND RELATIONSHIPS (BROADLY INCLUDING BIOCHEMICAL ACTIVITY AND BIOLOGICAL FUNCTION) OF ALL THE GENES WITHIN A GENOME. TOPICS WILL INCLUDE TECHNIQUES AND METHODS IN GENETICS, GENOME SEQUENCING, SEQUENCE ALIGNMENT, GENE AND PROTEIN ANALYSIS, MICROARRAY ANALYSIS, PROTEOMICS AND DATABASE SEARCHING. Required Previous: BIOL-1214 or BIOL-1314

BIOL-3615 Human Anatomy & Physiology 5 Credits
AN INTRODUCTION TO THE STRUCTURE AND FUNCTIONS OF THE VARIOUS SYSTEMS OF THE HUMAN BODY INCLUDING A STUDY OF RESPIRATION, DIGESTION, METABOLISM, AND NUTRITION; A STUDY OF THE SPECIAL SENSES, INTERNAL SECRETION, AND MUSCULAR AND NERVOUS SYSTEMS. LECTURE AND LABORATORY. DEGREE CREDIT NOT ALLOWED IN BOTH 3615 AND 3634, OR IN 2184 AND 3615. Required Previous: 4 to 8 hours of Chemistry;Degree credit not allowed in both BIOL-3615 and BIOL-3634 or in BIOL-2184 and BIOL-3615.

BIOL-3623 Biochemistry of Human Diseases 3 Credits
A SURVEY OF THE BIOCHEMICAL AND MOLECULAR BASIS FOR HUMAN DISEASES. LECTURE TOPICS WILL INCLUDE METABOLIC DISEASES SUCH AS ATHEROSCLEROSIS AND DIABETES, AND THE BIOCHEMISTRY RELATED TO PRION DISEASES, VIROLOGY AND CANCER. Required Previous: BIOL-3434

BIOL-3634 Human Physiology 4 Credits
FUNCTION OF THE HUMAN BODY, PHYSICAL AND CHEMICAL CHANGES WHICH OCCUR IN LIVING SYSTEMS. LABORATORY STUDIES IN THE PHYSICAL AND CHEMICAL NATURE OF ENERGY CHANGES OCCURRING IN LIVING SYSTEMS, AND THEIR EVALUATION UNDER VARIED CONDITIONS. LECTURE AND LABORATORY. DEGREE CREDIT NOT ALLOWED IN BOTH BIOL-3615 AND 3634. Required Concurrent: Take BIOL-3634L

BIOL-3634L Human Physiology Laboratory 0 Credits
LAB COURSE FOR BIOL-3634.

BIOL-3654 Histology 4 Credits
INTRODUCTION TO THE ESSENTIALS OF MICROANATOMY OF TISSUES AND ORGANS. LECTURE AND LABORATORY. Required Previous: BIOL-1314

BIOL-3654L Histology Laboratory 0 Credits
LAB COURSE FOR BIOL-3654.

BIOL-3674 Plant Ecophysiology 4 Credits
THIS COURSE FOCUSES ON HOW PLANTS COPE WITH ENVIRONMENTAL STRESS THROUGH PHYSIOLOGICAL MECHANISMS AND INTEGRATION. WE WILL USE LECTURE, LAB, AND FIELD TECHNIQUES TO EXPLORE PLANT-ENVIRONMENT INTERACTIONS. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-1114

BIOL-3683 Immunology 3 Credits
AN INTRODUCTORY STUDY OF THE PRINCIPLES, MECHANISMS, AND CLINICAL APPLICATIONS OF THE IMMUNE RESPONSE. Required Previous: BIOL-2344

BIOL-3703 Biostatistics 3 Credits
A STUDY OF STATISTICAL METHODS COMMONLY USED IN ENVIRONMENTAL AND LIFE SCIENCE. TOPICS INCLUDE DESCRIPTIVE AND INFERENTIAL STATISTICS AND OTHER RELATED CALCULATIONS. Required Previous: MATH-1513

BIOL-3712 Foundations of Biology 2 Credits
A SURVEY BY STUDY OF ORIGINAL SOURCES AND COMPILATIONS OF THE SEQUENCE OF BIOLOGICAL DISCOVERIES AND THE MEN ASSOCIATED WITH THEM, AND OF THE GROWTH OF BIOLOGICAL THEORIES AND THE DEVELOPMENT OF SCIENTIFIC THOUGHT. LECTURE AND LIBRARY.

BIOL-3814 Plant Kingdom 4 Credits
REPRESENTATIVE PLANTS FROM IMPORTANT GROUPS STUDIED AS TO GENERAL STRUCTURE AND FUNCTION OF EACH PART, METHODS OF REPRODUCTION, THE DEVELOPMENT OF PLANTS FROM THE SIMPLEST TO THE HIGHEST FORMS. LECTURE AND LABORATORY . Required Previous: BIOL-1214

BIOL-3814L Plant Kingdom Laboratory 0 Credits
LAB COURSE FOR BIOL-3814.

BIOL-3934 Limnology 4 Credits
INTRODUCTION TO THE STUDY OF FRESHWATER BIOLOGY, PHYSICAL AND CHEMICAL FACTORS, PLANKTON ANALYSIS, BOTTOM FAUNA LAKE AND STREAM MAPPING AND PRODUCTIVITY STUDIES. LECTURE AND LABORATORY. Required Concurrent: Take BIOL-3934L

BIOL-3934L Limnology Laboratory 0 Credits
LAB COURSE FOR BIOL-3934.

BIOL-4014 Integrated Pest Management 4 Credits
A SURVEY OF AGRONOMIC PESTS FOCUSING ON INSECTS INCLUDING THEIR BIOLOGY, MORPHOLOGY, IDENTIFICATION AND MANAGEMENT PRACTICES FOR SUSTAINABLE AGRICULTURE, NATURAL RESOURCES, AND URBAN AND RURAL HEALTH AND WELLBEING. THIS IS A FIELD-BASED COURSE. Required Previous: BIOL-3234 with a grade of C or better.

BIOL-4023 Animal Behavior 3 Credits
AN INTRODUCTION TO THE BIOLOGICAL BASIS OF ANIMAL BEHAVIOR, TOPICS INCLUDE THE DEVELOPMENT, PHYSIOLOGICAL MEDIATION, ADAPTIVE SIGNIFICANCE, AND EVOLUTION OF ANIMAL BEHAVIOR. LECTURE. Required Previous: BIOL-1314

BIOL-4113 Vertebrate Embryology 3 Credits
OUTLINE OF FACTS AND FACTORS IN EMBRYONIC DEVELOPMENT OF FISHES, AMPHIBIANS, REPTILES, BIRDS AND MAMMALS. Required Previous: BIOL-1314

BIOL-4123 Evolution 3 Credits
MODERN EVOLUTIONARY THEORY WITH SPECIAL REFERENCE TO RELATED GENETIC MECHANISM. Required Previous: BIOL-1214

BIOL-4144 Natural History of the Vertebrates 4 Credits
PRINCIPLES OF DISTRIBUTION, CLASSIFICATION, LIFE HISTORIES, ECOLOGY, AND ETHOLOGY OF THE COMMON VERTEBRATES. EMPHASIS GIVEN TO THE TERRESTRIAL FORMS OF LOCAL AREAS. LABORATORY AND FIELD WORK EMPHASIZES COLLECTING TECHNIQUES, IDENTIFICATION AND PREPARATION OF SPECIMENS. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-1314

BIOL-4144L Natural History of the Vertebrates Laboratory 0 Credits
LAB COURSE FOR BIOL-4144.

BIOL-4214 Taxonomy of Flowering Plants 4 Credits
IDENTIFICATION AND CLASSIFICATION OF PLANTS, ESPECIALLY OF THE LOCAL FLORA; CONSTRUCTION AND USE OF KEYS AND THE PREPARATION OF AN HERBARIUM. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-1214

BIOL-4214L Taxonomy of Flowering Plants Laboratory 0 Credits
LAB COURSE FOR BIOL-4214.

BIOL-4313 Cell and Molecular Biology 3 Credits
CYTOLOGY, BIOCHEMISTRY, MOLECULAR REGULATION, AND FUNCTION OF CELLS AND ORGANELLES. EMPHASIS IS ON THE EUCARYOTIC CELL. Required Previous: Twelve hours of Biology

BIOL-4323 Experimental Design in Biological Science 3 Credits
DESIGN, IMPLEMENTATION AND DATA ANALYSIS USING THE SCIENTIFIC METHOD ON A SPECIFIC TOPIC IN THE BIOLOGICAL SCIENCES. STUDENTS WILL ALSO DEVELOP A RESEARCH PROPOSAL THAT WILL GUIDE INDEPENDENT RESEARCH. LECTURE. Required Previous: BIOL-1214

BIOL-4414 Ecology 4 Credits
A STUDY OF THE STRUCTURE AND FUNCTION OF THE ECOSYSTEM INCLUDING A SURVEY OF THE AQUATIC AND TERRESTRIAL HABITATS. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-1314

BIOL-4414L Ecology Laboratory 0 Credits
LAB COURSE FOR BIOL-4414.

BIOL-4473 Nature Study 3 Credits
COMMON NAMES, NATURAL HISTORIES, AND INTERRELATIONSHIPS OF LOCAL FLORA AND FAUNA; SURVEY OF HABITAT TYPES, COLLECTIONS, AND NATURE PROJECTS. PROBLEMS OF CONSERVATION OF WILDLIFE. LECTURE AND FIELD LABORATORY. THIS COURSE IS NOT APPLICABLE ON MAJOR OR MINOR IN BIOLOGY.

BIOL-4514 Environmental Biology 4 Credits
A STUDY OF THE BIOLOGY OF ENVIRONMENTAL PROBLEMS AND HUMAN RELATIONSHIPS TO THE ENVIRONMENT, INCLUDING AIR, WATER, LAND, AND OTHER ORGANISMS. LECTURE AND LABORATORY. Required Previous: BIOL-1114 or equivalent

BIOL-4534 Wildlife Management 4 Credits
THE APPLICATION OF SCIENTIFIC PRINCIPLES TO THE ECOLOGICAL PROBLEMS ASSOCIATED WITH THE MANAGEMENT OF WILDLIFE POPULATIONS AND THEIR HABITATS. LECTURE AND LABORATORY. Required Previous: BIOL-1214 or BIOL-1314

BIOL-4534L Wildlife Management Laboratory 0 Credits
LAB COURSE FOR BIOL-4534.

BIOL-4545 Advanced Molecular Biology 5 Credits
AN IN-DEPTH INVESTIGATION OF SPECIFIC ENZYMES AND REAGENTS THAT MODIFY NUCLEIC ACIDS BOTH IN VIVO AND IN VITRO. THE THEORY BEHIND BIOCHEMICAL ACTIVITY, OPTIMAL REACTION CONDITIONS AND PRACTICAL APPLICATIONS IN BIOENGINEERING WILL BE EXPLORED IN BOTH LECTURE AND LABORATORY. THE PRACTICAL PORTION OF THE COURSE WILL BE PROJECT DRIVEN AND WILL INCORPORATE ANALYSES OF THE CURRENT SCIENTIFIC LITERATURE. Required Previous: BIOL-2344

BIOL-4545L Advanced Molecular Biology Laboratory 0 Credits
LAB COURSE FOR BIOL-4545.

BIOL-4553 Pathogenic Microbiology 3 Credits
THE COURSE WILL FOCUS UPON BACTERIAL, FUNGAL, AND VIRAL DISEASES. IT WILL PRIMARILY COVER HUMAN DISEASES AND AGRICULTURALLY IMPORTANT DISEASES IN CROPS AND LIVESTOCK. ROUTES OF INFECTION SUCH AS AIR BORNE, WATER BORNE, FOOD BORNE, SOIL BORNE, ARTHROPOD BORNE, AND SEXUAL CONTACT WILL BE INVESTIGATED. CHARACTERISTICS OF INFECTIVE ORGANISMS AND THEIR MECHANISMS OF INFECTION IN DIFFERENT ORGANISMS WILL BE INCLUDED IN THE DISCUSSION. Required Previous: BIOL-1214 or BIOL-1314

BIOL-4614 Animal Parasitology 4 Credits
MORPHOLOGY, LIFE HISTORY, AND CLASSIFICATION OF THE MORE IMPORTANT PARASITES OF ANIMALS; HOST-PARASITE RELATIONSHIP AND METHODS OF CONTROL. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-1314

BIOL-4614L Animal Parasitology Laboratory 0 Credits
LAB COURSE FOR BIOL-4614.

BIOL-4713 Methods of Teaching Secondary Biological Science 3 Credits
PHILOSOPHY, METHODOLOGY AND RESOURCES FOR TEACHING HIGH SCHOOL BIOLOGY. Required Previous: Twelve hours for Biology

BIOL-4763 Biochemical Genetics 3 Credits
A STUDY OF THE MOLECULAR MECHANISMS CONTROLLING GENE REGULATION IN VIRUSES, PROKARYOTES AND EUKARYOTES. TOPICS WILL INCLUDE GENETIC ENGINEERING, MOLECULAR GENETICS, AND BIOCHEMISTRY OF MACROMOLECULAR INTERACTIONS. Required Previous: BIOL-1214 or BIOL-1314

BIOL-4881 Biology Senior Seminar 1 Credit
DIRECTED STUDY ON BIOLOGICAL ACTIVITIES RELATED TO SENIOR LEVEL ASSESSMENT. (THIS COURSE SHOULD BE TAKEN DURING THE SEMESTER PRIOR TO GRADUATION.)

BIOL-4924 Advanced Research Experience 4 Credits
A CONTINUATION OF THE RESEARCH EXPERIENCE. MUST HAVE PERMISSION FROM RESEARCH MENTOR WITH WHOM THE STUDENT WILL WORK CLOSELY TO DEVELOP AN INDEPENDENT RESEARCH PROJECT, FOSTERING SKILLS NECESSARY FOR CAREERS IN LABORATORY, FIELD, AND OTHER RESEARCH ORIENTED FIELDS. LABORATORY AND/OR FIELD. Required Previous: BIOL-2002 Must have permission from research mentor.

BIOL-4981 Seminar in Biology (Subject named in title listing) 1 Credit
DIRECTED GROUP STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-4982 Seminar in Biology (Subject named in title listing) 2 Credits
DIRECTED GROUP STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-4983 Seminar in Biology (Subject named in title listing) 3 Credits
DIRECTED GROUP STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-4984 Seminar in Biology (Subject named in title listing) 4 Credits
DIRECTED GROUP STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-4991 Individual Study in Biology (Subject named in title listing) 1 Credit
DIRECTED INDIVIDUAL STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-4992 Individual Study in Biology (Subject named in title listing) 2 Credits
DIRECTED INDIVIDUAL STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-4993 Individual Study in Biology (Subject named in title listing) 3 Credits
DIRECTED INDIVIDUAL STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-4994 Individual Study in Biology (Subject named in title listing) 4 Credits
DIRECTED INDIVIDUAL STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-5133 Special Topics in Evolution 3 Credits
GRADUATE COURSE TO PROVIDE AN UNDERSTANDING OF THE MODERN THEORY AND MECHANISMS OF EVOLUTION. EMPHASIS ON THE IMPORTANCE OF EVOLUTION AS A UNIFYING CONCEPT TO THE FIELD OF BIOLOGY.

BIOL-5144 Freshwater Invertebrate Zoology 4 Credits
IDENTIFICATION AND ECOLOGY OF FRESH WATER INVERTEBRATES. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-2644

BIOL-5313 Microbiology and Man 3 Credits
A SURVEY OF THE MICROORGANISMS, THEIR FORM, FUNCTION, AND IMPORTANCE IN PERSONAL AND COMMUNITY HEALTH AND ECOLOGY. THIS COURSE DESIGNED PRIMARILY AS GENERAL EDUCATION FOR GRADUATE STUDENTS.

BIOL-5323 Advanced Cell and Molecular Biology 3 Credits
GRADUATE COURSE TO PROVIDE AN UNDERSTANDING OF CYTOLOGY, BIOCHEMISTRY, MOLECULAR REGULATION, AND FUNCTION OF CELLS AND ORGANELLES. EMPHASIS IS ON THE EUKARYOTIC CELL.

BIOL-5413 Common Plants of Oklahoma 3 Credits
PLANT GROUPS OF GENERAL INTEREST TO THE LAYMAN, INCLUDING STUDY OF BASIC CHARACTERISTICS OF PLANT FAMILIES AND ENVIRONMENTAL FACTORS WHICH TEND TO LIMIT THEIR DISTRIBUTION TO CERTAIN PLANT COMMUNITIES. THIS COURSE IS DESIGNED PRIMARILY AS GENERAL EDUCATION FOR GRADUATES STUDENTS. LECTURE, LABORATORY, AND FIELD.

BIOL-5433 Human Genetics 3 Credits
A STUDY OF THE BASIC PRINCIPLES OF HUMAN GENETICS AND RELATED BIOLOGICAL PROBLEMS IMPORTANT TO OUR SOCIETY.

BIOL-5654 Histopathology 3 Credits
THE STUDY OF THE MICROANATOMY OF TISSUES AND ORGANS. AN INTRODUCTION TO MICROPHYSIOLOGY AND PATHOHISTOLOGY. LECTURE AND LABORATORY.

BIOL-5703 Advanced Biostatistics 3 Credits
ADVANCED STUDY OF STATISTICAL METHODS COMMONLY USED IN ENVIRONMENTAL AND LIFE SCIENCE. TOPICS INCLUDE DESCRIPTIVE AND INFERENTIAL STATISTICS AND OTHER RELATED CALCULATIONS. CREDIT CANNOT BE APPLIED FROM BOTH EHS5703 AND BIOL5703.

BIOL-5981 Seminar in Biology (Subject named in title listing) 1 Credit
DIRECTED INTENSIVE STUDY ON SELECTED PROBLEM OR SPECIAL TOPIC.

BIOL-5982 Seminar in Biology (Subject named in title listing) 2 Credits
DIRECTED INTENSIVE STUDY ON SELECTED PROBLEM OR SPECIAL TOPIC.

BIOL-5983 Seminar in Biology (Subject named in title listing) 3 Credits
DIRECTED INTENSIVE STUDY ON SELECTED PROBLEM OR SPECIAL TOPIC.

BIOL-5984 Seminar in Biology (Subject named in title listing) 4 Credits
DIRECTED INTENSIVE STUDY ON SELECTED PROBLEM OR SPECIAL TOPIC.

BIOL-5991 Individual Studies in Biology (Subject named in title listing) 1 Credit
DIRECTED INTENSIVE STUDY ON DEFINITE PROBLEM OR SPECIAL SUBJECT, BASED ON APPROVED OUTLINE OR PLAN, CONFERENCES, ORAL AND WRITTEN REPORTS. Required Previous: 12 hours of Biology

BIOL-5992 Individual Studies in Biology (Subject named in title listing) 2 Credits
DIRECTED INTENSIVE STUDY ON DEFINITE PROBLEM OR SPECIAL SUBJECT, BASED ON APPROVED OUTLINE OR PLAN, CONFERENCES, ORAL AND WRITTEN REPORTS. Required Previous: 12 hours of Biology

BIOL-5993 Individual Studies in Biology (Subject named in title listing) 3 Credits
DIRECTED INTENSIVE STUDY ON DEFINITE PROBLEM OR SPECIAL SUBJECT, BASED ON APPROVED OUTLINE OR PLAN, CONFERENCES, ORAL AND WRITTEN REPORTS. Required Previous: 12 hours of Biology

BIOL-5994 Individual Studies in Biology (Subject named in title listing) 4 Credits
DIRECTED INTENSIVE STUDY ON DEFINITE PROBLEM OR SPECIAL SUBJECT, BASED ON APPROVED OUTLINE OR PLAN, CONFERENCES, ORAL AND WRITTEN REPORTS. Required Previous: 12 hours of Biology

BIOL-H1114L Honors-General Biology Laboratory 0 Credits
LAB COURSE FOR BIOL-H114.

BIOL-H2344 Honors-General Microbiology 4 Credits
THE DISTRIBUTION, DISSEMINATION, CLASSIFICATION, AND IDENTIFICATION OF MICROORGANISMS, SPECIAL ATTENTION TO ORGANISMS CAUSING DISEASE AND TO IMMUNITY FROM THESE ORGANISMS. LECTURE AND LABORATORY. Required Previous: BIOL-1114

BIOL-H2345 Honors-General Microbiology 5 Credits
THE DISTRIBUTION, DISSEMINATION, CLASSIFICATION, AND IDENTIFICATION OF MICROORGANISMS, SPECIAL ATTENTION TO ORGANISMS CAUSING DISEASE AND TO IMMUNITY FROM THESE ORGANISMS. LECTURE AND LABORATORY.

BIOL-H2345L Honors-General Microbiology Laboratory 0 Credits
LAB COURSE FOR BIOL-H2345.

BIOL-H3134 Honors-Field Zoology 4 Credits
AN INTRODUCTION TO LOCAL ANIMAL LIFE BASED UPON CLASSIFICATION, DISTRIBUTION, AND NATURAL HISTORY OF REPRESENTATIVES OF THE ANIMAL PHYLA OF THIS REGION. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-1314

BIOL-H3245 Honors-Comparative Vertebrate Anatomy 5 Credits
COMPARISON OF ANATOMICAL STRUCTURE IN VERTEBRATE TYPES. LECTURE AND LABORATORY. Required Previous: BIOL-1314

BIOL-H3343 Honors-Experimental Molecular Biology 3 Credits
A STUDY OF THE EXPERIMENTAL APPROACH AND TECHNIQUES USED IN MOLECULAR BIOLOGY. EMPHASIS WILL BE PLACED ON THE EXTRACTION, ISOLATION, AND PURIFICATION OF PROTEINS AND NUCLEIC ACIDS OF BACTERIA, FUNGI, PLANTS, AND ANIMALS. Required Previous: BIOL-1314

BIOL-H3434 Honors-Genetics 4 Credits
A STUDY OF BASIC PRINCIPLES IN INHERITANCE INCLUDING MENDELISM AND MOLECULAR MECHANISMS AND RECOMBINANT DNA TECHNOLOGY. LECTURE AND LAB. Required Previous: BIOL-1214

BIOL-H3434L Honors-Genetics Laboratory 0 Credits
LAB COURSE FOR BIOL-3434.

BIOL-H3553 HONORS-Genomics and Bioinformatics 3 Credits
INTRODUCTION TO THE STUDY AND ANALYSIS OF GENOMES AND THE FUNCTIONS AND RELATIONSHIPS (BROADLY INCLUDING BIOCHEMICAL ACTIVITY AND BIOLOGICAL FUNCTION) OF ALL THE GENES WITHIN A GENOME. TOPICS WILL INCLUDE TECHNIQUES AND METHODS IN GENETICS, GENOME SEQUENCING, SEQUENCE ALIGNMENT, GENE AND PROTEIN ANALYSIS, MICROARRAY ANALYSIS, PROTEOMICS AND DATABASE SEARCHING. Required Previous: BIOL-1214 or BIOL-1314

BIOL-H3634 Honors-Human Physiology 4 Credits
FUNCTION OF THE HUMAN BODY, PHYSICAL AND CHEMICAL CHANGES WHICH OCCUR IN LIVING SYSTEMS. LABORATORY STUDIES IN THE PHYSICAL AND CHEMICAL NATURE OF ENERGY CHANGES OCCURRING IN LIVING SYSTEMS, AND THEIR EVALUATION UNDER VARIED CONDITIONS. LECTURE AND LABORATORY. Required Previous: BIOL-2184 OR BIOL-2344 OR BIOL-3245; Degree credit not allowed in both BIOL 3615 and 3634.

BIOL-H3634L Honors-Human Physiology Laboratory 0 Credits
LAB COURSE FOR BIOL-3634.

BIOL-H3654 Honors-Histology 4 Credits
INTRODUCTION TO THE ESSENTIALS OF MICROANATOMY OF TISSUES AND ORGANS. LECTURE AND LABORATORY. Required Previous: BIOL-1314

BIOL-H3654L Honors-Histology Laboratory 0 Credits
LAB COURSE FOR BIOL-H3654.

BIOL-H3683 Honors-Immunology 3 Credits
AN INTRODUCTORY STUDY OF THE PRINCIPLES, MECHANISMS, AND CLINICAL APPLICATIONS OF THE IMMUNE RESPONSE. Required Previous: BIOL-2344

BIOL-H3934 Honors-Limnology 4 Credits
INTRODUCTION TO THE STUDY OF FRESHWATER BIOLOGY, PHYSICAL AND CHEMICAL FACTORS, PLANKTON ANALYSIS, BOTTOM FAUNA LAKE AND STREAM MAPPING AND PRODUCTIVITY STUDIES. LECTURE AND LABORATORY. Required Previous: BIOL-1214

BIOL-H4113 Honors-Vertebrate Embryology 3 Credits
OUTLINE OF FACTS AND FACTORS IN EMBRYONIC DEVELOPMENT OF FISHES, AMPHIBIANS, REPTILES, BIRDS AND MAMMALS. Required Previous: BIOL-1314

BIOL-H4214 Honors-Taxonomy of Flowering Plants 4 Credits
IDENTIFICATION AND CLASSIFICATION OF PLANTS, ESPECIALLY OF THE LOCAL FLORA, CONSTRUCTION AND USE OF KEYS AND THE PREPARATION OF AN HERBARIUM. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-1214

BIOL-H4214L Honors-Taxonomy of Flowering Plants Laboratory 0 Credits
LAB COURSE FOR BIOL-H4214.

BIOL-H4313 Honors-Cell and Molecular Biology 3 Credits
CYTOLOGY, BIOCHEMISTRY, MOLECULAR REGULATION, AND FUNCTION OF CELLS AND ORGANELLES. EMPHASIS IS ON THE EUKARYOTIC CELL. Required Previous: Twelve hours of Biology

BIOL-H4414 Honors-Ecology 4 Credits
A STUDY OF THE STRUCTURE AND FUNCTION OF THE ECOSYSTEM INCLUDING A SURVEY OF THE AQUATIC AND TERRESTRIAL HABITATS. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-1314

BIOL-H4414L Honors-Ecology Laboratory 0 Credits
LAB COURSE FOR BIOL-4414.

BIOL-H4534 Honors-Wildlife Management 4 Credits
THE APPLICATION OF SCIENTIFIC PRINCIPLES TO THE ECOLOGICAL PROBLEMS ASSOCIATED WITH THE MANAGEMENT OF WILDLIFE POPULATIONS AND THEIR HABITATS. LECTURE AND LABORATORY. Required Previous: BIOL-1214 or BIOL-1314

BIOL-H4614 Honors-Animal Parasitology 4 Credits
MORPHOLOGY, LIFE HISTORY, AND CLASSIFICATION OF THE MORE IMPORTANT PARASITES OF ANIMALS, HOST-PARASITE RELATIONSHIP AND METHODS OF CONTROL. LECTURE, LABORATORY, AND FIELD. Required Previous: BIOL-1314

BIOL-H4765 Honors-Molecular Genetics 5 Credits
A STUDY OF THE MOLECULAR MECHANISMS CONTROLLING GENE REGULATION AND DEVELOPMENT IN PROKARYOTIC AND EUKARYOTIC ORGANISMS. TECHNIQUES IN GENETIC ENGINEERING AND GENOMICS WILL BE INCLUDED IN BOTH LECTURE AND LABORATORY SESSIONS. SPECIAL TOPICS SUCH AS MOLECULAR GENETICS OF THE CELL CYCLE AND OF CANCER WILL BE COVERED.

BIOL-H4881 Honors-Biology Senior Seminar 1 Credit
DIRECTED STUDY ON BIOLOGICAL ACTIVITIES RELATED TO SENIOR LEVEL ASSESSMENT. (THIS COURSE SHOULD BE TAKEN DURING THE SEMESTER PRIOR TO GRADUATION.)

BIOL-H4983 Honors-Seminar in Biology (Subject named in title listing) 3 Credits
DIRECTED GROUP STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-H4991 Honors-Individual Studies in Biology (Subject named in title listing) 1 Credit
DIRECTED INDIVIDUAL STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-H4992 Honors-Individual Studies in Biology (Subject named in title listing) 2 Credits
DIRECTED INDIVIDUAL STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-H4993 Honors-Individual Studies in Biology (Subject named in title listing) 3 Credits
DIRECTED INDIVIDUAL STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-H4994 Honors-Individual Studies in Biology (Subject named in title listing) 4 Credits
DIRECTED INDIVIDUAL STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-S4981 Seminar in Biology (Subject named in title listing) 1 Credit
DIRECTED GROUP STUDY ON SPECIAL SUBJECT OR PROBLEM.

BIOL-S5981 Seminar in Biology (Subject named in title listing) 1 Credit
DIRECTED INTENSIVE STUDY ON SELECTED PROBLEM OR SPECIAL TOPIC.