ACADEMIC COLLEGES

2024-2025 COLLEGE OF HEALTH & SCIENCES

2024-2025 College of Health & Sciences
Kenneth D. Andrews, Dean

Department of Biology & Environmental Science
Department of Physical Sciences
Department of Mathematics & Computer Science
School of Nursing

2024-2025 Biology (BIOL) Courses
2024-2025 Chemistry (CHEM) Courses
2024-2025 Computer Science (CMPSC) Courses
2024-2025 Computer Science Mathematics (CPSMA)
2024-2025 Environmental Health Science (EHS) Courses
2024-2025 Geographic Information Systems (GIS) Courses
2024-2025 Human Dev., Hospitality & Food Service (HHFS) Courses
2024-2025 Mathematics (MATH) Courses
2024-2025 Medical Technology (MEDTE) Courses
2024-2025 Nursing (NRSG) Courses
2024-2025 Physics (PHYS) Courses
2024-2025 Teach Bio. & Physical Sci (B/C/P) Courses

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Department of Biological & Environmental Sciences

Majors Offered
Biology - Bachelor of Science
Biology (Clinical Laboratory Scientist) - Bachelor of Science
Biology (Ecology) - Bachelor of Science
Biology (Health Sciences) - Bachelor of Science
Biology (Medical Botany) - Bachelor of Science
Biology (Molecular Biology) - Bachelor of Science
Biology (Teacher Certification) - Bachelor of Science
Env. Health Science - Bachelor of Science
Env. Health Science - (Env. Mgmt. & Nat. Resource) - Bachelor of Science
Env. Health Science (Public Health) - Bachelor of Science

Minors Offered
Biology
Environmental Health Science
Public Health
Environmental Management & Natural Resources

Departmental Information
The Department of Biological & Environmental Sciences provides undergraduate training for students interested in the life sciences who may wish to pursue careers in this area. Biological & Environmental Sciences is a continually expanding discipline with a variety of career opportunities. The faculty and facilities of the Department permit the investigation of Biological & Environmental Sciences at the subcellular, cellular, organismal, population, and community level. Courses taught in the Department emphasize scientific principles and concepts that aid in understanding structure, function and behavior of individual organisms, and how individual organisms interact within the natural environment. Several scholarships are available to qualified students. Departmental scholarships include the Thomas J. McKnight Biology Scholarship and the Fred and Mary Pfeffer Scholarship. Other scholarships are available through the Academic Scholarship Program and the East Central University Foundation. For students who plan to teach, there are scholarships available through the College of Education and Psychology.

There are several clubs and societies available for Biological & Environmental Sciences students. The ones currently active are the Tri-Beta Club, the Pre-Dentistry Club, and the Society for Wildlife and Ecological Biologists.

Biology Degree Program
The Bachelor of Science in Biology degree program offers majors in six bachelor degree concentrations. A Bachelor of Science is designed for students who plan to become practicing biologists in industry or government, or plan to pursue a graduate degree in biology. This degree concentration is usually chosen by those students who need pre-professional training before entering the schools of medicine, dentistry, veterinary medicine, or other health-related professional schools. A Bachelor of Science for Teacher Certification gives a prospective science teacher an appropriate academic background in biology and in the methods of teaching. The Bachelor of Science for Molecular Biology prepares students for graduate research and/or employment in the rapidly growing fields of biotechnology, agribusiness, industry, law enforcement, and molecular biology. A Bachelor of Science for Clinical Laboratory Science prepares students to conduct and supervise complex medical tests, clinical trials, and research experiments; manage clinical laboratories; and consult with physicians and clinical researchers on diagnoses, disease causation and spread, and research outcomes. This degree concentration requires three years of prescribed study on campus followed by a year of clinical training in an approved hospital or School of Clinical Laboratory Science. A Bachelor of Science for Medical Botany empowers students to apply coursework in Botany, Zoology, Genetics, Physiology, Microbiology, Medical Botany, Entomology and Plant Ecophysiology. It provides f lexibility through electives so that many path options are available all with the goal in mind of students understanding the complex relationship between plants and humans. Ultimately, this deep understanding will enable students to enter graduate school or employment so that they may transform their futures in biotech, agribusiness, pharmacology, medicine, homeopathy, horticulture, law, Native American affairs, research, industry and others into successful futures. A Bachelor of Science in Ecology, and a Bachelor of Science in Health Sciences are also offered.

Clinical Laboratory Science Concentration

This concentration requires a minimum of ninety-four semester hours credit of prescribed study on the campus, followed by a clinical component (30 hours) which consists of a year of approved professional training in Clinical Laboratory Science. The professional training must be done in a school of clinical laboratory science approved by the University and by the Oklahoma Consortium of Clinical Laboratory Science Affiliates.

Requirements for admission to the clinical component of clinical laboratory science:
1.) Complete the general education requirements.

2.) Complete prescribed science and math courses or equivalent courses.

3.) Complete a sufficient number of approved electives to complete the minimum requirement of ninety-four semester hours.

4.) Grade average must be a 2.5 or better overall and in the specific work in science and math.

5.) Ten semester hours of the ninety-four must be done in upper division courses (3000 and 4000 level).

Attainment of the requirements above does not guarantee admission to the clinical component of the program. The number of applicants placed is based on the number of applicants accepted by affiliated Schools of Clinical Laboratory Science.

Environmental Health Science Program
The Bachelor of Science in Environmental Health Science (EHS) provides graduates with the interdisciplinary education needed for professional careers in areas such as: hazardous materials management, environmental program planning, industrial food safety, disease vector control, occupational safety and health, and water resources management. Concentrations in the EHS Program include Bachelor of Science in EHS for Environmental Management and Natural Resources, and a Bachelor of Science in EHS for Public Health. Environmental Health Sciences program graduates have been selected for professional positions in public health departments, private industries, state and federal environmental agencies, the United States Public Health Service Commissioned Corps and in private environmental consulting firms. In addition, the program prepares EHS majors for graduate study in a wide variety of disciplines.

The EHS program is one of 31 baccalaureate programs accredited by the National Environmental Health Science and Protection Accreditation Council and has maintained accreditation since 1975. EHS majors must complete a total of 55 hours of core courses in environmental health and environmental science which includes a supervised, professional internship at an approved site. The internship provides students with an opportunity to integrate their academic preparation with actual work experiences. EHS majors must also complete supporting courses in biology, chemistry, physics, and mathematics. A minor is advised, but not required.

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2024-2025 Biology/General - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Biology Core (20 Credit Hours)
BIOL 1114 General Biology
BIOL 1214 General Botany
BIOL 1314 General Zoology
BIOL 3434 Genetics

Select one of the following
BIOL 3514 General Physiology; OR
BIOL 3634 Human Physiology

Required for Biology/General Concentration (12 Credit Hours)
BIOL 2344 Microbiology
BIOL 4313 Cell and Molecular Biology
BIOL 4414 General Ecology
BIOL 4881 Biology Senior Seminar

Required Electives (16 Credit Hours)
Sixteen (16) hours of elective biology with minimum of 11 hours in 3000-4000 level courses (NOT BIOL 4473 or BIOL 4713).

Recommended Related Electives
CHEM 4114 Organic Chemistry II
CHEM 4213 Biochemistry
CHEM 4221 Biochemistry Lab
EHS 3703 Biostatistics
MATH 1223 Into. to Probability & Statistics
PSYCH 3833 Behavioral Science Statistics
SOC 3833 Statistics for Social Sciences

Required Related Work (23 Credit Hours)
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II
CHEM 3114 Organic Chemistry I
MATH 1513 College Algebra *; OR
MATH 2825 Calculus & Analytic Geometry I
PHYS 1114 General Physics I
PHYS 1214 General Physics II

General Electives (20 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
"Teachers" or "methods" courses may not be counted in this major.

Students interested in the 3+1 degree program (ECU and OSUCOM) can apply for early admission to the OSU College of Osteopathic Medicine and earn an ECU bachelors degree in biology by completing the first year of medical school at OSUCOM (D.O. Degree). Complete information on this program can be obtained from the Department of Biological and Environmental Sciences.

** With Department approval, students may omit MATH 1513 and being with MATH 2825.*

2024-2025 Biology/General Check Sheet
2024-2025 Biology/General 4-Year Plan

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2024-2025 Biology/Clinical Lab Scientist - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Core Courses
BIOL 1114 General Biology
BIOL 1214 General Botany
BIOL 1314 General Zoology
BIOL 3434 Genetics

Select one of the following:
BIOL 3514 General Physiology; OR
BIOL 3634 Human Physiology

Required for Clinical Lab Scientist Concentration (42-43 Credit Hours)
BIOL 2344 Microbiology
BIOL 3683 Immunology
BIOL 4881 Senior Seminar
MEDTE 4117 Clinical Microbiology
MEDTE 4125 Clinical Chemistry I
MEDTE 4236 Clinical Hematology
MEDTE 4246 Clinical Immunology
MEDTE 4325 Clinical Chemistry II
MEDTE 4351 Topics in Med Tech

Select one of the following:
BIOL 2184 Human Anatomy; OR
BIOL 3245 Comparative Vertebrate Anatomy

Required Related Work (19-21 Credit Hours)
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II
CHEM 3114 Organic Chemistry I
CHEM 4213 Biochemistry
CHEM 4221 Biochemistry Lab
MATH 1513 College Algebra*; OR
MATH 2825 Calculus & Analytic Geometry I

General Electives (7-11 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
"Teachers" or "methods" courses may not be counted in this major. A minor program is not required for this major.
Students interested in the 3+1 degree program (ECU and OSUCOM) can apply for early admission to the OSU College of Osteopathic Medicine and earn an ECU bachelors degree in biology by completing the first year of medical school at OSUCOM (D.O. Degree). Complete information on this program can be obtained from the Department of Biological and Environmental Sciences.

** With Department approval, students may omit MATH 1513 and being with MATH 2825.*

2024-2025 Biology/Clinical Lab Scientist Check Sheet
2024-2025 Biology/Clinical Lab Scientist 4-Year Plan

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2024-2025 Biology/Ecology - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Biology Core
BIOL 1114 General Biology
BIOL 1214 General Botany
BIOL 1314 General Zoology
BIOL 3434 Genetics

Select one of the following:
BIOL 3514 General Physiology; OR
BIOL 3634 Human Physiology

Required for Ecology Concentration (21 Credit Hours)

BIOL 2002 Intro. Research Experience
BIOL 3245 Comparative Vertebrate Anatomy
BIOL 3934 Limnology
BIO 4123 Evolution
BIOL 4323 Experimental Design in Biol. Science
BIOL 4414 General Ecology
BIOL 4881 Senior Seminar

Required Electives (16 Credit Hours)
Sixteen (16) hours of elective courses in biology with a minimum of 12 hours in 3000-4000 level courses(Not BIOL 4473 or 4713).

Required Related Work (26-28 Credit Hours)
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II
CHEM 3114 Organic Chemistry I
MATH 1513 College Algebra*; OR
MATH 2825 Calculus & Analytic Geometry I
PHYS 1114 General Physics I
PHYS 1214 General Physics II

Choose one of the following
EHS 3703 Biostatistics
MATH 1223 Intro. to Probability & Statistics
PSYCH 3833 Behavioral Science Statistics
SOC 3833 Stats for Social Sciences

General Electives (6-9 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
"Teachers" or "methods" courses may not be counted in this major.
** With Department approval, students may omit MATH 1513 and being with MATH 2825.*

2024-2025 Biology/Ecology Check Sheet
2024-2025 Biology/Ecology 4-Year Plan

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2024-2025 Biology/Health Science - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Biology Core (20 Credit Hours)
BIOL 1114 General Biology
BIOL 1214 General Botany
BIOL 1314 General Zoology
BIOL 3434 Genetics
BIOL 3514 General Physiology; OR
BIOL 3634 Human Physiology

Required for Health Science Concentration (16-17 Credit Hours)
BIOL 2184 Human Anatomy; OR
BIOL 3245 Comparative Vertbrate Anatomy
BIOL 2344 General Microbiology
BIOL 4313 Cell and Molecular Biology
BIOL 4414 General Ecology
BIOL 4881 Senior Seminar

Required Electives (9-12 Credit Hours)
Select three of the following:
BIOL 2113 Medical Terminology
BIOL 3013 Research Methods and Bioethics
BIOL 3034 Medical Botany
BIOL 3254 Medical Entomology
BIOL 3623 Biochemistry of Human Disease
BIOL 3654 Histology
BIOL 3683 Immunology
BIOL 4113 Vertebrate Embryology
BIOL 4553 Pathogenic Microbiology

Required Related Work (29-32 Credit Hours)
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II
CHEM 3114 Organic Chemistry I
MATH 1513 College Algebra*; OR
MATH 2825 Calculus & Analytic Geometry I
PHYS 1114 General Physics I
PHYS 1214 General Physics II
PSYCH 1113 General Psychology

Select one of the following:
EHS 3703 Biostatistics & Envir. Calculations
MATH 1223 Intro. to Probability & Statistics
PSYCH 3833 Behavioral Science Statistics
SOC 3833 Statistics for Social Sciences

General Electives (13-18 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
"Teachers" or "methods" courses may not be counted in this major. A minor program is not required for this major.
** With Department approval, students may omit MATH 1513 and being with MATH 2825.*

Students interested in the 3+1 degree program (ECU and OSUCOM) can apply for early admission to the OSU College of Osteopathic Medicine and earn an ECU bachelors degree in biology by completing the first year of medical school at OSUCOM (D.O. Degree). Complete information on this program can be obtained from the Department of Biological and Environmental Sciences.

2024-2025 Biology/Health Science Check Sheet
2024-2025 Biology/Health Science 4-Year Plan

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2024-2025 Biology/Medical Botany - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Core Courses (20 Credit Hours)
BIOL 1114 General Biology
BIOL 1214 General Botany
BIOL 1314 General Zoology
BIOL 3434 Genetics

Select one of the following:
BIOL 3514 General Physiology; OR
BIOL 3634 Human Physiology

Required for Medical Botany Concentration (16 Credit Hours)
BIOL 2344 Microbiology
BIOL 3034 Medical Botany
BIOL 3234 General Entomology
BIOL 3674 Plan Ecophysiology

Required Electives (24 Credit Hours)
Select 12 hours from the following:
ACCT 2103 Financial Accounting
ACCT 2203 Managerial Accounting
ANTH 2003 Intro. to Cultural Resources Management
BUCOM 3133 Business Communications & Report Writing
BUS 1113 Foundations of Business
BUSLW 3213 Legal Envir. of Business
BUSLW 3253 Business Law
ECON 2013 Principles of Economics
EHS 4013 Native American Environmental Health
LS 4143 Inro. to Native American Law
LSPS 2153 Intro. to Law
NAS 3003 Tribal Sovereignty & Federal Indian Policy
SOC 3003 Native American Sociology

View School of Business Catalog for Course Descriptions

Select 12 hours of the following:
BIOL 2103 Horticulture
BIOL 3143 Ethnobotany
BIOL 3524 Mycology
BIOL 4014 Integrated Pest Management
BIOL 4123 Evolution
BIOL 4553 Pathogenic Microbiology
CHEM 3124 Chemistry of Food
CHEM 3214 Quantitative Analysis I
CHEM 3484 Instrumental Analysis
EHS 4143 Food Hygiene & Consumer Protections
HHFS 3114 Food Science
HHFS 3514 Food Distribution Management
PSYCH 1113 General Psychology
PSYCH 4133 Abnormal Psychology

Required Related Work (21-23 Credit Hours)
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II
CHEM 3114 Organic Chemistry I

KIN 1513 Basic Nutrition
MATH 1513 College Algebra*; OR
MATH 2825 Calculus & Analytic Geometry I
MIS 1903 Computer Business Applications

General Electives (8-12 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
"Teachers" or "methods" courses may not be counted in this major. A minor program is not required for this major.
** With Department approval, students may omit MATH 1513 and being with MATH 2825.*

2024-2025 Biology/Medical Botany Check Sheet
2024-2025 Biology/Medical Botany 4-Year Plan

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2024-2025 Biology/Molecular Biology - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Biology Core (20 Credit Hours)
BIOL 1114 General Biology
BIOL 1214 General Botany
BIOL 1314 General Zoology

Select one of the following:
BIOL 3514 General Physiology; OR
BIOL 3634 Human Physiology

Required for Molecular Biology Concentration (20-21 Credit Hours)
BIOL 2344 General Microbiology
BIOL 3013 Research Methods & Bioethics
BIOL 4313 Cell & Molecular Biology
BIOL 4545 Advanced Molecular Biology
BIOL 4881 Senior Seminar

Select one of the following:
BIOL 2184 Human Anatomy
BIOL 3245 Comparative Vertebrate Anatomy

Required Electives (9 Credit Hours)
Select nine (9) credit hours of the following:
BIOL 2243 Intro. to Biotechnology
BIOL 2773 Forensic Biology
BIOL 3553 Genomics & Boinformatics
BIOL 3623 Biochemistry of Human Disease
BIOL 3683 Immunology
BIOL 4763 Biochemical Genetics
BIOL 4981-4 Seminar in Biology

Related Work (33-35 Credit Hours)
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II
CHEM 3114 Organic Chemistry I
CHEM 4213 Biochemistry
CHEM 4221 Biochemistry Lab
PHYS 1114 General Physics
PHYS 1214 General Physics II
MATH 1513 College Algebra

Select one of the following:
MATH 2825 Calculus & Analytics Geometry; OR
MATH 2613 Calculus for Bus, Life & Social Sciences

Select one of the following:
EHS 3703 Biostatistics & Environmental Calc.
MATH 1223 Intro. to Probability & Statistics
PSYCH 3833 Behavioral Science Statistics
SOC 3833 Statistics for Social Sciences

General Electives (6-10 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
"Teachers" or "methods" courses may not be counted in this major. A minor program is not required for this major.
With Department approval, students may omit MATH 1513 and being with MATH 2825.
No minor program is required for this major.

Students interested in the 3+1 degree program (ECU and OSUCOM) can apply for early admission to the OSU College of Osteopathic Medicine and earn an ECU bachelors degree in biology by completing the first year of medical school at OSUCOM (D.O. Degree). Complete information on this program can be obtained from the Department of Biological and Environmental Sciences.

2024-2025 Biology/Molecular Biology Check Sheet
2024-2025 Biology/Molecular Biology 4-Year Plan

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2024-2025 Biology/Teacher Certification - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Biology Core (20 Credit Hours)
BIOL 1114 General Biology
BIOL 1214 General Botany
BIOL 1314 General Zoology
BIOL 3434 Genetics

Select one of the following:
BIOL 3514 General Physiology; OR
BIOL 3634 Human Physiology

Required for Teacher Certification Concentration (11-12 Credit Hours)
B/C/P 4113 Method Teaching BIOL/PHYS/SCI
BIOL 4414 General Ecology

Select one of the following:
BIOL 2184 Human Anatomy; OR
BIOL 3245 Comparative Vertebrate Anatomy

Required Related Work (34-36 Credit Hours)
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II
COMM 1113 Fund. of HUman Communication
MATH 1513 College Algebra*; OR
MATH 2825 Calculus & Analytic Geometry I
PHYS 1114 General Physics I
PHYS 1214 General Physics II
PHYS 1314 Astronomy
PSYCH 1113 General Psychology

Select one of the following:
CHEM 1314 General Organic & Biochemistry
CHEM 3114 Organic Chemistry I
CHEM 3214 Quantitative Analysis I; AND
Three (3) additional hours of earth science electives.

Minor
Professional education is used as a minor (30 hours). For further details consult major program advisor.

General Electives (0-2 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
"Teachers" or "methods" courses may not be counted in this major. A minor program is not required for this major.
*With Department approval, students may omit MATH 1513 and being with MATH 2825.

2024-2025 Biology/Teacher Certification Check Sheet
2024-2025 Biology/Teacher Certification 4-Year Plan

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2024-2025 Environ. Health Sci. - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Core Courses (41 Credit Hours)
EHS 1114 Introduction to Environmental Health Science
GIS 2253 Initial Concepts in GIS
EHS 2313 Solid & Hazards Waste Management
EHS 2613 Occupational Health & Safety
EHS 3114 Epidemiology
EHS 3153 Environmental Health Administration
EHS 3553 Water Quality & Treatment
EHS 3603 Air Quality
EHS 3703 Biostatistics
EHS 3803 Environmental Toxicology
EHS 4143 Food Hygiene & Consumer Protection
EHS 4703 Environmental & Risk Assessment

EHS 4943 Field Experience in Environmental Health

Required Electives (Technical Areas; 11 Credit Hours)
Eleven (11) hours of elective 3000/4000 level coursework in EHS, BIOL or GIS. No more than 3 hours of credit in EHS 4991-4 may be used to meet the 11-hour requirement.

Required Related Work (30 Credit Hours)
CHEM 1114 General Chemistry I
CMPSC 1513 Computer Literacy
MATH 1513 College Algebra
BIOL 1114 General Biology
BIOL 2334 General Microbiology
CHEM 1214 General Chemistry II
CHEM 1314 General Organic & Biochemistry; OR
CHEM 3114 Organic Chemistry I
PHYS 1114 General Physics I

General Electives (10 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

* A minor program is not required for this major.

2024-2025 Environ. Health Sci. Check Sheet
2024-2025 environ. Health Sci. 4-Year Plan

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2024-2025 Environ Hlth. Sci/Environ Mgmt. & Nat. Res. - B.S. (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Core Courses (41 Credit Hours)
EHS 1114 Introduction to Environmental Health Science
GIS 2253 Initial Concepts in GIS
EHS 2313 Solid & Hazards Waste Management
EHS 2613 Occupational Health & Safety
EHS 3114 Epidemiology
EHS 3153 Environmental Health Administration
EHS 3553 Water Quality & Treatment
EHS 3603 Air Quality
EHS 3703 Biostatistics
EHS 3803 Environmental Toxicology
EHS 4143 Food Hygiene & Consumer Protection
EHS 4703 Environmental & Risk Assessment
EHS 4943 Field Experience in Environmental Health

Required for Environ & Nat. Res. Concentration (3 Credit Hours)
EHS 3543 Water Resources

Required Electives (Technical Areas; 6 Credit Hours)
Six (6) hours elective 3000/4000 level coursework in EHS, BIOL or GIS. No More than three (3) hours of credit in EHS 4991-4 may be used to meet the six (6) hour requirement.

Related Work (38 Credit Hours)
CHEM 1114 General Chemistry I
CMPSC 1513 Computer Literacy
MATH 1513 College Algebra
BIOL 1114 General Biology
BIOL 1314 General Zoology
BIOL 2334 General Microbiology
BIOL 3934 Limnology; OR
BIOL 4414 Ecology
CHEM 1214 General Chemistry II
CHEM 1314 General Organic & Biochemistry; OR
CHEM 3114 Organic Chemistry
PHYS 1114 General Physics I

General Electives (4 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

* A minor program is not required for this major.

2024-2025 Environ Hlth. Sci/Environ Mgmt. & Nat. Res. Check Sheet
2024-2025 Environ Hlth. Sci/Environ Mgmt. & Nat. Res. 4-Year Plan

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2024-2025 Environ. Health Sci. - Public Health - Bachelor of Science (120 Credit Hours)

The 120 credit hours includes ECU's 40 hour general education program.

Required Core Courses (41 Credit Hours)
EHS 1114 Introduction to Environmental Health Science
GIS 2253 Initial Concepts in GIS
EHS 2313 Solid & Hazards Waste Management
EHS 2613 Occupational Health & Safety
EHS 3114 Epidemiology
EHS 3153 Environmental Health Administration
EHS 3553 Water Quality & Treatment
EHS 3603 Air Quality
EHS 3703 Biostatistics
EHS 3803 Environmental Toxicology
EHS 4143 Food Hygiene & Consumer Protection
EHS 4703 Environmental & Risk Assessment
EHS 4943 Field Experience in Environmental Health

Required for Public Health Concentration (6 Credit Hours)
EHS 4203 Community Health
EHS 4503 Chronic Diseases & Global Health

Required Electives (Technical Areas; 3 Credit Hours)
Three (3) hours of elective 3000/4000 level coursework in EHS, BIOL or GIS.

Required Related Work (37-38 Credit Hours)
CHEM 1114 General Chemistry I
CMPSC 1513 Computer Literacy
KIN 1513 Basic Nutrition
MATH 1513 College Algebra
CHEM 1214 General Chemistry II
BIOL 2344 Microbiology
CHEM 1314 General Organic & Biochemistry; OR
CHEM 3114 Organic Chemistry
PHYS 1114 General Physics I
BIOL 1114 General Biology

Choose one of the following:
BIOL 3254 Medical Entomology
BIOL 3434 Genetics
BIOL 3634 Human Physiology
BIOL 4543 Pathogenic Microbiology
PSYCH 3613 Learning & Cognition
PSYCH 3993 Writing & Design for Psych Research

General Electives (4-5 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

*A minor program is not required for this major.

2024-2025 Env. Health Science Public Health Check Sheet
2024-2025 Env. Health Science Public Health 4-Year Plan

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2024-2025 Minor in Biology (19 Credit Hours)

Required Courses
BIOL 1114 General Biology
BIOL 1214 General Botany
BIOL 1314 General Zoology
BIOL 2344 General Microbiology

Electives
Three (3) hours of upper level elective credits. May not include B/C/P 4113, BIOL 4473, 4713 or 4881.

Special Requirements
"Teachers" or "methods" courses may not be counted in the minor.
Must earn three (3) hours of upper division coursework at ECU towards the minor to complete minor residency requirement.

2024-2025 Minor in Biology Check Sheet

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2024-2025 Minor in Environmental Health Science (19 Credit Hours)

Required Courses
EHS 1114 Intro to Env Health Science
EHS 2313 Solid & Hazardous Waste Mgmt

Electives
Twelve (12) hours of elective coursework in Env. Health Science. Courses should be selected in consultation with advisor.

Special Requirement
"Teachers" or "methods" courses may not be counted in minor.
Must earn three (3) hours of upper division coursework at ECU towards the minor to complete minor residency requirement.

2024-2025 Minor Environ. Health Sci. Check Sheet

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2024-2025 Minor in Public Health (16 Credit Hours)

Required Courses
EHS 3114 Epidemiology
EHS 4203 Community Health
EHS 4503 Chronic Diseases & Global Health

Choose two of the following:
EHS 2613 Industrial Hygiene
EHS 3153 Environmental Health Administration
EHS 3703 Biostatistics
EHS 4143 Food, Hygiene & Consumer Protection

2024-2025 Minor in Public Health Check Sheet

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2024-2025 Minor in Environmental Mgmt & Nature Resources (19 Credit Hours)

Required Courses
EHS 1114 Intro to Environmental Health Science
EHS 2713 Environmental Economics
EHS 3543 Water Resources

Electives
Nine (9) hours approved electives in Env. Health Science. Courses should be selected in consultation with program advisor.

Special Requirements
"Teachers" or "methods" courses may not be counted in minor.
Must earn three (3) hours of upper division work at ECU towards minor to complete residency requirement.

2024-2025 Minor in Environ. Mgmt & Nat. Resc. Check Sheet

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Department of Physical Sciences

Majors Offered
Chemistry - Bachelor of Science
Chemistry (Teacher Certification) - Bachelor of Science
Chemistry (Biochemistry) - Bachelor of Science
Physics - Bachelor of Science
Physics (Medical Physics) - Bachelor of Science
Physics (Teacher Certification) - Bachelor of Science

Minors Offered
Chemistry (contact department for details)
Physics

Departmental Information
The Department of Chemistry/Physics is comprised of two disciplines--Chemistry and Physics. The department offers Bachelor of Science degree programs with a major and a minor in each of these academic areas. Specific features of each program are detailed below.

Chemistry
The Department of Chemistry offers both a major and a minor in chemistry, a major in chemistry with a biochemistry concentration, a major in chemistry for teacher certification, and courses needed for those wishing to teach biology, chemistry, physics, physical science, or general science at the public school level. The department also functions as a support and service department for required courses in biology, nursing, environmental science, and allied health programs. Additionally, the department provides pre-professional studies for students pursuing medicine, engineering, pharmacy, veterinary medicine, physical therapy, and medical technology. A quality program of study is made possible through small classes, opportunity for student/professor interaction, and the unique situation of having the Robert S. Kerr Environmental Research Center located in Ada, OK. Cooperative agreements with this governmental institution allow expanded opportunities for study, research, quality analytical instrumentation, and possible student employment while at ECU.

Chemistry Program
In compliance with the recommendations of the American Chemical Society for curricula in undergraduate chemical education, the department offers courses in all five major areas of chemistry: inorganic, analytical, organic, physical, and biochemistry.

Physics

Physics is one of the most fundamental and all-inclusive of the sciences. It is an attempt to understand the foundations of our universe through the study of motion, force, energy, sound, electricity, magnetism, thermodynamics, heat, light, and quantum mechanics. Physics students use advanced mathematics to solve challenging experimental or theoretical problems, so they often major in mathematics as well. The ability to analyze a problem and find the best possible solution is vital to success in many fields. As a result, physics graduates often work in such seemingly non-related areas as medicine, law, biology, business, or military science, as well as in engineering, mathematics, computer science, or industry.

In addition to the university's program of financial aid, the department provides positions for student workers. Several departmental scholarships are awarded annually, and the department participates in the LS-OKAMP program awarding scholarships and research stipends for qualifying minority students. Interested students should contact the Department Chairman for further information.

Physics Program

In addition to the university's program of financial aid, the department provides positions for student workers. Several departmental scholarships are awarded annually, and the department participates in the LS-OKAMP program awarding scholarships and research stipends for qualifying minority students. Interested students should contact the Department Chairman for further information.

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2024-2025 Chemistry (General) - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Chemistry Core (20 Credit Hours)
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II
CHEM 3114 Organic Chemistry I
CHEM 3214 Quantitative Analysis I
CHEM 4114 Organic Chemistry II

Required for General Concentration (14 Credit Hours)
CHEM 3484 Instrumental Analysis
CHEM 4213 Biochemistry
CHEM 4413 Advanced Inorganic Chemistry
CHEM 4514 Physical Chemistry I

Required Electives (3-4 Credit Hours)
Select at least three (3) hours from the following:
CHEM 4221 Biochemistry Laboratory
CHEM 4421 Advanced Inorganic Chemistry Laboratory
CHEM 4614 Physical Chemistry II
CHEM 4981-4 Seminar in Chemistry
CHEM 4991-4 Individual Studies in Chemistry

Related Work (22-30 Credit Hours)
BIOL 1114 General Biology
MATH 1513 College Algebra*
MATH 1713 Trigonometry*
MATH 2825 Calculus & Analytical Geometry I
MATH 3025 Calculus & Analytical Geometry II
PHYS 1114 General Physics I; OR
PHYS 2115 Engineering Physics I
PHYS 1214 General Physics II; OR
PHYS 2225 Engineering Physics II

Recommended Related Work: Geology, additional physics, biology (not BIOL 1114) and computer science.

Minor (18-33 Credit Hours)
A minor is required for this program. The minor with the chemistry major must be biology, environmental health science, mathematics or physics.

General Electives (0-15 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
* With department approval, students may omit MATH 1513 and/or MATH 1713 and begin with MATH 2825.
"Teachers" or "methods" courses do not count in the major.

2024-2025 Chemistry (General) Check Sheet
2024-2025 Chemistry (General) 4-Year Plan

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2024-2025 Chemistry (Teacher Cert.) - Bachelor of Science (124-126 Credit Hours)
The 124-126 credit hours includes ECU's 40 hour general education program.

General Education
This major requires students to count specific courses toward their general education requirement. Seventeen (17) hours (BIOL 1114, CHEM 1114, COMM 1113, MATH 1513 and PSYCH 1113), counted in the major. Demonstrate novice high competency in a foreign language or complete a foreign language or American Sign Language course with a C or higher.

Required Core Courses (20 Credit Hours)
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II
CHEM 3114 Organic Chemistry I
CHEM 3214 Quantitative Analysis I
CHEM 4114 Organic Chemistry II

Required for Teacher Certification Concentration (3 Credit Hours)
B/C/P 4113 Methods of Teaching Biological & Physical Science

Required Chemistry Electives (7 Credit Hours)
Seven (7) hours of chemistry electives. Courses should be determined in consultation with program advisor.

Related Work (41-43 Credit Hours)
BIOL 1114 General Biology
BIOL 1314 General Zoology
BIOL 2184 Human Anatomy
BIOL 3634 Human Physiology
COMM 1113 Fundamentals of Human Communication
GEOG 1214 Earth Science
MATH 1513 College Algebra*; OR
MATH 2825 Calculus & Analytic Geometry I
PHYS 1114 General Physics I
PHYS 1214 General Physics II
PHYS 1314 Astronomy

Minor
Professional education is used as the minor and no other minor is required.

Professional Education (30 Credit Hours)
EDUC 2402 Survey of Excep Child
PSYCH 3463 Child & Adolescent Psych
EDUC 2012 Foundations of Educ
EDUC 2631 Foundations of Educ Technology
EDUC 2211 Field Experience I
EDPSY 3513 Educ Psych
EDUC 3001 Field Experience II
EDUC 4052 Effective Teaching in Secondary Education
EDUC 4611 Field Experience III
EDUC 4632 Education Technology Integration Strategies
EDUC 4262 Student Teaching Seminar I
EDUC 4282 Student Teaching Seminar II
EDUC 4974 Sup Student Tchg Secondary School
EDUC 4974 Sup Student Tchg Secondary School

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Special Requirements
* With department approval, students may omit MATH 1513 and/or Math 1713 and begin with MATH 2825.

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2024-2025 Chemistry (Teacher Cert) 4-Year Plan

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2024-2025 Biochemistry - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Chemistry Core (20 Credit Hours)
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II
CHEM 3114 Organic Chemistry I
CHEM 3214 Quantitative Analysis I
CHEm 4114 Organic Chemistry II

Required in Biochemistry Concentration (18 Credit Hours)
CHEM 3484 Instrumental Analysis
CHEM 4213 Biochemistry
CHEM 4221 Biochemistry Laboratory
CHEM 4413 Advanced Inorganic Chemistry
CHEM 4514 Physical Chemistry I
CHEM 4523 Advanced Biochemistry

Recommended Electives
CHEM 4421 Advanced Inorganic Chemistry Laboratory
CHEM 4531 Advanced Biochemistry Laboratory
CHEM 4614 Physical Chemistry II
CHEM 4981-4 Seminar in Chemistry
CHEM 4991-4 Individual Studies in Chemistry

Related Work (32-40 Credit Hours)
BIOL 1114 General Biology
BIOL 1314 General Zoology; OR
BIOL 2344 General Microbiology
BIOL 2184 Human Anatomy
BIOL 3634 Human Physiology
BIOL 4313 Cell & Molecular Biology
MATH 1513 College Algebra*
MATH 1713 Trigonometry*
MATH 2825 Calculus & Analytic Geometry I
PHYS 1114 General Physics I; OR
PHYS 2115 Engineering Physics I
PHYS 1214 General Physics II; OR
PHYS 2225 Engineering Physics II

General Electives (13-22 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
* With department approval, students may omit MATH 1513 and/or MATH 1713 and begin with MATH 2825.
"Teachers" or "methods" courses do not count in the major.
A minor program is not required for this major.

2024-2025 Biochemistry Check Sheet
2024-2025 Biochemistry 4-Year Plan

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2024-2025 Physics - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Physics Core (15 Credit Hours)
PHYS 2115 Engineering Physics I
PHYS 2225 Engineering Physics II
PHYS 3013 Modern Physics
PHYS 3412 Junior Physics Laboratory

Required for Physics Major (18 Credit Hours)
PHYS 3113 Mechanics I
PHYS 3713 Thermodynamics
PHYS 3813 Optics
PHYS Electricity & Magnetism-Field Theory
PHYS 4313 Introduction to Nuclear Physics
PHYS 4513 Quantum Mechanics

Required Electives (2 Credit Hours)
Two (2) hours of Physics electives (3xxx - 4xxx)

Related Work (27 - 33 Credit Hours)
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II
CMPSC 1113 Computer Programming I
MATH 1513 College Algebra*
MATH 1713 Trigonometry*
MATH 2825 Calculus & Analytic Geometry I
MATH 3025 Calculus & Analytic Geometry II
MATH 3033 Calculus & Analytic Geometry III
MATH 4113 Differential Equations

General Electives (22-28 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
* With department approval, students may omit MATH 1513 and/or MATH 1713 and begin with MATH 2825.
"Teachers" or "methods" courses do not count in the major.
A minor program is not required for this major.

2024-2025 Physics Check Sheet
2024-2025 Physics 4-Year Plan

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2024-2025 Physics (Medical Physics) - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Physics Core (15 credit Hours)
PHYS 2115 Engineering Physics I
PHYS 2225 Engineering Physics II
PHYS 3013 Modern Physics
PHYS 3412 Junior Physics Laboratory

Required for Medical Physics Concentration (15 Credit Hours)
PHYS 3222 Medical Physics
PHYS 3713 Thermodynamics
PHYS 4222 Xray & Nuclear Physics Lab
PHYS 4313 Introduction to Nuclear Physics
Five hours of Physics electives (3000-4000 Level)

Related Work (52-61 Credit Hours)
BIOL 1114 General Biology
BIOL 2184 Human Anatomy
BIOL 3634 Human Physiology
CHEM 1114 General Chemistry I
CMPSC 1113 Computer Programming I
COMM 1113 Fundamentals of Human Communication
MATH 1513 College Algebra*
MATH 1713 Trigonometry*
MATH 2825 Calculus & Analytic Geometry I
MATH 3025 Calculus & Analytic Geometry II
MATH 3033 Calculus & Analytic Geometry III
MATH 4113 Differential Equations

Select one of the following:
BIOL 2113 Medical Terminology
EHS 2413 Radiologic Health

Select one of the following:
MATH 3513 Mathematical Statistics
MATH 3583 Applied Statistics
SOC 3833 Statistics for the Social Sciences

General Electives (0-10 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
* With department approval, students may omit MATH 1513 and/or MATH 1713 and begin with MATH 2825.
"Teachers" or "methods" courses do not count in the major.
A minor program is not required for this major.

2024-2025 Physics (Medical Physics) Check Sheet
2024-2025 Physics (Medical Physics) 4-Year Plan

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2024-2025 Physics (Teacher Certification) - Bachelor of Science (122-128 Credit Hours)
The 122-128 credit hours includes ECU's 40 hour general education program.

General Education
This majors requires specific courses to be counted toward the general education requirement. Seventeen (17) hours (BIOL 1214 or 1314, CHEM 1114, COMM 1113, MATH 1513 or PSYCH 1113) counted in the major. Demonstrate novice high competency in a foreign language or American Sign Language course with a C or higher.

Required Physics Core (15 Credit Hours)
PHYS 2115 Engineering Physics I
PHYS 2115 Engineering Physics II
PHYS 3013 Modern Physics
PHYS 3412 Junior Physics Laboratory

Required for Teacher Certification Concentration (13 Credit Hours)
B/C/P 4113 Methods of Teaching Bio
PHYS 1314 Astronomy
PHYS 3113 Mechanics I
PHYS 4113 Electricity & Magnetism

Required Electives (2 Credit Hours)
Two (2) hours of physics electives (Not PHYS 3222 or 4222).

Related Work (32-38 Credit Hours)
BIOL 1114 General Biology
CHEM 1114 General Chemistry I
CHEM 1214 General Chemistry II

Related Work Electives (7 Credit Hours)

Seven (7) hours of chemistry electives.

Minor
Professional Education coursework is used as the minor and no other minor is required.

Professional Education (30 Credit Hours)
EDUC 2402 Survey of Excep Child
PSYCH 3463 Child & Adolescent Psych
EDUC 2012 Foundations of Educ
EDUC 2631 Foundations of Educ Technology
EDUC 2211 Field Experience I
EDPSY 3513 Educ Psych
EDUC 3001 Field Experience II
EDUC 4052 Effective Teaching in Secondary Education
EDUC 4611 Field Experience III
EDUC 4632 Education Technology Integration Strategies
EDUC 4262 Student Teaching Seminar I
EDUC 4282 Student Teaching Seminar II
EDUC 4974 Sup Student Tchg Secondary School
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2024-2025 Physics (Teacher Cert) Check Sheet
2024-2025 Physics (Teacher Cert) 4-Year Plan

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2024-2025 Minor in Chemistry

Students interested in a Chemistry minor should contact the department for details.

2024-2025 Minor in Physics (20 Credit Hours)

Required Courses
PHYS 2115 Engineering Physics I
PHYS 2225 Engineering Physics II
PHYS 3013 Modern Physics

Select one or both of the following:
PHYS 3411 Junior Physics Laboratory
PHYS 3511 Junior Physics Laboratory

Select two of the following:
PHYS 3113 Mechanics I
PHYS 3213 Basic Electronics
PHYS 3713 Thermodynamics
PHYS 3813 Optics
PHYS 4113 Electricity & Magnetism-Field Theory
PHYS 4313 Intro to Nuclear Physics

Special Requirements
Must earn three (3) hours of upper division work at ECU to complete the minor residency requirement.

2024-2025 Minor in Physics Check Sheet

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Department of Mathematics & Computer Science

Majors Offered
Computer Science - Bachelor of Science
Mathematics (Applied/Pre-Actuary) - Bachelor of Science
Mathematics (General) - Bachelor of Science
Mathematics (Teachers Cert.) - Bachelor of Science
Mathematics (Data Science) - Bachelor of Science

Minors Offered
Computer Science
Mathematics

Departmental Information
The Department Mathematics and Computer Science currently offers five concentrations which leads to a Bachelor of Science degree: General Mathematics, Teacher Certification in Mathematics, Mathematics - Applied/Pre-Actuary, Data Science Applications, and Computer Science.

The Mathematics Program offers four concentrations which lead to a Bachelor of Science degree. The curriculum is flexible and can be adapted to a variety of student interests. After completing one of the four concentrations, program graduates typically enter the job market as applied mathematicians in business

or industry, actuarial trainees, or certified teachers of secondary school mathematics. Some program graduates pursue study in graduate school leading to advanced degrees in mathematics, statistics, computer science, finance, or management science while others elect to pursue further study in a professional school such as law or medicine.

The Computer Science Program provides a solid education in all major areas of Computer Science with an emphasis on Software Engineering. Computer Science students complete a Bachelor of Science degree in four years. Our graduates are typically employed by large companies who need skilled software design specialists to work on the forefront of the field. Computing facilities include powerful Linuxbased and Windows based terminals as well as graphics workstations. Department computers have internet access and are loaded with mathematical and statistical software packages for use in classroom teaching, student research and downloadable for home use.

Mathematics Program - General Concentration
The General Mathematics concentration provides preparation for the student who plans to enter a graduate program in mathematics or to seek immediate employment. A student taking this concentration, in consultation with his or her advisor, should choose elective courses which meet the entrance requirements of the desired graduate program. This concentration is often part of a double major with Physics, Computer Science, or other sciences. In addition to the core courses required for all mathematics majors, students in this concentration also take courses emphasizing proof writing.

Mathematics Program - Teacher Certification Concentration
The Teacher Certification concentration, in conjunction with professional education courses, prepares students for teaching mathematics at the secondary level. Majors take courses in education, mathematics, and mathematics education. Curriculum emphasizes pedagogy, technology, diversity, and current trends in education. Graduates of this concentration are in high demand locally, state-wide, and nationally. Most graduates of this concentration quickly find employment in the country, or elsewhere in Oklahoma and surrounding states. In addition to the core courses required for all mathematics majors, students in this concentration also take courses specifically for education majors.

Mathematics Program - Applied Mathematics/Pre-Actuary Concentration
The Applied Mathematics/Pre-Actuary concentration prepares students for entry into the job market as an applied mathematician or actuarial trainee, for a career in finance, or for entry into a graduate program in applied mathematics, actuarial science, statistics, finance, or quantitative management science. In addition to the core courses required for all mathematics majors, students in this concentration also take courses in business.

Mathematics Program - Data Science Applications Concentration
The Data Science Applications concentration is for students interested in applying mathematics, statistics, and computer science to a wide range of business problems. With a broader focus, students in this concentration will be prepared to work in a variety of industries— analytics, data science and big data. Students finishing this program will have a variety of skills in mathematics, statistics, computer science, programming, and analytics. They will have specific skills related to data science in database design, data extraction, data wrangling, data scraping, data visualization, machine learning, deep learning, and artificial intelligence. Students will also gain the interdisciplinary skills to succeed in this fast-growing field. In addition to the core courses required for all mathematics majors, students in this concentration also take courses in computer science.

Computer Science Program
The Computer Science degree program prepares students for a career in the world of technology. Both online and in-seat options for majors of this program. Lucrative salaries and opportunities to work on interesting and challenging projects are the rewards which await those who choose the Computer Science major. Technology touches essentially every aspect of life. Students have access to a powerful Linux-based mainframe as well as the University computer network. Majors have access to both labs and 24/7 remote access. The curriculum is designed using guidelines published by the Association of Computing Machinery (ACM). Courses provide students excellent training in the scientific and technical areas of computing and the preparation necessary to pursue graduate work in this field. The course of study is mathematical in nature with emphasis on software engineering.

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2024-2025 Computer Science - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Courses (27 Credit Hours)
CMPSC 1113 Computer Programming I
CMPSC 1133 Computer Programming II
CPSMA 2103 Data Structures
CPSMA 3103 Algorithm Analysis
CMPSC 3113 Operating Systems
CMPSC 3613 Computer Architecture
CMPSC 3943 Software Design & Development
CMPSC 4213 Data Base Design
CMPSC 4473 Theory of Programming Languages

Required Electives (18 Credit Hours)
Eighteen (18) hours in upper level Computer Science with at least twelve (12) hours in CMPSC courses.

Related Work (11-18 Credit Hours)
CPSMA 3913 Discrete Mathematics
MATH 1513 College Algebra*
MATH 1713 Trigonometry*

Select one of the following:
MATH 2825 Calculus & Analytical Geometry I; OR
MATH 2613 Calculus for Bus, Life & Soc. Sci.

If MATH 2613 is chosen from above, then choose one of the following:
MATH 1223 Intro to Probability & Statistics; OR
BSEC 2603 Business & Economic Statistics

Select one of the following:
BUCOM 3133 Business Communication & Report Writing

COMM 1113 Fundamentals of Human Communication
ENG 3183 Technical & Professional Writing

General Electives (26-36 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student. Students majoring in computer science are highly encouraged to take upper-level computer science electives to make themselves more attractive to industry recruiters.

Special Requirements
* With department approval, students may omit MATH 1513 and/or MATH 1713 and begin with MATH 2825.
A minor program is not required for this major.

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2024-2025 Computer Science 4-Year Plan

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2024-2025 Mathematics (Applied/Pre-Actuary) - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Mathematics Core (22-28 Credit Hours)
MATH 1513 College Algebra*
MATH 1223 Intro to Probability & Statistics
MATH 1713 Trigonometry*
MATH 2825 Calculus & Analytic Geometry I
MATH 3025 Calculus & Analytic Geometry II
MATH 3033 Calculus & Analytic Geometry III
MATH 3713 Linear Algebra
MATH 4923 Perspectives in Mathematics

Required for Applied/Pre-Actuary Concentration (9 Credit Hours)
MATH 3513 Mathematical Statistics
MATH 3583 Applied Statistics
MATH 4113 Differential Equations

Required Mathematics Electives (15 Credit Hours)
Select two of the following:
CPSMA 3913 Discrete Mathematics
CPSMA 3933 Operations Research
CPSMA 4413 Numerical Methods
Nine hours approved courses from MATH, CMPSC, MIS, MGMT, MKTG, BUSLW or FIN (3000-4000)

Related Work (30 Credit Hours)
ACCT 2103 Financial Accounting
CMPSC 1113 Computer Programming I; OR
other computer programming course in a high level language (logical, functional or procedural, including Mathematica)
COMM 1113 Fundamentals of Human Communication
ECON 2003 Principles of Macroeconomics
ECON 2013 Principles of Microeconomics
ENG 3183 Technical & Professional Writing
FIN 3113 Financial Management
FIN 3913 Insurance Planning & Risk Management
MIS 1903 Computer Business Applications
MIS 3433 Management Information Systems

General Electives (10-16 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
Math 1413 "teachers" or "methods" courses will not be counted in the major.
* With department approval, students may omit MATH 1513 and/or MATH 1713 and begin with MATH 2825.
A minor program is not required for this major.
Actuaries must pass a series of exams administered by the Society of Actuaries (SOA) in order to achieve professional status as an actuary. The first exam, Exam P, covers probability and supporting calculus topics. Pre-actuary students should take this exam after completing MATH 3513 Mathematical Statistics. The second exam, Exam FM, covers interest theory and financial economics. This exam should be taken after FIN 3113 Financial Management. Other SOA exams cover subjects as risk and risk management.

2024-2025 Mathematics Applied/Pre-Actuary Check Sheet
2024-2025 Mathematics Applied/Pre-Actuary 4-Year Plan

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2024-2025 Mathematics (General) - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Mathematics Core (22-28 Credit Hours)
MATH 1513 College Algebra*
MATH 1223 Intro to Probability & Statistics
MATH 1713 Trigonometry*
MATH 2825 Calculus & Analytic Geometry I
MATH 3025 Calculus & Analytic Geometry II
MATH 3033 Calculus & Analytic Geometry III
MATH 3713 Linear Algebra
MATH 4923 Perspectives in Mathematics

Required for General Mathematics Concentration (12 Credit Hours)
MATH 3093 Intro to Theorem Prov & Number Theory
MATH 3813 Modern Algebra
MATH 4113 Differential Equations
MATH 4133 Intermediate Analysis

Required Mathematics Electives (12 Credit Hours)
Twelve (12) hours mathematics electives (3000-4000 level).

Related Work (3 Credit Hours)
CMPSC 1113 Computer Programming; OR
other computer programming course in a high language (logical, functional, or procedural, including Mathematica).

General Electives (34-37 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
Math 1413 "teachers" or "methods" courses will not be counted in the major.
* With department approval, students may omit MATH 1513 and/or MATH 1713 and begin with MATH 2825.
A minor program is not required for this major.

2024-2025 Mathematics (General) Check Sheet
2024-2025 Mathematics (General) 4-Year Plan

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2024-2025 Mathematics (Teachers Certification) - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Mathematics Core (22-28 Credit Hours)
MATH 1513 College Algebra*
MATH 1223 Intro to Probability & Statistics
MATH 1713 Trigonometry*
MATH 2825 Calculus & Analytic Geometry I
MATH 3025 Calculus & Analytic Geometry II
MATH 3033 Calculus & Analytic Geometry III
MATH 3713 Linear Algebra
MATH 4923 Perspectives in Mathematics

Required for Teacher Certification Concentration (17 Credit Hours)
MATH 3913 Discrete Mathematics
MATH 3093 Intro to Theorem Prov & Number Theory
MATH 3213 College Geometry
MATH 3013 Modern Algebra
MATH 4915 Methods of Teaching Secondary Math

Required Mathematics Electives (6 Credit Hours)
Six (6) hours of mathematics electives (3000-4000) level.

Related Work (9 Credit Hours)
CMPSC 1113 Computer Programming I; OR
other computer programming course in a high level language (logical, functional or procedural, including Mathematica).
COMM 1113 Fundamentals of Human Comm
PSYCH 1113 General Psychology

Minor
Professional Education is used as the minor and no other minor is required for this major.

Professional Education (30 Credit Hours)
EDUC 2402 Survey of Excep Child
PSYCH 3463 Child & Adolescent Psych
EDUC 2012 Foundations of Educ
EDUC 2631 Foundations of Educ Technology
EDUC 2211 Field Experience I
EDPSY 3513 Educ Psych
EDUC 3001 Field Experience II
EDUC 4052 Effective Teaching in Secondary Education

EDUC 4611 Field Experience III
EDUC 4632 Education Technology Integration Strategies
EDUC 4262 Student Teaching Seminar I
EDUC 4282 Student Teaching Seminar II
EDUC 4974 Sup Student Tchg Secondary School
EDUC 4974 Sup Student Tchg Secondary School

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General Electives (7-13 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
Math 1413 "teachers" or "methods" courses will not be counted in the major.
* With department approval, students may omit MATH 1513 and/or MATH 1713 and begin with MATH 2825.

2024-2025 Mathematics (Teacher Certification) Check Sheet
2024-2025 Mathematics (Teacher Certification) 4-Year Plan

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2024-2025 Mathematics (Data Science) - Bachelor of Science (120 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

Required Mathematics Core (22-28 Credit Hours)
MATH 1513 College Algebra*
MATH 1223 Intro to Probability and Statistics
MATH 1713 Trigonometry*
MATH 2825 Calculus and Analytic Geometry I
MATH 3025 Calculus and Analytic Geometry II
MATH 3033 Calculus and Analytic Geometry III
MATH 3713 Linear Algebra
MATH 4923 Perspectives in Mathematics

Required for Data Science Concentration (18 Credit Hours)
CPSMA 2103 Data Structures
CPSMA 3813 Data Mining
CPSMA 4313 Data Processing and Visualization
CPSMA 4513 Data Applications in Business
MATH 3513 Mathematical Statistics
MATH 3583 Applied Statistics

Required Mathematics Electives (6 Credit Hours)
Select two of the following courses.
CPSMA 3913 Discrete Mathematics
CPSMA 3933 Operations Research
CPSMA 4413 Numerical Methods

Related Work (12 Credit Hours)
CMPSC 1113 Computer Programming I
CMPSC 1133 Computer Programming II
CMPSC 3313 Advanced Computer Languages
CMPSC 4213 Data Base Design

Minor
A minor is not required for this program.

General Electives (22-31 Credit Hours)
An elective course is any college-level course not required by the major program, but utilized to reach the minimum 120 credit hour requirement for degree completion. Elective courses are chosen according to the interest of the student.

Special Requirements
Math 1413 "teachers" or "methods" courses will not be counted in the major.
* With department approval, students may omit MATH 1513 and/or MATH 1713 and begin with MATH 2825.

2024-2025 Mathematics (Data Science) Check Sheet
2024-2025 Mathematics (Data Science) 4-Year Plan

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2024-2025 Minor in Computer Science (18 Credit Hours)

Required Courses
CMPSC 1113 Computer Programming I

CMPSC 1133 Computer Programming II
CPSMA 2103 Data Structures
Nine (9) hours of elective computer science courses.

Special Requirements
Must earn three (3) hours of upper division work at ECU towards minor to complete minor residency requirement.

2024-2025 Minor in Computer Science Check Sheet

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2024-2025 Minor in Mathematics (19 Credit Hours)

Required Courses
MATH 1513 College Algebra
MATH 1713 Trigonometry
MATH 2825 Calculus & Analytic Geometry I
MATH 3025 Calculus & Analytic Geometry II
Three (3) hours of mathematics electives above MATH 1713.

Special Requirements
In approved cases, upper division courses may be substituted for MATH 1513 and/or MATH 1713.
"Teachers" or "methods" courses are not to be counted in the minor.
Must earn three (3) hours of upper division work at ECU towards minor to complete minor residency requirement.

2024-2025 Minor in Mathematics Check Sheet

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School of Nursing

Majors Offered
Nursing - Bachelor of Science

Departmental Information

Accreditation
The ECU School of Nursing is approved by the Oklahoma Board of Nursing. Graduates of this state-approved program are eligible to write the National Council Licensure Examination (NCLEX) for registered nurses. Applicants for Oklahoma licensure must meet all state and federal requirements to hold an Oklahoma license and practice nursing. Specific requirements may be found at Oklahoma Board of Nursing. The School of Nursing at East Central University located in Ada, Oklahoma is accredited by the: Accreditation Commission for Education in Nursing (ACEN) 3390 Peachtree Road NE, Suite 1400 Atlanta, GA 30326. 405-975-5000. The most recent accreditation decision made by the ACEN Board of Commissioners for the ECU School of Nursing is continuing accreditation. View the public information disclosed by the ACEN regarding this program at www.acennursing.us/accreditedprograms/ programSearch/htm

Pre-Licensure Nursing Program
The School of Nursing offers the Bachelor of Science with a major in Nursing degree to pre-licensure students. A minimum of 121 hours is required for graduation, to include 40 general education, 21 required related work, and 60 in the major. Courses prepare students to provide high-quality, professional nursing care in a variety of settings. See additional information at School of Nursing. Due to the prior work experience of LPN pathway nursing students, all academic deficiency/remediations will be waived.

Pre-Licensure Admission Requirements
Admission decisions are based upon published criteria, faculty input, and program outcomes. The fall semester admission cycle opens October 1st and closes March 1; the spring semester admission cycle opens on April 1st and closes September 1st. Any exceptions to admission criterion must be reviewed and approved on a case-by-case basis by the Director and a committee of faculty. Students should work with their nursing advisor regarding the need for a possible exception.

1. Must meet university admission requirements; apply and be accepted to ECU prior to starting the program.

2. Minimum retention and program grade point average of 2.7/4.0, and grades of “C” or higher in all required related work.

3. Completion of a minimum of 24 credit hours of general education/ required related work/support courses, or the equivalent thereof at the time of application.

4. English Comp I & II, Math requirement, Chemistry, Biology, Human Anatomy (A&P I), Nutrition, and General Psychology must be completed prior to beginning the program.

5. Entrance exam must be taken by the application deadline, with a minimum score achieved, as outlined in the application information.

6. Once provisionally admitted, complete all remaining requirement related to clinical, attestations, and accreditation.

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2024-2025 Nursing - Bachelor of Science (121 Credit Hours)
The 120 credit hours includes ECU's 40 hour general education program.

General Education
This program requires specific courses to be applied toward general education requirements. Seventeen (17) hours (BIOL 1114, CHEM 1114 or CHEM 1324, KIN 2183, MATH 1513 or MATH 1613, and PSYCH 1113) counted in the major.

Required Core Courses (36 Credit Hours)
NRSG 1142 Introduction to Professional Nursing
NRSG 2104 Foundations in Nursing
NRSG 3118 Med Surg I
NRSG 3193 Pharmacology I
NRSG 3218 Med Surg II
NRSG 3393 Pharmacology II
NRSG 4164 Nursing-Childbearing Family
NRSG 4214 Psychiatric-Mental Health Nursing

Required in Nursing Major (24 Credit Hours)
NRSG 2224 Physical Assessment
NRSG 3883 Nursing Research
NRSG 4375 Meg Surg III
NRSG 4513 Prioritization & Critical Thinking
NRSG 4283 Community Health Nursing
NRSG 4382 Leadership in Nursing
NRSG 4954 Transition to Professional Practice

Related Work (38 Credit Hours)
BIOL 1114 General Biology
BIOL 2184 Human Anatomy
BIOL 2344 General Microbiology
BIOL 3634 Human Physiology
CHEM 1114 General Chemistry; OR
CHEM 1324 Chemical Principles
KIN 2183 Basic Nutrition
MATH 1513 College Algebra; OR
MATH 1613 Functions & Modeling
PSYCH 1113 General Psychology
PSYCH 3463 Child & Adolescent Psychology

Three (3) hours introductory statistics OR one of the following:
BSEC 2603 Business & Economic Statistics
EHS 3703 Biostatistics
MATH 1223 Intro to Probability Statistics
PSYCH 3883 Behavioral Science Statistics
SOC 3833 Stats for Social Sciences
*Three (3) hour Computer course to meet OSHRE computer proficiency requirement.

Nursing Electives
NRSG 4673 Healthcare Communications
NRSG 4683 Current Topics in Nursing
NRSG 4981-5 Seminar in Nursing
NRSG 4991-4 Individual Studies in Nursing

Special Requirements
A minor program is not required for this major.

2024-2025 Nursing Check Sheet
2024-2025 Nursing 4-Year Plan

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