

# *College of Mathematics and Science*

## *Academic Degree Programs*



Program: **Actuarial Science**  
 Major: **Actuarial Science**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Mathematics and Statistics**  
 College: **Mathematics and Science**  
 Major Code: **6140**

**University Core (Total Listed 42-44)**

**Specific courses within the University Core are listed on pages 95-96.**

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**Cultural and Language Analysis ..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills..... 3

**Minimum  
Required Hours**

**Prerequisite Courses**

**Prerequisite Courses ..... 0-6**

Required courses:

- MATH 1513 College Algebra or High School Algebra II **AND**
- MATH 1593 Plane Trigonometry or High School Trigonometry
- OR**

The equivalent of these courses at other institutions.

Upon completion of the above courses, corresponding university core requirements will be satisfied. (These courses are required for this major regardless of previous degrees conferred.)

**Major Requirements**

**Actuarial Science ..... 66**

**Mathematics Core ..... 18**

Required courses:

- MATH 2313 Calculus 1
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- MATH 2343 Calculus 4
- MATH 2753 Technology for Professional Math and Statistics
- MATH 3143 Linear Algebra

**Actuarial Core ..... 12**

Required courses:

- # MATH 3133 Theory of Interest 1
- # MATH 4133 Theory of Interest 2
- # MATH 4223 Mathematics of Life Contingencies I
- # MATH 4233 Mathematics of Life Contingencies II

**Statistics Core ..... 15**

Required courses:

- STAT 2113 Statistical Methods
- STAT 4103 Applied Experimental Design **OR**
- STAT 4313 Nonparametric Statistics
- # STAT 4113 Mathematical Statistics I
- # STAT 4123 Mathematical Statistics II
- \* STAT 4213 Applied Regression Analysis

**Finance and Insurance Electives ..... 15**

Select from the following:

- \* ECON 2103 Principles of Microeconomics
- \* ECON 2203 Principles of Macroeconomics

**Minimum  
Required Hours**

- FIN 3523 Foundations of Insurance and Risk Management
- FIN 3553 Property and Liability Insurance for the Firm
- FIN 3613 Life and Health Insurance
- \* FIN 3563 Fundamentals of Business Finance
- \* FIN 4253 Intermediate Business Finance
- FIN 4213 Investments

**Area of Application ..... 6**

Select from the following:

- MATH 3103 Differential Equations
- MATH 3263 Numerical Analysis
- MATH 4263 Numerical Methods
- MATH 4113 Introduction to Operations Research I
- MATH 4123 Introduction to Operations Research II
- MATH 4950 Internship (3 hours)

\* These courses are accredited by the Society of Actuaries to earn Validation by Educational Experience (VEE) credits.

# These courses will help prepare students for the professional examinations administered by the Society of Actuaries. See the Director of Actuarial Studies in MCS 108 for more details.

**Electives to bring total to ..... 124**

**Minimum Grade Requirements**

1. Average in (a) all college course work, (b) course work at UCO, and (c) major courses ..... 2.50
2. A minimum grade of "C" must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Biology**  
 Major: **Biology**  
 Degree: Bachelor of Science (B.S.)

Dept: Biology  
 College: Mathematics and Science  
 Major Code: 6000

### University Core (Total Listed 42-44)

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

Written and Oral Communication ..... 9

Quantitative Reasoning/Scientific Method ..... 10-11

- Math..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

Critical Inquiry and Aesthetic Analysis ..... 6

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

American Historical and Political Analysis ..... 6

- American National Government ..... 3
- American History ..... 3

Cultural and Language Analysis ..... 3-4

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

Social and Behavioral Analysis ..... 3

Life Skills ..... 5

- Required Health Course ..... 2
- Elective Life Skills..... 3

Minimum  
Required Hours

Minimum  
Required Hours

### Support Courses

Support Courses.....0-6

Students majoring in Biology are encouraged to complete the following courses in high school.

Two years of high school algebra and one year of Trigonometry **OR**  
 MATH 1513 College Algebra **AND**  
 MATH 1593 Plane Trigonometry

### Major Requirements

Biology.....67

Biology Core (required of all degree candidates) ..... 26

Required Courses:

- BIO 1204 Biology I for Majors
- BIO 1225 Biology II for Majors and Lab
- BIO 2203 Cell Biology
- BIO 2211 Cell Biology Laboratory
- BIO 3054 Microbiology for Majors and Lab
- BIO 3303 Genetics
- BIO 3543 General Ecology
- BIO 3703 Evolution
- \*BIO 4840 Capstone

Mathematics ..... 6

Required courses:

- MATH 2153 BioCalculus
- STAT 2103 Intro Statistics for Sciences

Chemistry..... 15

Required courses:

- CHEM 1103 General Chemistry I
- CHEM 1112 General Chemistry I - Recitation/Lab
- CHEM 1223 General Chemistry II
- CHEM 1232 General Chemistry II - Recitation/Lab
- CHEM 3303 Organic Chemistry I **OR**
- CHEM 3013 Organic Chemistry for Life Sciences
- CHEM 3312 Organic Chemistry I Lab **OR**
- CHEM 3022 Organic Chemistry for Life Sciences Lab

Physics..... 4

Required course:

- PHY 1114 General Physics I and Lab

### Upper Division Biology Electives

(to bring major total to 67)\*\* ..... 14-16

\*\* Any 3000/4000 level UCO BIO course or its equivalent **AND/OR**  
 CHEM 3403 Biochemistry I

\*\* At least five courses taken for the B.S. in Biology must be BIO courses with a lab. These courses include the three lab courses required as part of the core: BIO 1225, BIO 2211, and BIO 3054.

\*To enroll in a Capstone Experience, students must complete a minimum of 60 credit hours. This 0 credit hour course is designed to be taken in conjunction with a capstone experience. Capstone experiences may include the following courses or special projects in biology. Special projects include but are not limited to independent research, service learning, professional school applications, or other equivalent experiences as approved by the Capstone Coordinator. Approval of the Capstone Coordinator is required before starting any capstone experience. A reflective writing piece, which must receive a passing score, will be required for all capstones.

- BIO 3000 Workshop in Biology
- BIO 3990 Advanced Topics in Biology
- BIO 4012 Intro to Biological Research
- BIO 4871 Senior Seminar
- BIO 4900 Practicum in Biology
- BIO 4920 Workshop in Biology
- BIO 4930 Individual Study in Biology
- BIO 4950 Internship in Biology
- BIO 4960 Institute in Biology
- BIO 4970 Study Tour in Biology

A maximum of 2 credit hours of the courses listed above, whether taken in conjunction with the capstone experience or not, will apply to the 67 credit hours required in the major except when BIO 4012 is chosen. If BIO 4012 is chosen as the capstone experience, an additional 2 credit hours may be taken.

Program: **Biology**- continued  
 Major: **Biology**  
 Degree: Bachelor of Science (B.S.)

Dept: Biology  
 College: Mathematics and Science  
 Major Code: 6000

---

**Minimum  
Required Hours**

- CONTINUED FROM PREVIOUS PAGE -

**Electives to bring total to..... 124**

General Physics II is a recommended elective.

Graduating seniors must take a national assessment exam in Biology as a graduation requirement for the B.S. in Biology.

**Minimum Grade Requirements**

1. Average in (a) all college course work, (b) course work at UCO, and (c) major courses..... **2.00**
2. A minimum grade of “C” must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see  
pages 68-69 of the 2015-2016 catalog.**

Program: **Biology**  
 Major: **Biology-Biomedical Sciences**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Biology**  
 College: **Mathematics and Science**  
 Major Code: **6001**

### University Core (Total Listed 42-44)

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

Written and Oral Communication ..... 9

Quantitative Reasoning/Scientific Method ..... 10-11

- Math..... 3
- Life Science..... 4
- Physical Science ..... 3-4

Critical Inquiry and Aesthetic Analysis ..... 6

- Aesthetic Analysis..... 3
- Critical Inquiry..... 3

American Historical and Political Analysis ..... 6

- American National Government ..... 3
- American History ..... 3

Cultural and Language Analysis ..... 3-4

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

Social and Behavioral Analysis ..... 3

Life Skills ..... 5

- Required Health Course..... 2
- Elective Life Skills..... 3

**Support Courses**

Minimum  
Required Hours

**Support Courses.....0-6**

Students majoring in Biology-Biomedical Sciences are encouraged to complete the following courses in high school.

Two years of high school algebra and one year of Trigonometry **OR**

MATH 1513 College Algebra **AND**

MATH 1593 Plane Trigonometry

### Major Requirements

**Biology-Biomedical Sciences ..... 73**

**Biology Core ..... 20**

Required Courses:

- BIO 1204 Biology I for Majors
- BIO 1225 Biology II for Majors and Lab
- BIO 2203 Cell Biology
- BIO 2211 Cell Biology Laboratory
- BIO 3054 Microbiology for Majors and Lab
- BIO 3303 Genetics
- \*BIO 4840 Capstone

**Mathematics ..... 6**

Required courses:

- MATH 2153 BioCalculus
- STAT 2103 Intro Statistics for Sciences

**Chemistry..... 15**

Required courses:

- CHEM 1103 General Chemistry I
- CHEM 1112 General Chemistry I - Recitation/Lab
- CHEM 1223 General Chemistry II
- CHEM 1232 General Chemistry II - Recitation/Lab
- CHEM 3303 Organic Chemistry I **OR**
- CHEM 3013 Organic Chemistry for Life Sciences
- CHEM 3312 Organic Chemistry I Lab **OR**
- CHEM 3022 Organic Chemistry for Life Sciences Lab

**Physics..... 4**

Required course:

- PHY 1114 General Physics I and Lab

**\*\*Guided Electives..... 28**

Selected from the following:

	Minimum Required Hours		Minimum Required Hours
BIO	3104	Embryology and Lab	
BIO	3254	Comparative Vertebrate Anatomy and Lab	
BIO	3311	Intro to Genetics Lab Methods	
BIO	3414	Histology and Lab	
BIO	4515	Pathogenic Micro and Immunology & Lab	
BIO	3703	Evolution	
BIO	3803	Mammalian Physiology I	
BIO	3813	Mammalian Physiology II	
BIO	4413	Virology and Lab	
BIO	4622	Methods of Human Dissection & Prosection	
BIO	4763	Biology of Cancer	
BIO	4774	Parasitology and Lab	
CHEM	3323	Organic Chemistry II	
CHEM	3332	Organic Chemistry II Lab	
CHEM	3403	Biochemistry I	
CHEM	4103	Biochemistry II	
PHY	1214	General Physics II and Lab	

\*A maximum of 2 credit hours from the following list of capstone courses may apply toward the 28 credit hours of guided electives.

- BIO 3000 Workshop in Biology
- BIO 3990 Advanced Topics in Biology
- BIO 4012 Intro to Biological Research
- BIO 4871 Senior Seminar
- BIO 4900 Practicum in Biology
- BIO 4920 Workshop in Biology
- BIO 4930 Individual Study in Biology
- BIO 4950 Internship in Biology
- BIO 4960 Institute in Biology
- BIO 4970 Study Tour in Biology

\*To enroll in a Capstone Experience, students must complete a minimum of 60 credit hours. This 0 credit hour course is designed to be taken in conjunction with a capstone experience. Capstone experiences may include the above courses, or special projects in biology. Special projects include but are not limited to independent research, service learning,

Program: **Biology**- continued  
 Major: **Biology-Biomedical Sciences**  
 Degree: Bachelor of Science (B.S.)

Dept: Biology  
 College: Mathematics and Science  
 Major Code: 6001

**Minimum  
Required Hours**

- CONTINUED FROM PREVIOUS PAGE -

professional school applications, or other equivalent experiences as approved by the Capstone Coordinator. Approval of the Capstone Coordinator is required before starting any capstone experience. A reflective writing piece, which must receive a passing score, will be required for all capstones.

**Electives to bring total to.....124**

Graduating seniors must take a national assessment exam in Biology as a graduation requirement for the B.S. in Biology-Biomedical Sciences.

**Minimum Grade Requirements**

1. Average in (a) all college course work, (b) course work at UCO, and (c) major courses..... **2.00**
2. A minimum grade of “C” must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see  
pages 68-69 of the 2015-2016 catalog.**

\*\*Students accepted to graduate medical and allied health professional schools (e.g. Chiropractic, Dentistry, Medicine, Optometry, Osteopathic Medicine, Pharmacy, Physician Assistant, Veterinary Medicine) prior to completing this degree will be allowed to transfer a maximum of 30 credit hours from the first year of medical course work toward the guided electives and electives included in this degree.

To be eligible, students must have successfully completed the following minimum requirements from UCO before matriculation into the professional program: 1) 94 credit hours total; 2) 30 credit hours in residence at UCO; 3) 15 upper division credit hours in the major; 4) 50% of the total major credit hours; and 5) all regular degree requirements, including general education. (Students must apply for their bachelor's degree within two years of completing their UCO work, but no later than graduation from medical school.)

Program: **Biology**  
 Major: **Biology-Medical Laboratory Science**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Biology**  
 College: **Mathematics and Science**  
 Major Code: **6002**

### University Core (Total Listed 42-44)

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

Written and Oral Communication ..... 9

Quantitative Reasoning/Scientific Method ..... 10-11

- Math ..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

Critical Inquiry and Aesthetic Analysis ..... 6

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

American Historical and Political Analysis ..... 6

- American National Government ..... 3
- American History ..... 3

Cultural and Language Analysis ..... 3-4

- Second Language ..... 4
- OR
- Cultural Analysis ..... 3

Social and Behavioral Analysis ..... 3

Life Skills ..... 5

- Required Health Course ..... 2
- Elective Life Skills ..... 3

Minimum  
Required Hours

Minimum  
Required Hours

### Support Courses

Support Courses ..... 0-3

Students majoring in Biology-Medical Laboratory Science are encouraged to complete the following courses in high school.

Two years of high school algebra **OR**  
 MATH 1513 College Algebra

### Major Requirements

Biology-Medical Laboratory Sciences ..... 87

Students may earn the B.S. in Biology-Medical Laboratory Science from UCO upon completion of the following three year curriculum and an additional one year in a hospital school approved by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

Biology and Chemistry ..... 47

Required Courses:

- BIO 1204 Biology I for Majors
- BIO 1225 Biology II for Majors and Lab
- BIO 2203 Cell Biology
- BIO 2211 Cell Biology Laboratory
- BIO 2604 Human Physiology and Lab
- BIO 3054 Microbiology for Majors and Lab
- BIO 3303 Genetics
- BIO 4515 Pathogenic Microbiology and Immunology and Lab
- CHEM 1103 General Chemistry I
- CHEM 1112 General Chemistry I-Recitation/Lab
- CHEM 1223 General Chemistry II
- CHEM 1232 General Chemistry II-Recitation/Lab
- CHEM 3303 Organic Chemistry I
- CHEM 3312 Organic Chemistry I Lab
- CHEM 3403 Biochemistry I

Mathematics ..... 6

Required courses:

- MATH 2153 BioCalculus
- STAT 2103 Intro Statistics for Sciences

Elective Biology and/or Chemistry ..... 4

Selected from the following courses:

- BIO 3403 Comparative Animal Physiology OR
- BIO 3464 Comparative Animal Physiology and Lab
- BIO 3414 Histology and Lab

- BIO 3803 Mammalian Physiology I
- BIO 3813 Mammalian Physiology II
- BIO 4413 Virology and Lab
- BIO 4774 Parasitology and Lab
- CHEM 3203 Introductory Physical Chemistry
- CHEM 3323 Organic Chemistry II
- CHEM 3332 Organic Chemistry II Lab
- CHEM 3442 Experimental Biochemistry
- CHEM 4103 Biochemistry II

#Medical Technology ..... 30

Students must complete an appropriate one year program with an approved affiliate Hospital Medical Laboratory Science Program and satisfactorily complete the following courses through UCO.

- BIO 4117 Clinical Microbiology
- BIO 4236 Clinical Hematology
- BIO 4246 Clinical Immunology
- CHEM 4125 Clinical Chemistry I
- CHEM 4325 Clinical Chemistry II
- CHEM 4351 Topics in Medical Technology

Electives to bring total to ..... 124

#The Medical Laboratory Science degree can only be obtained upon completion of the one year clinical hospital training. Completion of the three-year requirements at UCO does NOT assure acceptance into one of the affiliated hospitals. Acceptance into a hospital program is highly competitive.

### Minimum Grade Requirements

1. Average in (a) all college course work, (b) course work at UCO, and (c) major courses ..... 2.00
2. A minimum grade of "C" must be earned in all courses in the major to count toward meeting degree requirements.

For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.



Program: **Biomedical Engineering**  
 Major: **Biomedical Engineering**  
 Degree: Bachelor of Science (B.S.)

Dept: Engineering and Physics  
 College: Mathematics and Science  
 Major Code: 6220

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**• Cultural and Language Analysis..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**• Social and Behavioral Analysis..... 3**

**Life Skills ..... 5**

- Required Health Course..... 2
- Elective Life Skills ..... 3

**Minimum  
Required Hours**

**Support Courses**

**Support Courses.....9-19**

- PHIL 1123 Contemporary Moral Problems
- ECON 1103 Introduction to Economics
- FMKT 2323 Global Protocol and Diversity  
(or Foreign Language)

Students majoring in Biomedical Engineering are encouraged to complete the following courses in high school.

One year of High School Algebra II and Trigonometry **OR**

- MATH 1513 College Algebra **AND**
- MATH 1593 Plane Trigonometry

One year High School Physics **OR**

- PHY 1003 Introduction to Physics

**Major Requirements**

**Biomedical Engineering.....98-101**

**Biology .....11**

Required courses:

- BIO 1204 Biology I for Majors
- BIO 2203 Cell Biology
- BIO 2604 Human Physiology and Laboratory

**Chemistry..... 5**

Required courses:

- CHEM 1103 General Chemistry I
- CHEM 1112 General Chemistry I Recitation/Laboratory

**Engineering..... 48**

Required courses:

- ENGR 1112 Introduction to Engineering and Laboratory
- ENGR 1213 Engineering Computing and Laboratory
- ENGR 1311 Introduction to Biomedical Engineering
- ENGR 2033 Statics
- ENGR 2043 Dynamics
- ENGR 2303 Electrical Science
- ENGR 2311 Electrical Science Laboratory
- ENGR 3043 Biomaterials
- ENGR 3113 Principles of Biomedical Engineering
- ENGR 3222 Digital Logic Design and Laboratory
- ENGR 3302 Engineering Statistics and Experimentation

**Minimum  
Required Hours**

- ENGR 3323 Signals and Systems & Laboratory
- ENGR 3404 Analog Electronics and Laboratory
- ENGR 4132 Biomedical Engineering Laboratory
- ENGR 4223 Biomedical Imaging
- ENGR 4233 Biomedical Instrumentation
- ENGR 4343 Biomechanics
- ENGR 4882 Senior Engineering Design I
- ENGR 4892 Senior Engineering Design II

**Mathematics ..... 14-15**

Required courses:

- MATH 2305 Accelerated Calculus 1 and 2 **OR**
- MATH 2313 Calculus 1 **AND**
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- MATH 2343 Calculus 4
- MATH 3103 Differential Equations

**Physics..... 8**

Required courses:

- PHY 2014 Physics for Scientists and Engineers I and Laboratory
- ^ PHY 2114 Physics for Scientists and Engineers II and Laboratory

^ A grade of "C" or better must be earned in PHY 2114.

**Biomedical Engineering Elective..... 3-6**

Any 3000/4000 level PHY or ENGR course with the following exceptions: PHY 3014, 3044, 3054 or 3503.

Students in Concentration A are required to have 3 credit hours from Biomedical Engineering electives. Students in Concentration B are required to have 6 credit hours from Biomedical Engineering electives.

**Complete all the courses from one of the following concentrations:  
..... 6-11**

Concentration A: (courses in preparation for Pre-Med fields)

- CHEM 1223 General Chemistry II
- CHEM 1232 General Chemistry II Recitation/Laboratory
- CHEM 3303 Organic Chemistry I
- CHEM 3323 Organic Chemistry II



Program: **Biomedical Engineering** - continued  
 Major: **Biomedical Engineering**  
 Degree: Bachelor of Science (B.S.)

Dept: Engineering and Physics  
 College: Mathematics and Science  
 Major Code: 6220

**Minimum  
Required Hours**

- CONTINUED FROM PREVIOUS PAGE -

Concentration B: (courses in preparation for Instrumentation fields)

ENGR 3183 Electromagnetic Fields I  
 PHY 3883 Mathematical Physics I

**The number of credits needed to meet degree requirements exceeds 124 hours and will vary according to course selection.**

The following courses are strongly recommended electives:

ENGR 4243 Modeling and Analysis of Biomedical Systems  
 CHEM 3403 Biochemistry I  
 ENGR 3443 Fluid Mechanics

**Minimum Grade Requirements**

1. Average in (a) all college course work, and (b) course work at UCO, ..... **2.00**
2. A minimum grade of "C" must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

This program requires admission to the Upper Division with special requirements. See page 58-59 of the 2015-2016 catalog for selective admission criteria.

Program: **Chemistry**  
 Major: **Chemistry**  
 Degree: Bachelor of Science (B.S.)

Dept: Chemistry  
 College: Mathematics and Science  
 Major Code: 6060

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**Cultural and Language Analysis ..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills..... 3

**Minimum  
Required Hours**

**Minimum  
Required Hours**

**Support Courses**

**Support Courses.....0-9**

Required Courses:

- MATH 1513 College Algebra **AND**
- MATH 1593 Plane Trigonometry **OR**
- High School Equivalent
- High School Physics **OR**
- PHY 1003 Introduction to Physics

The following are highly recommended:

- CHEM 3403 Biochemistry I
- ENG 4023 Technical Writing
- MATH 2343 Calculus 4
- PHY 3103 Modern Physics

**Major Requirements**

**Chemistry.....68**

**Common Core ..... 45**

Required courses:

- CHEM 1103 General Chemistry I
- CHEM 1112 General Chemistry I - Recitation/Lab
- CHEM 1223 General Chemistry II
- CHEM 1232 General Chemistry II - Recitation/Lab
- CHEM 2104 Quantitative Analysis and Lab
- CHEM 3303 Organic Chemistry I
- CHEM 3312 Organic Chemistry I Lab
- CHEM 3323 Organic Chemistry II
- CHEM 3332 Organic Chemistry II Lab
- CHEM 3454 Fundamentals of Instrumental Analysis and Lab
- MATH 2313 Calculus 1
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- PHY 2014 Physics for Scientists and Engineers I and Lab
- PHY 2114 Physics for Scientists and Engineers II and Lab

**Advanced Chemistry ..... 23**

Required courses:..... 14

- CHEM 3503 Physical Chemistry I
- CHEM 3513 Physical Chemistry II
- CHEM 3602 Experimental Physical Chemistry
- CHEM 4454 Advanced Instrumental Analysis and Lab
- CHEM 4502 Directed Research and Lab

Chemistry Electives ..... 9  
 (3000/4000 level; CHEM 3203 will not apply)

**Minimum Grade Requirements**

1. Average in (a) all college course work, and (b) course work at UCO ..... 2.25
2. A minimum grade of “C” must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

**Electives to bring total to.....124**

Program: **Chemistry**  
 Major: **Chemistry - ACS Certificate**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Chemistry**  
 College: **Mathematics and Science**  
 Major Code: **6061**

### University Core (Total Listed 42-44)

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**Cultural and Language Analysis ..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills..... 3

**Minimum  
Required Hours**

**Minimum  
Required Hours**

### Support Courses

**Support Courses.....0-9**

Required Courses:

- MATH 1513 College Algebra **AND**
- MATH 1593 Plane Trigonometry **OR**
- High School Equivalent
- High School Physics **OR**
- PHY 1003 Introduction to Physics

### Major Requirements

**Chemistry - ACS Certificate .....74**

**Common Core ..... 45**

Required courses:

- CHEM 1103 General Chemistry I
- CHEM 1112 General Chemistry I - Recitation/Lab
- CHEM 1223 General Chemistry II
- CHEM 1232 General Chemistry II - Recitation/Lab
- CHEM 2104 Quantitative Analysis and Lab
- CHEM 3303 Organic Chemistry I
- CHEM 3312 Organic Chemistry I Lab
- CHEM 3323 Organic Chemistry II
- CHEM 3332 Organic Chemistry II Lab
- CHEM 3454 Fundamentals of Instrumental Analysis and Lab
- MATH 2313 Calculus 1
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- PHY 2014 Physics for Scientists and Engineers I and Lab
- PHY 2114 Physics for Scientists and Engineers II and Lab

**Advanced Chemistry ACS approved..... 29**

Required courses:..... 24

- CHEM 3403 Biochemistry I
- CHEM 3503 Physical Chemistry I
- CHEM 3513 Physical Chemistry II
- CHEM 3602 Experimental Physical Chemistry
- CHEM 4454 Advanced Instrumental Analysis and Lab
- CHEM 4502 Directed Research and Lab
- CHEM 4603 Advanced Organic Chemistry

CHEM 4654 Inorganic Chemistry and Lab

Elective Chemistry (3000/4000 level) ..... 5  
 (CHEM 3203 will not apply.)

**Electives to bring total to..... 124**

The following are highly recommended:

- ENG 4023 Technical Writing
- MATH 2343 Calculus 4
- PHY 3103 Modern Physics

### Minimum Grade Requirements

1. Average in (a) all college course work, and (b) course work at UCO ..... 2.25
2. A minimum grade of "C" must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Chemistry**  
 Major: **Chemistry - Health Sciences**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Chemistry**  
 College: **Mathematics and Science**  
 Major Code: **6062**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

- Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**Cultural and Language Analysis ..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills..... 3

**Minimum  
Required Hours**

**Minimum  
Required Hours**

**Support Courses**

**Support Courses.....0-6**

Required Courses:

- MATH 1513 College Algebra AND
- MATH 1593 Plane Trigonometry OR
- High School Equivalent

**Major Requirements**

**Chemistry - Health Sciences ..... 76**

**Common Core ..... 56**

Required courses:

- CHEM 1103 General Chemistry I
- CHEM 1112 General Chemistry I Recitation/Lab
- CHEM 1223 General Chemistry II
- CHEM 1232 General Chemistry II Recitation/Lab
- CHEM 2104 Quantitative Analysis and Lab
- CHEM 2621 Professionalism in Chemistry I
- CHEM 3303 Organic Chemistry I
- CHEM 3312 Organic Chemistry I Lab
- CHEM 3323 Organic Chemistry II
- CHEM 3332 Organic Chemistry II Lab
- CHEM 3454 Fundamentals of Instrumental Analysis and Lab
- CHEM 3621 Professionalism in Chemistry II
- BIO 1204 Biology I for Majors
- BIO 1225 Biology II for Majors and Lab
- BIO 2203 Cell Biology
- MATH 2153 Bio-Calculus
- PHY 1114 General Physics I and Lab
- PHY 1214 General Physics II and Lab
- STAT 2103 Intro Statistics for Sciences

**Advanced Course work ..... 20**

Required courses:..... 14

- BIO 3054 Microbiology for Majors and Lab
- CHEM 3203 Introductory Physical Chemistry
- CHEM 3403 Biochemistry I
- CHEM 3442 Experimental Biochemistry
- CHEM 4892 Capstone for Chemistry

Elective Chemistry (3000/4000 level) ..... 6

**Electives to bring total to..... 124**

**Minimum Grade Requirements**

1. Average in (a) all college course work, and (b) course work at UCO ..... 2.25
2. A minimum grade of "C" must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Computer Science**  
 Major: **Computer Science**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Computer Science**  
 College: **Mathematics and Science**  
 Major Code: **6100**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**Cultural and Language Analysis ..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills..... 3

**Minimum  
Required Hours**

**Minimum  
Required Hours**

**Support Courses**

**Support Courses.....0-12**

Students majoring in Computer Science are encouraged to complete the following courses in high school.

High School Physics **OR**

PHY 1003 Introduction to Physics

Advanced Placement High School Programming Course **OR**

CMSC 1513 Beginning Programming

One year of High School Algebra II and Trigonometry **OR**

MATH 1513 College Algebra **AND**

MATH 1593 Plane Trigonometry

Upon completion of the above courses, corresponding university core requirements will be satisfied. (These courses are required for this major regardless of previous degrees conferred.)

**Major Requirements**

**Computer Science .....82**

**Required..... 63**

- ^ CMSC 1613 Programming I
- ^ CMSC 2123 Discrete Structures
- ^ CMSC 2613 Programming II
- ^ CMSC 2833 Computer Organization I
- ^ CMSC 3103 Object Oriented Software Design and Construction
- ^ CMSC 3833 Computer Organization II
- ^ CMSC 3613 Data Structures and Algorithms
- ^ CMSC 4003 Applications Database Management
- ^ CMSC 4023 Programming Languages **OR**
- ^CMSC 4173 Translator Design
- ^ CMSC 4153 Operating Systems
- ^ CMSC 4273 Theory of Computing
- ^ CMSC 4283 Software Engineering I
- ^ CMSC 4401 Ethics in Computing
- ^\*CMSC 4513 Software Design and Development
- ^ MATH 2313 Calculus 1
- ^ MATH 2323 Calculus 2
- ^ MATH 2333 Calculus 3
- ^ MATH 3143 Linear Algebra

- STAT 2113 Statistical Methods **OR**
- STAT 2103 Introduction to Statistics for Sciences **OR**
- STAT 4113 Mathematical Statistics I
- PHY 2014 Physics for Scientists & Engineers I and Lab
- PHY 2114 Physics for Scientists & Engineers II and Lab

^ A grade of 'C' or better must be earned in CMSC 1613, 2123, 2613, 2833, 3103, 3613, 3833, 4003, (4023 OR 4173), 4153, 4273, 4283, 4401, 4513 and MATH 2313, 2323, 2333, 3143, and STAT (2113 or 2103 or 4113).

\* CMSC 4513 is recommended to be taken in the last semester prior to graduation.

**Elective CMSC or SE courses ..... 19**

Selected from the following:

- CMSC 1621 Programming I Laboratory
- CMSC 2621 Programming II Laboratory
- CMSC 3621 Data Structures/Algorithms Laboratory
- Any 3/4000 level CMSC or SE courses

In addition to CMSC 1621, 2621 and 3621 an additional 6 hours of CMSC or SE electives may be taken at the 2000 level.

SE 4513 may not be used to satisfy the CMSC or SE elective requirement.

No more than four (4) hours of Internship and Individual Study combined may be used to satisfy the CMSC or SE elective requirement.

Credit cannot be received for both CMSC 3303 and 4283.

**Electives to bring total to..... 124**

**Minimum Grade Requirements**

**Average in (a) all college course work, (b) course work at UCO, and (c) major courses..... 2.00**

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Computer Science**  
 Major: **Computer Science - Applied**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Computer Science**  
 College: **Mathematics and Science**  
 Major Code: **6101**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**Cultural and Language Analysis ..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills..... 3

**Minimum  
Required Hours**

**Minimum  
Required Hours**

**Support Courses**

**Major Support Courses ..... 0-9**

Students majoring in Computer Science-Applied are encouraged to complete the following courses in high school.

Advanced Placement High School Programming Course **OR**  
 CMSC 1513 Beginning Programming

One year of High School Algebra II and Trigonometry **OR**  
 MATH 1513 College Algebra **AND**  
 MATH 1593 Plane Trigonometry

Upon completion of the above courses, corresponding university core requirements will be satisfied. (These courses are required for this major regardless of previous degrees conferred.)

**Major Requirements**

**Computer Science - Applied ..... 54**

**Required ..... 45**

- ^ CMSC 1613 Programming I
- ^ CMSC 2413 Visual Programming
- ^ CMSC 2123 Discrete Structures
- ^ CMSC 2613 Programming II
- ^ CMSC 2833 Computer Organization I
- ^ CMSC 3103 Object Oriented Software Design and Construction
- ^ CMSC 3303 System Analysis and Design **OR**
- ^ CMSC 4283 Software Engineering I
- ^ CMSC 3613 Data Structures and Algorithms
- ^ CMSC 4003 Applications Database Management
- ^ CMSC 4023 Programming Languages **OR**
- ^CMSC 4173 Translator Design
- ^ CMSC 4153 Operating Systems
- ^\*CMSC 4513 Software Design and Development
- ^ MATH 2313 Calculus 1
- ^ MATH 2323 Calculus 2
- STAT 2113 Statistical Methods **OR**
- STAT 2103 Introduction to Statistics for Sciences **OR**
- STAT 4113 Mathematical Statistics I

^ A grade of 'C' or better must be earned in CMSC 1613, (1713 OR 2413), 2123, 2613, 2833, 3103, (3303 OR 4283), 3613, 4003, (4023 OR 4173), 4153, 4513 and MATH 2313, 2323 and STAT (2113 or 2103 or 4113).

\* CMSC 4513 is recommended to be taken in the last semester prior to graduation.

**Elective CMSC or SE courses ..... 9**

- Any 3/4000 level CMSC or SE courses except SE 4513
- Any programming labs (CMSC 1621, 2621, and 3621)

No more than three (3) hours of Internship and Individual Study combined may be used to satisfy the CMSC or SE elective requirement.

Credit cannot be received for both CMSC 3303 and 4283.

**Applied Area of Study ..... 18**

**Minor**

The student will complete a minor; if the student is completing a second Bachelor's degree, the first degree's major will satisfy the requirements for the minor.

**OR**

**Second Major**

The student will complete a second major. If any of the courses listed among the 54 hours above is required for the second major, then (subject to academic policy) replacement course(s) will be selected by the Chair of the department in which the student is taking the second major.

**OR**

**Associate degree or comparable concentration** in an information technology-related discipline transferred from a regionally accredited two- or four-year college or international equivalent with the approval of the Computer Science Department.

Program: **Computer Science** - continued  
 Major: **Computer Science - Applied**  
 Degree: Bachelor of Science (B.S.)

Dept: Computer Science  
 College: Mathematics and Science  
 Major Code: 6101

---

**Minimum  
Required Hours**

- CONTINUED FROM PREVIOUS PAGE -

If less than 18 hours are transferred under this category, the student should take 2/3/4000 level CMSC electives to make up the difference. A student may take additional CMSC 3/4000 electives to bring the total hours of upper-division courses to 40.

**Electives to bring total to..... 124**

**Minimum Grade Requirements**

Average in (a) all college course work, (b) course work at UCO,  
 and (c) major courses..... **2.00**

**For other regulations pertaining to graduation, see  
 pages 68-69 of the 2015-2016 catalog.**



Program: **Computer Science**  
 Major: **Computer Science - Information Science**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Computer Science**  
 College: **Mathematics and Science**  
 Major Code: **6102**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**Cultural and Language Analysis ..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills ..... 3

**Minimum  
Required Hours**

**Support Courses**

**Major Support Courses.....0-12**

Students majoring in Computer Science-Information Science are encouraged to complete the following courses in high school.

A high school computer technology course using a word processor, spreadsheet, e-mail, browser, and search engines **OR**

CMSC 1053 Professional Computer Applications and Problem Solving

Advanced Placement High School Programming Course **OR**

CMSC 1513 Beginning Programming

One year of High School Algebra II and Trigonometry **OR**

MATH 1513 College Algebra **AND**

MATH 1593 Plane Trigonometry

Upon completion of the above courses, corresponding university core requirements will be satisfied. (These courses are required for this major regardless of previous degrees conferred.)

**Major Requirements**

**Computer Science - Information Science.....78**

**Required..... 63**

- ^ CMSC 1613 Programming I
- ^ CMSC 2123 Discrete Structures
- ^ CMSC 2413 Visual Programming
- ^ CMSC 2613 Programming II
- ^ CMSC 2833 Computer Organization I
- ^ CMSC 3103 Object Oriented Software Design and Construction
- ^ CMSC 3303 Systems Analysis and Design
- ^ CMSC 3413 Advanced Visual Programming
- ^ CMSC 3613 Data Structures and Algorithms
- ^ CMSC 4003 Applications Database Management
- ^ CMSC 4063 Networks
- ^ CMSC 4153 Operating Systems
- ^ CMSC 4323 Computer and Network Security
- ^\* CMSC 4513 Software Design and Development
- ^ MATH 2313 Calculus 1
- ^ MATH 2323 Calculus 2
- STAT 2113 Statistical Methods **OR**

**Minimum  
Required Hours**

STAT 2103	Introduction to Statistics for Sciences	<b>OR</b>
STAT 4113	Mathematical Statistics I	
ACCT 2113	Accounting I	
ACCT 2133	Accounting II	
MGMT 3103	Principles of Management	
ISOM 3263	Management Information Systems	

^ A grade of 'C' or better must be earned in CMSC 1613, 1713, 2123, 2413, 2613, 2833, 3103, 3303, 3413, 3613, 4003, 4063, 4153, 4513 and MATH 2313, 2323, and STAT (2113 or 2103 or 4113).

\* CMSC 4513 is recommended to be taken in the last semester prior to graduation.

**Elective CMSC or SE courses..... 9**

- Any 3/4000 level CMSC or SE courses except SE 4513
- Any programming labs (CMSC 1621, 2621, and 3621)

No more than three (3) hours of Internship and Individual Study combined may be used to satisfy the CMSC or SE elective requirement.

Credit cannot be received for both CMSC 3303 and 4283.

**Other areas of application..... 6**

Selected from the following:

- ACCT 3113 Managerial Accounting
- FIN 3563 Fundamentals of Business Finance
- ISOM 4063 Computer Simulation
- ISOM 4283 Developing Decision Support Systems
- ISOM 4363 Information Systems Management

**Electives to bring total to..... 124**

**Minimum Grade Requirements**

**Average in (a) all college course work, (b) course work at UCO, and (c) major courses..... 2.00**

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Engineering Physics**  
 Major: **Engineering Physics - Electrical Engineering**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Engineering and Physics**  
 College: **Mathematics and Sciences**  
 Major Code: **6246**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

- Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**• Cultural and Language Analysis..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**• Social and Behavioral Analysis..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills ..... 3

**Minimum  
Required Hours**

**Support Courses**

**Support Courses.....9-19**

- PHIL 1123 Contemporary Moral Problems
- ECON 1103 Introduction to Economics
- FMKT 2323 Global Protocol and Diversity  
(or Foreign Language)

Students majoring in the Engineering Physics program are encouraged to complete the following courses in high school.

- One year of High School Algebra II and Trigonometry **OR**
- MATH 1513 College Algebra **AND**
- MATH 1593 Plane Trigonometry
- One year of high school physics **OR**
- PHY 1003 Introduction to Physics

**Major Requirements**

**Engineering Physics - Electrical Engineering**

**.....93-94**

**Physics..... 14**

Required courses:

- PHY 2014 Physics for Scientists and Engineers I and Lab
- PHY 2114 Physics for Scientists and Engineers II and Lab
- PHY 3103 Modern Physics
- PHY 3883 Mathematical Physics I

**Engineering..... 54**

Required courses:

- ENGR 1112 Introduction to Engineering and Laboratory
- ENGR 1213 Engineering Computing and Laboratory
- ENGR 2033 Statics
- ENGR 2043 Dynamics
- ENGR 2303 Electrical Science
- ENGR 2311 Electrical Science Laboratory
- ENGR 3183 Electromagnetic Fields I
- ENGR 3203 Thermodynamics
- ENGR 3222 Digital Logic Design and Laboratory
- ENGR 3302 Engineering Statistics and Experimentation
- ENGR 3323 Signals and Systems & Laboratory
- ENGR 3404 Analog Electronics and Laboratory

**Minimum  
Required Hours**

- ENGR 3413 Materials Science
- ENGR 3613 Microprocessors and Laboratory
- ENGR 3703 Computational Methods in Engineering
- \*ENGR 4323 Digital and Analog Communication
- ENGR 4333 Digital Signal Processing and Laboratory
- \*ENGR 4803 Mechatronics & Laboratory
- ENGR 4882 Senior Engineering Design I
- ENGR 4892 Senior Engineering Design II

**Mathematics ..... 14-15**

Required courses:

- MATH 2305 Accelerated Calculus 1 and 2 **OR**
- MATH 2313 Calculus 1 **AND**
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- MATH 2343 Calculus 4
- MATH 3103 Differential Equations

**Chemistry..... 5**

Required courses:

- CHEM 1315 Chemistry for Engineering and Lab

**Engineering Electives..... 6**

Select from the following:

- ENGR 3803 Electrical Power Systems
- \*ENGR 4183 Electromagnetic Fields II
- ENGR 4263 Engineering Optics
- ENGR 4303 Control Systems
- \*ENGR 4613 Photonics
- \*ENGR 4633 Solid State Devices

\*Students in the Accelerated BS/MS program in Engineering Physics must enroll in the graduate level versions of this course, and must choose the 5000 level of either Photonics, Electromagnetic Fields II or Solid State Devices as one of the engineering electives. Students need only three 5000-level courses as part of the accelerated program.

**The number of credits needed to meet degree requirements exceeds 124 hours and will vary according to course selection.**

Program: **Engineering Physics** - continued  
Major: **Engineering Physics - Electrical Engineering**  
Degree: Bachelor of Science (B.S.)

Dept: Engineering and Physics  
College: Mathematics and Sciences  
Major Code: 6246

---

- CONTINUED FROM PREVIOUS PAGE -

### **Minimum Grade Requirements**

1. Average in (a) all college course work, and (b) course work at UCO ..... **2.00**
2. A minimum grade of “C” must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

This program requires admission to the Upper Division with special requirements. See page 58-59 of the 2015-2016 catalog for selective admission criteria.

Program: **Engineering Physics** Dept: Engineering and Physics  
 Major: **Engineering Physics - Mechanical Engineering** College: Mathematics and Science  
 Degree: Bachelor of Science (B.S.) Major Code: 6247

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**• Cultural and Language Analysis..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**• Social and Behavioral Analysis..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills ..... 3

**Minimum  
Required Hours**

**Support Courses**

**Support Courses.....9-19**

- PHIL 1123 Contemporary Moral Problems
- ECON 1103 Introduction to Economics
- FMKT 2323 Global Protocol and Diversity  
(or Foreign Language)

Students majoring in the Engineering Physics program are encouraged to complete the following courses in high school.

- One year of High School Algebra II and Trigonometry **OR**
- MATH 1513 College Algebra **AND**
- MATH 1593 Plane Trigonometry
- One year of high school physics **OR**
- PHY 1003 Introduction to Physics

**Major Requirements**

**Engineering Physics - Mechanical Engineering  
.....92-94**

**Physics..... 14**

Required courses:

- PHY 2014 Physics for Scientists and Engineers I and Lab
- PHY 2114 Physics for Scientists and Engineers II and Lab
- PHY 3103 Modern Physics
- PHY 3883 Mathematical Physics I

**Engineering..... 54**

Required courses:

- ENGR 1112 Introduction to Engineering and Laboratory
- ENGR 1213 Engineering Computing and Laboratory
- ENGR 2033 Statics
- ENGR 2043 Dynamics
- ENGR 2143 Strength of Materials
- ENGR 2151 Strength of Materials Lab
- ENGR 2303 Electrical Science
- ENGR 2311 Electrical Science Laboratory
- ENGR 3203 Thermodynamics
- ENGR 3302 Engineering Statistics and Experimentation
- ENGR 3323 Signals and Systems & Laboratory
- ENGR 3363 Mechanical Engineering Design

**Minimum  
Required Hours**

- ENGR 3413 Materials Science
- ENGR 3443 Fluid Mechanics
- ENGR 3451 Fluid Mechanics Lab
- ENGR 3703 Computational Methods in Engineering
- ENGR 4123 Heat Transfer
- ENGR 4141 Heat Transfer Lab
- \*ENGR 4533 Thermal Systems Design
- \*ENGR 4803 Mechatronics & Laboratory
- ENGR 4882 Senior Engineering Design I
- ENGR 4892 Senior Engineering Design II

**Mathematics ..... 14-15**

Required courses:

- MATH 2305 Accelerated Calculus 1 and 2 **OR**
- MATH 2313 Calculus 1 **AND**
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- MATH 2343 Calculus 4
- MATH 3103 Differential Equations

**Chemistry..... 5**

Required courses:

- CHEM 1315 Chemistry for Engineering and Lab

**Physics or Engineering Electives ..... 5-6**

Selected from the following:

- ENGR 3143 Machine Dynamics
- ENGR 3222 Digital Logic Design and Laboratory
- ENGR 4103 Finite Element Analysis
- ENGR 4143 Vibration
- ENGR 4303 Control Systems
- \*ENGR 4313 Fluid Dynamics
- \*ENGR 4343 Biomechanics
- PHY 4163 Analytical Mechanics

\*Students in the Accelerated BS/MS program in Engineering Physics must enroll in the graduate level versions of this course, and must choose the 5000 level of either Fluid Dynamics or Biomechanics as one of the engineering electives. Students need only three 5000-level courses as part of the accelerated program.

---

Program:	<b>Engineering Physics</b> - continued	Dept:	Engineering and Physics
Major:	<b>Engineering Physics - Mechanical Engineering</b>	College:	Mathematics and Science
Degree:	Bachelor of Science (B.S.)	Major Code:	6247

---

- CONTINUED FROM PREVIOUS PAGE -

**The number of credits needed to meet degree requirements exceeds 124 hours and will vary according to course selection.**

#### **Minimum Grade Requirements**

1. Average in (a) all college course work, and (b) course work at UCO ..... **2.00**
2. A minimum grade of "C" must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

This program requires admission to the Upper Division with special requirements. See page 58-59 of the 2015-2016 catalog for selective admission criteria.

Program: **Engineering Physics**  
 Major: **Engineering Physics - Physics**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Engineering and Physics**  
 College: **Mathematics and Science**  
 Major Code: **6243**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

- Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**• Cultural and Language Analysis..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**• Social and Behavioral Analysis..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills ..... 3

	<b>Minimum Required Hours</b>
<b>Support Courses</b>	

**Support Courses.....9-19**

- PHIL 1123 Contemporary Moral Problems
- ECON 1103 Introduction to Economics
- FMKT 2323 Global Protocol and Diversity  
(or Foreign Language)

Students majoring in the Engineering Physics program are encouraged to complete the following courses in high school.

- One year of High School Algebra II and Trigonometry **OR**
- MATH 1513 College Algebra **AND**
- MATH 1593 Plane Trigonometry
- One year of high school physics **OR**
- PHY 1003 Introduction to Physics

**Major Requirements**

**Engineering Physics - Physics .....95-96**

**Physics..... 23**

Required courses:

- PHY 2014 Physics for Scientists and Engineers I and Lab
- PHY 2114 Physics for Scientists and Engineers II and Lab
- PHY 3103 Modern Physics
- PHY 3883 Mathematical Physics I
- PHY 4003 Mathematical Physics II
- \*PHY 4163 Analytical Mechanics **OR**
- \*ENGR 4183 Electromagnetic Fields II
- \*PHY 4173 Classical Mechanics **OR**
- \*PHY 4203 Quantum Mechanics

**Engineering..... 49**

Required courses:

- ENGR 1112 Introduction to Engineering and Laboratory
- ENGR 1213 Engineering Computing and Laboratory
- ENGR 2033 Statics
- ENGR 2043 Dynamics
- ENGR 2143 Strength of Materials
- ENGR 2303 Electrical Science
- ENGR 2311 Electrical Science Laboratory
- ENGR 3183 Electromagnetic Fields I

	<b>Minimum Required Hours</b>
--	-----------------------------------

- ENGR 3203 Thermodynamics
- ENGR 4263 Engineering Optics
- ENGR 3302 Engineering Statistics and Experimentation
- ENGR 3323 Signals and Systems & Laboratory
- ENGR 3404 Analog Electronics and Laboratory
- ENGR 3443 Fluid Mechanics
- ENGR 3703 Computational Methods in Engineering
- \*ENGR 4633 Solid State Devices
- ENGR 4882 Senior Engineering Design I
- ENGR 4892 Senior Engineering Design II

**Mathematics ..... 14-15**

Required courses:

- MATH 2305 Accelerated Calculus 1 and 2 **OR**
- MATH 2313 Calculus 1 **AND**
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- MATH 2343 Calculus 4
- MATH 3103 Differential Equations

**Chemistry..... 5**

Required courses:

- CHEM 1315 Chemistry for Engineering and Lab

**Physics or Engineering Electives ..... 4**

Any 3000 or 4000 level PHY or ENGR course with the following exceptions: PHY 3014, PHY 3044, PHY 3054, or PHY 3503.

\*Students in the Accelerated BS/MS program in Engineering Physics must enroll in the graduate level versions of this course. Students need only three 5000-level courses as part of the accelerated program.

**The number of credits needed to meet degree requirements exceeds 124 hours and will vary according to course selection.**

- CONTINUED ON NEXT PAGE -

---

Program: **Engineering Physics** - continued  
Major: **Engineering Physics - Physics**  
Degree: Bachelor of Science (B.S.)

Dept: Engineering and Physics  
College: Mathematics and Science  
Major Code: 6243

---

- CONTINUED FROM PREVIOUS PAGE -

### **Minimum Grade Requirements**

1. Average in (a) all college course work, and (b) course work at UCO ..... **2.00**
2. A minimum grade of "C" must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

This program requires admission to the Upper Division with special requirements. See page 58-59 of the 2015-2016 catalog for selective admission criteria.



Program: **Funeral Service**  
 Major: **Funeral Service**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Funeral Service**  
 College: **Mathematics and Science**  
 Major Code: **6120**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication** ..... 9

**Quantitative Reasoning/Scientific Method** ..... 10-11

Math ..... 3

Life Science ..... 4

• Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis** ..... 6

Aesthetic Analysis ..... 3

Critical Inquiry ..... 3

**American Historical and Political Analysis** ..... 6

American National Government ..... 3

American History ..... 3

**Cultural and Language Analysis** ..... 3-4

Second Language ..... 4

OR

Cultural Analysis ..... 3

**Social and Behavioral Analysis** ..... 3

**Life Skills** ..... 5

Required Health Course ..... 2

• Elective Life Skills ..... 3

**Minimum  
Required Hours**

**Major Requirements**

**Funeral Service**..... 67

**Required Course** ..... 5

ACCT 2223 Survey of Accounting **OR**

ACCT 2113 Accounting I

\* FNRL 4522 Board Review

**Basic Sciences** ..... 15

Required courses:

BIO 2314 Introduction to Microbiology and Lab

CHEM 1014 Introduction to Chemistry and Lab

FNRL 2214 Introduction to Human Anatomy and Dissection

FNRL 3433 Introduction to Pathology

**Mortuary Arts and Sciences**..... 20

Required courses:

FNRL 3054 Embalming Chemistry

FNRL 3204 Embalming

FNRL 3304 Restorative Art

\* FNRL 4118 Practicum in Embalming & Funeral Directing

**Mortuary Administration**..... 27

Required courses:

FNRL 1211 Orientation to Funeral Service

FNRL 2313 Contemporary Funeral Service

FNRL 3374 Funeral Home Management I

FNRL 3383 Funeral Service Statutory Law

FNRL 3393 Mortuary Jurisprudence

FNRL 3493 Funeral Service Communication

FNRL 3513 History of Funeral Directing

FNRL 4214 Funeral Home Management II

FNRL 3483 Psychology of Grief

\* Must be taken concurrently during a student’s final semester.

**Electives to bring total to** ..... 124

**Minimum Grade Requirements**

1. Average in (a) all college course work, (b) course work at UCO, and (c) major courses ..... 2.00
2. A minimum grade of “C” must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

National Board Examination scores, graduation rates, and employment rates for this and other ABFSE-accredited programs are available at [www.abfse.org](http://www.abfse.org). To request a printed copy of this program’s scores and rates, go to: UCO Department of Funeral Service, CHS 154, 100 North University Drive, Edmond, OK 73034 or by e-mail at [funeralservice@uco.edu](mailto:funeralservice@uco.edu), or by telephone, (405) 974-5001.

The Department of Funeral Service Bachelor of Science Degree and Certificate of Completion Programs at the University of Central Oklahoma are accredited by the American Board of Funeral Service Education (ABFSE) 3414 Ashland Avenue, Suite G, St. Joseph, Missouri 64506 (816)233-3747 [www.abfse.org](http://www.abfse.org).

The Department of Funeral Service has as its central aim recognition of the importance of funeral service education personnel as:

1. Members of a human services profession.
2. Members of the community in which they serve.
3. Participants in the relationship between bereaved families and those engaged in the funeral service profession.
4. Professionals knowledgeable of and compliant with federal, state, provincial/territorial, and local regulatory guidelines (in the geographic area where they practice).
5. Professionals sensitive to the responsibility for public health, safety, and welfare in caring for human remains.

Department of Funeral Service Objectives

1. To enlarge the background and knowledge of students about the funeral service profession.
2. To educate students in every phase of funeral service and to help enable them to develop proficiency and skills necessary for the profession, as defined in the Preamble above.
3. To educate students concerning the responsibilities of the funeral service progression to the community at large.
4. To emphasize high standards of ethical conduct.
5. To provide a curriculum at the post- secondary level of instruction.
6. To encourage student and faculty research in the field of funeral service.

Admission to this program has special requirements. See page 59 of the 2015-2016 catalog for selective admission criteria.

Program: **Mathematics**  
 Major: **Mathematics**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Mathematics and Statistics**  
 College: **Mathematics and Science**  
 Major Code: **6160**

**University Core (Total Listed 42-44)**

**Specific courses within the University Core are listed on pages 95-96.**

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**Cultural and Language Analysis ..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills..... 3

**Minimum  
Required Hours**

**Prerequisite Courses**

**Prerequisite Courses ..... 0-6**

- MATH 1513 College Algebra or High School Algebra II **AND**
- MATH 1593 Plane Trigonometry or High School Trigonometry
- OR**

The equivalent of these courses at other institutions.

Upon completion of the above courses, corresponding general education requirements will be satisfied. (These courses are required for this major regardless of previous degrees conferred.)

**Major Requirements**

**Mathematics ..... 47**

**Required..... 30**

- MATH 2313 Calculus 1
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- MATH 2343 Calculus 4
- MATH 2753 Technology for Professional Math and Statistics
- MATH 3113 Foundations of Advanced Math
- MATH 3143 Linear Algebra
- MATH 3183 Introduction to Modern Algebra
- MATH 4143 Introduction to Analysis 1
- STAT 4113 Mathematical Statistics I

**Electives ..... 17**

At least nine (9) hours must be selected from the following:

- MATH 3103 Differential Equations
- MATH 3163 Elementary Number Theory
- MATH 4153 Introduction to Analysis 2
- MATH 4483 History of Mathematics
- STAT 4123 Mathematical Statistics II

All other elective courses must be selected from 3000 and 4000 level MATH courses (including those MATH courses listed above).

**Electives to bring total to..... 124**

It is strongly recommended that PHY 1114 General Physics I and Lab be taken in the general education core.

**Minimum Grade Requirements**

1. Average in (a) all college course work, (b) course work at UCO, and (c) major courses ..... **2.50**
2. A minimum grade of “C” must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Mathematics**  
 Major: **Mathematics - Applied Mathematics**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Mathematics and Statistics**  
 College: **Mathematics and Science**  
 Major Code: **6161**

**University Core (Total Listed 42-44)**

**Specific courses within the University Core are listed on pages 95-96.**  
 • Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**  
 • Math..... 3  
 Life Science ..... 4  
 Physical Science..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**  
 Aesthetic Analysis ..... 3  
 Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**  
 American National Government ..... 3  
 American History ..... 3

**Cultural and Language Analysis ..... 3-4**  
 Second Language ..... 4  
 OR  
 Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**  
 Required Health Course ..... 2  
 Elective Life Skills..... 3

**Minimum  
 Required Hours**

**Prerequisite Courses**

**Prerequisite Courses ..... 0-6**

MATH 1513 College Algebra or High School Algebra II **AND**  
 MATH 1593 Plane Trigonometry or High School Trigonometry  
**OR**

The equivalent of these courses at other institutions.

Upon completion of the above courses, corresponding general education requirements will be satisfied. (These courses are required for this major regardless of previous degrees conferred.)

**Major Requirements**

**Mathematics - Applied Mathematics ..... 48**

**Required courses ..... 27**

- MATH 2313 Calculus 1
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- MATH 2343 Calculus 4
- MATH 2753 Technology for Professional Math and Statistics
- MATH 3113 Foundations of Advanced Math
- MATH 3143 Linear Algebra
- MATH 3183 Introduction to Modern Algebra
- MATH 4143 Introduction to Analysis 1

**Applied Mathematics ..... 21**

Required courses:

- STAT 2113 Statistical Methods
  - MATH 3103 Differential Equations
  - MATH 3263 Numerical Analysis
  - MATH 4113 Introduction to Operations Research I
  - STAT 4113 Mathematical Statistics I
- Any 3000 and 4000 level MATH or STAT course to bring the total to 21.

**Electives to bring total to ..... 124**

It is strongly recommended that PHY 1114 General Physics I and Lab be taken in the general education pattern.

**Minimum Grade Requirements**

1. Average in (a) all college course work, (b) course work at UCO, and (c) major courses ..... **2.50**
2. A minimum grade of “C” must be earned in all courses in the major to count toward meeting degree requirements.

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Mathematics**  
 Major: **Mathematics - Statistics**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Mathematics and Statistics**  
 College: **Mathematics and Science**  
 Major Code: **6162**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**Cultural and Language Analysis ..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills..... 3

**Minimum  
Required Hours**

**Minimum  
Required Hours**

**Prerequisite Courses**

**Prerequisite Courses ..... 0-6**

- MATH 1513 College Algebra or High School Algebra II **AND**
- MATH 1593 Plane Trigonometry or High School Trigonometry
- OR**

The equivalent of these courses at other institutions.

Upon completion of the above courses, corresponding general education requirements will be satisfied. (These courses are required for this major regardless of previous degrees conferred.)

**Major Requirements**

**Mathematics - Statistics ..... 54**

**The following courses ..... 30**

Required ..... 27

- MATH 2313 Calculus 1
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- MATH 2343 Calculus 4
- MATH 2753 Technology for Professional Math and Statistics
- MATH 3103 Differential Equations
- MATH 3113 Foundations of Advanced Math
- MATH 3143 Linear Algebra
- MATH 3183 Introduction to Modern Algebra

Electives ..... 3

Selected from 3000 and 4000 level MATH courses.

**Statistics ..... 24**

Required Courses:

- STAT 2113 Statistical Methods
- STAT 4103 Applied Experimental Design
- STAT 4113 Mathematical Statistics I
- STAT 4123 Mathematical Statistics II
- STAT 4213 Applied Regression Analysis
- STAT 4253 Computer Applications in Statistics
- STAT 4313 Nonparametric Statistics
- STAT 4513 Statistical Consulting

**Electives to bring total to ..... 124**

**Minimum Grade Requirements**

- 1 **Average in (a) all college course work, (b) course work at UCO, and (c) major courses ..... 2.50**
- 2 **A minimum grade of "C" must be earned in all courses in the major to count toward meeting degree requirements.**

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Mathematics Education**  
 Major: **Mathematics Education**  
 Degree: **Bachelor of Science in Education (B.S.Ed.)**

Dept: **Mathematics and Statistics**  
 College: **Mathematics and Science**  
 Major Code: **6180**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

- **Written and Oral Communication..... 9**
- Quantitative Reasoning/Scientific Method ..... 10-11**
- Math..... 3
- Life Science ..... 4
- Physical Science..... 3-4
- Critical Inquiry and Aesthetic Analysis ..... 6**
- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

- American Historical and Political Analysis ..... 6**
- American National Government ..... 3
- American History ..... 3
- Cultural and Language Analysis ..... 3-4**
- Second Language ..... 4
- OR
- Cultural Analysis..... 3
- Social and Behavioral Analysis ..... 3**
- Life Skills ..... 5**
- Required Health Course ..... 2
- Elective Life Skills ..... 3

**Minimum  
Required Hours**

**Support and Prerequisite Courses**

**Support Courses.....9**

- MCOM 1113 Fundamentals of Speech
- ENG 1113 English Composition
- ENG 1213 English Composition and Research

**Prerequisite Courses.....0-6**

- MATH 1513 College Algebra or High School Algebra II **AND**
- MATH 1593 Plane Trigonometry or High School Trigonometry
- OR**

The equivalent of these courses at other institutions.

**Major Requirements**

**Mathematics Education.....41-42**

**Required courses ..... 36**

- MATH 2313 Calculus 1
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- MATH 2343 Calculus 4
- MATH 2743 Technology and Mathematics Education
- MATH 3113 Foundations of Advanced Mathematics
- MATH 3123 College Geometry
- MATH 3143 Linear Algebra
- MATH 3163 Elementary Number Theory
- MATH 3183 Introduction to Modern Algebra
- MATH 4483 History of Mathematics
- STAT 2113 Statistical Methods

**Mathematics Electives .....5-6**

Select at least two of the following:

- MATH 2023 Foundations of Geometry and Measurement
- MATH 3103 Differential Equations
- MATH 4143 Introduction to Analysis 1
- MATH 4960 Institute in Mathematics (2 hours)
- STAT 4113 Mathematical Statistics I

**Minimum  
Required Hours**

**Professional Education .....32**

- PTE 1010 Introduction to Teacher Education
- PTE 3023 Foundations of American Education/Clinical Exp
- PTE 3153 Adolescent Psychology
- SPED 4123 Teaching Individuals with Disabilities
- MATH 3323 Teaching Middle School Math
- ^MATH 4843 Teaching Secondary Mathematics
- ^PTE 4172 Educational Assessment
- ^PTE 4533 Educational Psych/Clinical Experience
- ^#PTE 4811 Contemporary Issues
- ^#PTE 4838 Internship/Student Teaching Secondary
- ^#PTE 4853 Classroom Management & Instruction

^ Admission to Teacher Education required

#To be taken the same semester

**Electives to bring total to..... 124**

It is strongly recommended that students complete a two-semester sequence in physics (PHY 1114/1214 - General Physics I/II and laboratory) or computer science (CMSC 1613/2613 - Programming I/II). Students planning to do graduate work should take MATH 4143, Introduction to Analysis 1.

**Minimum Graduation Requirements**

1. **Overall GPA in all college course work ..... 2.75**
2. **Courses in English Composition, Fundamentals of Speech, Professional Education, and area of specialization (major)..... "C"**
3. **Proficiency in foreign language ..... Novice 4 level**

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Nursing**  
 Major: **Nursing**  
 Degree: Bachelor of Science (B.S.)

Dept: Nursing  
 College: Mathematics and Science  
 Major Code: 6200

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

Math ..... 3

• Life Science ..... 4

• Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

Aesthetic Analysis ..... 3

• Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

American National Government ..... 3

American History ..... 3

**Cultural and Language Analysis ..... 3-4**

Second Language ..... 4

OR

Cultural Analysis ..... 3

• **Social and Behavioral Analysis..... 3**

**Life Skills ..... 5**

Required Health Course ..... 2

• Elective Life Skills ..... 3

**Minimum  
Required Hours**

**Minimum  
Required Hours**

**Major Requirements**

**Nursing..... 98**

The UCO nursing program is accredited by the \*\*Accreditation Commission for Education in Nursing (ACEN) and approved by the Oklahoma Board of Nursing. Graduates of this state approved program are eligible to apply to write the National Council Licensure Examination (NCLEX-RN) for registered nurses.

**Pre-Professional ..... 39**

The following courses:

- CHEM 1014 Introductory Chemistry and Lab
- BIO 1114 General Biology **OR**
- BIO 1204 Biology I for Majors
- NTRN 1513 Introduction to Nutrition
- PSY 1103 General Psychology
- SOC 2103 Sociology
- BIO 2314 Introductory Microbiology and Lab
- BIO 2504 Human Anatomy and Lab **OR**
- FNRL 2214 Elementary Human Anatomy and Dissection
- BIO 2604 Human Physiology and Lab
- ECON 2173 Principles of Business Statistics **OR**
- PSY 2753 Psychological Statistics **OR**
- SOC 4043 Sociological Statistics **OR**
- STAT 3103 Statistical Methods **OR**
- ECON 2303 Statistics for Healthcare **OR**
- STAT 2103 Introduction to Statistics for Sciences
- PHIL 1103 Logic and Critical Thinking **OR**
- PHIL 1113 Introduction to Philosophy **OR**
- PHIL 1123 Contemporary Moral Problems **OR**
- PHIL 2073 Social & Political Philosophy
- NURS 1221 Introduction to Nursing
- NURS 2113 Individual and Family Development Through the Lifespan

**Professional..... 59**

The following courses:

- NURS 2207 Foundations of Nursing
- NURS 3202 Introduction to Pharmacology
- NURS 3307 Adult Medical-Surgical Nursing I
- NURS 3314 Maternal-Newborn Nursing

- NURS 3324 Pediatric/Child Health Nursing
- NURS 3333 Psychiatric/Mental Health Nursing
- NURS 3344 Adult Med/Surg Nursing II
- NURS 3512 Service Learning and Health Promotion
- NURS 4134 Community Health Nursing
- NURS 4146 High Acuity Nursing
- NURS 4153 Research/Evidence-Based Practice
- NURS 4324 Care of Vulnerable Individuals
- NURS 4722 Pharmacology II
- NURS 4746 Professional Nursing Leadership & Management
- NURS 4821 Preparing for Entry into Practice

**The number of credits needed to meet degree requirements may exceed 124 hours and will vary according to course selection.**

- CONTINUED ON NEXT PAGE -



Program: **Nursing** - continued  
 Major: **Nursing**  
 Degree: Bachelor of Science (B.S.)

Dept: Nursing  
 College: Mathematics and Science  
 Major Code: 6200

- CONTINUED FROM PREVIOUS PAGE -

### Admission to Nursing Program

Students planning to become candidates for the Bachelor of Science with a major in Nursing are required to make formal application to the Chairperson of the Department of Nursing for admission into the Professional Nursing program. Applications must be submitted to the Department of Nursing on or before the **last Friday of January for fall admission, and the second Friday of September for spring admission** into the program.

**Admission is competitive as applications exceed the number of positions available. Formal approval by the selection committee is required for admission.** Preference is given to University of Central Oklahoma students. The student will be notified eight to ten weeks after the filing date as to the disposition of the application.

The following must be submitted to the Department of Nursing as part of the admission process and are used by the faculty in selection of candidates:

- A. Transcript(s) reflecting a minimum retentive grade point average of 2.50 in all course work completed at the time of the application.
- B. A minimum grade of "C" in chemistry, all biological sciences, NURS 1221 and NURS 2113 is required. Two of the five required science courses must be successfully completed prior to the application deadline. Students may enroll a maximum of two times in any nursing course.
- C. Score on the Test of Essential Academic Skills (TEAS).
- D. Submit a criminal background check (OSBI).
- E. Meet "Performance Standards for Admission and Progression in the Department of Nursing" (available in application packet).
- F. International students (i.e. students for whom English is a second language regardless of resident status) must have a minimum TOEFL score of 530 on the written examination or equivalent on computer or internet version.

### Career Ladder Students

#### RN to BS

Registered nurses who have graduated from an NLNAC accredited associate degree program may be eligible for matriculation into the program on an advanced standing basis. For information regarding criteria and application, go to <http://www.uco.edu/cms/nursing/index.asp>, or contact the Department of Nursing.

#### LPN to BS

Licensed practical nurses who have graduated from an Oklahoma Career Technology program or an NLNAC accredited practical nursing program may be eligible for matriculation into the program on an advanced standing basis. For information regarding criteria and application, go to <http://www.uco.edu/cms/nursing/index.asp>, or contact the Department of Nursing.

### Transfer Students

Students transferring to the University of Central Oklahoma from other institutions are expected to fulfill all requirements specified for regularly

enrolled students. The three lower division nursing courses (NURS 1221 - Introduction to Nursing, NURS 2207 - Foundations of Nursing, and NURS 2113 - Individual and Family Development Through the Lifespan) must be completed at UCO before entering the junior year of nursing. Call the Department of Nursing for detailed information.

### Progression in the Program

- A. To continue in the Nursing Program, candidates must show evidence of satisfactory progress toward graduation and comply with all requirements as indicated in the UCO Undergraduate Catalog, UCO Student Handbook, and the Department of Nursing Student Handbook.
- B. Nursing courses (after admission to the program) will begin with NURS 2207. NURS 1221 and NURS 2113 may be taken prior to, or concurrently with NURS 2207. All university core and pre-professional courses must be successfully completed prior to beginning Upper Division (3000 level) nursing courses.

**A minimum grade of "C" must be obtained in all professional courses.**

### Other Requirements

- A. Transportation to the clinical area and to other special assignments is the responsibility of each student;
- B. Professional liability insurance is required of all students for the duration of the program. Information is available from the Department of Nursing;
- C. Additional expenses for the nursing major include such items as uniforms, equipment, and fees for achievement tests;
- D. Documentation of immunizations: see UCO Department of Nursing Student Handbook for required immunizations;
- E. Current CPR Certification as an American Heart Association Health Care Provider.
- F. A criminal background check (Federal).
- G. Drug screening.

\*\*Accreditation Commission for Education in Nursing  
 3343 Peachtree Road NE  
 Suite 850  
 Atlanta, GA 30326  
 Phone: 404-975-5000  
 Fax: 404-975-5020  
 Website: [www.acnursing.org](http://www.acnursing.org)



Program: **Science Education**  
 Major: **Science Education - Biology**  
 Degree: **Bachelor of Science in Education (B.S.Ed.)**

Dept: **Biology**  
 College: **Mathematics and Science**  
 Major Code: **6040**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

• **Written and Oral Communication..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

• Math..... 3

• Life Science ..... 4

• Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

Aesthetic Analysis ..... 3

Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

American National Government ..... 3

American History ..... 3

**Cultural and Language Analysis ..... 3-4**

Second Language ..... 4

OR

Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

Required Health Course..... 2

• Elective Life Skills ..... 3

**Minimum  
Required Hours**

**Minimum  
Required Hours**

**Support Courses**

**Support Courses.....9-15**

- MCOM 1113 Fundamentals of Speech
- ENG 1113 English Composition
- ENG 1213 English Composition and Research

Students majoring in the Biology Education program are encouraged to complete the following courses in high school.

Two years of high school Algebra and one year of Trigonometry **OR**

- MATH 1513 College Algebra **OR**
- MATH 1593 Plane Trigonometry

**Major Requirements**

**Science Education - Biology ..... 65**

**Biology..... 26**

Required courses:

- BIO 1204 Biology I for Majors
- BIO 1225 Biology II for Majors and Lab
- BIO 2203 Cell Biology
- BIO 2211 Cell Biology Laboratory
- BIO 3054 Microbiology for Majors and Lab
- BIO 3303 Genetics
- BIO 3543 General Ecology
- BIO 3703 Evolution

**Chemistry..... 10**

Required courses:

- CHEM 1103 General Chemistry I **AND**
- CHEM 1112 General Chemistry I Recitation/Lab
- CHEM 1223 General Chemistry II **AND**
- CHEM 1232 General Chemistry II Recitation/Lab

**Physics..... 8**

Required courses:

- PHY 1114 General Physics I and Lab **OR**
- PHY 2014 Physics for Scientists and Engineers I and Lab
- PHY 1214 General Physics II and Lab **OR**
- PHY 2114 Physics for Scientists and Engineers II and Lab

**Mathematics ..... 6**

Required courses:

- MATH 2153 BioCalculus
- STAT 2103 Introduction to Statistics for Sciences

**Elective 3000/4000 Biology ..... 15**

Any 3000/4000 level BIO course

No more than two (2) hours of the following courses will count toward the minimum required hours for the Biology major.

- BIO 3000 Workshop in Biology
- BIO 3990 Advanced Topics in Biology
- BIO 4900 Practicum in Biology
- BIO 4930 Individual Study in Biology
- BIO 4950 Internship in Biology
- BIO 4960 Institute in Biology
- BIO 4970 Study Tour in Biology

**Professional Education ..... 31**

- PTE 1010 Introduction to Teacher Education
- PTE 3023 Foundations of American Education/Clinical Exp
- PTE 3153 Adolescent Psychology
- SPED 4123 Teaching Individuals with Disabilities
- ^BIO 4812 Teaching and Learning in Science Classrooms
- ^BIO 4853 General Methods of Teaching Science and Lab
- ^PTE 4172 Educational Assessment
- ^PTE 4533 Educational Psych/Clinical Experience
- ^#PTE 4811 Contemporary Issues
- ^#PTE 4838 Internship/Student Teaching Secondary
- ^#PTE 4853 Classroom Management & Instruction

^ Admission to Teacher Education required

#To be taken the same semester

**The number of credits needed to meet degree requirements exceeds 124 hours and will vary according to course selection.**

Graduating seniors must take a national assessment exam in Biology as a degree requirement for the B.S.Ed. in Science Education - Biology.

---

Program: **Science Education** - continued  
Major: **Science Education - Biology**  
Degree: Bachelor of Science in Education (B.S.Ed.)

Dept: Biology  
College: Mathematics and Science  
Major Code: 6040

---

- CONTINUED FROM PREVIOUS PAGE -

### **Minimum Graduation Requirements**

1. Overall GPA in all college course work ..... 2.75
2. Courses in English Composition, Fundamentals of Speech, Professional Education, and area of specialization (major)..... "C"
3. Proficiency in foreign language ..... Novice 4 level

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Science Education**  
 Major: **Science Education - Chemistry**  
 Degree: **Bachelor of Science in Education (B.S.Ed.)**

Dept: **Chemistry**  
 College: **Mathematics and Science**  
 Major Code: **6041**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

• **Written and Oral Communication..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

• Math..... 3

• Life Science ..... 4

• Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

Aesthetic Analysis ..... 3

Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

American National Government ..... 3

American History ..... 3

**Cultural and Language Analysis ..... 3-4**

Second Language ..... 4

OR

Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

Required Health Course ..... 2

• Elective Life Skills ..... 3

**Minimum  
Required Hours**

**Minimum  
Required Hours**

**Support Courses**

**Support Courses.....9-15**

- MCOM 1113 Fundamentals of Speech
- ENG 1113 English Composition
- ENG 1213 English Composition and Research

Students majoring in the Chemistry Education program are encouraged to complete the following courses in high school.

Two years of high school Algebra and one year of Trigonometry **OR**

MATH 1513 College Algebra **OR**

MATH 1593 Plane Trigonometry

**Major Requirements**

**Science Education - Chemistry ..... 65**

**Science Education Core ..... 37**

Biology ..... 9

Required courses:

- BIO 1204 Biology I for Majors
- BIO 1225 Biology II for Majors and Lab

Chemistry ..... 10

Required courses:

- CHEM 1103 General Chemistry I **AND**
- CHEM 1112 General Chemistry I Recitation/Lab
- CHEM 1223 General Chemistry II **AND**
- CHEM 1232 General Chemistry II Recitation/Lab

Physics ..... 8

Required courses:

- PHY 1114 General Physics I and Lab **OR**
- PHY 2014 Physics for Scientists and Engineers I and Lab
- PHY 1214 General Physics II and Lab **OR**
- PHY 2114 Physics for Scientists and Engineers II and Lab

Earth Science ..... 4

PHY 3014 Earth Science

History and Nature of Science ..... 3

BIO 4103 History and Nature of Science

Mathematics ..... 3

STAT 2103 Introduction to Statistics for Sciences

**Science Education - Chemistry ..... 28**

Required Courses ..... 18

- CHEM 2104 Quantitative Analysis and Lab
- CHEM 3303 Organic Chemistry I
- CHEM 3312 Organic Chemistry I Lab
- CHEM 3323 Organic Chemistry II
- CHEM 3203 Introduction to Physical Chemistry
- CHEM 3403 Biochemistry I

Elective Courses..... 10

Any 3/4000 level Biology, Chemistry, Physics or Math courses

**Professional Education ..... 31**

- PTE 1010 Introduction to Teacher Education
- PTE 3023 Foundations of American Education/Clinical Exp
- PTE 3153 Adolescent Psychology
- SPED 4123 Teaching Individuals with Disabilities
- ^BIO 4812 Teaching and Learning in Science Classrooms
- ^BIO 4853 General Methods of Teaching Science & Lab
- ^PTE 4172 Educational Assessment
- ^PTE 4533 Educational Psych/Clinical Experience
- ^#PTE 4811 Contemporary Issues
- ^#PTE 4838 Internship/Student Teaching Secondary
- ^#PTE 4853 Classroom Management & Instruction

^ Admission to Teacher Education required

#To be taken the same semester

**The number of credits needed to meet degree requirements exceeds 124 hours and will vary according to course selection.**

**Minimum Graduation Requirements**

1. Overall GPA in all college course work ..... 2.75
2. Courses in English Composition, Fundamentals of Speech, Professional Education, and area of specialization (major)..... "C"
3. Proficiency in foreign language ..... Novice 4 level

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Science Education**  
 Major: **Science Education - General Science**  
 Degree: **Bachelor of Science in Education (B.S.Ed.)**

Dept: **Biology**  
 College: **Mathematics and Science**  
 Major Code: **6042**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

- Courses from the major may apply to the areas marked in the University Core.
- **Written and Oral Communication..... 9**
- Quantitative Reasoning/Scientific Method ..... 10-11**
  - Math..... 3
  - Life Science ..... 4
  - Physical Science ..... 3-4
- Critical Inquiry and Aesthetic Analysis ..... 6**
  - Aesthetic Analysis ..... 3
  - Critical Inquiry ..... 3

- American Historical and Political Analysis ..... 6**
  - American National Government ..... 3
  - American History ..... 3
- Cultural and Language Analysis ..... 3-4**
  - Second Language ..... 4
  - OR
  - Cultural Analysis..... 3
- Social and Behavioral Analysis ..... 3**
- Life Skills ..... 5**
  - Required Health Course ..... 2
  - Elective Life Skills ..... 3

**Minimum  
Required Hours**

**Support Courses**

**Support Courses.....9-15**

- MCOM 1113 Fundamentals of Speech
- ENG 1113 English Composition
- ENG 1213 English Composition and Research

Students majoring in the General Science Education program are encouraged to complete the following courses in high school.

- Two years of high school Algebra and one year of Trigonometry **OR**
- MATH 1513 College Algebra **OR**
  - MATH 1593 Plane Trigonometry

**Major Requirements**

**Science Education - General Science.....63-64**

**Science Education Core ..... 34**

- Biology ..... 9
  - Required courses:
  - BIO 1204 Biology I for Majors
  - BIO 1225 Biology II for Majors and Lab
- Chemistry ..... 10
  - Required courses:
  - CHEM 1103 General Chemistry I **AND**
  - CHEM 1112 General Chemistry I Recitation/Lab
  - CHEM 1223 General Chemistry II **AND**
  - CHEM 1232 General Chemistry II Recitation/Lab
- Physics ..... 8
  - Required courses:
  - PHY 1114 General Physics I and Lab **OR**
  - PHY 2014 Physics for Scientists and Engineers I and Lab
  - PHY 1214 General Physics II and Lab **OR**
  - PHY 2114 Physics for Scientists and Engineers II and Lab
- Mathematics ..... 3
  - Required course:
  - STAT 2103 Introduction to Statistics for Sciences
- Earth Science ..... 4
  - Required course:
  - PHY 3014 Earth Science

**Minimum  
Required Hours**

**Science Education - General Science..... 29-30**

- Required courses:
- BIO 2203 Cell Biology
  - BIO 2211 Cell Biology Laboratory
  - BIO 3054 Microbiology for Majors and Lab
  - BIO 3303 Genetics
  - BIO 3543 General Ecology
  - BIO 3703 Evolution
  - CHEM 2104 Quantitative Analysis and Lab
  - CHEM 3303 Organic Chemistry I
  - CHEM 3312 Organic Chemistry I Lab
- Choose from one of the following:
- PHY 1304 Descriptive Astronomy
  - PHY 3103 Modern Physics

**Professional Education .....31**

- PTE 1010 Introduction to Teacher Education
- PTE 3023 Foundations of American Education/Clinical Exp
- PTE 3153 Adolescent Psychology
- SPED 4123 Teaching Individuals with Disabilities
- ^BIO 4812 Teaching and Learning in Science Classrooms
- ^BIO 4853 General Methods of Teaching Science and Lab
- ^PTE 4172 Educational Assessment
- ^PTE 4533 Educational Psych/Clinical Experience
- ^#PTE 4811 Contemporary Issues
- ^#PTE 4838 Internship/Student Teaching Secondary
- ^#PTE 4853 Classroom Management & Instruction

^ Admission to Teacher Education required  
 #To be taken the same semester

- CONTINUED ON NEXT PAGE -

---

Program: **Science Education** - continued  
Major: **Science Education - General Science**  
Degree: Bachelor of Science in Education (B.S.Ed.)

Dept: Biology  
College: Mathematics and Science  
Major Code: 6042

---

- CONTINUED FROM PREVIOUS PAGE -

**The number of credits needed to meet degree requirements exceeds 124 hours and will vary according to course selection.**

### **Minimum Graduation Requirements**

1. Overall GPA in all college course work ..... 2.75
2. Courses in English Composition, Fundamentals of Speech, Professional Education, and area of specialization (major)..... "C"
3. Proficiency in foreign language ..... Novice 4 level

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Science Education**  
 Major: **Science Education - Physical Science**  
 Degree: **Bachelor of Science in Education (B.S.Ed.)**

Dept: **Engineering and Physics**  
 College: **Mathematics and Science**  
 Major Code: **6043**

### University Core (Total Listed 42-44)

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

• **Written and Oral Communication**..... 9

**Quantitative Reasoning/Scientific Method** ..... 10-11

• Math..... 3

• Life Science ..... 4

• Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis** ..... 6

Aesthetic Analysis ..... 3

Critical Inquiry ..... 3

**American Historical and Political Analysis** ..... 6

American National Government ..... 3

American History ..... 3

**Cultural and Language Analysis** ..... 3-4

Second Language ..... 4

OR

Cultural Analysis..... 3

**Social and Behavioral Analysis** ..... 3

**Life Skills** ..... 5

Required Health Course ..... 2

• Elective Life Skills ..... 3

Minimum  
Required Hours

Minimum  
Required Hours

### Support Courses

**Support Courses**.....9-15

MCOM 1113 Fundamentals of Speech

ENG 1113 English Composition

ENG 1213 English Composition and Research

Students majoring in the Physical Science Education program are encouraged to complete the following courses in high school.

Two years of high school Algebra and one year of Trigonometry **OR**

MATH 1513 College Algebra **OR**

MATH 1593 Plane Trigonometry

### Major Requirements

**Science Education - Physical Science** ..... 65

**Science Education Core** ..... 37

Biology ..... 9

Required courses:

BIO 1204 Biology I for Majors

BIO 1225 Biology II for Majors and Lab

Chemistry ..... 10

Required courses:

CHEM 1103 General Chemistry I **AND**

CHEM 1112 General Chemistry I Recitation/Lab

CHEM 1223 General Chemistry II **AND**

CHEM 1232 General Chemistry II Recitation/Lab

Physics ..... 8

Required courses:

PHY 1114 General Physics I and Lab **OR**

PHY 2014 Physics for Scientists and Engineers I and Lab

PHY 1214 General Physics II and Lab **OR**

PHY 2114 Physics for Scientists and Engineers II and Lab

Earth Science ..... 4

Required course:

PHY 3014 Earth Science

Mathematics ..... 3

Required course:

STAT 2103 Introduction to Statistics for Sciences

History and Nature of Science ..... 3

Required course:

BIO 4103 History and Nature of Science

**Science Education - Physical Science** ..... 28

Required courses ..... 21

CHEM 2104 Quantitative Analysis and Lab

CHEM 3303 Organic Chemistry I

CHEM 3312 Organic Chemistry I Lab

PHY 1003 Introduction to Physics

PHY 1304 Descriptive Astronomy

PHY 3503 Elementary Meteorology

ENGR 1112 Introduction to Engineering and Lab

Elective Science ..... 7

Select from the following:

CHEM 3323 Organic Chemistry II

CHEM 3203 Introductory Physical Chemistry

ENGR 2303 Electrical Science

ENGR 2311 Electrical Science Lab

ENGR 3263 Introduction to Engineering Optics

ENGR 3404 Analog Electronics and Lab

PHY 3044 Medical Physics and Lab

PHY 3103 Modern Physics

PHY 4910 Seminar in Physics (1 - 3 hours)

**Professional Education** ..... 31

PTE 1010 Introduction to Teacher Education

PTE 3023 Foundations of American Education/Clinical Exp

PTE 3153 Adolescent Psychology

SPED 4123 Teaching Individuals with Disabilities

^BIO 4812 Teaching and Learning in Science Classrooms

^BIO 4853 General Methods of Teaching Science and Lab

^PTE 4172 Educational Assessment

^PTE 4533 Educational Psych/Clinical Experience

^#PTE 4811 Contemporary Issues

^#PTE 4838 Internship/Student Teaching Secondary

^#PTE 4853 Classroom Management & Instruction

- CONTINUED ON NEXT PAGE -

Program: **Science Education** - continued  
Major: **Science Education - Physical Science**  
Degree: Bachelor of Science in Education (B.S.Ed.)

Dept: Engineering and Physics  
College: Mathematics and Science  
Major Code: 6043

---

- CONTINUED FROM PREVIOUS PAGE -

^ Admission to Teacher Education required

#To be taken the same semester

**The number of credits needed to meet degree requirements exceeds 124 hours and will vary according to course selection.**

### **Minimum Graduation Requirements**

1. Overall GPA in all college course work ..... 2.75
2. Courses in English Composition, Fundamentals of Speech, Professional Education, and area of specialization (major)..... "C"
3. Proficiency in foreign language ..... Novice 4 level

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**



Program: **Science Education**  
 Major: **Science Education - Physics**  
 Degree: **Bachelor of Science in Education (B.S.Ed.)**

Dept: **Engineering and Physics**  
 College: **Mathematics and Science**  
 Major Code: **6044**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

• **Written and Oral Communication..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**Cultural and Language Analysis ..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills ..... 3

**Minimum  
Required Hours**

**Support Courses**

**Support Courses.....9-15**

- MCOM 1113 Fundamentals of Speech
- ENG 1113 English Composition
- ENG 1213 English Composition and Research

Students majoring in the Physics Education program are encouraged to complete the following courses in high school.

Two years of high school Algebra and one year of Trigonometry **OR**

- MATH 1513 College Algebra **OR**
- MATH 1593 Plane Trigonometry

**Major Requirements**

**Science Education - Physics .....60-61**

**Science Education Core ..... 34**

Biology ..... 9

Required courses:

- BIO 1204 Biology I for Majors
- BIO 1225 Biology II for Majors

Chemistry ..... 10

Required courses:

- CHEM 1103 General Chemistry I **AND**
- CHEM 1112 General Chemistry I Recitation/Lab
- CHEM 1223 General Chemistry II **AND**
- CHEM 1232 General Chemistry II Recitation/Lab

Physics ..... 8

Required courses:

- PHY 2014 Physics for Scientists and Engineers I and Lab
- PHY 2114 Physics for Scientists and Engineers II and Lab

Earth Science ..... 4

Required course:

- PHY 3014 Earth Science

History and Nature of Science ..... 3

Required course:

- BIO 4103 History and Nature of Science

**Minimum  
Required Hours**

**Science Education - Physics .....26-27**

Math Courses ..... 14-15

- MATH 2305 Accelerated Calculus 1 and 2 **OR**
- MATH 2313 Calculus 1 **AND**
- MATH 2323 Calculus 2
- MATH 2333 Calculus 3
- MATH 2343 Calculus 4
- MATH 3103 Differential Equations

Physics and Engineering Courses ..... 12

- ENGR 2033 Statics
- ENGR 2043 Dynamics
- ENGR 3302 Engineering Statistics and Experimentation
- PHY 4801 Physics Capstone
- PHY 3103 Modern Physics

**Professional Education .....31**

- PTE 1010 Introduction to Teacher Education
- PTE 3023 Foundations of American Education/Clinical Exp
- PTE 3153 Adolescent Psychology
- SPED 4123 Teaching Individuals with Disabilities
- ^BIO 4812 Teaching and Learning in Science Classrooms
- ^BIO 4853 General Methods of Teaching Science and Lab
- ^PTE 4172 Educational Assessment
- ^PTE 4533 Educational Psych/Clinical Experience
- ^#PTE 4811 Contemporary Issues
- ^#PTE 4838 Internship/Student Teaching Secondary
- ^#PTE 4853 Classroom Management & Instruction

^ Admission to Teacher Education required

#To be taken the same semester

**The number of credits needed to meet degree requirements exceeds 124 hours and will vary according to course selection.**

Program: **Science Education**  
Major: **Science Education - Physics**  
Degree: **Bachelor of Science in Education (B.S.Ed.)**

Dept: **Engineering and Physics**  
College: **Mathematics and Science**  
Major Code: **6044**

---

- CONTINUED FROM PREVIOUS PAGE -

**Minimum Graduation Requirements**

1. **Overall GPA in all college course work ..... 2.75**
2. **Courses in English Composition, Fundamentals of Speech, Professional Education, and area of specialization (major)..... “C”**
3. **Proficiency in foreign language ..... Novice 4 level**

**For other regulations pertaining to graduation, see pages 68-69 of the 2015-2016 catalog.**

Program: **Software Engineering**  
 Major: **Software Engineering**  
 Degree: **Bachelor of Science (B.S.)**

Dept: **Computer Science**  
 College: **Mathematics and Science**  
 Major Code: **6110**

**University Core (Total Listed 42-44)**

Specific courses within the University Core are listed on pages 95-96.

• Courses from the major may apply to the areas marked in the University Core.

**Written and Oral Communication ..... 9**

**Quantitative Reasoning/Scientific Method ..... 10-11**

- Math..... 3
- Life Science ..... 4
- Physical Science ..... 3-4

**Critical Inquiry and Aesthetic Analysis ..... 6**

- Aesthetic Analysis ..... 3
- Critical Inquiry ..... 3

**American Historical and Political Analysis ..... 6**

- American National Government ..... 3
- American History ..... 3

**Cultural and Language Analysis ..... 3-4**

- Second Language ..... 4
- OR
- Cultural Analysis..... 3

**Social and Behavioral Analysis ..... 3**

**Life Skills ..... 5**

- Required Health Course ..... 2
- Elective Life Skills..... 3

**Minimum  
Required Hours**

**Support Courses ..... 0-12**

Students majoring in Software Engineering are encouraged to complete the following courses in high school.

- High School Physics **OR**
- PHY 1003 Introduction to Physics
- Advanced Placement High School Programming Course **OR**
- CMSC 1513 Beginning Programming
- One year of High School Algebra II and Trigonometry **OR**
- MATH 1513 College Algebra **AND**
- MATH 1593 Plane Trigonometry

Upon completion of the above courses, corresponding university core requirements will be satisfied. (These courses are required for this major regardless of previous degrees conferred.)

**Major Requirements**

**Software Engineering ..... 76-79**

**Required ..... 52**

- ^CMSC 1613 Programming I
- ^CMSC 2123 Discrete Structures
- ^CMSC 2613 Programming II
- ^CMSC 2833 Computer Organization I
- ^CMSC 3103 Object Oriented Software Design and Construction
- ^CMSC 3613 Data Structures and Algorithms
- ^CMSC 4003 Applications of Database Management Systems
- ^CMSC 4153 Operating Systems
- ^CMSC 4283 Software Engineering I
- ^CMSC 4401 Ethics in Computing
- ^SE 4423 Software Engineering II
- ^SE 4433 Software Architecture and Design
- ^SE 4513 Software Engineering Senior Project \*
- ^MATH 2313 Calculus I
- ^MATH 2323 Calculus II
- ^MATH 2333 Calculus III
- ^MATH 3143 Linear Algebra
- ^STAT 2113 Statistical Methods I OR
- ^STAT 2103 Introduction to Statistics for Sciences **OR**
- ^STAT 4113 Mathematical Statistics I

**Minimum  
Required Hours**

**Elective Science/Math courses ..... 9-12**

\* SE 4513 is recommended to be taken in the last semester prior to graduation.

Select a minimum of nine (9) hours including at least one of the CHEM or PHY lab courses:

- CHEM 1103 General Chemistry I
  - CHEM 1112 General Chemistry I Recitation/Laboratory
  - CHEM 1223 General Chemistry II
  - CHEM 1232 General chemistry II Recitation/Laboratory
  - PHY 1114 General Physics I and Laboratory
  - PHY 1214 General Physics II and Laboratory
  - PHY 2014 Phys for Scientists & Engineers I and Lab
  - PHY 2114 Phys for Scientists & Engineers II and Lab
- Any 2/3/4000 level Math courses

**Elective Courses ..... 9**

Choose nine (9) hours from one of the two application areas:

- Application Development
- CMSC 3413 Advanced Visual Programming
- CMSC 4133 Concepts of Artificial Intelligence
- CMSC 4303 Mobile Apps Programming
- CMSC 4373 Web Server Programming
- System Development
- CMSC 4023 Programming Languages
- CMSC 4063 Networks
- CMSC 4173 Translator Design
- CMSC 4193 Introduction to Robotics
- CMSC 4323 Computer and Network Security

- CONTINUED ON NEXT PAGE -

Program: **Software Engineering**  
Major: **Software Engineering**  
Degree: **Bachelor of Science (B.S.)**

Dept: **Computer Science**  
College: **Mathematics and Science**  
Major Code: **6110**

---

**Minimum  
Required Hours**

- CONTINUED FROM PREVIOUS PAGE -

**Elective CMSC or SE Courses..... 6**

Any 3/4000 level CMSC or SE courses except CMSC 4513  
Any programming labs (CMSC 1621, 2621, and 3621)

No more than three (3) hours of Internship and Individual Study combined may be used to satisfy the CMSC or SE elective requirement.

Credit cannot be received for both CMSC 3303 and 4283.

**Electives to bring total to..... 124**

**Minimum Grade Requirements**

Average in (a) all college course work, (b) course work at UCO,  
and (c) major courses..... **2.00**

**For other regulations pertaining to graduation, see  
pages 68-69 of the 2015-2016 catalog.**