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)

For a full list of courses see University Core.
• 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 0-9

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

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

*MATH 1533 Precalculus-Algebra **OR**
MATH 1513 College Algebra **OR** Placement Score **AND**
*MATH 1593 Plane Trigonometry **OR** Placement Score

*A grade of 'C' or better is required for either MATH 1513 or MATH 1533 and MATH 1593 to take MATH 2313.

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 78-81

Required 55

^CMSC 1613 Programming I
^CMSC 1621 Programming I Laboratory
^CMSC 2123 Discrete Structures
^CMSC 2613 Programming II
^CMSC 2621 Programming II Laboratory
^CMSC 2833 Computer Organization and Architecture I
^SE 3103 Object Oriented Software Design and Construction
^CMSC 3613 Data Structures and Algorithms
^CMSC 3621 Data Structures/Algorithms Lab
^CMSC 4003 Applications of Database Management Systems
^CMSC 4083 Cybersecurity
^SE 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 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 1

^ A grade of 'C' or better must be earned in all required CMSC, SE, MATH and STAT courses.

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

Elective Science/Math courses 8-11
Select a minimum of eight (8) 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 Physics for Science & Engineering I and Lab
PHY 2114 Physics for Science & Engineering II and Lab

Any non-required 2/3/4000 level MATH or STAT courses with the following exceptions: MATH 2013, 2053, 2113, 2123, 2133, 2153, 2743, 3323, or 4843.

Elective Courses 9
Choose nine (9) hours from one of the three application areas:

Application Development
CMSC 3413 Enterprise Programming
CMSC 4133 Concepts of Artificial Intelligence
CMSC 4143 Algorithms for Machine Learning
CMSC 4303 Mobile Apps Programming
CMSC 4313 Internet of Things
CMSC 4373 Cloud Web Apps Development

Cybersecurity **
CMSC 4163 Secure Systems Administration and Certification
CMSC 4323 Network Security
CMSC 4333 Incident Analysis and Response I

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Minimum Required Hours

- CONTINUED ON NEXT PAGE -
- CONTINUED FROM PREVIOUS PAGE -

CMSC 4343 Cyber Operations
CMSC 4353 Incident Analysis and Response II

** Students who choose the Cybersecurity application area are recommended to take CMSC 4063 Computer Networks and/or CMSC 4153 Operating Systems as prerequisites. CMSC 4063 and 4153 can be counted in the “Elective CMSC or SE courses” section.

System Development
CMSC 4023 Programming Languages
CMSC 4063 Computer Networks
CMSC 4153 Operating Systems
CMSC 4173 Translator Design
CMSC 4193 Introduction to Robotics
CMSC 4223 Cyber Infrastructure and Cloud Computing

Elective CMSC or SE Courses..... 6
Any 2/3/4000 level CMSC or SE courses except CMSC 4513

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 SE 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

Accelerated BS/PSM

UCO’s P.S.M. (Professional Science Master’s) in Computational Science has partnered with the B.S. in Software Engineering so that approved students may take up to nine credit hours of 5000-level CMSC courses during their senior year of the B.S. program. These courses will count toward both the B.S. and P.S.M. degrees. A formal application to the P.S.M. Computational Science program and an approval from the Department of Computer Science are required. Requirements for the P.S.M. program are located in the UCO Graduate Catalog under Computational Science - Computer Science, P.S.M.

Up to nine credit hours of the following courses can be used to satisfy both the B.S. Software Engineering and the P.S.M. Computational Science - Computer Science:

CMSC 5043 Applications Database Systems
CMSC 5283 Software Engineering I
CMSC 5323 Computer and Network Security