

## COMPUTER INFORMATION SYSTEMS, BACHELOR OF SCIENCE

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### BACHELOR DEGREE REQUIREMENTS:

- Minimum 121 Credit Hours
  - Writing Intensive Course
  - Minimum Cumulative G.P.A.: 2.00
  - 30 Credit Hours of Residency Courses
  - 9 Credits of Upper-Level Major Residency Courses
  - Minimum G.P.A. in the Major: 2.00
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### PROGRAM MAJOR REQUIREMENTS (78 CREDIT HOURS):

- BUA 223 Principles of Management (3)
  - BUA 365 Organizational Behavior (3)
  - CIS 101 Introduction to Computer Science (3)
  - CIS 110 Programming Fundamentals (3)
  - CIS 131 Web Applications and Development (3):
  - CIS 135 Introduction to Information Systems & Applications Development (3)
  - Complete any 200-level programming course (3):
    - CIS 212 Introduction to Visual Basic Programming*
    - CIS 214 Introduction to Java Programming*
    - CIS 215 Introduction to C++ Programming*
    - CIS 216 Programming in C# and .NET*
  - CIS 221 Operating Systems: Linux (3)
  - CIS 240 Networking Concepts (3)
  - CIS 255 Database Design (3)
  - CIS 330 Systems Analysis (3)
  - CIS 380 or 480 Internship (3)
  - CIS 460 Computers & Culture (3)
  - CIS 470 Project Management (3)
  - ISS 210 Introduction to Information Security (3)
  - Complete any one 200-level or higher CIS or ISS courses (3)
  - Complete any three 300-level or higher CIS or ISS courses (9)
- Complete one of the following pathways/concentrations:

#### **No Concentration:**

- Complete any three 200-level or higher CIS or ISS courses (9)
- Complete any advanced programming course (3):
  - CIS 312 Advanced Visual Basic*
  - CIS 314 Advanced Java Programming*
  - CIS 354 Algorithms and Data Structures*
- CIS 333 PHP (3)
- CIS 345 Virtual Systems (3)
- CIS 350 Database Management (3)

#### **Data Science Concentration:**

- CIS 350 Database Management (3)
- CIS 351 Database Management Systems: Oracle (3)
- CIS 352 Data Visualization (3)
- CIS 360 Geographical Information Systems (3)
- CIS 450 Data Mining (3)
- CIS 452 Advanced Oracle Programming and Application Development (3)
- MAT 315 Applied Statistics (3)

**Information Systems Security Concentration:**

- ISS 220 Security Risk Management (3)
- ISS 230 Systems Forensics I (3)
- ISS 310 Information Security Architecture (3)
- ISS 320 Security Analytics (3)
- ISS 410 Cyber Security I (3)
- ISS 412 Cyber Security II (3)
- ISS 470 Information Security Management (3)

**Networking Concentration:**

- CIS 241 Routing and Switching (3)
- CIS 245 Wireless Networks (3)
- CIS 340 Scaling Networks (3)
- CIS 341 TCP/IP (3)
- CIS 345 Virtual Systems (3)
- CIS 348 Connecting Networks (3)
- CIS 440 Introduction to Network Security (3)

**Software Development Concentration:**

- Complete three of the following introductory programming courses (9):
  - CIS 212 Intro to Visual Basic Programming*
  - CIS 214 Introduction to Java Programming*
  - CIS 215 Introduction to C++ Programming*
  - CIS 216 Programming in C# and .NET*
- CIS 314 Advanced Java Programming (3)
- CIS 316 Software Quality Assurance (3)
- CIS 354 Algorithms and Data Structures (3)
- CIS 410 Software Engineering (3)

**Web Development Concentration:**

- CIS 231 JavaScript (3)
- CIS 251 Web Authoring Tools (3)
- CIS 333 PHP (3)
- CIS 334 PHP and MySQL (3)
- One of the following (3):
  - CIS 338 Content Management*
  - CIS 339 Front End Frameworks*
- CIS 438 Electronic Commerce (3)
- ISS 452 Securing Web Applications & Social Networking (3)

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**OTHER PROGRAM REQUIREMENTS (40 CREDIT HOURS):**

- Complete any 100-level Communications course (3)
- ENG 101 College Writing (3)
- ENG 317W Professional Writing (3)
- Complete one of the following Fine Arts electives (3):
  - ART 1xx any 100-level Art course*
  - DRA xxx any Drama course*
  - ENG 351 Creative Writing I*
  - ENG 452 Creative Writing II*
  - MUH 1xx any 100-level Music History course*
  - MUS 1xx any 100-level Music course*

Complete two of the following Humanities electives (6):

*AME xxx any American Studies course*  
*ARH 105 History of Art & Architecture I*  
*ARH 106 History of Art & Architecture II*  
*DRA xxx any Drama course*  
*ENG xxx any English course (except ENG 101 or 317w)*  
*FRE xxx any French course*  
*HGH xxx any Holocaust, Human Rights & Genocide course*  
*HTY xxx any History course*  
*HUM xxx any Humanities course*  
*MUH xxx any Music History course*  
*PHI xxx any Philosophy course (except PHI 135 or 335)*  
*SPA xxx any Spanish course*  
*WGS xxx any Women and Gender Studies course*

 MAT 112 College Algebra (3) MAT 115 Elementary Statistics I (3) MAT 261 Applied Linear Algebra (3) MAT 280 Discrete Mathematical Structures I (3) Complete any 100-level Laboratory Science course (4) Complete two of the following Social Science electives (6):

*ANT 1xx any 100-level anthropology course*  
*ECO 1xx any 100-level economics course*  
*ECO 201 Macroeconomics*  
*ECO 202 Microeconomics*  
*JUS 1xx any 100-level justice studies course*  
*POS 1xx any 100-level political science course*  
*PSY 1xx any 100-level psychology course*  
*SOC 1xx any 100-level sociology course*  
*SSC 1xx any 100-level social science course*

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**GENERAL ELECTIVES (3 CREDIT HOURS):** Complete any 100-level or higher general elective (3)

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Students are encouraged to contact their faculty advisor and the Advising Center for academic advising and support services throughout their stay at UMA.

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