

## Department of Computer &amp; Information Science - College of Engineering - UMass Dartmouth

## Requirements for Bachelor of Science in Computer Science\* (updated: 11/10/2025 jm)

Student Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

Date: \_\_\_\_\_

Advisor: \_\_\_\_\_

**CIS Core Courses (Grade of "C" or better) - 44 Credits**

\_\_\_\_\_ CIS 180 - Object-Oriented Programming I (4)  
 \_\_\_\_\_ CIS 181 - Object-Oriented Programming II (4) (Pre: CIS 180)  
 \_\_\_\_\_ CIS 190 - Introduction to Procedural Programming (4) (Pre: CIS 180)  
 \_\_\_\_\_ CIS 272 - Introduction to Computing Systems (4) (Co: CIS 190, MTH 181)  
 \_\_\_\_\_ CIS 273 - Computer Organization and Design (3) (Pre: CIS 272)  
 \_\_\_\_\_ CIS 280 - Software Specification and Design (4) (Pre: CIS 181)  
 \_\_\_\_\_ CIS 360 - Algorithms and Data Structures (4) (Pre: CIS 181, CIS 190, MTH 181)  
 \_\_\_\_\_ CIS 361 - Models of Computation (3) (Pre: CIS 181, MTH 182)  
 \_\_\_\_\_ CIS 370 - Design of Operating Systems (4) (Pre: CIS 272)  
 \_\_\_\_\_ CIS 481 - Parallel and Distributed Software Systems (3) (Pre: CIS 280, CIS 370)  
 \_\_\_\_\_ CIS 498 - Software Engineering Project I (4) (Pre: CIS 280, CIS 362)  
 \_\_\_\_\_ CIS 499 - Software Engineering Project II (3) (Pre: CIS 498) - USC 5A + 5B

**CIS Elective, 4 courses required, (Grade of "C" or better) - Minimum 12 Credits**

\_\_\_\_\_ CIS 402 - Special Topics in Computer & Information Science (3) (depends on topic)  
 \_\_\_\_\_ CIS 410 - Programming Language Design (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 412 - Artificial Intelligence (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 422 - Design Parallel Algorithms (4) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 430 - Data Mining and Knowledge Discovery (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 431 - Human Computer Interaction (3) (Pre: CIS 362)  
 \_\_\_\_\_ CIS 432 - Software Architecture and Design (3) (Pre: CIS 280)  
 \_\_\_\_\_ CIS 433 - Mobile Application Development with Android (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 434 - Mobile Application Development with iOS (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 440 - Software Process and Project Management (3) (Pre: CIS Jr/Sr)  
 \_\_\_\_\_ CIS 442 - Digital Forensics (3) (Pre: CIS 272)  
 \_\_\_\_\_ CIS 443 - Applied Cryptography (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 444 - Cyber Defense and Operations (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 446 - Secure Software Development (3) (Pre: CIS 280)  
 \_\_\_\_\_ CIS 447 - Network Security & Data Assurance (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 452 - Database Systems (3) (Pre: CIS 280)  
 \_\_\_\_\_ CIS 454 - Computer Graphics (3) (Pre: CIS Jr/Sr)  
 \_\_\_\_\_ CIS 455 - Bioinformatics (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 461 - Formal Methods in Software Engineering (3) (Pre: MTH 182)  
 \_\_\_\_\_ CIS 463 - Game Engine Design (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 464 - Computer Game Design (3) (Pre: CIS 280, MTH 154 or 152)  
 \_\_\_\_\_ CIS 465 - Topics in Computer Vision (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 466 - Introduction to Mobile Robotics (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 467 - Image Analysis and Processing (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 468 - Data Visualization (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 469 - Web Software Development (3) (Pre: CIS 360)  
 \_\_\_\_\_ CIS 470 - Software Testing and Automation (3) (Pre: MTH 181)  
 \_\_\_\_\_ CIS 471 - Compiler Design (3) (Pre: CIS 361)  
 \_\_\_\_\_ CIS 475 - Computer Networks (3) (Pre: CIS 370)

**Mathematics Requirements - 17 Credits**

\_\_\_\_\_ MTH 153 (or MTH 151) - Calculus I (4) - USC 1D  
 \_\_\_\_\_ MTH 154 (or MTH 152) - Calculus II (4) (Pre: MTH 153 or 151)  
 \_\_\_\_\_ MTH 181 - Discrete Structures I (3) (Pre: Placement into MTH 153 or 151)  
 \_\_\_\_\_ MTH 182 - Discrete Structures II (3) (Pre: MTH 181)  
 \_\_\_\_\_ Math Elective: MTH 211 or MTH 213 or MTH 221 or MTH 331 - (3) (Pre: MTH 154 or 152)

**Science/Quantitative Requirements - Minimum 14 Credits**

\_\_\_\_\_ PHY 113 - BIO 121&131 - CHM 151&161 (4) (Circle one)  
 \_\_\_\_\_ PHY 114 - BIO 122&132 - CHM 152&162 (4) (Must be continuation of above)  
 \_\_\_\_\_ Science Elective (**Must satisfy USC 2A if CHM Track**) (3)  
 \_\_\_\_\_ CIS 362 - Empirical Methods for Computer Science (3) (Pre: CIS 280)

**University Studies\*\* - 30 Credits**

\_\_\_\_\_ ENL 101 - Critical Writing and Reading I (3) - USC 1A  
 \_\_\_\_\_ ENL 102 - Critical Writing and Reading II (3) (Pre: ENL 101) - USC 1B  
 \_\_\_\_\_ ENL 266 - Technical Communications (3) (Pre: ENL 102) - USC 1C  
 \_\_\_\_\_ EGR 111 (3) - USC 1E (Transfer student: 200+ level equivalent \_\_\_\_\_)  
 \_\_\_\_\_ CIS 381 - Social and Ethical Aspects of Computing (3) - USC 2B  
 \_\_\_\_\_ Literature (3) - Choose from USC 3A  
 \_\_\_\_\_ Visual and Performing Arts (3) - Choose from USC 3B  
 \_\_\_\_\_ Human Questions and Contexts (3) - Choose from USC 4A  
 \_\_\_\_\_ Nature of US Society (3) - Choose from USC 4B  
 \_\_\_\_\_ Nature of the Global Society (3) - Choose from USC 4C

**Free Electives - A single course or combination that adds up to 3 Credits**

\_\_\_\_\_ (3)

**Comment Box****CIS Electives (continued)**

\_\_\_\_\_ CIS 476 - Network Programming (3) (Pre: CIS 370)  
 \_\_\_\_\_ CIS 477 - Computer and Information System Security (3) (Pre: CIS 360, CIS 370)  
 \_\_\_\_\_ CIS 490 - Machine Learning (3) – (Pre: CIS 360)

\*A minimum 2.00 GPA in the major, a minimum 2.00 cumulative GPA, and a minimum 120 earned credits to graduate.

\*\*USC -University Studies Cluster; A preapproved list can be found at: <http://www.umassd.edu/universitystudies/approvedcourses/>

Note: Any CIS core course or technical elective that is a prerequisite to another CIS course, must be passed with a grade of C or better in order to satisfy the prerequisite.