

**Department of Computer & Information Science - College of Engineering - UMass Dartmouth**  
**Requirements for Bachelor of Science in Computer Science with option in Software Engineering\*** (updated: 6/6/2023 jm)

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

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

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

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

<b>CIS Core Courses (Grade of "C" or better) - 43 Credits</b>	
_____	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 264 - Software Quality Assurance and Testing (3) (Pre: MTH 181)
_____	CIS 272 - Introduction to Computing Systems (4) (Co: CIS 190, MTH 181)
_____	CIS 280 - Software Specification and Design (4) (Pre: CIS 181)
_____	CIS 340 - Large Software Systems (3) (Pre: CIS 280)
_____	CIS 360 - Algorithms and Data Structures (4) (Pre: CIS 181, CIS 190, MTH 181)
_____	CIS 440 - Software Process and Project Management (3) (Pre: CIS Jr/Sr)
_____	CIS 461 - Formal Methods in Software Engineering (3) (Pre: MTH 182)
_____	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

<b>Mathematics Requirements - 17 Credits</b>	
_____	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)
_____	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)

<b>Science/Quantitative Requirements - Minimum 14 Credits</b>	
_____	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 ( <b>Must satisfy USC 2A if CHM Track</b> ) (3)
_____	CIS 362 - Empirical Methods for Computer Science (3) (Pre: CIS 280)

<b>CIS Elective, 4 courses required, (Grade of "C" or better) - Minimum 12 Credits</b>	
_____	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 430 - Data Mining and Knowledge Discovery (3) (Pre: CIS 360)
_____	CIS 431 - Human Computer Interaction (3) (Pre: CIS 362)
_____	CIS 433 - Mobile Application Development with Android (3) (Pre: CIS 360)
_____	CIS 434 - Mobile Application Development with iOS (3) (Pre: CIS 360)
_____	CIS 442 – Digital Forensics (3) (Pre: CIS 360, CIS 370)
_____	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 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 471 - Compiler Design (3) (Pre: CIS 361)
_____	CIS 475 - Computer Networks (3) (Pre: CIS 370)
_____	CIS 476 - Network Programming (3) (Pre: CIS 370)
_____	CIS 477 - Computer and Information System Security (3) (Pre: CIS 360, CIS 370)
_____	CIS 481 - Parallel and Distributed Software Systems (3) (Pre: CIS 280, CIS 370)
_____	CIS 490 - Machine Learning (3) (Pre: CIS 360)

<b>English Requirements/Foundations for Engagement - 9 Credits</b>	
_____	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

<b>Ethics and Social Responsibility/Science in the Engaged Community - 3 Credits</b>	
_____	CIS 381 - Social and Ethical Aspects of Computing (3) - USC 2B

<b>University Studies** - 18 Credits</b>	
_____	EGR 111 (3) - USC 1E (Transfer student: CIS 200 level or above, or equivalent _____)
_____	_____ 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

<b>Free Electives - A combination of courses that adds up to 4 Credits</b>	
_____	_____ (1)
_____	_____ (3)

<b>Comment Box</b>	
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\*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.