# College of Computer, Mathematical and Natural Sciences
## Computer Science - Distributive Areas and Electives  Effective Fall 2022

### Area 1: Systems
- Computer Systems Architecture: CMSC 411, 3 credits
- Operating Systems: CMSC 412, 4 credits
- Computer and Network Security: CMSC 414, 3 credits
- Introduction to Parallel Computing: CMSC 416, 3 credits
- Computer Networks: CMSC 417, 3 credits
- Introduction to Parallel Computing (Fall 2020): CMSC 498X, 3 credits
- Real World Computer Security (Fall 2022): CMSC 498L, 3 credits

### Area 2: Information Processing
- Data Structures: CMSC 420, 3 credits
- Introduction to Artificial Intelligence: CMSC 421, 3 credits
- Introduction to Machine Learning: CMSC 422, 3 credits
- Bioinformatic Algorithms, Databases and Tools: CMSC 423, 3 credits
- Database Design: CMSC 424, 3 credits
- Computer Vision: CMSC 426, 3 credits
- Computer Graphics: CMSC 427, 3 credits
- Introduction to Natural Language Processing: CMSC 470, 3 credits
- Introduction to Data Visualization: CMSC 471, 3 credits
- Advanced Topics in Machine Learning (Fall 2018): CMSC 498V, 3 credits
- Advances in XR (Spring 2022): CMSC 498F, 3 credits

### Area 3: Software Engineering and Programming Languages
- Introduction to Compilers: CMSC 430, 3 credits
- Programming Language Technologies and Paradigms: CMSC 433, 3 credits
- Introduction to Human-Computer Interaction: CMSC 434, 3 credits
- Software Engineering: CMSC 435, 3 credits
- Programming Handheld Systems: CMSC 436, 3 credits
- Introduction to Data Visualization: CMSC 471, 3 credits

### Area 4: Theory
- Design and Analysis of Computer Algorithms: CMSC 451, 3 credits
- Elementary Theory of Computation: CMSC 452, 3 credits
- Algorithms for Data Science: CMSC 454, 3 credits
- Cryptology: CMSC 456, 3 credits
- Introduction to Quantum Computing: CMSC 457, 3 credits

### Area 5: Numerical Analysis
- Computational Methods: CMSC 460, 3 credits
- Introduction to Numerical Analysis: CMSC 466, 3 credits

### Upper Level Electives
- Introduction to Data Science: CMSC 320, 3 credits
- Web Application Development with JavaScript: CMSC 335, 3 credits
- Student Initiated Courses (STICs): CMSC 388/9, 1-2 credits
- Teaching Techniques for Computer Science (TAs Only): CMSC 395, 1 credit
- Computer Science Honors Seminar (Dept Honors Only): CMSC 396H, 1 credit
- Game Programming: CMSC 425, 3 credits
- Introduction to Deep Learning: CMSC 472, 3 credits
- Capstone in Machine Learning: CMSC 473, 3 credits
- Combinatorics and Graph Theory: CMSC 475, 3 credits
- Robotics and Perception: CMSC 476, 3 credits
- Quantum Boot Camp: CMSC 488A, 1 credit
- Special Topics in CS Courses (not listed in a distributive area): CMSC 498, 1-3 credits
- Independent Study: CMSC 498A, 1-3 credits
- Independent Undergraduate Research: CMSC 498A, 1-3 credits