

# ADVANCE

A NOVA | MASON PARTNERSHIP

A.S. Computer Science / B.S. Computer  
Science Pathway  
**2022-2023**

## A.S. Computer Science

### ADVANCE Program Milestones

**ADVANCE Milestone Requirements:** All ADVANCE students must adhere to the following requirements. For Milestones #1-#3, failure to meet these milestones will prevent a student from matriculating to Mason and/or result in termination from ADVANCE. For Milestones #4-#7, failure to meet these milestones may delay matriculation to Mason.

1. Students must complete their NOVA degree within 4 years of being admitted into ADVANCE. Students are highly encouraged to be continuously enrolled at NOVA/Mason to support progress towards degree completion.
2. Students must maintain a minimum 2.5 cumulative GPA at NOVA and must have a minimum 2.5 GPA upon matriculation to Mason.
3. Students who wish to enroll at Mason for the fall semester must apply for NOVA spring graduation by March 1 or summer graduation by June 1. Students who wish to enroll at Mason for the spring semester must apply for NOVA fall graduation by October 1.
4. Students must begin developmental coursework no later than the first semester in ADVANCE at NOVA.
5. Students must take first college-level MTH course and ENG 111 in the semester immediately following the completion of any MDE or EDE courses (excluding summer).
6. In the first 30 credits, students must complete ENG 111 and ENG 112 with a C or better.
7. Students must complete a Mason Core Quantitative Reasoning course equivalent with a C or better no later than one semester before NOVA graduation. Refer to your pathway to select the appropriate MTH course(s).

**Computer Science Admission Requirements:** All transfer applicants must have earned at a least B in CSC 222 or CSC 223, AND must have earned at least a B in one of the following: MTH 263, MTH 264, or MTH 288.

|    | NOVA DEGREE<br>REQUIREMENT | Credits | Courses  | MASON<br>TRANSFER<br>EQUIVALENT                                      | MASON<br>CORE/DEGREE<br>EQUIVALENT |
|----|----------------------------|---------|--|--|------------------------------------|
| 1  | SDV Course                 | 1       | SDV 100 College Success Skills <b>OR</b><br>SDV 101 Orientation to XXX   | UNIV 100   | General Elective                   |
| 2  | ENG 111                    | 3       | ENG 111 College Composition I  | ENGH 101   | Written Comm                       |
| 3  | CSC 221                    | 3       | CSC 221 Introduction to Problem Solving and Programming  | CS XXX   | General Elective                   |
| 4  | HIS Elective               | 3       | HIS 101 Western Civilizations Pre-1600 CE <b>OR</b><br>HIS 102 Western Civilizations Post-1600 CE <b>OR</b><br>HIS 112 World Civilizations Post-1500 CE  | HIST 101<br>HIST 102<br>HIST 125                                     | Western Civ                        |
| 5  | MTH 167                    | 5       | MTH 167 PreCalculus with Trigonometry <sup>1</sup>   | MATH 105   | General Elective                   |
| 6  | CSC 222                    | 4       | CSC 222 Object Oriented Programming  | CS 112   | Major                              |
| 7  | ENG 112                    | 3       | ENG 112 College Composition II   | ENGH XXX   | General Elective                   |
| 8  | Humanities/Fine Arts #1    | 3       | ART 100 Art Appreciation <b>OR</b><br>ART 101 History of Art: Prehistoric to Gothic <b>OR</b><br>ART 102 History of Art: Renaissance to Modern <b>OR</b><br>CST 130 Introduction to Theatre <b>OR</b><br>CST 151 Film Appreciation I <b>OR</b><br>MUS 121 Music in Society | ARTH 101<br>ARTH 200<br>ARTH 201<br>THR 101<br>ENGH L372<br>MUSI 101 | Arts                               |
| 9  | MTH 263                    | 4       | MTH 263 Calculus I   | MATH 113   | Quantitative                       |
| 10 | CSC 223                    | 4       | CSC 223 Data Structures and Analysis of Algorithms   | CS 211   | Major                              |
| 11 | MTH 288 OR CSC 208         | 3       | MTH 288 Discrete Mathematics <b>OR</b><br>CSC 208 Introduction to Discrete Structures  | MATH 125   | Major                              |
| 12 | MTH 264                    | 4       | MTH 264 Calculus II  | MATH 114   | Major                              |
| 13 | Science Course #1          | 4       | <b>See footnote #2 when selecting from the following:</b><br>BIO 101 General Biology I <b>OR</b><br>CHM 111 General Chemistry I <b>OR</b><br>PHY 241 University Physics I <b>OR</b><br>GOL 105 Physical Geology  | BIOL 103/105<br>CHEM 211-213<br>PHY 160-161<br>GEOL 101/103          | Natural Science                    |

|    |                            |   |  |   |            |
|----|----------------------------|---|--|---|------------|
| 14 | Humanities/Fine Arts #2    | 3 | ENG 225 Reading Literature: Culture and Ideas <b>OR</b><br>ENG 245 British Literature <b>OR</b><br>ENG 246 American Literature <b>OR</b><br>ENG 255 World Literature <b>OR</b><br>ENG 258 African American Literature <b>OR</b><br>ENG 275 Women's Literature <b>OR</b><br>Any 200-Level ENG Literature course <sup>3</sup>  | ENGH 202 or<br>FRLN L330 (ENG<br>255 only)  | Literature |
| 15 | MTH 265                    | 4 | MTH 265 Calculus III   | MATH 213  | Major      |
| 16 | Science Course #2          | 4 | <b>See footnote #2 when selecting from the following:</b><br>BIO 102 General Biology II <b>OR</b><br>CHM 112 General Chemistry II <b>OR</b><br>PHY 242 University Physics II <b>OR</b><br>GOL 106 Historical Geology   | BIOL 102<br>CHEM 212-214<br>PHY 260-261<br>GEOL 102/104   | Major      |
| 17 | Social/Behavioral Sciences | 3 | ECO 201 Principles of Macroeconomics <b>OR</b><br>ECO 202 Principles of Microeconomics <b>OR</b><br>GEO 210 People and the Land: An Introduction to Cultural<br>Geography <b>OR</b><br>HIS 121 United States History to 1877 <b>OR</b><br>HIS 122 United States History Since 1865 <b>OR</b><br>PLS 135 U.S. Government and Politics <b>OR</b><br>PSY 200 Principles of Psychology <b>OR</b><br>SOC 200 Introduction to Sociology <b>OR</b><br>SOC 211 Cultural Anthropology | ECON 104<br>ECON 103<br>GGS 103<br>HIST 121<br>HIST 122<br>GOVT 103<br>PSYC 100<br>SOCI 101<br>ANTH 114 | Soc/Behav  |
| 18 | Technical Elective         | 3 | CST 100 Principles of Public Speaking <b>OR</b><br>CST 110 Introduction to Human Communication   | COMM 100<br>COMM 101  | Oral Comm  |

#### A. S. COMP SCIENCE DEGREE

**TOTAL** 61

For academic policies and procedures, please see NOVA catalog - <http://www.nvcc.edu/catalog/index.html>

### B.S. Computer Science

|    | MASON DEGREE<br>REQUIREMENT                        | Credits | Course   | MASON<br>CORE/DEGREE<br>EQUIVALENT |
|----|--|---------|--|------------------------------------|
| 19 | Computer Science Core<br>Requirements              | 3       | CS 110 Essentials of Computer Science  | Major                              |
| 20 | Mathematics/Statistics<br>Requirement              | 0-3     | <b>If not completed at NOVA:</b><br>MATH 203 Linear Algebra  | Major                              |
| 21 | Gen Ed: Written<br>Communication (Upper-<br>level) | 3       | ENGH 302 Advanced Composition (Natural Science Section)  | Written Comm                       |
| 22 | Additional Natural Science <sup>2</sup>            | 0-4     | <b>If not completed at NOVA:</b><br><b>See footnote #2 when selecting from the following:</b><br>BIOL 103/105 Introductory Biology I <b>OR</b><br>BIOL 102 Introductory Biology II Lecture & Lab <b>OR</b><br>CHEM 211 & 213 General Chemistry I Lecture & Lab <b>OR</b><br>CHEM 212 & 214 General Chemistry II Lecture & Lab <b>OR</b><br>PHYS 160/161 University Physics I Lecture & Lab <b>OR</b><br>PHYS 260/261 College Physics I Lecture & Lab <b>OR</b><br>GEOL 101/103 Physical Geology & Lab <b>OR</b><br>GEOL 102/104 Historical Geology & Lab | Natural Science                    |
| 23 | Computer Science Core<br>Requirements              | 3       | CS 262 Introduction to Low-Level Programming   | Major                              |
| 24 | Computer Science Core<br>Requirements              | 3       | CS 306 Synthesis of Ethics and Law for the Computing Professional  | Major                              |
| 25 | Computer Science Core<br>Requirements              | 3       | CS 310 Data Structure  | Major                              |
| 26 | Computer Science Core<br>Requirements              | 3       | CS 321 Software Engineering  | Major                              |
| 27 | Computer Science Core<br>Requirements              | 3       | CS 330 Formal Methods and Models   | Major                              |
| 28 | Computer Science Core<br>Requirements              | 4       | CS 367 Computer Systems and Programming  | Major                              |

|    |                                    |   |  |        |
|----|------------------------------------|---|--|--------|
| 29 | Computer Science Core Requirements | 3 | CS 471 Operating Systems   | Major  |
| 30 | Computer Science Core Requirements | 3 | CS 483 Analysis of Algorithms  | Major  |
| 31 | Computer Science Core Requirements | 3 | CS 455 Computer Communications and Networking <b>OR</b><br>CS 468 Secure Programming and Systems <b>OR</b><br>CS 475 Concurrent and Distributed Systems <b>OR</b><br>CS 487 Introduction to Cryptography | Major  |
| 32 | Computer Science Core Requirements | 3 | Approved Senior Computer Science Elective <sup>4</sup>   | Major  |
| 33 | Computer Science Core Requirements | 3 | Approved Senior Computer Science Elective <sup>4</sup>   | Major  |
| 34 | Computer Science Core Requirements | 3 | Approved Senior Computer Science Elective <sup>4</sup>   | Major  |
| 35 | Computer Science Core Requirements | 3 | Approved Senior Computer Science Elective <sup>4</sup>   | Major  |
| 36 | Mathematics/Statistics Requirement | 3 | STAT 344 Probability and Statistics for Engineers and Scientists I   | Major  |
| 37 | Computer Science Core Requirements | 3 | Approved Computer Science Related-Course Elective <sup>4</sup>   | Major  |
| 38 | Computer Science Core Requirements | 3 | Approved Computer Science Related-Course Elective <sup>4</sup>   | Major  |
| 39 | Gen Ed: Global Understanding       | 3 | Approved Global Understanding Course <sup>5</sup>  | Global |

**B.S. COMPUTER SCIENCE**  
**DEGREE TOTAL 121-126**

**Important Academic Information:**

<sup>1</sup>Students who place directly into MTH 263 and do not need MTH 167 should take MTH 266 and an additional Lab Science class (BIO 101, CHM 111, PHY 241, or GOL 105).

<sup>2</sup>12 credits of Natural Science must include a two-course sequence in the same subject. See advisor to ensure the selected course was not already completed at NOVA.

<sup>3</sup>200-level ENG literature classes include: ENG 225, ENG 230, ENG 236, ENG 237, ENG 245, ENG 246, ENG 250, ENG 255, ENG 256, ENG 257, ENG 258, ENG 271, ENG 275, and ENG 279.

<sup>4</sup>For Computer Science Electives, please visit - <https://catalog.gmu.edu/colleges-schools/engineering/computer-science/computer-science-bs/#requirementstext>

<sup>5</sup>For approved Mason Core courses, please visit - <https://catalog.gmu.edu/mason-core/>

**Additional General Notes & Resources:**

- Students interested in pursuing licensure to teach at the secondary level may add the Undergraduate Certificate: Secondary Education - Computer Science to this degree. For more information visit: <https://education.gmu.edu/secondary-education-6-12/academics/> . Some certificate courses can be used to fulfill general elective requirements, but additional credits may be needed to complete the certificate. Students interested in teacher licensure should meet with a Mason pre-teacher advisor. Contact information: <https://cehd.gmu.edu/teacher/advising/advising-appointment/>
- ADVANCE students who earn at least a 2.85 final, cumulative GPA and no more than 9 credits of unrepeatd D/F grades may be eligible to receive a waiver for any lower-level Mason Core courses not already completed. To be eligible for the Mason Core waiver, students must also complete the requirements of the AA or AS degree listed on their pathway, and apply to graduate from NOVA by the deadline (see milestone #3). Students must provide the Office of Admissions with a final, official transcript reflecting the degree conferral date and a cumulative NOVA GPA at or above 2.85.
- For academic policies and procedures, please see Mason catalog - <https://catalog.gmu.edu/policies/>
- Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements. This cannot include transferred credits with an L-designation (e.g. ECE-L301). All B.S. degrees at Mason require a minimum of 120 credits; see your Mason advisor for advice on what courses to take if needed.