

# ADVANCE

A NOVA | MASON PARTNERSHIP

A.S. Engineering /  
B.S. Mechanical Engineering Pathway  
2021-2022

## A.S. Engineering

### 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-#6, 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 graduation by March 1 for spring graduation or June 1 for summer graduation. Students who wish to enroll at Mason for the spring semester must apply for NOVA graduation by October 1 for winter graduation.
4. Students must begin developmental coursework in 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:
  - a. Complete ENG 111 and ENG 112 with a C or better.
  - b. Complete the first college-level MTH course with a C or better.

**ADVANCE Program-Specific Requirements:** All ADVANCE students in this degree program must adhere to the following requirements prior to matriculation. Failure to do so may prevent a student from matriculating into this program at Mason or progressing in coursework at Mason.

1. Engineering students must begin the calculus sequence within the first 30 credits and complete Calculus I and II with a B or better.

| NOVA DEGREE REQUIREMENT                       | Credits | Courses   | MASON TRANSFER EQUIVALENT  | MASON CORE/DEGREE EQUIVALENT |
|---|---------|---|--|------------------------------|
| 1 SDV Course                                  | 1       | SDV 100 College Success Skills <b>OR</b><br>SDV 101 Orientation to Engineering  | UNIV 100   | General Elective             |
| 2 ENG 111                                     | 3       | ENG 111 College Composition I   | ENGH 101   | Written Comm                 |
| 3 CST Course                                  | 3       | CST 100 Principles of Public Speaking <b>OR</b><br>CST 110 Introduction to Communication  | COMM 100<br>COMM 101   | Oral Comm                    |
| 4 Humanities/Fine Arts #1                     | 3       | ART 100 Art Appreciation <b>OR</b><br>ART 101 History and Appreciation of Art I <b>OR</b><br>ART 102 History and Appreciation of Art II <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 Appreciation I | ARTH 101<br>ARTH 200<br>ARTH 201<br>THR 101<br>ENGL L372<br>MUSI 101 | Arts                         |
| 5 MTH 263                                     | 4       | MTH 263 Calculus I  | MATH 113   | Quantitative                 |
| 6 Social/Behavioral Sciences #1               | 3       | HIS 101 History of Western Civilization I <b>OR</b><br>HIS 102 History of Western Civilization II <b>OR</b><br>HIS 112 History of World Civilization II   | HIST 101<br>HIST 102<br>HIST 125                                     | Western Civ                  |
| 7 EGR 122 Required<br>(NOVA Catalog: EGR 121) | 3       | EGR 122 Engineering Design <sup>1</sup>   | ME 151   | Major                        |
| 8 ENG 112                                     | 3       | ENG 112 College Composition II  | ENGH XXX   | General Elective             |
| 9 MTH 264                                     | 4       | MTH 264 Calculus II   | MATH 114   | Major                        |
| 10 PHY 231                                    | 5       | PHY 231 General University Physics I  | PHYS 160-161-266   | Nat Science                  |
| 11 Technical Elective #1                      | 4       | CHM 111 General Chemistry I   | CHEM 211-213   | Nat Science                  |
| 12 Technical Elective #2                      | 4       | CSC 201 Computer Science I <b>OR</b><br>EGR 125 Introduction to Engineering Methods   | CS 112<br>ENGR 125T  | Info Tech                    |
| 13 Technical Elective #3                      | 3       | EGR 240 Solid Mechanics (Statics)   | ME 211   | Major                        |
| 14 MTH 265                                    | 4       | MTH 265 Calculus III  | MATH 213   | Major                        |
| 15 PHY 232                                    | 5       | PHY 232 General University Physics II   | PHYS 260-261-XXX   | Major                        |

|    |                               |   |  |                        |            |
|----|-------------------------------|---|--|------------------------|------------|
| 16 | Social/Behavioral Sciences #2 | 3 | ECO 202 Principles of Microeconomics   | ECON 103               | Soc/Behav  |
| 17 | Humanities/Fine Arts #2       | 3 | ENG 236 Introduction to the Short Story <b>OR</b><br>ENG 241 Survey of American Literature I <b>OR</b><br>ENG 242 Survey of American Literature II <b>OR</b><br>ENG 251 Survey of World Literature I <b>OR</b><br>ENG 252 Survey of World Literature II <b>OR</b><br>ENG 253 Survey of African-American Literature I | ENGH 202               | Literature |
| 18 | MTH 267                       | 3 | MTH 267 Differential Equations   | MATH 214               | Major      |
| 19 | Technical Elective #4         | 3 | EGR 246 Mechanics of Materials   | CEIE L310 or<br>ME 212 | Major      |
| 20 | Technical Elective #5         | 3 | EGR 245 Engineering Mechanics (Dynamics)   | ME 231                 | Major      |
| 21 | Technical Elective #6         | 3 | EGR 248 Thermodynamics   | ME 221                 | Major      |

**A. S. ENGINEERING DEGREE**  
**TOTAL** 70

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

## B.S. Mechanical Engineering

|  | MASON DEGREE REQUIREMENT                    | Credits    | Course   |             | MASON CORE/DEGREE EQUIVALENT  |
|--|---|------------|--|-------------|-------------------------------|
| 22   | Engineering                                 | 3          | ECE 330 Circuit Theory   | Fall Only   | Major                         |
| 23   | Gen Ed: Global Understanding                | 3          | Approved Global Understanding course <sup>2</sup>                                  |             | Global                        |
| 24   | Engineering                                 | 3          | Approved Math/Science course <sup>3</sup>  |             | Major                         |
| 25   | Engineering                                 | 1          | ME 311 Mechanical Experimentation I  | Fall Only   | Major                         |
| 26   | Engineering                                 | 3          | ME 313 Material Science  |             | Major                         |
| 27   | Engineering                                 | 3          | ME 322 Fluid Mechanics   |             | Major                         |
| 28   | Engineering                                 | 3          | ME 341 Design of Mechanical Elements <b>OR</b><br>ME 342 Design of Thermal Systems |             | Major                         |
| 29   | Engineering                                 | 3          | ME 351 Analytical Methods in Engineering   |             | Major                         |
| 30   | Gen Ed: Written Communication (Upper-level) | 3          | ENGH 302 Advanced Composition (Natural Science Section)                            |             | Written Comm                  |
| 31   | Engineering                                 | 3          | ME 331 Mechatronics  | Spring Only | Major                         |
| 32   | Engineering                                 | 1          | ME 321 Mechanical Experimentation II   | Spring Only | Major                         |
| 33   | Engineering                                 | 3          | ME 323 Heat Transfer   | Spring Only | Major                         |
| 34   | Engineering                                 | 3          | ME 352 Entrepreneurship in Engineering   | Spring Only | Major                         |
| 35   | Engineering                                 | 3          | ME 443 Mechanical Design I   | Fall Only   | Major                         |
| 36   | Engineering                                 | 2          | ME 453 Developing the Societal Engineer  | Fall Only   | Major                         |
| 37   | Elective                                    | 3          | 300/400 Elective <sup>4</sup>  |             | Major                         |
| 38   | Elective                                    | 3          | 300/400 Elective <sup>4</sup>  |             | Major                         |
| 39   | Elective                                    | 3          | 300/400 Elective <sup>4</sup>  |             | Major                         |
| 40   | Elective                                    | 3          | 300/400 Elective <sup>4</sup>  |             | Major                         |
| 41   | Engineering                                 | 4          | ME 432 Control Engineering   |             | Major                         |
| 42   | Gen Ed: Synthesis/Engineering               | 3          | ME 444 Mechanical Design II  | Spring Only | Synthesis & Writing Intensive |
| <b>B.S. MECH. ENGINEERING DEGREE TOTAL</b> |   | <b>129</b> |  |             |                               |

**Important Academic Information:**

<sup>1</sup>Students need departmental approval to enroll in EGR 122. Contact your campus dean for Engineering for permission to register for this course: <https://www.nvcc.edu/academics/divisions/mstb/contact.html#panel3>

<sup>2</sup>For approved Mason Core courses, please visit - <https://catalog.gmu.edu/mason-core/>. If ADVANCE students have at least a 2.85 GPA at the time of matriculation to Mason, students will receive a lower-level General Education waiver and do not need to take this course. Please see your Success Coach for more information.

<sup>3</sup>For approved Math/Science Electives, please visit: <https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/#requirementstext>

<sup>4</sup>For 300/400 Electives, any Mason course numbered 300 or higher can be used please visit: <https://catalog.gmu.edu/>

**Additional General Notes & Resources:**

- ADVANCE students who earn at least a 2.85 cumulative GPA and no more than 9 credits of unrepeated 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 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 meet these criteria by the time of matriculation to Mason and provide the Office of Admissions a final, official transcript reflecting the degree conferral date.
- 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.