

# ADVANCE

A NOVA | MASON PARTNERSHIP

A.S. Engineering /  
B.S. Systems 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> 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> CST 110 Introduction to Communication	COMM 100 COMM 101	Oral Comm & Major
4	Humanities/Fine Arts #1	3	ART 100 Art Appreciation <b>OR</b> ART 101 History and Appreciation of Art I <b>OR</b> ART 102 History and Appreciation of Art II <b>OR</b> CST 130 Introduction to Theatre <b>OR</b> CST 151 Film Appreciation I <b>OR</b> MUS 121 Music Appreciation I	ARTH 101 ARTH 200 ARTH 201 THR 101 ENGH L372 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> HIS 102 History of Western Civilization II <b>OR</b> HIS 112 History of World Civilization II	HIST 101 HIST 102 HIST 125	Western Civ
7	EGR 121	2	EGR 121 Foundations of Engineering	ENGR 107	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	3	SYST 101 Understanding Systems Engineering	SYST 101	Major
12	Technical Elective #2	4	EGR 125 Intro to Engineering Methods	ENGR 125T	Info Tech
13	Technical Elective #3	3	SYST 210 Systems Design	SYST 210	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	Nat Science
16	Social/Behavioral Sciences #2	3	ECO 202 Principles of Microeconomics	ECON 103	Soc/Behav & Major

17	Humanities/Fine Arts #2	3	ENG 236 Introduction to the Short Story <b>OR</b> ENG 241 Survey of American Literature I <b>OR</b> ENG 242 Survey of American Literature II <b>OR</b> ENG 251 Survey of World Literature I <b>OR</b> ENG 252 Survey of World Literature II <b>OR</b> 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	4	SYST 230 Object-Oriented Modeling and Design	SYST 230	Major
20	Technical Elective #5	4	CHM 111 General Chemistry I	CHEM 211/213	Major

**A. S. ENGINEERING DEGREE TOTAL** 67

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

## B.S. Systems Engineering

**Students must choose one of the following technical emphases:**

Aviation Systems, Bioengineering, Control Systems, Computer Network Systems, Data Analytics, Financial Engineering, Mechanical Engineering, Operations Research, Software-Intensive Systems

	MASON DEGREE REQUIREMENT	Credits	Course		MASON CORE/DEGREE EQUIVALENT
21	Mathematics and Statistics	3	MATH 203 Linear Algebra		Major
22	Systems Engineering	4	SYST 220 Dynamical Systems I <b>AND</b> SYST 221 Systems Modeling Laboratory		Major
23	Gen Ed: Global Understanding	3	Approved Global Understanding course <sup>1</sup>		Global
24	Mathematics and Statistics	3	STAT 344 Probability and Statistics for Engineers		Major
25	Systems Engineering	3	SYST 320 Dynamical Systems II		Major
26	Plan Specific #15	3	OR 441 Deterministic Operations Research		Major
27	Gen Ed: Written Communication (Upper Level)	3	ENGH 302 Advanced Composition (Natural Science Section)		Written Comm
28	Technical Emphasis Areas	3	Technical Elective <sup>2</sup>		Major
29	Mathematics and Statistics	3	STAT 354 Probability & Statistics for Engrs & Scientists II		Major
30	Systems Engineering	3	SYST 330 Systems Methods		Major
31	Systems Engineering	3	SYST 335 Discrete Systems Modeling & Simulation		Major
32	Systems Engineering	3	SYST 371 Systems Engineering Management		Major
33	Systems Engineering	3	SYST 395 Applied Systems Engineering		Major
34	Systems Engineering	3	SYST 470 Human Factors Engineering		Major
35	Systems Engineering	3	SYST 473 Decision and Risk Analysis		Major
36	Systems Engineering	3	SYST 489 Senior Seminar		Writing Intensive
37	Systems Engineering	3	SYST 490 Senior Design Project I		Major
38	Technical Emphasis Areas	3	Technical Elective <sup>2</sup>		Major
39	Gen Ed: Synthesis/Systems Engineering	3	SYST 495 Senior Design Project II		Synthesis
40	Systems Engineering	3	OR 442 Stochastic Operations Research		Major
41	Technical Emphasis Areas	3	Technical Elective <sup>2</sup>		Major

**B.S. SYSTEMS ENGINEERING DEGREE TOTAL** 131

Denotes a course that must be taken at George Mason University. Please see your Success Coach to enroll.

**Important Academic Information:**

<sup>1</sup>For approved Mason Core courses, please visit - <https://catalog.gmu.edu/mason-core/>

<sup>2</sup>For approved Technical Electives, please visit -

<https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-bs/#requirementstext>

**Additional General Notes & Resources:**

- Students in the Systems Engineering, BS program must complete all mathematics, science, and VSE courses with a grade of C or better. However, students may apply for one-time grade waiver for no more than one mathematics, science, or VSE course completed at Mason with grade of C- or D. Students must also complete any course required by the program that is a prerequisite to another course applicable to the degree with a grade of C or better.
- 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 requirements.