ADVANCE
A NOVA | MASON PARTNERSHIP

A.S. Engineering /
B.S. Bioengineering Pathway
2025-2026

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-#7, failure to meet these milestones may delay matriculation to Mason.

1. Students must graduate with the NOVA degree aligned with their ADVANCE academic pathway 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 college level math course with a C or better no later than one semester before NOVA graduation. Refer to your pathway to select the appropriate MTH course(s).

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.

2. While not required to matriculate to Mason, Bioengineering students must complete MTH 267 Differential Equations with a B- or better to progress to Bioengineering coursework at Mason.

3. Bioengineering students must complete Matlab applications concurrently with MTH 266.[4]

	NOVA DEGREE REQUIREMENT	Credits	Courses	MASON TRANSFER EQUIVALENT	MASON CORE/DEGREE EQUIVALENT
1	**SDV Course**	1	SDV 100 College Success Skills **OR** SDV 101 Orientation to Engineering	UNIV 100	General Elective
2	**ENG 111**	3	ENG 111 College Composition I[1]	ENGH XXX	General Elective
3	**MTH 263**	4	MTH 263 Calculus I	MATH 113	Major & Quantitative
4	**CHM 111 Required** ***(NOVA Catalog: Lab Science #1)***	4	CHM 111 General Chemistry I	CHEM 211-213	Major
5	**ECO 202**	3	ECO 202 Principles of Microeconomics	ECON 103	Soc/Behav & Major
6	**ENG 112**	3	ENG 112 College Composition II[1]	ENGH 101	Written Comm
7	**MTH 264**	4	MTH 264 Calculus II	MATH 114	Major
8	**Technical Elective #1**	3	CST 100 Principles of Public Speaking **OR** CST 110 Introduction to Human Communication	COMM 100 COMM 101	Major & Oral Comm
9	**PHY 241 Required** ***(NOVA Catalog: Lab Science #2)***	4	PHY 241 University Physics I	PHYS 160-161	Major & Nat Science
10	**Technical Elective #2**	4	CHM 112 General Chemistry II	CHEM 212-214	General Elective
11	**Humanities/Fine Arts #1**	3	ART 100 Art Appreciation **OR** ART 101 History of Art: Prehistoric to Gothic **OR** ART 102 History of Art: Renaissance to Modern **OR** CST 130 Introduction to Theatre **OR** CST 151 Film Appreciation I **OR** MUS 121 Music in Society	ARTH 101 ARTH 200 ARTH 201 THR 101 ENGH L372 MUSI 101	Arts

12	**Technical Elective #3**	4	PHY 242 University Physics II	PHYS 260-261	Major & Nat Science
13	**EGR 121**	3	BENG 101 Intro to Bioengineering ***(Fall recommended)***	BENG 101	Major
14	**Technical Elective #4**	4	BIOL 213 Cell Structure and Function	BIOL 213	Major
15	**MTH 265**	4	MTH 265 Calculus III	MATH 213	Major
16	**HIS Course**	3	HIS 101 Western Civilizations Pre-1600 CE **OR** HIS 102 Western Civilizations Post-1600 CE **OR** HIS 112 World Civilizations Post-1500 CE ***(recommended)***	HIST 101T HIST 102T HIST 125	Global History
17	**Humanities/Fine Arts #2**	3	ENG 225 Reading Literature: Culture and Ideas **OR** ENG 245 British Literature **OR** ENG 246 American Literature **OR** ENG 255 World Literature **OR** ENG 258 African American Literature **OR** ENG 275 Women in Literature **OR** Any 200-Level ENG Literature course[2]	ENGH 202 or FRLN L330 (ENG 255 only)	Literature
18	**MTH 267**	3	MTH 267 Differential Equations[3]	MATH 214	Major
19	**Technical Elective #5**	3	MTH 266 Linear Algebra[4]	MATH 203	Major
20	**Technical Elective #6**	4	EGR 125 Introduction to Computer Programming for Engineers[5]	ENGR 125T	Major & Info Tech
A. S. ENGINEERING DEGREE TOTAL		**67**			

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

B.S. Bioengineering

Concentrations: Bioengineering Healthcare Informatics; Biomaterials and Nanomedicine; Biomedical Imaging and Devices; Computational Biomedical Engineering; Neurotechnology and Computational Neuroscience.

NOTE: Students interested in the Bioengineering Prehealth concentration should speak with a Bioengineering Advisor before matriculating. Email bioeng@gmu.edu.

	MASON DEGREE REQUIREMENT	Credits	Course		MASON CORE/DEGREE EQUIVALENT
21	**Concentration Courses**	3	CHEM 310 Survey of Organic Chemistry ***(Bioengineering Prehealth students: See Advisor)***		Major
22	**Bioengineering**	3	BENG 214 Physiology for Engineers	**Fall Only**	Major
23	**Gen Ed: Written Communication (Upper-level)**	3	ENGH 302 Advanced Composition (Natural Science Section)		Written Comm
24	**Bioengineering**	1	BENG 391 Bioengineering Professional Development	**Fall Only**	Major
25	**Bioengineering**	3	BENG 320 Bioengineering Signals & Systems		Major
26	**Bioengineering**	3	BENG 230 Continuum Biomechanics and Transport I		Major
27	**Bioengineering**	4	BENG 240 Biomaterials **AND** BENG 241 Biomechanics and Biomaterials Lab	**Spring Only**	Major
28	**Bioengineering**	3	BENG 375 Intellectual Property, Regulatory Concepts and Product Development	**Spring Only**	Major
29	**Bioengineering**	4	BENG 370 Bioinstrumentation and Devices I **AND** BENG 371 Bioinstrumentation and Devices Lab		Major
30	**Bioengineering/Synthesis**	3	BENG 492 Senior Advanced Design Project I	**Fall Only**	Major
31	**Concentration Courses**	3	Concentration Specialization Course[6]		Major
32	**Bioengineering**	4	BENG 330 Computational Methods in Bioengineering **AND** BENG 331 Computational Methods in Bioengineering Lab	**Fall Only**	Major
33	**Bioengineering**	3	BENG 360 Biomedical Imaging		Major

34	**Bioengineering**	3	BENG 350 Neural System Designs	**Spring Only**	Major
35	**Gen Ed: Apex/Bioengineering**	3	BENG 493 Senior Advanced Design Project II	**Spring Only**	Apex
36	**Concentration Courses**	3	Concentration Specialization Course[6]		Major
37	**Mathematics and Statistics**	3	STAT 360 Introductory Statistics II		Major
38	**Concentration Courses**	3	Concentration Specialization Course[6]		Major
39	**Concentration Courses**	3	Technical Elective[6]		Major
40	**Concentration Courses**	3	Technical Elective[6]		Major
B.S. BIOENGINEERING DEGREE TOTAL		**128**			

Denotes a course that must be taken at George Mason University while attending NOVA. Failure to complete your co-enrollment course(s) while attending NOVA can significantly affect your timeline for Mason graduation. Please see your ADVANCE Coach for more information and to enroll.

Important Academic Information:

[1]Students who complete ENG 111 after Spring 2024 will earn ENGH elective for ENG 111 and ENGH 101 for ENG 112.

[2]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.

[3]Students must earn a B- or higher in MTH 267 to progress to Bioengineering coursework at Mason.

[4]NOVA students must register for Matlab applications to obtain content that is not included in non-Bioengineering sections of Linear Algebra prior to matriculation. Please email bioeng@gmu.edu for registration information.

[5]Students need departmental approval to enroll in EGR 125. Contact your campus dean for Engineering for permission to register for this course: https://www.nvcc.edu/academics/divisions/mstb/contact.html#panel3

[6]For approved Concentration Courses and Technical Electives, please visit - https://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/bioengineering/bioengineering-bs/#requirementstext

General Education Waiver Policy and Guidance:

• Students who complete a VCCS transfer associate degree (AS, AA, or AFA) will receive a waiver of the Foundation and Exploration (lower division) Mason Core general education categories, which can be found here: https://catalog.gmu.edu/mason-core/ . To be eligible for the waiver, the students must provide the Mason Office of Admissions with a final, official transcript reflecting the degree conferral date. As a prerequisite for ENGH 302, ENGH 101 is not waived. Students must complete ENGH 100 or ENGH 101, or an equivalent, with a C or higher.

• When a course fulfills a Mason Core requirement **and** a major or college requirement (e.g. Major & Quant), students must complete the course listed on the pathway to fulfill the major/college requirement. Courses that fulfill only Mason Core Foundation and Exploration categories are recommendations. In most pathways, ADVANCE students must complete a Quantitative Reasoning course to matriculate through ADVANCE.

• ADVANCE students must complete the associate degree indicated on their pathway (see the ADVANCE Program Milestones listed above). Students who withdraw from ADVANCE and transfer without the associate degree or UCGS are required to complete each Mason Core general education category.

Additional General Notes & Resources:

• Students must complete each BENG, BIOL, CHEM, CS, ECE, ME course presented as part of the required credits for the degree with a grade of C or better.

• 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.