

ADVANCE

A NOVA | MASON PARTNERSHIP

A.S. Engineering /
B.S. Bioengineering Pathway
2023-2024

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 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).

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. Bioengineering students must complete MTH 267 Differential Equations with a B- or better.⁴
3. Bioengineering students must complete Matlab applications concurrently with MTH 266.⁵

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 101	Written Comm
3 MTH 263	4	MTH 263 Calculus I	MATH 113	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
6 ENG 112	3	ENG 112 College Composition II ¹	ENGH XXX	General Elective
7 MTH 264	4	MTH 264 Calculus II	MATH 114	Major
8 EGR 121	3	BENG 101 Intro to Bioengineering	BENG 101	Major
9 PHY 241 Required (NOVA Catalog: Lab Science #2)	4	PHY 241 University Physics I	PHYS 160-161	Nat Science
10 Technical Elective #1	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 #2	4	PHY 242 University Physics II	PHYS 260-261	Nat Science

13	Technical Elective #3	3	CST 100 Principles of Public Speaking OR CST 110 Introduction to Human Communication	COMM 100 COMM 101	Oral Comm
14	Technical Elective #4	4	BIOL 213 Cell Structure and Function ²	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 (<i>recommended</i>)	HIST 101 HIST 102 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 ³	ENGH 202 or FRLN L330 (ENG 255 only)	Literature
18	MTH 267	3	MTH 267 Differential Equations ⁴	MATH 214	Major
19	Technical Elective #5	3	MTH 266 Linear Algebra ⁵	MATH 203	Major
20	Technical Elective #6	4	EGR 125 Introduction to Computer Programming for Engineers ⁶	ENGR 125T	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 (<i>Bioengineering Prehealth students: See Advisor</i>)	Major
22	Bioengineering	3	BENG 214 Physiology for Engineers	Major
23	Bioengineering	3	BENG 230 Continuum Biomechanics and Transport I	Major
24	Bioengineering	4	BENG 240 Biomaterials AND BENG 241 Biomechanics and Biomaterials Lab	Major
25	Bioengineering	3	BENG 320 Bioengineering Signals & Systems	Major
26	Bioengineering	4	BENG 330 Computational Methods in Bioengineering AND BENG 331 Computational Methods in Bioengineering Lab	Major
27	Gen Ed: Global Understanding	3	Approved Global Understanding course ⁷	Global Understanding
28	Gen Ed: Written Communication (Upper-level)	3	ENGH 302 Advanced Composition (Natural Science Section)	Written Comm
29	Mathematics and Statistics	3	STAT 360 Introductory Statistics II	Major
30	Bioengineering	4	BENG 370 Bioinstrumentation and Devices I AND BENG 371 Bioinstrumentation and Devices Lab	Major
31	Bioengineering	3	BENG 350 Neural System Designs	Major
32	Concentration Courses	3	Concentration Specialization Course ⁸	Major
33	Bioengineering	3	BENG 375 Intellectual Property, Regulatory Concepts and Product Development	Major
34	Bioengineering	3	BENG 360 Biomedical Imaging	Major
35	Bioengineering/Synthesis	3	BENG 492 Senior Advanced Design Project I	Major
36	Concentration Courses	3	Concentration Specialization Course ⁸	Major
37	Concentration Courses	3	Concentration Specialization Course ⁸	Major
38	Bioengineering	1	BENG 391 Bioengineering Professional Development	Major

39	Gen Ed: Synthesis/Bioengineering	3	BENG 493 Senior Advanced Design Project II	Synthesis
40	Concentration Courses	3	Technical Elective ⁸	Major
41	Concentration Courses	3	Technical Elective ⁸	Major

B.S. BIOENGINEERING		131		
DEGREE TOTAL				

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:

- ¹Students who complete ENG 111 after Spring 2024 will earn ENGH elective for ENG 111 and ENGH 101 for ENG 112.
- ²Students should plan to take a BENG-specific section of BIOL 213 at Mason in a fall term. If necessary, students may take a regular BIOL 213 section at Mason in a spring term.
- ³200-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.
- ⁴Students must earn a B- or higher in MTH 267 to progress to Bioengineering coursework at Mason.
- ⁵NOVA 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.
- ⁶Students 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>
- ⁷For approved Mason Core courses, please visit - <https://catalog.gmu.edu/mason-core/>. Students with a completed AS, AA, or AFA degree are eligible for a waiver of the Foundation and Exploration (lower division) Mason Core general education categories and do not need this course. Please see your ADVANCE Coach for more information.
- ⁸For approved Concentration Courses and Technical Electives, please visit - <https://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/bioengineering/bioengineering-bs/#requirementstext>

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.
- Students who complete a VCCS transfer associate degree (AS, AA, & AFA) will receive a waiver of the Foundation and Exploration (lower division) Mason Core general education categories. 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.
- 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.