ADVANCE
A NOVA | MASON PARTNERSHIP

A.S. Engineering/B.S. Bioengineering

2019-20

A.S. Engineering Pathway 2019-2020

ADVANCE Program Milestones

1. Students must take SDV 100 or SDV 101 in the first semester at NOVA.
2. Students must begin Developmental coursework in the first semester in ADVANCE at NOVA.
3. Students must take first college-level MTH course and ENG 111 in the semester immediately following the completion of any MTE or ENF courses (excluding summer).
4. 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.**
- **c. Engineering students must begin the calculus sequence and complete Calculus I and II with a B or better.**

5. Students must complete at least six degree-applicable credits with a C or better each fall and spring semester.
6. Students must maintain a 2.5 cumulative GPA.
7. Students must complete Matlab applications concurrently with MTH 266.
8. Students must apply for NOVA graduation and complete their Associate's degree.

	NOVA DEGREE REQUIREMENT SEQUENCE	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	ELECTIVE
2	**ENG 111**	3	ENG 111 College Composition I	ENGH 101	Written Comm
3	**Social/Behavioral Sciences #1**	3	HIS 101 History of Western Civilization I **OR** HIS 102 History of Western Civilization II **OR** HIS 112 History of World Civilization II	HIST 101 HIST 102 HIST 125	Western Civ
4	**MTH 263**	4	MTH 263 Calculus I	MATH 113	Quantitative Reasoning
5	**Technical Elective #1**	4	CHM 111 College Chemistry I	CHEM 211-213 (CHEM 271/272)	DEGREE
6	**CST Course**	3	CST 100 Principles of Public Speaking **OR** CST 110 Introduction to Communication	COMM 100 COMM 101	Oral Comm
7	**EGR 121**	3	BENG 101 Intro to Bioengineering	BENG 101	DEGREE
8	**ENG 112**	3	ENG 112 College Composition II	ENGH XXX	Elective
9	**MTH 264**	4	MTH 264 Calculus II	MATH 114	DEGREE
10	**Technical Elective #2**	4	CHM 112 College Chemistry II	CHEM 212-214	Elective
11	**PHY 231**	5	PHY 231 General University Physics I	PHYS 160-161-266	NAT SCIENCE
12	**MTH 265**	4	MTH 265 Calculus III	MATH 213	DEGREE
13	**Technical Elective #3***	3	MTH 266 Linear Algebra*	MATH 203	DEGREE
14	**PHY 232**	5	PHY 232 General University Physics II	PHYS 260-261-XXX	NAT SCIENCE
15	**Technical Elective #5**	3	CHM 241 Organic Chemistry I-Lecture	CHEM L313 (CHEM 310)	DEGREE
16	**Technical Elective #6**	2	CHM 245 Organic Chemistry I-Laboratory	CHEM L315	ELECTIVE
17	**MTH 267**	3	MTH 267 Differential Equations	MATH 214	DEGREE
18	**Social/Behavioral Sciences #2**	3	ECO 202 Principles of Microeconomics **OR** PSY 200 Principles of Psychology **OR (recommended)** SOC 200 Principles of Sociology	ECON 103 PSYC 100 SOCI 101	Soc/Behav
19	**Technical Elective #4**	4	BIOL 213 Cell Structure and Function (BENG section only)	BIOL 213	DEGREE
20	**Humanities/Fine Arts #2**	3	ENG 236 Introduction to the Short Story **OR** ENG 241 Survey of American Literature I **OR** ENG 242 Survey of American Literature II **OR** ENG 251 Survey of World Literature I **OR** ENG 252 Survey of World Literature II **OR** ENG 253 Survey of African-American Literature I	ENGH 202	Literature

21	**Humanities/Fine Arts**	3	ART 101 History and Appreciation of Art I **OR** ART 102 History and Appreciation of Art II **OR** CST 130 Introduction to Theatre **OR** CST 151 Film Appreciation I **OR** MUS 121 Music Appreciation I	ARTH 200 ARTH 201 THR 101 ENGH L372 MUSI 101	Arts
A. S. ENGINEERING DEGREE TOTAL		**70**			

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

Students must select a concentration:

Bioengineering Healthcare Informatics; Biomaterials and Nanomedicine; Biomedical Imaging and Devices; Computational Biomedicine Engineering; Neurotechnology and Computational Neuroscience

NOTE: Students interested in the Bioengineering Prehealth concentration should speak with a Bioengineering Advisor to discuss best transfer option.

	MASON DEGREE REQUIREMENT SEQUENCE	Credits	Course	MASON CORE/DEGREE EQUIVALENT
22	**Computer Science**	4	CS 112 Introduction to Computer Programming	DEGREE
23	**Bioengineering**	3	BENG 214 Physiology for Engineers	DEGREE
24	**Bioengineering**	3	BENG 230 Continuum Biomechanics and Transport I	DEGREE
25	**Bioengineering**	1	BENG 391 Bioengineering Professional Development	DEGREE
26	**Gen Ed: Written Communication (UL)**	3	ENGH 302 Advanced Composition (Natural Science Section)	Written Comm
27	**Bioengineering**	4	BENG 240 Biomaterials **AND** BENG 241 Biomechanics and Biomaterials Lab **(Spring only)**	DEGREE
28	**Bioengineering**	4	BENG 370 Bioinstrumentation and Devices I **AND** BENG 371 Bioinstrumentation and Devices Lab	DEGREE
29	**Bioengineering**	3	BENG 350 Neural System Designs **(Spring only)**	DEGREE
30	**Bioengineering**	3	BENG 320 Bioengineering Signals & Systems	DEGREE
31	**Bioengineering**	4	BENG 330 Computational Methods in Bioengineering **AND** BENG 331 Computational Methods in Bioengineering Lab	DEGREE
32	**Bioengineering**	3	BENG 414 Pathophysiology and the Role of New Technologies in Human Diseases **(Fall only)**	DEGREE
33	**Bioengineering/Synthesis**	3	BENG 492 Senior Advanced Design Project I	DEGREE
34	**Mathematics and Statistics**	3	STAT 350 Introductory Statistics II	DEGREE
35	**Bioengineering**	3	BENG 360 Biomedical Imaging	DEGREE
36	**Concentration Courses**	3	Concentration Specialization Course***	DEGREE
37	**Bioengineering**	3	BENG 475 Intellectual Property, Regulatory Concepts and Product Development **(Spring only)**	DEGREE
38	**Gen Ed: Synthesis/Bioengineering**	3	BENG 493 Senior Advanced Design Project II	Synthesis
39	**Gen Ed: Global Understanding**	3	Approved Global Understanding Course**	Global
40	**Concentration Courses**	3	Concentration Specialization Course***	DEGREE
41	**Concentration Courses**	3	Concentration Specialization Course***	DEGREE
42	**Concentration Courses**	3	Technical Elective***	DEGREE
43	**Concentration Courses**	3	Technical Elective***	DEGREE
B.S. BIOENGINEERING DEGREE TOTAL		**138**		

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

***Students must register for Matlab applications - please see Mason advisor for registration**

****For approved Mason Core courses, please visit - https://catalog.gmu.edu/mason-core/**

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

General Note: 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. Summer courses are highly recommended in order to elevate the intense workload of the Bioengineering pathway (See: Advisor).

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