

ADVANCE

A NOVA | MASON PARTNERSHIP

A.S. Engineering/B.S. Systems Engineering

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 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 EGR 121	2	EGR 121 Foundations of Engineering	ENGR 107	DEGREE
6 CST Course	3	CST 100 Principles of Public Speaking OR CST 110 Introduction to Communication	COMM 100 COMM 101	Oral Comm
7 Humanities/Fine Arts #1	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
8 ENG 112	3	ENG 112 College Composition II	ENGH XXX	Elective
9 MTH 264	4	MTH 264 Calculus II	MATH 114	DEGREE
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	DEGREE
12 Social/Behavioral Sciences #2	3	ECO 202 Principles of Microeconomics	ECON 103	Soc/Behav
13 MTH 265	4	MTH 265 Calculus III	MATH 213	DEGREE
14 Technical Elective #2	4	CSC 201 Computer Science I	CS 112	DEGREE
15 Humanities/Fine Arts #2	3	REL 100 Introduction to the Study of Religion OR REL 231 Religions of the World I	RELI 100 RELI 212	Global
16 Technical Elective #3	3	SYST 210 Systems Design	SYST 210	DEGREE
17 Technical Elective #4***	4	CSC 202 Computer Science II OR SYST 230 Object-Oriented Modeling and Design	CS 211 SYST 230	DEGREE
18 PHY 232	5	PHY 232 General University Physics II	PHYS 260-261-XXX	DEGREE
19 Technical Elective #5***	4	CHM 111 General Chemistry I OR PHYS262/263 University Physics III OR CHEM 211/213 General Chemistry I OR CHEM 271/272 General Chemistry for Engineers OR BIOL 213 Cell Structure and Function	CHEM 211/213 PHYS262/263 CHEM 211/213 CHEM 271/272 BIOL 213	NAT SCIENCE/DEGREE

20	Technical Elective #6	3	MTH 266 Linear Algebra	MATH 203	DEGREE
21	MTH 267	3	MTH 267 Differential Equations	MATH 214	DEGREE
A. S. ENGINEERING DEGREE TOTAL		70			

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

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 SEQUENCE	Credits	Course	MASON CORE/DEGREE EQUIVALENT
22	4	SYST 220 Dynamical Systems I AND SYST 221 Systems Modeling Laboratory	DEGREE
23	3	Approved Literature course*	DEGREE
24	3	STAT 344 Probability and Statistics for Engineers	DEGREE
25	3	SYST 320 Dynamical Systems II	DEGREE
26	3	OR 441 Deterministic Operations Research	DEGREE
27	3	ENGH 302 Advanced Composition (Natural Science Section)	Written Comm
28	3	Technical Elective**	DEGREE
29	3	STAT 354 Probability & Statistics for Engrs & Scientists II	DEGREE
30	3	SYST 330 Systems Methods	DEGREE
31	3	SYST 335 Discrete Systems Modeling & Simulation	DEGREE
32	3	SYST 371 Systems Engineering Management	DEGREE
33	3	SYST 395 Applied Systems Engineering	DEGREE
34	3	SYST 470 Human Factors Engineering	DEGREE
35	3	SYST 473 Decision and Risk Analysis	DEGREE
36	3	SYST 489 Senior Seminar	Writing Intensive
37	3	SYST 490 Senior Design Project I	DEGREE
38	3	Technical Elective**	DEGREE
39	3	SYST 495 Senior Design Project II	Synthesis
40	3	OR 442 Stochastic Operations Research	DEGREE
41	3	Technical Elective**	DEGREE
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.

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

**For approved Technical Electives, please visit -

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

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

*** 2 pathways- In Bold and underlined are courses at GMU

Pathway 1. **SYST 101, SYST 210, and SYST 230** - Highly recommended pathway

Pathway 2. **SYST 101, SYST 210, and PHYS 262/263 or CHEM 211/213 or CHEM 271/272 or BIOL 213**