ADVANCE
A NOVA | MASON PARTNERSHIP

A.S. Engineering /
B.S. Systems Engineering Pathway
2020-2021

A.S. Engineering

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 MTT 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 an A, B, or C.
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	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
5	**EGR 121**	2	EGR 121 Foundations of Engineering	ENGR 107	Major
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 100 Art Appreciation **OR** 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 101 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	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	**Social/Behavioral Sciences #2**	3	ECO 202 Principles of Microeconomics	ECON 103	Soc/Behav
13	**MTH 265**	4	MTH 265 Calculus III	MATH 213	Major
14	**Technical Elective #2**	4	CSC 201 Computer Science I	CS 112	Info Tech
15	**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
16	**Technical Elective #3**	3	SYST 210 Systems Design	SYST 210	Major
17	**Technical Elective #4*** **	4	CSC 202 Computer Science II **OR** **SYST 230 Object-Oriented Modeling and Design (co-enrollment course)**	CS 211 **SYST 230**	Major

18	**PHY 232**	5	PHY 232 General University Physics II	PHYS 260-261-XXX	Nat Science
19	**Technical Elective #5*** **	4	CHM 111 General Chemistry **OR** **PHYS 262/263 University Physics III (co-enrollment course) OR** **CHEM 211/213 General Chemistry I (co-enrollment course) OR** **CHEM 271/272 General Chemistry for Engineers (co-enrollment course) OR** **BIOL 213 Cell Structure and Function (co-enrollment course)**	CHEM 211/213 **PHYS 262/263 or** **CHEM 211/213 or** **CHEM 271/272 or** **BIOL 213**	Major
20	**Technical Elective #6**	3	MTH 266 Linear Algebra	MATH 203	Major
21	**MTH 267**	3	MTH 267 Differential Equations	MATH 214	Major
A. S. ENGINEERING DEGREE TOTAL		**70**			

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
22	**Systems Engineering**	4	SYST 220 Dynamical Systems I **AND** SYST 221 Systems Modeling Laboratory	Major
23	**Gen Ed: Global Understanding**	3	Approved Global Understanding course*	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 (UL)**	3	ENGH 302 Advanced Composition (Natural Science Section)	Written Comm
28	**Technical Emphasis Areas**	3	Technical Elective**	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**	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**	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.

***For approved Mason Core courses, please visit - https://catalog.gmu.edu/mason-core/. If ADVANCE students have at least a 2.85 GPA at the time of matriculation to Mason, students will receive a General Education waiver and do not need to take this course. Please see your Success Coach for more information.**

****For approved Technical Electives, please visit - https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-bs/#requirementstext**

***2 pathways:

Pathway 1: SYST 101, SYST 210, and SYST 230 (highly recommended)

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

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.