

ADVANCE

A NOVA | MASON PARTNERSHIP

A.S. Science / B.S. Physics - All Concentrations Pathway
2023-2024

A.S. Science

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).

The following concentrations are offered: Applied and Engineering Physics, Astrophysics, Computational Physics, and No Concentration. Students are encouraged to consult with a Mason Physics advisor early in their education to select an appropriate concentration. Contact: uadvphys@gmu.edu.

	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 XXX	UNIV 100	General Elective
2	ENG 111	3	ENG 111 College Composition I ¹	ENGH XXX	General Elective
3	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
4	MTH 263	4	MTH 263 Calculus I	MATH 113	Quantitative
5	ENG 112	3	ENG 112 College Composition II ¹	ENGH 101	Written Comm
6	CST Course	3	CST 100 Principles of Public Speaking OR CST 110 Introduction to Human Communication	COMM 100 COMM 101	Oral Comm
7	Science Course #1	4	PHY 241 University Physics I	PHYS 160-161	Nat Science
8	MTH 264	4	MTH 264 Calculus II	MATH 114	Major
9	Social/Behavioral Sciences #1	3	ECO 201 Principles of Macroeconomics OR ECO 202 Principles of Microeconomics OR GEO 210 People and the Land: An Introduction to Cultural Geography OR HIS 121 United States History to 1877 OR HIS 122 United States History Since 1865 OR PLS 135 U.S. Government and Politics OR PSY 200 Principles of Psychology OR PSY 230 Developmental Psychology OR SOC 200 Introduction to Sociology OR SOC 211 Cultural Anthropology	ECON 104 ECON 103 GGG 103 HIST 121 HIST 122 GOVT 103 PSYC 100 PSYC 211 SOCI 101 ANTH 114	Soc/Behav
10	Math or Science #1	4	MTH 265 Calculus III	MATH 213	Major
11	Science Course #2	4	PHY 242 University Physics II	PHYS 260-261	Nat Science

12	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
13	Math or Science #2	3-4	Other Concentrations: MTH 266 Linear Algebra Astrophysics Only: ASTR 210 Introduction to Astrophysics AND ASTR 124 Introductions to Observational Astronomy (co-enrollment courses) (Typically only offered in Spring terms)	MATH 203 ASTR 210 ASTR 124	Major or General Elective
14	ITE 152 or General Education Elective	3	PHYS 251 Introduction to Computer Techniques in Physics ²	PHYS 251	Info Tech
15	Math or Science #3	3	MTH 267 Differential Equations	MATH 214	Major or General Elective
16	General Education Elective (This elective is not needed if selections for all other requirements total 60 credits or more)	3	CST 229 Intercultural Communication OR ECO 202 Principles of Microeconomics OR HUM 220 Introduction to African-American Studies OR HUM 256 Comparative Mythology OR MTH 245 Statistics I OR PHI 111 Logic I OR PSY 200 Principles of Psychology OR REL 100 Introduction to the Study of Religion OR SOC 200 Introduction to Sociology	COMM L305 ECON 103 AFAM 200 ENGH 202 STAT 250 PHIL 173 PSYC 100 RELI 100 SOCI 101	General Elective
17	MTH 167 or Science	4	PHY 243 Modern Physics ³ AND PHY 244 Modern Physics Lab ³ (Spring only)	PHYS 262/263	Major
18	Social/Behavioral Sciences #2	3	GEO 220 World Regional Geography OR PLS 140 Introduction to Comparative Politics OR PLS 241 Introduction to International Relations OR	GGG 101 GOVT 133 GOVT 132	Global Understanding
19	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 ⁴	ENGH 202 or FRLN L330 (ENG 255 only)	Literature

A.S. SCIENCE DEGREE TOTAL 61-62

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

B.S. Physics

Concentrations: Applied and Engineering Physics; Astrophysics; Computational Physics; No Concentration

	MASON DEGREE REQUIREMENT	Credits	Course	MASON CORE/DEGREE EQUIVALENT
20	Gen Ed: Written Communication (Upper-level)	3	ENGH 302 Advanced Composition	Written Comm
21	Physics Core Courses	3	PHYS 301 Analytical Methods of Physics	Major
22	Physics Core Courses	3	PHYS 303 Classical Mechanics	Major
23	Physics Core Courses	3	PHYS 305 Electromagnetic Theory	Major
24	Intermediate Laboratory	3	PHYS 311 Instrumentation	Major
25	Concentration Course	3	Approved Concentration Course ⁵	Major
26	Concentration Course	3	Approved Concentration Course ⁵	Major
27	Concentration Course	3	Approved Concentration Course ⁵	Major
28	Physics Core Courses	3	PHYS 402 Introduction to Quantum Mechanics and Atomic Physics	Major
29	Concentration Course	3	Approved Concentration Course ⁵	Major
30	Physics Core Courses	3	PHYS 307 Thermal Physics	Major
31	Concentration Course	3	Approved Concentration Course ⁵	Major
32	Capstone Course	4	Approved Concentration Capstone Course (See: Advisor)	Synthesis & Writing Intensive

33	Concentration Course	3	Approved Concentration Course ⁵	Major
34	Concentration Course	3	Approved Concentration Course ⁵ OR General Elective (See: Advisor)	Major
35	Practical Work, Research, Internship, or Independent Study	3	Applied/Engineering Physics: Practical Work Elective ⁵ All Other Concentrations: Approved Research, Internship, or Independent Study Course ⁵	Major
36	Concentration Course	3-4	Approved Concentration Course ⁵ OR General Elective (See: Advisor)	Major
37	General Elective	3	General Elective (See: Advisor)	General Elective
38	General Elective	3	General Elective (See: Advisor)	General Elective
39	General Elective	2-4	General Elective (See: Advisor)	General Elective

B.S. PHYSICS DEGREE TOTAL 120

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.

²It is recommended that students take this co-enrollment course in their 3rd semester if attending full-time.

³PHY 243 and PHY 244 are only offered in the spring semester. If PHY 243/244 are not available, students should take CHM 111, BIO 101, or GOL 105 and complete PHYS 262 at Mason. Consult your ADVANCE Coach for more information.

⁴200-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.

⁵For approved Concentration courses, please visit: <https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/#requirements>

Additional General Notes & Resources:

- Students must complete a total of 75 credits in the major (69 credits if completing a second major), including at least 11 credits in mathematics, with a minimum GPA of 2.00. Students must complete the coursework described below and either select a concentration or select the "BS without Concentration" option.
- Students interested in pursuing licensure to teach at the secondary level may add the Undergraduate Certificate: Secondary Education - Physics to this degree. For more information visit: <https://education.gmu.edu/secondary-education-6-12/academics/> . Some certificate courses can be used to fulfill general elective requirements, but additional credits may be needed to complete the certificate. Students interested in teacher licensure should meet with a Mason pre-teacher advisor. Contact information: <https://cehd.gmu.edu/teacher/advising/advising-appointment/>
- 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.