

# ADVANCE

A NOVA | MASON PARTNERSHIP

A.S. Science / B.S. Physics - All  
Concentrations Pathway  
**2021-2022**

## 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-#6, 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 graduation by March 1 for spring graduation or June 1 for summer graduation. Students who wish to enroll at Mason for the spring semester must apply for NOVA graduation by October 1 for winter graduation.
4. Students must begin developmental coursework in 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:
  - 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.

The following concentration 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](mailto:uadvphys@gmu.edu).

	NOVA DEGREE REQUIREMENT	Credits	Courses	MASON TRANSFER EQUIVALENT	MASON CORE/DEGREE EQUIVALENT
1	SDV Course	1	SDV 100 College Success Skills <b>OR</b> SDV 101 Orientation to XXX	UNIV 100	General Elective
2	ENG 111	3	ENG 111 College Composition I	ENGH XXX	General Elective
3	HIS Course	3	HIS 101 History of Western Civilization I <b>OR</b> HIS 102 History of Western Civilization II <b>OR</b> 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	ENG 112	3	ENG 112 College Composition II	ENGH 101	Written Comm
6	CST Course	3	CST 100 Principles of Public Speaking <b>OR</b> CST 110 Introduction to Communication	COMM 100 COMM 101	Oral Comm
7	Science Course #1	5	PHY 231 General University Physics I	PHYS 160-161-266	Nat Science
8	MTH 264	4	MTH 264 Calculus II	MATH 114	Major
9	Social/Behavioral Sciences #1	3	ECO 201 Principles of Macroeconomics <b>OR</b> ECO 202 Principles of Microeconomics <b>OR</b> GEO 210 Introduction to Cultural Geography <b>OR</b> HIS 121 United States History I <b>OR</b> HIS 122 United States History II <b>OR</b> PLS 135 American National Politics <b>OR</b> PSY 200 Principles of Psychology <b>OR</b> PSY 230 Developmental Psychology <b>OR</b> SOC 200 Principles of Sociology <b>OR</b> SOC 211 Principles of Anthropology I	ECON 104 ECON 103 GGS 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	5	PHY 232 General University Physics II	PHYS 260-261-XXX	Nat Science

12	Humanities/Fine Arts #1	3	ART 100 Art Appreciation <b>OR</b> ART 101 History and Appreciation of Art I <b>OR</b> ART 102 History and Appreciation of Art II <b>OR</b> CST 130 Introduction to Theatre <b>OR</b> CST 151 Film Appreciation I <b>OR</b> MUS 121 Music Appreciation I	ARTH 101 ARTH 200 ARTH 201 THR 101 ENGH L372 MUSI 101	Arts
13	Math or Science #2	3-4	<b>Other Concentrations:</b> MTH 266 Linear Algebra <b>Astrophysics Only:</b> <b>ASTR 210 Introduction to Astrophysics AND ASTR 124 Introductions to Observational Astronomy (co-enrollment courses)</b> (Typically only offered in Spring terms)	MATH 203 ASTR 210 ASTR 124	Major or General Elective
14	ITE 115 or ITE 119 or General Education Elective	3	PHYS 251 Introduction to Computer Techniques in Physics <sup>1</sup>	PHYS 251	Info Tech
15	Math or Science #3	3	MTH 267 Differential Equations	MATH 214	Major or General Elective
16	MTH 167 or Science	4	PHY 243 Modern Physics <sup>2</sup>	PHYS L308	Major
17	Social/Behavioral Sciences #2	3	GEO 220 World Regional Geography <b>OR</b> PLS 140 Introduction to Comparative Politics <b>OR</b> PLS 241 International Relations I	GGG 101 GOVT 133 GOVT 132	Global
18	Humanities/Fine Arts #2	3	ENG 236 Introduction to the Short Story <b>OR</b> ENG 241 Survey of American Literature I <b>OR</b> ENG 242 Survey of American Literature II <b>OR</b> ENG 251 Survey of World Literature I <b>OR</b> ENG 252 Survey of World Literature II <b>OR</b> ENG 253 Survey of African-American Literature I	ENGH 202	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
19 Gen Ed: Written Communication (Upper-level)	3	ENGH 302 Advanced Composition	Written Comm
20 Physics Core Courses	3	PHYS 301 Analytical Methods of Physics	Major
21 Physics Core Courses	3	PHYS 303 Classical Mechanics	Major
22 Physics Core Courses	3	PHYS 305 Electromagnetic Theory	Major
23 Intermediate Laboratory	3	PHYS 311 Instrumentation	Major
24 Concentration Course #1	3	Approved Concentration Course <sup>3</sup>	Major
25 Concentration Course #2	3	Approved Concentration Course <sup>3</sup>	Major
26 Concentration Course #3	3	Approved Concentration Course <sup>3</sup>	Major
27 Physics Core Courses	3	PHYS 402 Introduction to Quantum Mechanics and Atomic Physics	Major
28 Concentration Course #4	3	Approved Concentration Course <sup>3</sup>	Major
29 Physics Core Courses	3	PHYS 307 Thermal Physics	Major
30 Concentration Course #5	3	Approved Concentration Course <sup>3</sup>	Major
31 Capstone Course	4	Approved Concentration Capstone Course (See: Advisor)	Synthesis & Writing Intensive
32 Physics Core Courses	1	PHYS 416 Special Topics in Undergraduate Physics	Major
33 Concentration Course #6	3	Approved Concentration Course <sup>3</sup>	Major
34 Concentration Course #7	3	Approved Concentration Course <sup>3</sup> <b>OR</b> General Elective (See: Advisor)	Major

35	Research, Internship, or Independent Study	0-4	<b>Applied/Engineering Physics:</b> Not needed <b>All Other Concentrations:</b> Approved Research, Internship, or Independent Study Course	Major
36	Concentration Course #8	3-4	Approved Concentration Course <sup>3</sup> OR General Elective (See: Advisor)	Major
37	Concentration Course #9	0-4	Approved Concentration Course <sup>3</sup>	Major
38	General Elective	3	General Elective (See: Advisor)	General Elective
39	General Elective	3	General Elective (See: Advisor)	General Elective
40	General Elective	0-3	General Elective (See: Advisor)	General Elective

**B.S. PHYSICS DEGREE TOTAL      120**

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

**Important Academic Information:**

- <sup>1</sup>It is recommended that students take this co-enrollment course in their 3rd semester if attending full-time.
- <sup>2</sup>PHY 243 is only offered in the spring semester. If PHY 243 is not available, students should take CHM 111, BIO 101, or GOL 105 and will need to take PHYS 308 at Mason in the first "General Elective" space. Consult your Success Coach for more information.
- <sup>3</sup>For approved Concentration courses, please visit: <https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/#requirementstext>

**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/>
- ADVANCE students who earn at least a 2.85 cumulative GPA and no more than 9 credits of unrepeatd D/F grades may be eligible to receive a waiver for any lower-level Mason Core courses not already completed. To be eligible for the core waiver, students must also complete the requirements of the AA or AS degree listed on their pathway, and apply to graduate from NOVA by the deadline (see milestone #3). Students must meet these criteria by the time of matriculation to Mason and provide the Office of Admissions a final, official transcript reflecting the degree conferral date.
- 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.