ADVANCE
A NOVA | MASON PARTNERSHIP

A.S. Science / B.S. Physics - All Concentrations Pathway
2022-2023

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	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	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 **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 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**	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[1]	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[2] **AND** PHY 244 Modern Physics Lab[2] ***(Spring only)***	PHYS L308	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**	GGS 101 GOVT 133 GOVT 132	Global
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's Literature **OR** Any 200-Level ENG Literature course[3]	ENGH 202 or FRLN L330 (ENG 255 only)	Literature
A.S. SCIENCE DEGREE TOTAL		**60-62**			

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 #1**	3	Approved Concentration Course[4]	Major
26	**Concentration Course #2**	3	Approved Concentration Course[4]	Major
27	**Concentration Course #3**	3	Approved Concentration Course[4]	Major
28	**Physics Core Courses**	3	PHYS 402 Introduction to Quantum Mechanics and Atomic Physics	Major
29	**Concentration Course #4**	3	Approved Concentration Course[4]	Major
30	**Physics Core Courses**	3	PHYS 307 Thermal Physics	Major
31	**Concentration Course #5**	3	Approved Concentration Course[4]	Major
32	**Capstone Course**	4	Approved Concentration Capstone Course (See: Advisor)	Synthesis & Writing Intensive
33	**Physics Core Courses**	1	PHYS 416 Special Topics in Undergraduate Physics	Major
34	**Concentration Course #6**	3	Approved Concentration Course[4]	Major
35	**Concentration Course #7**	3	Approved Concentration Course[4] **OR** General Elective (See: Advisor)	Major

36	**Research, Internship, or Independent Study**	0-4	***Applied/Engineering Physics:*** Not needed ***All Other Concentrations:*** Approved Research, Internship, or Independent Study Course	Major
37	**Concentration Course #8**	3-4	Approved Concentration Course[4] **OR** General Elective (See: Advisor)	Major
38	**Concentration Course #9**	0-3	Approved Concentration Course[4]	Major
39	**General Elective**	3	General Elective (See: Advisor)	General Elective
40	**General Elective**	3	General Elective (See: Advisor)	General Elective
41	**General Elective**	0-1	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:

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

[2]If students are placed into MTH 167, students should take MTH 167 and take PHYS 308 at Mason in the first "General Elective" space. Consult your ADVANCE Coach for more information. PHY 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. Consult your ADVANCE Coach for more information.

[3]200-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.

[4]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 final, cumulative GPA and no more than 9 credits of unrepeated 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 Mason 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 provide the Office of Admissions with a final, official transcript reflecting the degree conferral date and a cumulative NOVA GPA at or above 2.85.
- 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.

No Concentration		Applied & Engineering		Astrophysics		Computational	
	3		3		3		3
	3		3		3		3
	3		3		3		3
	3		3		3		3
	3		3		3		3
PHYS 312	3	PHYS 325	3	ASTR 401	3	PHYS 325	3
PHYS 306	3	PHYS 312	3	PHYS 312	3	Math/Cor	3
PHYS 403	3	PHYS 306	3	ASTR 328	3	Math/Cor	3
	3		3		3		3
PHYS 428	3	PHYS Theory 1	3	PHYS 306	3	PHYS/AST	3
	3		3		3		3
Add'l six	3	PHYS Theory 2	3	PHYS 428	3	PHYS/AST	3
Capstone	4	Capstone	4	Capstone	4	Capstone	3
	1		1		1		1
Add'l six	3	Practical Work	3	PHYS/ASTR Tl	3	PHYS/AST	3
General electi	3	Practical Work	3	PHYS/ASTR Tl	3	General e	3

Research/inte	3		0	Research/inte	3	Research/	3	
General electi	3	Practical Work	3	General elect	3	General e	3	
Not needed	0	Practical Work	3	Not needed	0	Not neede	0	
	3		3		3		3	
	3		3		2		3	This is presuming they coenroll in ASTR 2
	0		0		0		1	
Mason Total	59		59		58		59	
NOVA Total	61		61		62		61	
Degree Total	120		120		120		120	

10 and ASTR 124 and since many don’t, I'm leaving the line #40 at 3.