ADVANCE

A NOVA | GEORGE MASON PARTNERSHIP

NOVA Northern Virginia Community College | GEORGE MASON UNIVERSITY

A.S. Science/ B.S. Chemistry - All Concentrations

2026-2027

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 George Mason University and/or result in termination from ADVANCE. For Milestones #4-#7, failure to meet these milestones may delay matriculation to George Mason.

1. Students must graduate with the NOVA degree aligned with their ADVANCE academic pathway within 4 years of being admitted into ADVANCE. Students must ensure they are enrolled in the matching degree.

2. Students must maintain a minimum 2.5 cumulative GPA at NOVA and must have a minimum 2.5 GPA upon matriculation to George Mason.

3. Students who wish to enroll at George 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 George 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 college level math course 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 Chemistry, BS offers concentrations in Analytical Chemistry, Biochemistry, Environmental Chemistry, or Materials Chemistry. Students may also complete the degree without a concentration. Students are encouraged to speak with a George Mason Chemistry advisor for more information when selecting a concentration by emailing: chemug@gmu.edu.

	NOVA DEGREE REQUIREMENT	Credits	Courses	GEORGE MASON TRANSFER EQUIVALENT	GEORGE 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	**General Education**	4	CHM 111 General Chemistry I	CHEM 211-213	Major & Nat Science
4	**MTH 167 or Science**	4-5	MTH 167 Pre-Calculus with Trigonometry[1]	MATH 105	General Elective
5	**MTH 263**	4	MTH 263 Calculus I	MATH 113	Major & Quantitative
6	**ENG 112**	3	ENG 112 College Composition II	ENGH 101	Written Comm
7	**Math or Science #1**	4	**Biochemistry/Environmental:** PHY 201 General College Physics I[1] **OR** PHY 241 University Physics I[1] **All Other Concentrations:** PHY 241 University Physics I[1]	PHYS 243-244 PHYS 160-161	Major
8	**MTH 264**	4	MTH 264 Calculus II	MATH 114	Major
9	**Science Course #1**	4	CHM 112 General Chemistry II	CHEM 212-214	Major & Nat Science
10	**Social/Behavioral Sciences**	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

11	**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 ***(recommended)***	HIST 101T HIST 102T HIST 125	Global History
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	CHM 241 Organic Chemistry I **-** Lecture	CHEM L313	Major
14	**Math or Science #3**	2	CHM 245 Organic Chemistry I **-** Lab	CHEM L315	Major
15	**Science Course #2**	3	CHM 242 Organic Chemistry II **-** Lecture	CHEM L314	Major
16	**Math or Science #3 (with lab above under line #14)**	2	CHM 246 Organic Chemistry II **-** Lab	CHEM L318	Major
17	**General Education Elective**	4	**Biochemistry/Environmental:** PHY 202 General College Physics II[1] **OR** PHY 242 University Physics II[1] **All Other Concentrations:** PHY 242 University Physics II[1]	PHYS 245-246 PHYS 260-261	Major
18	**CST Course**	3	CST 100 Principles of Public Speaking **OR** CST 110 Introduction to Human Communication	COMM 100 COMM 101	Oral Comm
19	**General Education Elective** ***(only needed if MTH 167 is not taken)***	3-4	**Analytical:** MTH 245 Statistics I **Environmental:** GOL 105 Physical Geology **Biochemistry** and **No Concentration:** **BIOL 213 Cell Structure and Function AND BIOL 215 Cell Structure & Function Lab** **Materials:** BIO 101 General Biology I **OR** ECO 202 Principles of Microeconomics **OR** HUM 210 Introduction to Women and Gender Studies **OR** HUM 259 The Greek and Roman Tradition **OR** PHI 111 Logic **OR** PSY 200 Principles of Psychology **OR** REL 100 Introduction to the Study of Religion **OR** SOC 200 Introduction to Sociology	STAT 250 GEOL 101/103 BIOL 213/215 BIOL 103/105 ECON 103 WMST 200 CLAS 260 PHIL 173T PSYC 100 RELI 100 SOCI 101	General Elective or Major
20	**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[2]	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. Chemistry - All Concentrations

Concentrations: Analytical Chemistry, Biochemistry, Environmental Chemistry, Materials Chemistry, or No Concentration

Note: Requirements and course sequencing varies depending on the selected concentration. Please see a George Mason Chemistry advisor each semester to plan course selections carefully.

	GEORGE MASON DEGREE REQUIREMENT	Credits	Course	GEORGE MASON CORE/DEGREE EQUIVALENT
21	**Gen Ed: Written Communication (UL)**	3	ENGH 302 Advanced Composition	Written Comm
22	**Chemistry Courses: All Concentrations**	4	CHEM 321 Quantitative Chemical Analysis	Major
23	**Concentration Courses: All Concentrations**	3	CHEM 331 Physical Chemistry I[3] **(Fall Only)**	Major
24	**Concentration Courses: All Concentrations**	2	CHEM 336 Physical Chemistry Lab I[3]	Writing Intensive

Students select one concentration from lines 26 - 30 below				
25	**Concentration Courses: Analytical Chemistry**	31-38	MATH 213 Analytic Geometry and Calculus III BIOL 213 Cell Structure & Function **AND** BIOL 215 Cell Structure & Function Lab CHEM 463 General Biochemistry I CHEM 332 Physical Chemistry II[3] **(Spring Only)** CHEM 441 Properties and Bonding of Inorganic Compounds **(Fall Only)** CHEM 427 Aquatic Environmental Chemistry **(Fall Only) OR** CHEM 355 Undergraduate Research **OR** CHEM 451 Special Projects in Chemistry **OR** CHEM 452 Special Projects in Chemistry CHEM 422 Instrumental Methods of Chemical Analysis **(Fall Only)** CHEM 465 Biochemistry Lab **OR** CHEM 445 Inorganic Preparations and Techniques **(Spring Only)** CHEM 424 Principles of Chemical Separation **(Fall Only) OR** CHEM 425 Electroanalytical Chemistry **(Spring Only)** CHEM 337 Physical Chemistry Lab II[3] **(Spring Only)** CHEM 423 Instrumental Methods of Chemical Analysis Lab **(Spring Only)** Supporting Science Electives[4] (6 credits)(See: Advisor) ***(if MTH 245 is completed at NOVA, only 3 credits are needed)***	Major
26	**Concentration Courses: Biochemistry**	25-29	BIOL 213 Cell Structure & Function **AND** BIOL 215 Cell Structure & Function Lab ***(If BIOL 213-215 is not completed while at NOVA)*** CHEM 463 General Biochemistry I BIOL 305 Biology of Microorganisms **AND** BIOL 306 Biology of Microorganisms Lab CHEM 446 Bioinorganic Chemistry **(Fall Only)** CHEM 464 General Biochemistry II **(Spring Only)** CHEM 465 Biochemistry Lab Approved Science Electives: CHEM/BIOL[4] (9 credits)	Major
27	**Concentration Courses: Environmental Chemistry**	34-42	MATH 213 Analytic Geometry and Calculus III **OR** STAT 250 Introductory Statistics I BIOL 213 Cell Structure & Function **AND** BIOL 215 Cell Structure & Function Lab **OR** EVPP 210 Environmental Biology: Molecules and Cells CHEM 332 Physical Chemistry II[3] **(Spring Only)** GEOL 101 Physical Geology **AND** GEOL 103 Physical Geology Lab ***(if GOL 105 is not completed at NOVA)*** GEOL 306 Soil Science CHEM 441 Properties and Bonding of Inorganic Compounds **(Fall Only) OR** CHEM 446 Bioinorganic Chemistry **(Fall Only)** CHEM 422 Instrumental Methods of Chemical Analysis **(Fall Only)** CHEM 427 Aquatic Environmental Chemistry **(Fall Only)** CHEM 337 Physical Chemistry Lab II[3] **(Spring Only)** CHEM 423 Instrumental Methods of Chemical Analysis Lab **(Spring Only)** CHEM 438 Atmospheric Chemistry **(Spring Only)** CHEM Elective (3 credits) (See: Advisor) Supporting Science Electives[4] (6 credits) (See: Advisor)	Major
28	**Concentration Courses: Materials Chemistry**	24-28	MATH 213 Analytic Geometry and Calculus III CHEM 332 Physical Chemistry II[3] **(Spring Only)** CHEM 441 Properties and Bonding of Inorganic Compounds **(Fall Only)** CHEM 472 Modern Polymer Chemistry **(Fall Only)** CHEM 445 Inorganic Preparations and Techniques **(Spring Only)** CHEM 337 Physical Chemistry Lab II[3] **(Spring Only)** Additional Science Electives[4] (12 credits) (See: Advisor)	Major

29	**Concentration Courses: No Concentration**	28-32	MATH 213 Analytic Geometry and Calculus III BIOL 213 Cell Structure & Function **AND** BIOL 215 Cell Structure & Function Lab ***(If BIOL 213-215 is not completed while at NOVA)*** CHEM 332 Physical Chemistry II[3] **(Spring Only)** CHEM 463 General Biochemistry I CHEM 441 Properties and Bonding of Inorganic Compounds **(Fall Only)** CHEM 422 Instrumental Methods of Chemical Analysis **(Fall Only)** CHEM 423 Instrumental Methods of Chemical Analysis Lab **(Spring Only)** CHEM 445 Inorganic Preparations and Techniques CHEM 337 Physical Chemistry Lab II[3] **(Spring Only)** CHEM Elective[4](3 credits) In-Depth Elective[4](3 credits)	Major
30	**Gen Ed: Apex**	3	Approved Apex Course[5]	Apex
31	**General Electives**	2-20	General Elective (if needed to bring total credits to 120; some electives must be upper-level; See: Advisor)	General Elective
B.S. CHEMISTRY DEGREE TOTAL		**120 - 125**		

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 George Mason graduation. Please see your ADVANCE Coach for more information and to enroll.

Important Academic Information:

[1]If students are placed directly into MTH 263 and do not need MTH 167, students should work with their academic coach to choose an appropriate science course. Students must complete the Physics sequence they begin: PHY 201 AND PHY 202 or PHY 241 AND PHY 242.

[2]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.

[3]Prerequisite sequencing and course availability require careful attention to stay on track each term. Please see your George Mason advisor to plan your course selections regularly. Students may need to split Physical Chemistry (CHEM 331/336, CHEM 332/337) into separate terms.

[4]For approved concentration courses, please visit: https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/#requirementstext

[5]For approved Mason Core courses, please visit - https://catalog.gmu.edu/mason-core/

General Education Waiver Policy and Guidance:

• Students who complete a VCCS transfer associate degree (AS, AA, or AFA) will receive a waiver of the Foundation and Exploration (lower division) Mason Core general education categories, which can be found here: https://catalog.gmu.edu/mason-core/ . To be eligible for the waiver, the students must provide the George 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.

• When a course fulfills a Mason Core requirement **and** a major or college requirement (e.g. Major & Quant), students must complete the course listed on the pathway to fulfill the major/college requirement. Courses that fulfill only Mason Core Foundation and Exploration categories are recommendations. In most pathways, ADVANCE students must complete a Quantitative Reasoning course to matriculate through ADVANCE.

• ADVANCE students must complete the associate degree indicated on their pathway (see the ADVANCE Program Milestones listed above). Students who withdraw from ADVANCE and transfer without the associate degree or UCGS are required to complete each Mason Core general education category.

Additional General Notes & Resources:

• Students majoring in chemistry must complete the chemistry program requirements with a minimum GPA of 2.30 and present no more than two courses with a grade of 'D' (1.00) in CHEM coursework at graduation.

• Students interested in Pre-Health Professions (Pre-Med, Pre-Dentistry, Pre-Podiatry, Pre-Optometry, Pre-Veterinary, Pre-Pharmacy, Pre-Physician Assistant, Pre-Occupational Therapy, and Pre-Physical Therapy) are strongly encouraged to meet with the Health Professions Advisor regarding the appropriate prerequisite courses for their field of choice. For more information, please visit: https://prehealth.gmu.edu/

• For academic policies and procedures, please see the George 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.