

College of Science
Department of Chemistry
Bachelor of Science in Chemistry
Major in Chemistry
for students graduating in Calendar Year 2020 ^{1, 2, 3, 4, 5}

PART 1: CURRICULUM FOR LIBERAL EDUCATION (CLE) REQUIREMENTS

CLE requirements and approved courses are available online:

<http://www.cle.prov.vt.edu/guides/index.html>

(credit hours in parentheses)

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|------|--|----------------------|
| I. | Writing and Discourse (Area 1: 6 credits + ViEWS)
ENGL 1105-1106 ⁶ First-Year Writing
& ViEWS requirement ⁷ | (3) _____, (3) _____ |
| II. | Ideas, Cultural Traditions, and Values (Area 2: 6 credits required)
(Select from approved CLE courses) | (3) _____, (3) _____ |
| III. | Society and Human Behavior (Area 3: 6 credits required)
(Select from approved CLE courses) | (3) _____, (3) _____ |
| IV. | Scientific Reasoning and Discovery (Area 4) ⁸ | |
| V. | Quantitative and Symbolic Reasoning (Area 5) ⁹ | |
| VI. | Creativity and Aesthetic Experience (Area 6: 3 credits required)
(Select from approved CLE courses; must be a three-credit course.) | (3) _____ |
| VII. | Critical Issues in a Global Context (Area 7: 3 credits required)
(Select from approved CLE courses) | (3) _____ |

PART 1: (CLE) credit hour requirement:

24 credits

PART 2: COLLEGE AND DEPARTMENT REQUIREMENTS

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| I. | Chemistry Courses (47 credits) | |
| | CHEM 1055-1056 ^{1, 6} | General Chemistry for Majors (4) _____, (4) _____ |
| | CHEM 1065-1066 ^{6, 10, 11} | General Chemistry for Majors lab (1) _____, (1) _____ |
| | CHEM 2154 ⁶ | Analytical Chemistry for Majors (4) _____ |
| | CHEM 2164 | Analytical Chemistry for Majors lab (1) _____ |
| | CHEM 2424 | Descriptive Inorganic Chemistry (3) _____ |
| | CHEM 2565 ^{1, 6, 12} -2566 | Principles of Organic Chemistry (3) _____, (3) _____ |
| | CHEM 2555-2556 ¹³ | Organic Syn-Tech lab (2) _____, (2) _____ |
| | CHEM 2984 | Chemistry First Year Experience (1) _____ |
| | CHEM 3615-3616 | Physical Chemistry (3) _____, (3) _____ |
| | CHEM 3625-3626 | Physical Chemistry lab (1) _____, (1) _____ |
| | CHEM 4014 | Survey of Chemical Literature (1) _____ |
| | CHEM 4114 | Instrumental Analysis (3) _____ |
| | CHEM 4124 | Instrumental Analysis Lab (1) _____ |
| | CHEM 4404 | Physical Inorganic Chemistry (3) _____ |
| | CHEM 4414 | Inorganic Synthesis & Techniques lab (2) _____ |
| II. | Mathematics Courses (16 credits) | |
| | MATH 1114 ⁶ | Elementary Linear Algebra (2) _____ |
| | MATH 1225-1226 ⁶ | Calculus of a Single Variable (4) _____, (4) _____ |
| | MATH 2204 ⁶ | Introduction to Multivariable Calculus (3) _____ |
| | MATH 2214 | Introduction to Differential Equations (3) _____ |
| III. | Physics Courses (8 credits) | |
| | PHYS 2305 ⁶ -2306 | Foundations of Physics I & II (incl. lab) (4) _____, (4) _____ |
| IV. | Technical Electives (12 credits) | |
| | BCHM 3114 or 4115 | Biochemistry elective (3) _____ |
| | STAT or CS course ¹⁴ | Statistics or Computer Science elective (3) _____ |
| | CHEM 4534, 4634, or 4424 ¹⁵ | Polymer chemistry elective (3) _____ |
| | CHEM 4xxx ¹⁶ | CHEM/BCHM/CHE elective (3) _____ |
| V. | FREE ELECTIVES (sufficient to achieve 120 credit graduation requirement or more) | |
| | () _____ () _____ () _____ () _____ | |
| | () _____ () _____ () _____ () _____ | |

PART 2: College and department credit hour requirement:

96 credits

¹ Minimum Grade Requirement: Chemistry majors must earn a grade of “C” (2.0) or better in CHEM 1055, 1056, and 2565.

- If a chemistry major fails to earn a “C” (2.0) or better in CHEM 1055, the student must either retake this class (and earn the minimum grade) **or** take CHEM 1035-1036, *General Chemistry*, to remain in good standing for a chemistry degree. If the chemistry major elects to take CHEM 1035-1036, a minimum grade of “B” (3.0) is required in both in order to enroll in CHEM 2565 and progress towards the B.S. degree.
- If a chemistry major fails to earn a “C” (2.0) or better in CHEM 2565, the student must either retake this class (and earn the minimum grade) **or** take CHEM 2535, *Organic Chemistry*, to remain in good standing for a chemistry degree. If the chemistry major elects to take CHEM 2535, a minimum grade of “B” (3.0) is required to count CHEM 2535 as CHEM 2565 for the CHEM degree.

² This checksheet has no hidden prerequisites, although some of the courses listed are prerequisites for other courses. The checksheet for 2020 will be approved by the University Registrar in 2018. Please see your advisor or consult the Undergraduate Course Catalog for more information. Please note: Chemistry majors are expected to be “calculus ready” upon the start of their curriculum.

³ Credit hours and GPA requirements: Graduation requires completion of a minimum of 120 credit hours with a GPA of 2.0 or greater for all hours attempted. In addition, students must have an in-major GPA of 2.0 or greater counting all required chemistry courses and chemistry electives. The in-major CHEM GPA excludes Introduction to Chemistry (CHEM 1015, 1016, 1025, 1026), Chemistry First-Year Experience, and Chemistry Problem Solving Skills. No more than 6 hours of CHEM 2974, 4974, and 4994 will be included in a student’s in-major GPA.

⁴ Effective Spring 2015, chemistry majors must maintain an in-major GPA of 2.0. If a chemistry major fails to meet this requirement for one academic term the student will be placed on Policy 91 (Satisfactory Progress Towards Degree) probation. Failure to meet the standard for two consecutive semesters will result in a Policy 91 suspension.

⁵ Foreign Language requirement (see below)

⁶ For “satisfactory progress towards degree,” these courses and their prerequisites must be completed by the time the student has attempted 72 hours.

⁷ Fulfilled by CHEM 4014 and CHEM 3626.

⁸ Fulfilled by PHYS 2305 and PHYS 2306.

⁹ Fulfilled by MATH 1225 and MATH 1226.

¹⁰ Prior credit for CHEM 1045 may be substituted for CHEM 1065.

¹¹ Prior credit for CHEM 1046 may be substituted for CHEM 1066.

¹² Effective Fall 2014, if a student has taken CHEM 2535 prior to adding a degree in chemistry, a minimum grade of “B” (3.0) or better is required in order to substitute CHEM 2535 as CHEM 2565.

¹³ Since CHEM 2545-2546 does not satisfy the prerequisite for CHEM 2556 (due to training on specific instrumentation), if a student adds a CHEM BS degree after completing CHEM 2545-2546, two or more credits of CHEM 4994 may substitute for CHEM 2556 to meet the requirement of 400 lab hours beyond general chemistry for an ACS-approved degree.

¹⁴ Any three-credit STAT or CS course, with the exceptions of CS 1004 and CS 1xxx, may satisfy STAT/CS requirement for chemistry degree.

¹⁵ SBIO 3444 or SBIO 4424 (cross-listed with CHEM 4424) may count as polymer chemistry elective **or** upper-level restricted chemistry elective.

¹⁶ A biochemistry or chemical engineering student should not double-count coursework required for that major towards the chemistry upper-level elective.

Foreign Language Requirement: Students who did not successfully complete at least two years of a single foreign, classical, or sign language during high school must successfully complete six semester hours of a single foreign, classical, or sign language at the college level. Courses taken to meet this requirement do not count toward the hours required for graduation. Please consult the Undergraduate Catalog for details.