All primary chemistry majors should pursue the American Chemical Society accredited major. As the most prestigious and most comprehensive option, it will provide flexible career options after graduation. In addition to the ACS accredited major, there are three additional options. For those interested in pursuing careers in biochemistry, the biochemistry major provides a strong background in chemistry and biochemistry as well as the opportunity to explore advanced courses in biology. For students who are interested in chemistry as a path to a professional program and will earn another major or a minor, the Honors major is an option that provides a strong foundation in chemistry and teaches skills that will apply toward many careers. It does not provide as much in depth work in chemistry as the ACS accredited degree. If you are pursuing chemistry as a secondary major, the Chemistry Major is also an option. You cannot major in both Chemistry and Biochemistry.

### BIOCHEMISTRY MAJOR Check List

#### Required Introductory Chemistry Courses
- □ CH105 & CH106 – General Chemistry, or CH107 – Advanced General Chemistry

#### Required Chemistry Courses
- □ CH351 – Organic Chemistry I
- □ CH352 – Organic Chemistry II
- □ CH360 – Modern Issues in Biochemistry
- □ CH361 – Biochemistry I
- □ CH363 – Biochemistry Laboratory
- □ CH462 – Biochemistry II
- □ CH321 – Analytical Chemistry

#### Required Allied Courses
- □ BI210 – Genetics – Fundamentals
- □ BI220 – Cellular and molecular Biology – Fundamental
- □ MA106 – Calculus I
- □ PH107 – Elementary Physics I
- □ PH108 – Elementary Physics II

#### Other requirements
- □ At least two CH or BI electives at the 300/400 level, totaling at least 6 credits: CH463 – Biochemistry Laboratory II, CH471 or CH472 – Physical Chemistry Laboratory, CH332 – Inorganic Chemistry, CH432 – Synthesis and Characterization, CH431 Advanced Inorganic Chemistry, CH422 – Analytical Chemistry II, CH424 – Instrumental Analysis Laboratory, CH4X9 – Special Topics in Chemistry, BI433 – Advanced Cell Biology, BI411 – Principles of Physiology, BI432 – Plant Physiology, BI435 – Molecular Genetics, BI 438 – Microbiology, BI460 – Cell and Molecular Neurobiology, BI436 – Genomics, Bioinformatics and Gene Evolution

*To earn HONORS* IN BIOCHEMISTRY, you must have a GPA of at least 3.6 and the following:

#### Required Introductory Chemistry Courses
- □ CH105 & CH106 – General Chemistry, or CH107 – Advanced General Chemistry

#### Required Chemistry Courses
- □ CH351 – Organic Chemistry I
- □ CH352 – Organic Chemistry II
- □ CH360 – Modern Issues in Biochemistry
- □ CH361 – Biochemistry I
- □ CH363 – Biochemistry Laboratory
- □ CH462 – Biochemistry II
- □ CH321 – Analytical Chemistry

#### Required Allied Courses
- □ BI210 – Genetics – Fundamentals
- □ BI220 – Cellular and molecular Biology – Fundamental
- □ MA106 – Calculus I
- □ PH107 – Elementary Physics I
- □ PH108 – Elementary Physics II

#### Other requirements
- □ At least two CH or BI electives at the 300/400 level, totaling at least 6 credits: CH463 – Biochemistry Laboratory II, CH471 or CH472 – Physical Chemistry Laboratory, CH332 – Inorganic Chemistry, CH432 – Synthesis and Characterization, CH431 Advanced Inorganic Chemistry, CH422 – Analytical Chemistry II, CH424 – Instrumental Analysis Laboratory, CH4X9 – Special Topics in Chemistry, BI433 – Advanced Cell Biology, BI411 – Principles of Physiology, BI432 – Plant Physiology, BI435 – Molecular Genetics, BI 438 – Microbiology, BI460 – Cell and Molecular Neurobiology, BI436 – Genomics, Bioinformatics and Gene Evolution

*To earn HIGH HONORS – complete the above, have a GPA of 3.7 or above and complete an honors thesis or honors exam

*To earn HIGHEST HONORS – complete the above, have a GPA of 3.8 or above and complete BOTH honors thesis and honors exam
CHEMISTRY MAJOR Check List

Required Introductory Chemistry Courses
☐ CH105 & CH106 – General Chemistry, or
   CH107 – Advanced General Chemistry

Required Chemistry Courses
☐ CH351 – Organic Chemistry I
☐ CH352 – Organic Chemistry II

Enough Hours of Chemistry for a Total of 32 Hours (Must Include Two of the Four Areas)
☐ CH332, CH431, CH432 – Inorganic Chemistry Courses
☐ CH321, CH422, CH424 – Analytical Chemistry Courses
☐ CH361, CH462, CH463 – Biological Chemistry Courses
☐ CH471, CH472, CH473 – Physical Chemistry Courses

Required Allied Courses
☐ MA106 – Calculus I
☐ MA107 – Calculus II
☐ PH107-8 – Elementary Physics, or
   PH201-2 – Analytical Physics

To earn HONORS* IN CHEMISTRY, you must have a GPA of at least 3.6 and the following:

Required Introductory Chemistry Courses
☐ CH105 & CH106 – General Chemistry, or
   CH107 – Advanced General Chemistry

Required Chemistry Courses
☐ CH351 – Organic Chemistry I
☐ CH321 – Analytical Chemistry I
☐ CH332 – Inorganic Chemistry
☐ CH361 – Biochemistry I: Bio-organic
☐ CH471 – Quantum Mechanics or CH472
   Thermodynamics and Kinetics

Required Allied Courses
☐ MA106 – Calculus I
☐ MA107 – Calculus II
☐ PH107-8 – Elementary Physics, or
   PH201-2 – Analytical Physics

Other requirements
☐ CH392 – Chemistry Seminar I
☐ At least 32 hours of chemistry not including CH392
   Chemistry Seminar I

CHEMISTRY MINOR Check List

Required Introductory Chemistry Courses
☐ CH105 & CH106 – General Chemistry, or
   CH107 – Advanced General Chemistry

Required Chemistry Courses
☐ CH351 – Organic Chemistry I
☐ CH352 – Organic Chemistry II

One Additional Course
☐ CH321, CH332, CH361, CH418, CH471, or CH472

*To earn HIGHER HONORS – complete the above, have a GPA of 3.7 or above and complete an honors thesis or honors exam

*To earn HIGHEST HONORS – complete the above, have a GPA of 3.8 or above and complete BOTH honors thesis and
   honors exam
# ACS Certification

ACS CERTIFICATION is possible if you complete the following:

## Required Introductory Chemistry Courses
- CH105 & CH106 – General Chemistry, or
- CH107 – Advanced General Chemistry

## Required Allied Courses
- MA106 – Calculus I
- MA107 – Calculus II
- PH107-8 – Elementary Physics, or
- PH201-2 – Analytical Physics

## Required Foundation Chemistry Courses
- CH351 – Organic Chemistry I <sup>a</sup>
- CH321 – Analytical Chemistry I <sup>b</sup>
- CH332 – Inorganic Chemistry
- CH471 – Quantum Mechanics or CH472 Thermodynamics and Kinetics
- CH361 – Biochemistry I: Bio-organic

## Required In-depth Chemistry Courses
- CH352 – Organic Chemistry II <sup>a</sup>

## Pick and Choose In-depth Chemistry Courses (3 additional courses required)
- CH422 – Analytical Chemistry II
- CH431 – Advanced Inorganic Chemistry
- CH4x9 – Special Topics in Chemistry
- CH462 – Biochemistry II: Central Metabolism
- CH471 – Quantum Mechanics or CH472 Thermodynamics and Kinetics

## Pick and Choose Chemistry Laboratory Courses (choose 4 of 5 areas to obtain 400 lab hours)
- Analytical Chemistry (CH321 counts for area)
  - CH424 Instrumental Analysis Laboratory (2 hours, may repeat for credit) <sup>b</sup>
- Inorganic Chemistry
  - CH432 – Inorganic Chemistry Laboratory (2 hours) <sup>b</sup>
- Organic Chemistry (CH351/2 count for area)
  - CH454 – Organic Chemistry Laboratory (2 hours) <sup>b</sup>
- Biochemistry
  - CH363 – Biochemistry Laboratory I (2 hours) <sup>b</sup>
- CH463 – Biochemistry Laboratory II (2 hours) <sup>b</sup>
- Physical Chemistry
  - CH473 – Physical Chemistry Laboratory: Physical Properties (2 hours) <sup>b</sup>
- Interdisciplinary
  - CH404 – Interdisciplinary Laboratory (2 hours) <sup>b</sup>

## Recommended Chemistry Courses
- CH491 – Chemistry Literature
- CH392 – Chemistry Seminar: Observation
- CH492 – Chemistry Seminar: Presentation
- CH493, CH494 – Undergraduate Research <sup>abc</sup>
- CH411, CH412 – Independent Study

## Recommended Allied Courses
- MA208 – Calculus and Analytic Geometry III
- MA224 – Differential Equations

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* 42/400 lab hours
* 56/400 lab hours
* 84/400 lab hours

Research can satisfy up to four semester credit hours of the in-depth course requirement for student certification and can account for up to 180 of the required 400 laboratory hours. A student who uses research to meet the ACS-certification requirements must prepare a well-written, comprehensive and well-documented research report, including safety considerations where appropriate. (see https://www.acs.org/content/dam/acsorg/about/governance/committees/training/2015-acs-guidlines-for-bachelors-degree-programs.pdf)