

*The B.S. degree objectives build on the B.A., and the objectives for the ACS certification build on those of the B.S.*

**Base Learning Objectives for the B.A.**

- Demonstrate understanding of the fundamental concepts of general, organic, inorganic, analytical, biochemistry, and physical chemistry.
  - Demonstrate critical thinking and analysis skills to solve complex chemical problems, e.g., analysis of data, synthetic logic, spectroscopy, structure and modeling, team-based problem solving, etc.
  - Demonstrate the ability to calculate the physical properties of chemical reagents, predict outcomes of chemical reactions, and perform critical analysis of data.
  - Demonstrate an ability to conduct experiments in the above sub-disciplines with mastery of appropriate techniques and proficiency using core chemical instrumentation and modeling methods.
- Demonstrate effective communication skills in written communication, poster presentation, oral presentation, and group work.
- Demonstrate the ability to search, understand, and put into use primary chemical literature as well as general scientific publications.
- Demonstrate good skills in recognizing hazards, minimizing risks, and safe laboratory practices.
- Demonstrate proper laboratory notebook and record keeping skills.
- Demonstrate the skills necessary to continue their post-graduate pursuits in a variety of disciplines -- chemistry, medicine, dentistry, pharmacy, and other fields.
- Develop an awareness of the impact of chemistry on the environment and how understanding chemical principles helps them to be knowledgeable world citizens.

**Additional Learning Objectives for all B.S. programs**

- Demonstrate knowledge about research skills in chemistry.
- Conduct mentored research at PLU or in other appropriate settings.
- Demonstrate proper research notebook and record keeping skills.
- Communicate the results of the research to a public audience in various formats.

**B.S., General**

- Demonstrate additional knowledge and skills in physical chemistry both lecture and laboratory
- Demonstrate additional knowledge and skills in organic, biochemistry, inorganic, or polymer chemistry
- Develop a broad competence with instrumentation including electronics, optics, instrument design, and exposure to multiple instruments.

**B.S., Biochemistry Emphasis**

- Develop a firm background in the fundamentals of biology
- Demonstrate advanced knowledge and skills in higher level biology and/or chemistry
- Demonstrate advanced knowledge of biochemistry
- Demonstrate biochemistry specific laboratory skills
- Develop a broad competence with instrumentation including electronics, optics, instrument design, and exposure to multiple instruments.

**B.S., Chemical Physics Emphasis**

- Develop a firm background in the fundamentals of Physics
- Demonstrate additional knowledge and skills in physical chemistry
- Demonstrate additional skills with ACS certification.

**All B.S. degrees with ACS Certification**

- Demonstrate a broadened level of chemical skills with continued study in:
  - advanced inorganic chemistry
  - two other advanced courses