Degree Learning Goals for the B.S. in Chemical Physics

**DLG 1:** Establish a Foundation and Depth of Knowledge Pertaining to Fundamental Chemical and Physical Principles.

**SLO 1.1:** Recognize the importance of classical physical theory including mechanics and electromagnetism to chemical theory  
**SLO 1.2:** Recognize, describe, draw, and name, important classes of atoms, functional groups, and molecules.  
**SLO 1.3:** Describe the atomic and subatomic structure and properties of matter with an in-depth understanding of the underlying quantum mechanical theory.  
**SLO 1.4:** Describe the origin and properties of chemical bonding and the influence on structure and properties of the molecules.  
**SLO 1.5:** Describe how the macromolecular properties of matter are determined by the molecular characteristics.  
**SLO 1.6:** Predict the outcome of, and describe the mechanisms for, various chemical reactions.

**DLG 2:** Demonstrate Competency in Problem Solving and Quantitative Reasoning

**SLO 2.1:** Demonstrate the ability to quantify and interpret the reliability of measured physical and chemical properties of molecules and mixtures employing dimensional and appropriate statistical analysis.  
**SLO 2.2:** Demonstrate knowledge of the main techniques employed to synthesize, separate, purify, identify, and quantitate chemical compounds.  
**SLO 2.3:** Develop knowledge of how to apply the scientific method in exploring chemical and physical phenomena.

**DLG 3:** Develop Skills used in Professional Settings

**SLO 3.1:** Develop proficiency with modern instrumentation and techniques relevant to physics and chemistry.  
**SLO 3.2:** Demonstrate the ability to read and comprehend a Standard Operating Procedure.  
**SLO 3.3:** Maintain clear and legible record of laboratory work.  
**SLO 3.4:** Develop knowledge of proper and safe chemical use, storage, and disposal.  
**SLO 3.5:** Exhibit effective oral and written communication skills.  
**SLO 3.6:** Develop the skills to effectively collaborate on complex projects.  
**SLO 3.7:** Exhibit knowledge of scientific ethics relating to treatment of data, proper citation of others' work, plagiarism, and publication of scientific results.

**DLG 4:** Effectively Employ Physical and Chemical Literature and Information Management Systems.

**SLO 4.1:** Retrieve information efficiently and effectively by searching the scientific literature.  
**SLO 4.2:** Develop the capability to evaluate technical articles critically.  
**SLO 4.3:** Develop and maintain a personal database of relevant scientific literature.