**Changes in the Applied Computational Physics (ACP) Program. Introduction of Specializations: Astrophysics, Quantum Technology and Computational Physics.**
Effective Date: Fall 2025 (Tentative date)

The following revisions are proposed for the B.S. in Applied Computational Physics in the ACP Program Requirements

| FROM: | TO: |
|---|---|
| ~~**Computer Science Requirements: 9 cr**~~<br><br>~~CST 1101 Problem Solving with Computer Programming – 3 cr~~<br>~~CST 1201 Programming Fundamentals – 3 cr~~<br>~~CST 1204 Database Systems Fundamentals – 3 cr~~<br><br>~~**General Physics Requirements: 25 cr**~~<br><br>~~PHYS 1441 General Physics I: Calculus based – 5 cr~~<br>~~PHYS 1442 General Physics II: Calculus based – 5 cr~~<br>~~PHYS 2443 Modern Physics – 4 cr~~<br>~~PHYS 2607 Introduction to Quantum Mechanics – 3 cr~~<br>~~PHYS 3100 Classical Mechanics -- 4 cr~~<br>~~PHYS 3200 Electricity and Magnetism – 4 cr~~<br><br>~~**Applied Computational Physics (ACP) Requirements: 16 cr**~~<br><br>~~PHYS 3300 Computational Fluid Dynamics -- 3 cr~~<br>~~PHYS 3600 Machine Learning for Physics and Astronomy – 3 cr~~<br>~~PHYS 4100 Computational Methods – 4 cr~~<br>~~PHYS 4150 Computational Methods Laboratory -- 2 cr~~<br>~~PHYS 4200 Internship/Real Research Experience – 4 cr~~<br><br>~~**Mathematics Requirements: 19 cr**~~<br><br>~~MAT 1475 Calculus I -- 4 cr~~<br>~~MAT 1575 Calculus II – 4 cr~~<br>~~MAT 2675 Calculus III – 4 cr~~<br>~~MAT 2580 Linear Algebra -- 3 cr~~<br>~~MAT 2572 Probability and Mathematical Statistics I -- 4 cr~~<br><br>~~**Program Electives: 9 cr**~~ | **Computer Science and Mathematics Requirements: 21 cr**<br>**(All Specializations)**<br>CST 1101 Problem Solving with Computer Programming -- 3 cr<br>CST 1201 Programming Fundamentals -- 3 cr<br>or MAT 1630 Introduction to Computational Science -- 3 cr<br>MAT 1475 Calculus I -- 4 cr<br>MAT 1575 Calculus II -- 4 cr<br>MAT 2675 Calculus III -- 4 cr<br>MAT 2580 Linear Algebra -- 3 cr<br><br>**Applied Computational Physics (ACP) Core Requirements: 39 cr**<br>**(All Specializations)**<br>PHYS 1441 General Physics I: Calculus based – 5 cr<br>PHYS 1442 General Physics II: Calculus based – 5 cr<br>PHYS 2443 Modern Physics -- 4 cr<br>PHYS 2601 Introduction to Research – 4 cr<br>PHYS 2607 Introduction to Quantum Mechanics -- 3 cr<br>PHYS 3100 Classical Mechanics -- 4 cr<br>PHYS 3200 Electricity and Magnetism -- 4 cr<br>PHYS 4100 Computational Methods -- 4 cr<br>PHYS 4150 Computational Methods Laboratory -- 2 cr<br>PHYS 4200 Internship/Real Research Experience – 4 cr<br><br>**Astrophysics Specialization Additional Requirements**: **14-15 cr**<br>PHYS 2700 Introduction to Astrophysics – 4 cr<br>PHYS 3600 Machine Learning for Physics and Astronomy – 3 cr<br>PHYS 3700 Cosmology – 4 cr<br>One Additional PHYS Elective Course* – 3 or 4 cr<br>*(*Non-PHYS elective allowed as well with permission from Program Coordinator)*<br><br>**Computational Physics Specialization Additional Requirements**: **13-15 cr**<br>PHYS 2609 Introduction to Quantum Computing 4 cr<br>PHYS 3600 Machine Learning for Physics and Astronomy 3 cr<br>Two Additional Physics Elective Courses* – 3 or 4 cr each<br>*(*Non-PHYS electives allowed as well with permission from Program Coordinator)*<br><br>**Quantum Technology Specialization Additional Requirements: 17 cr**<br>PHYS 1050 The Semiconductor World: From Coulomb to Compiler – 1 cr<br>PHYS 2501 Principles of Experimental Design I – 2 cr<br>PHYS 2502 Principles of Experimental Design II – 2 cr<br>PHYS 4500 Semiconductor Physics and Devices – 4 cr<br>CHEM 1110 General Chemistry I – 4 cr<br>CHEM 1210 General Chemistry II – 4 cr<br><br>**Free Elective classes (up to 120 credits)**. |