Program Learning Goals – Spring Quarter

Through your work in spring quarter, you will have the opportunity to:

1. Further develop an intentionally inclusive and anti-bias learning environment that is attentive to and supportive of the unique gifts and background of each student.
2. (Cross-Program Learning Goals)
   a. Improve your ability to articulate and assume responsibility for your own work.
   b. Strengthen your collaborative skills and the ability to respond in useful ways to the work of colleagues.
   c. Improve your skills in clear communication of mathematical and scientific ideas, both orally and in writing.
   d. Improve your ability to read technical textbooks with focus on developing conceptual understanding and procedural skills.
3. (Chemistry Learning Goals)
   a. Understand how chemical properties of elements can be predicted by theoretical models and how predictive models for reactions can be created based on measurable quantities such as reaction energies and concentrations (and how they change over time).
   b. Learn about chemical reactions and their products in the context of laboratory and everyday phenomena.
   c. Learn to use fundamental lab tools and apply these to investigate chemical and physical properties of solids, liquids, and gases.
   d. Explore lab-based scientific inquiry through making a testable hypothesis, carrying out experiments, and data analysis with comparisons to literature and peer results.
4. (Mathematics Learning Goals)
   a. Deepen your prerequisite understanding of derivatives and integrals and associated mathematical concepts.
   b. Define and distinguish between sequences and series; determine whether an infinite series converges or diverges using the integral and comparison tests, and when it converges, determine its sum in special cases (including geometric series and telescoping series); and represent functions as power series, particularly Taylor and Maclaurin series.
   c. Represent lines, planes, and surfaces in more than two dimensions, in rectangular, cylindrical, and spherical coordinates.
   d. Interpret multivariable functions symbolically and graphically (including level curves); find partial derivations of multivariable functions (including using the chain rule)l and use partial derivatives to determine direction derivatives, the gradient, and maximum and minimum values.
   e. Set-up, evaluate, and apply double integrals over rectangles, general regions, in polar coordinates, and to calculate surface areas.
5. (Physics Learning Goals)
   a. Utilize the mathematical models that describe and explain motion in the natural world.
   b. Understand that physics is based on a few key principles that can be applied to a wide range of natural phenomena.
   c. Use the main ideas of optics, waves, quantum mechanics, and special relativity to solve fundamental and applied problems.
   d. Experience that physics is both a mathematical and an experimental science.
6. (Independent Project Learning Goals): TBD between faculty and student

Credit Equivalencies – Spring Quarter

Calculus III (4 credits)	by year end: 12 credits in Calculus I, II, III
General Chemistry III w/ lab (4 credits)	by year end: 16 credits in General Chemistry I, II, III w/ lab
University Physics III w/ lab (4 credits)	by year end: 16 credits in University Physics I, II, III w/ lab
Independent Project (4 credits)	