# Program Learning Goals

(modified for Self-Evaluation writing)

The fall quarter Program Learning Goals can be considered in 2 broad categories (though there will certainly be some overlap or some gaps):

i) Process Goals, which are likely to be addressed in a broad array of Evergreen programs, though with perhaps slightly shifted focus in non-science programs;
ii) Subject Area Goals, which include Content and Skills, and are likely to be similar to those found when the subjects are taught at most places.

For convenience, the Goals below are numbered. Where appropriate, goals are followed by prompting questions and/or examples of where evidence for meeting the goals might be found. These examples are not meant to be (nor could they be) exhaustive, and we welcome your additions.

## Process Goals

**1) Improve your ability to articulate and assume responsibility for your own work.**

Did you attend class regularly and engage fully in class activities? Were you properly prepared for the class session (did pre-class reading, came with notebook and tools, completed pre-labs, etc.)? Attendance and engagement can be shown via your Program Activities Log, the quality of your reading and lecture notes, the quality of work in your lab and problem set notebooks, etc. If you missed class, did you check in your faculty? Get notes from classmate? Did you submit most of the required work, and did it demonstrate understanding? Submission of work and quality of learning can be shown via your Assignments and Assessments Account. If you did poorly on a quiz or exam, did you submit revisions? If you missed submitting an on-line problem set, is it present in your problem set notebook? If you did poorly on a homework set, did you look at the provided solutions to correct your work and improve your understanding? Etc.

**2) Strengthen your collaborative skills and the ability to respond in useful ways to the work of colleagues.**
**3) Improve your skills in clear communication of mathematical and scientific ideas, both orally and in writing.**

Were you enthusiastic or reluctant about opportunities to work with new people in program activities? Did you organize, support, or attend study groups? Did you adjust the things you did in response to your collaborators, in order to better support their learning? How many people in the class can you name, or say something important to them about? Did you address people in ways they found inviting or empowering? Did you re-phrase or re-present an explanation, diagram, etc. to work with a classmate who thought differently than you? Did you ask a clarifying question that helped someone think about a problem or issue differently? Did you help someone improve the quality of their solution or explanation? Did your solution or explanation help a classmate understand a topic differently, or better? Are you better able to speak precisely and/or use technical terminology appropriately? What's the quality of solutions in your problem set notebook or notes in your lab notebook? Etc.

**4) Improve your ability to read technical textbooks with focus on developing conceptual understanding and procedural skills.**

What changes do you see in your reading notes? How did you take advantage of chapter level learning goals and reading responses? How did you change your reading patterns to account for program workload but also to adequately prepare for lecture discussions? How have you changed the ways you read examples? Etc.

**5) Explore how issues of power, identity, privilege, and equity intersect with the teaching, learning, and practice of math and science.**

This is deeply individual, and depends complexly on your own personal history, experience, and privilege. We welcome your suggestions to help us think about how we can investigate (with an eye to improving) our understanding and practices around issues of difference. We are open to your articulation of your successes and failures in exploring these issues.

**Subject Area Goals**

Places to find evidence abound: exams, quizzes, revisions, graded homework, problem set notebooks, lab notebooks, in-class work, reading & lecture notes, etc.

**6) Calculus Content and Skills:**

- Gain a firm understanding of the concepts of function, slope, and limits, which provide the backdrop for calculus.
- Learn the definition of the derivative and be able to relate it to algebraic, numerical, graphical, or verbal descriptions and data.
- Learn to calculate derivatives using a variety of standard techniques.
- Learn to use derivatives in applied problems, particularly in the context of the physical sciences.

**7) Physics Content and Skills:**

- Utilize the mathematical models that describe and explain motion in the natural world.
- Understand that physics is based on a few key principles that can be applied to a wide range of natural phenomena.
- Use the main ideas of classical mechanics (kinematics to describe motion and changes in motion, and dynamics and conservation principles to understand what causes changes in motion and what limits those changes) to solve fundamental and applied problems.
- Experience that physics is both a mathematical and an experimental science.

**8) Chemistry Content and Skills:**

- Understand the structure of the periodic table and how it relates to chemical bonding and shapes of molecules.
- Learn about chemical reactions and their products in the context of laboratory and everyday phenomena.
- Learn to use fundamental lab tools and apply these to investigate chemical and physical properties of solids, liquids, and gases.
- Explore lab-based scientific inquiry through making a testable hypothesis, carrying out experiments, and data analysis with comparisons to literature and peer results.