

FQ Hallmarks (numbered), Explanatory Notes (bulleted):

1. Provide students with theoretical justifications for, and limitations of, mathematical or statistical methods, and the formulas, tools, or approaches used in the course.
2. Include application of abstract or theoretical ideas and information to the solution of practical quantitative reasoning problems arising in pure and applied research in specific disciplines, professional settings, and/or daily and civic life.
 - A minimum of 10% of course content (lecture content, homework problems, and exam problems) should include practical examples. Faculty members are encouraged to exceed this.
 - Practical examples might involve a physical situation, professional application, or daily life. Faculty members are encouraged to situate some practical examples in a rich context.
 - Practical examples should be integrated throughout the academic term.
3. Provide opportunities for practice and feedback that are designed to help students evaluate and improve quantitative reasoning skills by including a course component at least once per week with a maximum 30:1 student-to-teacher ratio.
 - Examples of acceptable formats include, but are not limited to: small lectures with maximum enrollment of 30 students; large lectures with 30-student-maximum weekly recitation sections, discussion sections, or problem sessions led by trained graduate assistants or trained undergraduate peer-tutors; large lectures with weekly 30-student-maximum supervised computer lab sessions designed to reinforce and practice lecture material.
 - Acceptable training for graduate students and undergraduate peer-tutors may include, but is not limited to, University and/or Departmental start-of-semester TA training, weekly course TA meetings, or other consistent guidance and supervision by faculty.
4. Be designed so that students will be able to:
 - Identify and convert relevant quantitative information into various forms such as equations, graphs, diagrams, tables, and/or words;
 - Select appropriate techniques or formulas, and articulate and evaluate assumptions of the selected approaches;
 - Apply mathematical tools and perform calculations (including correct manipulation of formulas);
 - Make judgments, create logical arguments, and/or draw appropriate conclusions based on the quantitative analysis of data, the assumptions made, the limitations of the analysis, and/or the reasonableness of results;
 - Effectively communicate those results in a variety of appropriate formats.
 - Individual practical examples will likely emphasize some aspects of this hallmark while omitting others. However, the course as a whole must ultimately address each aspect of this Hallmark.
 - Hallmark 4 is intended to help students identify the major components or factors involved in an analytical problem and determine the arrangement of evidence in evaluating the problem.