Quantitative Reasoning Working Group  
Spring 2014 End-of-semester Report

**Background.** The Quantitative Reasoning Working Group (QRWG) at UH Mānoa was formed in February 2014 to ensure that the required undergraduate curriculum offers students sufficient opportunities to develop quantitative reasoning (QR) skills and therefore be able to meet UH Mānoa’s standard of performance in this area. The QRWG was established by the request of the Mānoa Faculty Senate Executive Committee, General Education Committee, Foundations Board, and the Vice Chancellor for Academic Affairs.

**Members:**
- Dawne Bost, Educational Specialist, General Education Office
- Linda Furuto, Associate Professor of Mathematics Education, Curriculum Studies
- Joy Logan, Professor, Spanish
- Miguel Felipe, Assistant Professor, Music
- Michael Nassir, Instructor, Physics & Astronomy [co-chair]
- Scott Rowland, Specialist, Geology & Geophysics
- Todd Sammons, Associate Professor, English; Faculty Administrator, General Education Office
- Monica Stitt-Bergh, Associate Specialist, Assessment Office [co-chair]
- Monica Stitt-Bergh, Associate Specialist, Assessment Office [co-chair]
- Gary Tachiyama, Academic Advisor, Student Support Services

**Spring 2014 Accomplishments.**

1. Researched and gathered materials and recommendations from professional organizations, experts, and universities. Examples:
   - a. Syllabi, assignments, course descriptions, including StatWay, QuantWay, Math 100, Math 132, science courses that require quantitative reasoning, and financial literacy initiatives
   - b. Common Core Math Standards, grades 9-12
   - c. QR at other universities such as Wellesley College and CUNY
   - d. Recommendations from the Mathematical Association of America
   - e. Publications such as Health Literacy and Numeracy and Mathematics and Democracy
   - f. Association of American Colleges & Universities’ Quantitative Literacy VALUE rubric

2. Created a website to share progress and get feedback: [http://manoa.hawaii.edu/quantitativereasoning/](http://manoa.hawaii.edu/quantitativereasoning/)

3. Opened communication channels with UH faculty and notified UH faculty of our work.
   - a. Received email from 10 people; nearly all was positive and some provided constructive feedback
   - b. QRWG members discussed our efforts and received verbal and written feedback from Mānoa faculty members, including the Mānoa Arts & Sciences Faculty Senate Executive Committee; all feedback on our principles and direction was positive.

4. Created a working definition of Quantitative Reasoning (adopted from the WASC definition):
   “The ability to apply mathematical concepts to the interpretation and analysis of quantitative information in order to solve a wide range of problems, from those arising in pure and applied research to everyday issues and questions. It may include such dimensions as ability to apply math skills, judge
reasonableness, communicate quantitative information, and recognize the limits of mathematical or statistical methods.”

5. Created a set of draft Quantitative Reasoning hallmarks, based primarily on the AAC&U Quantitative Literacy VALUE rubric

A key component of QR courses will be the inclusion of discipline-specific and practical problems that come from daily life in professional and civic settings for the global citizen.

A. Practice and Feedback: ability to apply quantitative techniques to address problems within a specific discipline and real-world situations and faculty provides feedback that is designed to help students evaluate and improve quantitative reasoning skills.

B. Interpretation & Representation: ability to explain information presented in mathematical forms and convert relevant information into various forms (forms = equations, graphs, diagrams, tables, words)

C. Calculation (including correct manipulation of formulas [algebra])

D. Application/Analysis: ability to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis.

E. Assumptions: ability to make and evaluate important assumptions in estimation, modeling, and data analysis in real-world situations such as . . . [TBD].

F. Communication: express quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized).

Next steps. A tentative plan for 2014-15 includes the following:

1. Finalize QR definition and hallmarks; create SLOs
2. Develop and present 2-3 models of implementing QR (e.g., replace FS, modify FS)
3. Discuss financial ramifications of smaller class sizes for QR courses
4. Schedule meetings with UH faculty to get feedback
5. Begin assessment planning and discuss coordination with or takeover by the Foundations Board, Assessment Office, and General Education Office
6. Determine current status of QR opportunities in the majors and lower & upper division General Education courses

Please send comments to qrwg.hawaii@gmail.com.

Visit our website: http://manoa.hawaii.edu/quantitativereasoning

Thank you.