

## Appendix A: Survey of faculty teaching QL courses

### Characteristics of a QL Course

Thank you so much for helping us assess the Quantitative Literacy section of the College's Core Curriculum. Please answer the following questions for the QL course you taught during the past year or plan to teach in the coming year. If you taught more than one course, please fill out the survey again for each course.

1. What is your name?

2. Which course did you teach/plan to teach?

- ECMG 212 Statistics for Econ & Mgmt
- ENSP 103 Intro to GIS
- MATH 111A Math of Daily Life
- MATH 111B Math of Democracy
- MATH 111G Math of Games & Sports
- MATH 112 Applied Statistics
- MATH 112W Workshop Statistics
- MATH 201 Calculus I
- MATH 213 Statistical Concepts & Methods
- PSY 211 Elementary Statistics
- SOC 261 Quantitative Methods for the Social Sciences

3. For each of the following characteristics, please indicate the extent to which it is incorporated into your course (Not at all or not very much/ A moderate amount/ Often or a lot):

- Problem-solving: applying mathematics to real-world problems
- Working with data
- Using (and knowing when to use) appropriate technology
- Examining quantitative arguments in the media, or in professional journal articles

4. How often does your course incorporate... (Not at all or not much/A moderate amount/A lot)

- Using quantitative skills to defend one's position
- Presenting data in useful ways: graphs, charts, table, equations
- Solving multi-step problems, as in a long assignment or class project

5. How often does your course involve ... (Not at all or not very often/A moderate amount/Often or a lot)

- Active or discovery learning
- Collaborative learning
- Students' writing about quantitative issues in everyday life. (May include homework, exams, lab reports, essays.)

6. Please add any comments or additional information you think would be helpful.

Thank you!

## Appendix B: QL Rubric 2015

Interpret Quantitative Data	<b>1 Novice</b>	<b>2 Emergent</b>	<b>3 Proficient</b>	<b>4 Advanced</b>
	Attempts to explain information presented in mathematical formats, but draws incorrect conclusions about what the information means or uses incorrect terminology. For example, attempts to explain the trend data shown in a graph, but misinterprets the nature of that trend, perhaps by confusing positive and negative trends or misinterpreting the scales used on the axes.	Provides somewhat accurate explanations of information presented in mathematical formats, but occasionally makes minor errors related to mathematical computations or units. Use of appropriate terminology is inconsistent. For example, accurately explains trend data shown in a graph, but may miscalculate the slope of the trend line.	Provides accurate explanations of information presented in mathematical formats. For example, accurately explains the trend data shown in a graph.	Provides accurate explanations of information presented in mathematical formats. Makes appropriate inferences based on that information. For example, accurately explains the trend data shown in a graph and makes reasonable predictions regarding what the data suggest about future events.
	<b>1 Novice</b>	<b>2 Emergent</b>	<b>3 Proficient</b>	<b>4 Advanced</b>
	Calculations are attempted, but are both unsuccessful and are not comprehensive. Inappropriate technology usage is evident. Distracting format.	Calculations attempted are either partly unsuccessful or represent only a portion of the calculations required to comprehensively solve the problem. Use of technology is inconsistent. Minor errors in content accuracy or formatting.	Calculations attempted are mostly successful and sufficiently comprehensive to solve the problems. Technology is used effectively. Correctly labels information with minor errors in formatting, which do not distract from solving the problem.	Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. Technology is used appropriately and efficiently. Calculations are presented clearly and concisely. Correctly labels all relevant information. Format provides clarity.
Computational Fluency and Technology	<b>1 Novice</b>	<b>2 Emergent</b>	<b>3 Proficient</b>	<b>4 Advanced</b>
	Uses the quantitative analysis of data as the basis for incorrect arguments, and/or is hesitant or uncertain about drawing conclusions from this work.	Uses the quantitative analysis of data as the basis for tentative, basic arguments, drawing plausible conclusions from this work.	Uses the quantitative analysis of data as the basis for competent arguments, drawing reasonable and appropriately qualified conclusions from this work.	Uses the quantitative analysis of data as the basis for deep and thoughtful arguments, drawing insightful, carefully qualified conclusions from this work.
	<b>1 Novice</b>	<b>2 Emergent</b>	<b>3 Proficient</b>	<b>4 Advanced</b>
	Uses the quantitative analysis of data as the basis for incorrect arguments, and/or is hesitant or uncertain about drawing conclusions from this work.	Uses the quantitative analysis of data as the basis for tentative, basic arguments, drawing plausible conclusions from this work.	Uses the quantitative analysis of data as the basis for competent arguments, drawing reasonable and appropriately qualified conclusions from this work.	Uses the quantitative analysis of data as the basis for deep and thoughtful arguments, drawing insightful, carefully qualified conclusions from this work.
Create Arguments Supported by Data	<b>1 Novice</b>	<b>2 Emergent</b>	<b>3 Proficient</b>	<b>4 Advanced</b>
	Uses the quantitative analysis of data as the basis for incorrect arguments, and/or is hesitant or uncertain about drawing conclusions from this work.	Uses the quantitative analysis of data as the basis for tentative, basic arguments, drawing plausible conclusions from this work.	Uses the quantitative analysis of data as the basis for competent arguments, drawing reasonable and appropriately qualified conclusions from this work.	Uses the quantitative analysis of data as the basis for deep and thoughtful arguments, drawing insightful, carefully qualified conclusions from this work.
	<b>1 Novice</b>	<b>2 Emergent</b>	<b>3 Proficient</b>	<b>4 Advanced</b>
	Uses the quantitative analysis of data as the basis for incorrect arguments, and/or is hesitant or uncertain about drawing conclusions from this work.	Uses the quantitative analysis of data as the basis for tentative, basic arguments, drawing plausible conclusions from this work.	Uses the quantitative analysis of data as the basis for competent arguments, drawing reasonable and appropriately qualified conclusions from this work.	Uses the quantitative analysis of data as the basis for deep and thoughtful arguments, drawing insightful, carefully qualified conclusions from this work.

<b>Communicate Arguments: Quantitative Tools</b>	<b>1 Novice</b>	<b>2 Emergent</b>	<b>3 Proficient</b>	<b>4 Advanced</b>
	Presents an argument for which tables, graphs, and/or mathematical expressions are applicable, but the selected tools do not provide explicit numerical or visual support. Presents multiple errors and inaccuracies. Distracting format.	Uses quantitative tools such as tables, graphs, and/or mathematical expressions, but does not effectively connect the data to an argument or the purpose of the work. Minor errors in content accuracy or formatting exist.	Demonstrates the use of accurate and comprehensive quantitative information in the form of tables, graphs, and/or mathematical expressions, which are relevant to the argument or purpose of the work. Format may not be succinctly presented throughout the assignment.	Consistently demonstrates the use of accurate and comprehensive quantitative information in the form of tables, graphs and/or mathematical expressions which are relevant to the argument or purpose of the work. When required, provides effective format and labels to quantitative tools which enhance an argument's or work's clarity.
<b>Communicate Arguments: Narrative Analysis</b>	<b>1 Novice</b>	<b>2 Emergent</b>	<b>3 Proficient</b>	<b>4 Advanced</b>
	Attempts to explain information presented, but draws incorrect conclusions about what the information means. Vague writing style appears throughout the passage. Key components missing; inaccurate alignment of evidence and interpretation. Writing style requires attention.	Provides inaccurate or unclear explanations which are somewhat relevant to the argument or purpose of the work. Use of appropriate terminology is inconsistent. Minor inaccuracies or omissions. Room for improvement in the appropriate and acceptable writing style.	Presents mostly accurate and clear interpretations, explanations and/or mathematical reasoning which are relevant to the argument or purpose of the work. Explanation may not be succinctly articulated throughout the narrative, yet the description includes the appropriate terminology and acceptable writing style.	Consistently provides succinctly articulated, accurate, and thoughtful interpretations, explanations and/or mathematical reasoning relevant to the argument or purpose of the work. Maintains a precise, succinct writing style and command of appropriate terminology that adds to the work's clarity.

## Appendix C: Core Curriculum Quantitative Literacy Assessment Map

**STEP 1:** Define the Objective – Quantitative Literacy involves using elementary mathematical tools to interpret and manipulate quantitative data arising in a variety of contexts. It is marked by computational fluency, and by competence and comfort in working with numerical data. Those who are quantitatively literate can create arguments supported by data and can communicate those arguments in many ways – using tables, graphs, mathematical expressions, and words. A course that satisfies the QL section of the Core Curriculum should have as its main focus the use of mathematics to solve real-world problems. In those courses, using data and appropriate technology, students will collaborate to solve multi-step problems and effectively communicate their reasoning to others.

**STEP 2:** Frame the objective statement - Students will be able to interpret and manipulate quantitative data arising in a variety of contexts using elementary mathematical tools, create arguments supported by data, and communicate those arguments in many ways – using tables, graphs, mathematical expressions, and words.

**Interpret quantitative data** arising in a variety of contexts.

**Demonstrate computational fluency**, including the use of technology as appropriate.

**Create arguments** supported by data.

**Create and communicate arguments** using quantitative tools such as tables, graphs, and mathematical expressions.

**Create and communicate arguments** through the narrative analysis.

**STEP 3: Generate the Assessment Map**

Assessment Map Worksheet - Core Cur: Quantitative Literacy		1	2	3	4	5
		Interpret Quantitative Data	Computational Fluency	Create Arguments	Communicate Arguments: Quantitative Tools	Communicate Arguments: Narrative Analysis
<b>Course</b>	<b>Course Title, KEY Assignments, and Instruments</b>	<b>STEP 1:</b> Indicate the learning outcome that the respective course best measures. <b>STEP 2:</b> Indicate the key assignment that will be used to measure that learning outcome.				
<b>ECMG 212</b>	<b>Statistics for Economics &amp; Management</b>					
	NOT RUNNING FALL 2015					
<b>MATH 111A</b>	<b>Mathematics of Everyday Life</b>					
<i>Assignment Name</i>	LAB 4: One-variable statistics in Excel	X	X	X	X	X
<b>MATH 111B</b>	<b>Mathematics of Democracy</b>					
	NOT RUNNING FALL 2015					
<b>MATH 111G</b>	<b>Mathematics of Games and Sports</b>					
<i>Assignment Name</i>	Two-variable statistics in Excel	X	X	X	X	X
<b>MATH 112</b>	<b>Applied Statistics</b>					
<i>Assignment Name</i>	Final Project	X	X	X	X	X
<b>MATH 112W</b>	<b>Workshop Statistics</b>					
	NOT RUNNING FALL 2015					
<b>MATH 201</b>	<b>Calculus I</b>					
<i>Assignment Name</i>	Final Exam Question - Semi-log/Log-log	X	X	X	X	X
<b>MATH 213</b>	<b>Statistical Concepts and Methods</b>					
	NOT RUNNING FALL 2015					
<b>PSY 211-01</b>	<b>Elementary Statistics</b>					
<i>Assignment Name</i>	No data collected					
<b>SOC 261-01</b>	<b>Quantitative Methods for SocSci</b>					
<i>Assignment Name</i>	Final Exam - Take Home	X	X		X	X

## Appendix D: Student Survey: Quantitative Skills Attitudes and Confidence

We are interested in how you feel about mathematics, especially the skills you may need to be successful in a quantitative literacy course and beyond. This survey is anonymous, and your answers will not affect your grade in your QL course. Please enter your mother's middle name and the day of your birthday, e.g. "Rose15" or "Whitsey9". We will use this to track your pre-/post-course responses, not to identify individual survey participants.

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In which class are you enrolled?

- MATH 111B Mathematics of Democracy
- MATH 112-01 Applied Statistics T/Th 8:25 a.m.
- MATH 112-02 Applied Statistics T/Th 9:50 a.m.
- MATH 112-03 Applied Statistics T/Th 11:40 a.m.
- MATH 112-04 Applied Statistics T/Th 2:00 p.m.
- MATH 201 Calculus I
- MATH 213 Statistical Concepts and Methods

Please select the appropriate choice to signify your agreement or disagreement with each of the following statements.

(For each statement, there are four choices, ranging from 1 Strongly Agree to 4 Strongly Disagree.)

- Mathematics is very interesting to me, and I enjoy math courses.
- I feel confident in my ability to complete math problems.
- I do not feel that I have a good understanding of the mathematics courses I have taken so far.
- I earn good grades on math tests and quizzes.
- I feel that I have the background knowledge in math to succeed in this course.
- Some people will just never “get” math, no matter how hard they try.
- Technology can make math easier to understand.
- I enjoy working in groups in class.
- I believe that mathematics is useful in the real world.

- When I see a math problem, I get nervous.
- If I work hard, I can succeed in math.
- I expect to need mathematical knowledge in my career.
- I am comfortable applying math to real world situations.
- In mathematics you can be creative and discover things for yourself.
- People who are good at math can do math quickly.
- I like exploring problems using real data and computers.

Thanks for taking the time to complete our survey!