

DRAFT

Numeracy Guidelines and Procedures

Guidelines for numeracy, description of numeracy infused courses:

What does a “numeracy infused” course target? The primary target is an attitude that quantitative thinking stops when exiting math class. The emphasis is to increase basic competence and confidence in discussing and using the skills listed above. The course should aim to develop an inclination to use numbers where appropriate. The tool we have discussed is problem solving in a variety of contexts.

- Significant readings of papers/ use of resources (databases) in the field which require the student to verify computations, explain why certain methodologies were used, explain the answer that results from the computation and why the result is significant to the problem under discussion. The student may want to offer alternative numerical ideas with justification of what is appropriate and what is not.
- Multi-staged assignments: series of smaller assignments emphasizing questions that require aspects of quantitative reasoning, a demonstration that a student has the basic skill set to do the estimation or computation, an understanding of what is to be measured and how that measure relates to the broader question given the context. It is generally thought that there needs to be some level of jump starting the process in class (e.g. G. Browne’s class.) These exercises should lead to a culminating project or paper where the numerical components are included and explained accurately by the student.
- Reflective pieces which requires the student to detail the kinds of skills they needed to acquire and clear explanation of how they reasoned their answers. In order to address the issue of increasing confidence and competence, one would hope that students would demonstrate that the skills are acquired and that they can be used to inform the problem considered.
- Tutorials or software created to address numeracy skills, e.g. Eco-Beaker, simulations in game theory. (Resources could be developed to help students practice estimation skills, graphical reasoning skills, or whatever skill is needed to work on the project. These resources would help the student self-assess their level of ability and target weak areas.) Use and feedback of such information would be valuable, particularly if they benchmarked initial skills and then re-evaluated them at the end of the course.

We hope to extend this list in the coming year.

Evaluation of Proficiency: In terms of judging a course to be “numeracy infused,” we need more time to refine these ideas. (Most of our time was spent wrestling with the definition.) We think the evaluation of student performance should be tied to what is actually required for a course to be marked as infused.

From the Oakland Course Questionnaire (stock): (we need to refine this in the second round. We did not really spend that much time on this aspect.)

- Explain how numeracy will be addressed in the course.
- How will the numeracy performance of a student in the course be evaluated?
- Identify all evaluation methods that will be used to assess numeracy performance in the course. Essays, tests, papers, problem solving projects, simulations, tutorials.
- If the course is applying to meet numeracy requirements, explain how it will meet the following criteria:
 - student work involves a multi-stage problem which requires significant application of numeracy ideas. (This problem shall count for at least 20% of grade.)
 - These stages will involve several smaller graded assignments or one large project/paper where at least 50 % of the paper/project requires the student to explain clearly the methodologies and the rationale for using numerical ideas.
 - Reading assignments will require students to investigate and comment on numerical solutions to problems.
 - There will be some level of reflection on the proficiency (short answer-index card assignment, oral responses, essay, assessment question on an exam, survey at the end of the course.)
- Describe the on-going process that will be used at the department level of review the course and ensure quality. We believe that if Blackboard is used, chairs could be given access to the courses to determine whether or not the course is living up to the billing. Academic freedom? Maybe a departmental survey at the end of the class?