

**Syllabus**  
**MTH 101: Quantitative Literacy I**  
**Fall 2015**

**MTH 101, Section 003:**

Tuesdays 3:00pm-4:20pm in 116 FAE, and Thursdays 1:00pm – 2:20pm in 311 EBH

**MTH 101, Section 004:**

Tuesdays 3:00pm-4:20pm in 116 FAE, and Thursdays 3:00pm – 4:20pm in B100 Wells

**MTH 101, Section 006:**

Tuesdays 3:00pm-4:20pm in 116 FAE, and Thursdays 3:00pm – 4:20pm in 111 BCH

**Instructor:** Dr. Bronlyn Wassink

**Instructor's email:** wassinkb@msu.edu     **Instructor's office:** C136 Wells Hall

**Teaching Assistant:** Jeffrey Craig

**TA's email:** craigjef@msu.edu     **TA's office:** 122 North Kedzie

**Office Hours and Locations**

- **Instructor's office hours:**
  - Tuesdays 1:00-2:20pm in C136 Wells Hall
  - Wednesdays 1:00-2:30pm in C136 Wells Hall
  - Wednesdays 3:00-4:00pm in C136 Wells Hall
  - By appointment (email wassinkb@msu.edu to schedule an appointment)
- **TA office hours:**
  - Monday, 1-3pm in North Kedzie 122
  - Friday, 1-3pm, in North Kedzie 122

If you have questions about course content, you may attend the office hours of the instructor or the teaching assistant, regardless of which section you are registered for. You do not need an appointment to go to office hours. If you have concerns that are not about course content, you should attend the instructor's office hours, or make an appointment.

**Textbook and Course Materials**

- Textbook (optional): Bennett, J. & Briggs, W. (2005). *Understanding and using mathematics: A quantitative reasoning approach* (3rd ed.). Boston: Addison-Wesley Longman Publishing Company.
- MyMathLab (required): You are required to purchase access to MyMathLab to complete your online homework. A digital version of the textbook is included with your access to MyMathLab. Details about how to purchase access to MyMathLab will be included in an informational email that will be sent to all students prior to the first day of class.

## Goals

The purpose of this course is to provide you with opportunities to develop your understanding of quantitative information that is relevant to you and your classmates, particularly in the contexts of science, health and risk, and the environment. We will critically consider the quantitative information that we encounter in the world and that affects our lives. We will learn appropriate math, statistics, and technology skills and use them as a lens to explore complex real-life situations. Furthermore, we will develop the skills needed to clearly articulate an argument about a social or scientific issue that uses quantitative information in a meaningful manner.

## Objectives

Several of the main content-specific learning goals are listed below. These learning objectives will be addressed throughout the course, and are incorporated into each context-based module.

- Interpret mathematical models in the form of formulas, graphs, tables, and schematics, and draw inferences from them.
- Represent mathematical information in different ways including: visually, numerically, verbally, and symbolically.
- Use arithmetical, algebraic, geometric and statistical methods to understand problems.
- Make predictions about quantitative situations and check predictions against data in order to determine reasonableness, identify alternatives, and make choices.
- Clearly articulate an argument for a social or scientific issue that uses quantitative data in a meaningful way.

The **mathematical skills** we will use in this course will include, but are not limited to:

- Using scientific units and performing unit conversions, as well as other algebraic manipulations;
- Conceptualizing large numbers, understanding percentages, and absolute vs. relative measures;
- Logic, and recognizing when logic in a scientific article has been incorrectly used;
- Statistical reasoning, including the components of a statistical study, statistical graphs and infographics, correlation vs. causation, specificity and sensitivity, and an introduction to linear regression;
- Reasoning with probability, including performing and interpreting a simulation, expected value, and assessing risk;
- Understanding modeling, including exponential vs. linear growth, half-life, population growth, and logarithms, as well as exploring examples of models whose trends should not be extrapolated.

**Examples of specific contexts** that we will be using to motivate our exploration of mathematics include population growth, national and international demographics (including birth rate, average family size, GDP, prison population, literacy rate, etc.), the spread of communicable diseases, the accuracy of medical tests, climate change, the environmental impact of k-cups, evolution, and several others.

## **Background**

This course focuses on quantitative literacy applicable to your everyday life, particularly in the context of science, health and risk, and the environment. The course is structured around the following guiding principles.

- **Real Contexts.** Contexts are not contrived, rather found in real situations and reflect important societal decisions and public policy. This course is an integral part of the university's Undergraduate Learning Goals (<http://undergrad.msu.edu/programs/learninggoals>).
- **Modular Structure.** This course is split into modules that are defined by the content area on which they focus. The purpose of this approach is to foreground the application of math, statistics, and technology skills, as opposed to an abstract or theoretical approach. In this course, we will not follow the course textbook sequentially. Instead, we will investigate each of the context-based modules, drawing on quantitative skills from various chapters.
- **Mutual Assistance and Shared Discovery.** You will not be competing against your classmates in this course. Instead, you will be helping each other to understand quantitative literacy ideas through frequent interactions and group work. We aim to provide a classroom atmosphere that is conducive to exploratory learning, risk-taking, and perseverance.
- **Multiple Assessment Strategies.** An understanding of real-life problems is complex and multi-layered, so you will be able to develop and demonstrate your understanding in several ways. Your learning will be guided by 6 groups of tasks:
  - (1) participation in discussions both online and in-class (15%)
  - (2) completion of group activities (20%)
  - (3) online MyMathLab homework (15%)
  - (4) online D2L homework from videos and articles (10%)
  - (5) projects (20%)
  - (6) quizzes (10%) and final exam (10%)

## **Multiple Assessment Descriptions**

1. **Discussions (15% of overall grade)** - You will receive credit for participation in both online and in-class discussions. Your participation in online discussions will take place on D2L discussion forums and your participations will be required in specific ways as detailed by individual assignments. For example, you may be asked to write a paragraph response to an online article and respond to 2 classmates' posts. You will also be expected to participate in small-group discussions throughout the course during in-class activities.
2. **Group Activities (20% of overall grade)** You will work on group activities during most classes and will turn in the results of that work. Examples of group activities include performing biology simulations and creating an infographic about the relative amounts of incarcerated individuals among a group of 10 countries. **Students are expected to fully participate in group work; group activity grades will be determined by a combination**

**of the finished group product, as well as each individual student's participation and effort put into the activity.**

**3. Online MyMathLab Homework (15% of overall grade)**

Short online homework assignments will be regularly assigned. The purpose of the online homework is to provide immediate feedback on particular tasks. You will have unlimited attempts on each homework problem, so you will be able to rethink your strategy based on the feedback provided. Examples include determining the size of 14% of the world population and determining the probability of inheriting on a gene.

**4. Online D2L homework from videos and articles (10% of overall grade)**

As this course focuses on math used in relevant topics, there are many examples of the use of mathematics on the internet. There will regularly be articles or videos available online that are assigned to read or watch as homework. In order to grade the reading assignment homework, we will assign a series of multiple choice questions that are directly answered in the articles or videos, which will be required to be completed prior to coming to class. These questions will be posted on D2L. Often, these videos and articles will form the basis of posts that you will be asked to do that would go towards your participation grade.

**5. Projects (20% of overall grade) - You will work in groups on projects that will span several classes and topics. For group projects, you must fully participate and put in your fair share of effort in order to receive full credit.** Information about each project will be given in class.

**6. Quizzes and Exams (20% of overall grade).** You will complete several short quizzes and a final exam to demonstrate your ability to think about problems critically using quantitative reasoning skills. The quizzes and the final exam will include questions similar to the online MyMathLab homework, along with some questions that will ask you to explain your reasoning in writing.

Expect a short 10-20 minute quiz at the beginning of class about once every two weeks. You will be given at least a week notice before every quiz – there will be no pop quizzes. Please be sure to check announcements in D2L and in your msu.edu email account for important announcements about quizzes.

The **final exam** is Monday, December 14, 2015, 3:00pm-5:00pm, in 116 FAE.

**Grades.** Your grades throughout the course and your final grade will be determined based on meeting criteria, not by competition with your classmates. Grades will be assigned based on the percentage of work that you complete, based on the following scale.

4.0: 90%-100%  
3.5: 85%-90%  
3.0: 80%-85%  
2.5: 75%-80%

2.0: 70%-75%  
1.5: 65%-70%  
1.0: 60%-65%  
0.0: Below 60%

**Policy on Missed Classes and Assignments:** It is expected that you will attend all course meetings and are responsible for all of the material covering in class and in the homework. Any changes in the syllabus or course schedule (assignments, quizzes, etc.) will be announced during class meetings (usually at the beginning of class, so please don't be tardy). Some assignments will be completed during class, so you will be unable to earn those points if you miss class without an excused absence. Absences will be excused only with documentation and only if an instructor is contacted about the absence prior to the missed class. If you miss an assignment due to an excused absence, the assignment will be marked as exempt and will not be included in the calculation of your grade.

**Policy on Academic Honesty:** As noted on the web site of the Office of the Ombudsman and in other MSU publications "The principles of truth and honesty are fundamental to the educational process and the academic integrity of the University; therefore, no student shall:

- claim or submit the academic work of another as one's own.
- procure, provide, accept or use any materials containing questions or answers to any examination or assignment without proper authorization.
- complete or attempt to complete any assignment or examination for another individual without proper authorization.
- allow any examination or assignment to be completed for oneself, in part or in total, by another without proper authorization.
- alter, tamper with, appropriate, destroy or otherwise interfere with the research, resources, or other academic work of another person.
- fabricate or falsify data or results.

If any instance of academic dishonesty is discovered by an instructor, it is his or her responsibility to take appropriate action. Depending on his or her judgment of the particular case, *he or she may give a failing grade to the student on the assignment or for the course.*"

### **Important Dates:**

*September 2:* Classes begin

*September 9 (8pm):* Open adds ends.

*September 28 (8pm):* Last date to drop a course and receive a full refund.

*October 21 (8pm):* Last day to drop a course without a grade being reported.

*December 11:* Last day of classes

**Final Exam:** Monday, December 14, 3:00pm-5:00pm, in 116 FAE

*December 18:* Semester ends