

**(Exemplar) Syllabus
Math 102
Quantitative Literacy**

Contact Information:

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Required Materials: scientific calculator, laptop computer, Units 1A, 1C-E, 2A, 3A-C, 3E, 4A-D, 5A-E, 6A-D and 7A-E of *Using and Understanding Mathematics: A Quantitative Reasoning Approach, 4th Ed.* By Bennett and Briggs.

Course Description and Objectives:

Math 102 is a Foundational Studies course in the Quantitative Literacy category. As such, you will meet the following general Foundational Studies Learning Objectives (FSLO):

You will (1) Locate, critically read, and evaluate information to solve problems; (2) Critically evaluate the ideas of others; (3) Apply knowledge and skills within and across the fundamental ways of knowing (particularly mathematics); and (10) Express yourself effectively, professionally, and persuasively both orally and in writing.

In addition, this course meets the specific Learning Objectives for the Quantitative Literacy (QLLO) category of Foundational Studies:

You will (1) Solve for one or more unknowns from available information using appropriate methods; (2) Represent and solve real-world problems employing appropriate mathematical models; (3) Answer questions using empirical methods; and (4) Critically evaluate a quantitatively-based argument.

Finally, this course meets the Applied Skill Learning Objectives (ASLO) that are embedded in all Foundational Studies courses:

You will (1) Develop critical thinking skills; (2) Develop information literacy skills; and (3) Submit graded writing assignments.

Through a combination of class discussions, homework assignments, completion of skill development modules, written and oral projects, and exams you will demonstrate the learning objectives for the course.

This course is designed to help you develop the basic quantitative literacy skills that will be helpful in future college classes and your life as an informed citizen and consumer. You will learn to critically evaluate quantitative claims and arguments. You will learn about compound

interest and consumer loans. You will learn to construct basic descriptive statistics and how to evaluate claims made with both descriptive and inferential statistics. You will learn elementary probability principles and how to use those principles to assess risk. You will learn all of this in a real-world context. There are prerequisite mathematical skills you will need to use in this course. Throughout the first half of the course, you will spend some time in the math lab reviewing some of the skills needed to be successful in the course. The review will be individually tailored using mathematical software and the tutors in the Mathematics Resource Center Lab located in Root Hall A-019. Between the software and the help of the tutors, and the knowledge you gain in this course, you will be well-equipped to understand, evaluate, and make basic quantitative arguments.

Course Requirements and Grading:

Skills Development Modules: You will be expected to hone and develop your mathematical computation skills. You will do this through the use of mathematical software and the assistance of tutors in the mathematics resource center as you complete modules. You will complete a pretest for each module. If your score on the pretest is 80% or above, you are not required to complete the module and will receive a score of 100% for that module. If your score is less than 80% on the pretest, you will complete the module and take a post-test. If you score 80% or above on your post-test, you will receive a score of 100% for the module. If your post-test score is below 80%, the score you receive will be your score for the module. This format is designed to help you review the basic mathematical skills that you need to be successful in the course. These include solving equations, using exponents and scientific notation, percentages, formulas, and fundamental counting techniques. This use of the mathematical software and the tutors, will allow us to spend valuable class time more constructively. This component is worth 20% of your grade. **Completion of these modules will assist with meeting the following learning objectives: FSLO 3 and QLLO 1.**

Homework: Although I will not collect daily homework assignments, I will assign them and it is essential that you complete them. Although I do not expect that you will solve all of the problems and answer all of the questions with 100% accuracy, substantial attempts at solving the problems or answering the questions will help you engage in a meaningful way with the content and develop critical thinking skills. Your solutions and the questions raised from the homework will provide a basis for class discussions. In addition, your regular completion of the homework and active involvement in class discussions lays the groundwork for and are critical to your success on the projects and exams. **By completing homework, you will be meeting the following learning objectives: FSLO 1, 2, & 3, QLLO 1, 2, 3, & 4, and ASLO 1 & 2.**

Projects: You will complete 5 projects throughout the course of the semester. Each project will be worth 10% of your grade. For each project you will be given a question or series of related questions to answer. You will research the topic, decide on an appropriate mathematical model to apply to problem, apply appropriate mathematical techniques to solve the problem, and write up your results in a clear, coherent fashion. These projects will aid in the development of your information literacy skills and your critical thinking skills. The first four projects will be written. The last project will be a group project (with 1-2 other students) with your results conveyed in an oral presentation during the last week of classes. For each project, you will be given a choice of

several topics and I encourage you to select the one that is most interesting to you. Completion of these projects will help you meet the following learning objectives: **FSLO 1, 2, 3, & 4, QLLO 1, 2, 3, & 4, and ASLO 1, 2, & 3.**

Exams: I will give 3 exams throughout the semester. Each exam is worth 10% of your course grade. I will give the 3rd exam during the university scheduled final examination time. You will be permitted to use a calculator on the exams as well as an 8 ½ by 11-inch page of notes one side of the page in YOUR handwriting. The exams will have some basic computational questions and applications, but will also have questions that test your critical thinking skills and ability to make and evaluate quantitative arguments.

Attendance and Participation: Your attendance and participation in class is a critical component of your learning and the learning of others in the class. Class activities and discussions cannot be duplicated by reading a textbook or copying the notes of a classmate. I expect you to be in class each day, on time, and prepared. I also expect you to participate fully in all class activities and discussions and to treat me and your classmates in a professional, collegial manner. Although this category is not an explicitly weighted part of your grade, failure to adhere to these guidelines will result in a (perhaps significant) reduction in your course grade.

Grading Scale: Following is an approximate grading scale used for this course.

A	93 – 100%
A-	90 – 92%
B+	87 – 89%
B	83 – 86%
B-	80 – 82%
C+	77 – 79%
C	73 – 76%
C-	70 – 72%
D+	67 – 69%
D	63 – 66%
D-	60 – 62%
F	Below 60%

Tentative Weekly Schedule:

Week	Topic and Learning Objectives met for the week	Assignment(s) Due
1	Recognizing Fallacies, Sets and Venn Diagrams (FSLO 1, 2, &3, QLLO 3 & 4, ASLO 1)	Module 1 on ratio and proportional reasoning, solving linear equations
2	Analyzing Arguments, Critical Thinking in Everyday Life (FSLO 1 & 2, QLLO 3 & 4, ASLO 1)	Module 2 on percentages and dimensional analysis
3	Using Units, Uses and Abuses of Percentages (FSLO 1, 2, &3, QLLO 1, 2, 3, & 4, ASLO 1 & 2)	Module 3 on scientific notation, exponents, and using formulas
4	Numbers in the Real World, Types of	Module 4 on graphing basic

	Measurement Error, Accuracy and Precision, How Numbers Can Be Used to Deceive (FSLO 1, 2, & 3, QLLO 1, 2, 3, & 4, ASLO 1 & 2)	equations, scatterplots
5	Finances, The Power of Compound Interest (FSLO 1 & 3, QLLO 1, 2, & 3, ASLO 1)	Project 1
6	Savings Plans and Investments, Loans, Credit Cards, Mortgages (FSLO 1, 2, & 3, QLLO 1, 2 & 3, ASLO 1)	Module 5 on factorials and the fundamental counting principle
7	Statistical Studies, Sampling, Analyzing Statistical Studies (FSLO 1, 2, & 3, QLLO 1, 2, 4, ASLO 1 & 2)	Exam 1
8	Statistical Tables and Graphs, Graphics in the Media (FSLO 1, 2, & 3, QLLO 1, 2, 3, 4, ASLO 1 & 2)	Project 2
9	Correlation and Causality, Characterizing Data, Central Tendency, Outliers (FSLO 1, 2, & 3, QLLO 1, 2, 3, & 4, ASLO 1 & 2)	
10	Measures of Central Tendency, Measures of Variation (FSLO 1 & 3, QLLO 1, 2 & 3, ASLO 1)	Project 3
11	The Normal Distribution, Statistical Inference, Margin of Error, Confidence Intervals (FSLO 1, 2, & 3, QLLO 1, 2, 3, & 4, ASLO 1)	Exam 2
12	Basic Probability, Combining Probabilities (FSLO 1 & 3, QLLO 1, 2, & 3, ASLO 1)	
13	Law of Large Numbers, Expected Value (FSLO 1 & 3, QLLO 1, 2, & 4, ASLO 1)	Project 4
14	Assessing Risk, Counting and Probability (FSLO 1, 2, & 3, QLLO 1, 2, 3, & 4, ASLO 1 & 2)	
15	Group Presentations of Project 5 (FSLO 1, 2, 3, & 10, QLLO 1, 2, 3, & 4, ASLO 1, 2, & 3)	Project 5
	Exam Week	Exam 3

Course Policies:

Laptop Required for Course: Regular Usage: For the purposes of this course, it will be assumed that you are in compliance with the mandatory laptop policy of the University. You will be expected to bring your laptop and be ready to use it for every class period. Usage of the laptop must conform to the provisions of this course as laid out in this syllabus as well as the Code of Student Conduct.

Academic Honesty: It is imperative that you adhere to standard practices of academic honesty and integrity in this course. I encourage you to review the University's Academic Dishonesty Policy found in the Student Code of Conduct (see <http://www.indstate.edu/sjp/docs/code.pdf>).

A violation of this policy will result in a zero for the assignment or exam in which the violation occurred. Any subsequent violation will result in a grade of F for the course.

Academic Freedom: “Teachers are entitled to freedom in the classroom in discussing their subject, but they should be careful not to introduce into their teaching controversial matter which has no relation to their subject.” The preceding comes from the American Association of University Professors statement on academic freedom. Though the entire statement speaks to many issues, it is this portion on conduct of the course that is most relevant. For the purpose of Foundational Studies courses this means that faculty have the right to conduct their class in a fashion they deem appropriate as long as the material presented meets the learning objectives laid out by the entire faculty.

<http://www.aaup.org/AAUP/pubsres/policydocs/contents/1940statement.htm>

American with Disabilities Act Statement: “Indiana State University seeks to provide effective services and accommodation for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, you are required to register with Disability Support Services at the beginning of the semester. Contact the Director of Student Support Services. The telephone number is 237-2301 and the office is located in Gillum Hall, Room 202A. The Director will ensure that you receive all the additional help that Indiana State offers. If you will require assistance during an emergency evacuation, notify your instructor immediately. Look for evacuation procedures posted in your classrooms.”