



SAGINAW CHIPPEWA TRIBAL COLLEGE
SYLLABUS OF RECORD

MTH 120

Quantitative Reasoning

(3)

- I. Bulletin Description:** This course will provide students with ways to approach the quantitative information they are likely to encounter in society and their careers and private lives. The course will incorporate measurement, finance, data use, and other relevant topics to develop students' ability to think logically and critically and make decisions about real world issues.
- II. Prerequisites, Pre/Co-requisites, Co-requisites, Recommended:** Grade of "C" or better in MTH 099 or placement test. A grade of "C" or better is required to pass this class. (Rationale: While the course does not assume a high level of mathematical background, it does require at least a firm grasp of arithmetic, i.e. MTH 095. It also assumes at least introductory familiarity with algebraic modeling, i.e. MTH 099. The course is intended as the minimum college math requirement, and therefore assumes the student has been adequately prepared for college-level math.
- III. Rationale for Course Level:** As stated in (II), the course is intended to satisfy the minimum college math requirement; therefore, it is numbered in the low 100s.
- IV. Suggested Textbooks:** Bolker, E. & Mast, M. (forthcoming). Common Sense Mathematics.
- V. Other Requirements and/or Materials for the Course:** Access to the following technologies is required.
- Scientific calculator.
 - Microsoft Excel.
 - Internet.
- VI. Student Learning Objectives:**
- Institutional Outcomes:**
- Students will demonstrate competency in reading, writing, oral communication, and numerical literacy.
 - Students will be able to evaluate information.
- Course Outcomes:**
- Students will communicate logical quantitative arguments clearly and effectively.
 - Students will choose from a variety of strategies (including estimation, percentages, software, and others) to calculate and/or verify quantities to an appropriate level of precision.
 - Students will demonstrate understanding of units by setting up and carrying out appropriate calculations involving conversion factors.

4. Students will interpret graphs and other presentations of real-world data using foundational statistical methods.
5. Students will make predictions about real-world phenomena using mathematical models (linear and exponential).
6. Students will analyze real-world situations involving randomness using introductory probability concepts.

VII. Suggested Course Outline:

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| Introduction to course | 1 week |
| Estimation | 1 week |
| Units & conversions | 1 week |
| Relative change (percentages) | 2 weeks |
| Exam 1 | |
| Averages | 1.5 weeks |
| Spreadsheets & statistics | 2 weeks |
| Modeling: Linear | 1.5 weeks |
| Exam 2 | |
| Modeling: Exponential & installments | 2 weeks |
| Probability | 2 weeks |
| Exam 3 | |

VIII. Suggested Course Evaluation:

Daily work (in-class work and homework exercises), journals entries about math in the students' everyday life, two or three projects, and two or three exams.

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| Daily work | 30% |
| Journals | 20% |
| Projects | 20-30% |
| Exams | 20-30% |

IX. Bibliography:

- Bolker, E. & Mast, M. (forthcoming). Common Sense Mathematics.
- Burger, E. & Starbird, M. (2012). The 5 Elements of Effective Thinking. Princeton University Press.
- Ellenberg, J. (2014). How Not to be Wrong: The Power of Mathematical Thinking. Penguin Press.
- Gaze, E. (2016). Thinking Quantitatively: Communicating with Numbers. Pearson Education, Inc.
- Tannenbaum, P. (2014). Excursions in Modern Mathematics. (8ed.) Pearson Education, Inc.

Syllabus Prepared By:

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Date