



North Central Michigan College Master Course Syllabus

PART 1:

Course Name: Quantitative Reasoning

Course Number: MATH 128

Credit Hrs. 4 Lecture Hrs. 4 Lab Hrs. Clinical Hrs. Variable Hrs.

Total Hours of Instruction: 64 Total Contact Hours: 70.4
(Total Contact hour's formula: (lecture hrs. + lab hrs. + clinical hrs) x 17.6)

Course Description:

A survey course of mathematical topics. MATH 128 is designed to assist students in communicating mathematical/statistical information in a variety of ways; symbolically, visually and numerically. MATH 128 will assist students in communicating a quantitative argument in writing. Core topics include arithmetic reasoning, problem solving, mathematical modeling, mathematics of finance, probability and statistics. Other topics may be included at the discretion of the instructor.

Prerequisite (s): MATH 108, MATH 112 or higher with a grade of "C" or higher or placement determined by ACT, SAT and/or North Central Assessment/Placement scores.

Co-requisite (s): None

Course Objectives:

Upon completion of this course students will be able to:

- Interpret information presented in mathematical and/or statistical forms.
- Illustrate and communicate mathematical and/or statistical information symbolically, visually, and/or numerically.
- Determine when computations are needed and when to execute the appropriate computations.
- Apply an appropriate model to the problem to be solved.
- Communicate quantitative arguments in written form.
- Make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis.

In addition, students will have acquired the knowledge to appreciate the diversity of mathematics and will have observed and worked with significant mathematical systems to allow them to function in a technologically oriented society.

Reasonable accommodations can be provided for students with documented disabilities. Please contact Learning Support Services to arrange for these (231)348-6687 or (231)348-6817, Room 533 SCRC.



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PART 2:

Course Objectives and Linked Lumina DQP Outcomes

See **PART 3** of this syllabus for the complete language of each Lumina DQP outcome.

*Please identify the Lumina DQP outcome(s) supported by the course objectives. List each course objectives (from **PART 1**), followed by the corresponding Lumina DQP Outcome number(s) in parentheses. (See the example.)*

- Interpret information presented in mathematical and/or statistical forms. (DPQ 2,10,11)
- Illustrate and communicate mathematical and/or statistical information symbolically, visually, and/or numerically. (DPQ 2,10,11,13)
- Determine when computations are needed and when to execute the appropriate computations. (DPQ 10,13)
- Apply an appropriate model to the problem to be solved. (DPQ 2,10,11,13)
- Communicate quantitative arguments in written form. (DPQ 2, 10,11,13)
- Make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis. (DPQ 2, 10,11,13)



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Suggested Methods of Instruction:

Pedagogical methodology employed will include traditional lecture and discussion format. A collaborative learning environment will frequently be employed and course work will be designed to facilitate constructive learning.

Suggested Methods of Assessment and Evaluation:

Projects, Papers, Quizzes, Tests, Collaborative participation in group work, Comprehensive Final Exam

Adopted Text at Time of Course Adoption/Revision:

None available. Content to be developed by NCMC full-time mathematics personnel

Topics Covered During the Semester:

Sequence of topics and time allowance are at the discretion of the instructor

- Week 1: Arithmetic Reasoning
- Week 2: Fractions and Proportions
- Week 3: Levels of measurement and Dimensional Analysis
- Week 4: Problem Solving Process
- Week 5: Methods of Problem Solving
- Week 6: Communication in Problem Solving
- Week 7: Mathematical Modeling
- Week 8: Translating from English to Mathematics
- Week 9: Various Mathematical Models
- Week 10: From Math back to English
- Week 11: Interest, Credit Cards, Loans
- Week 12: Annuities and Retirement Savings
- Week 13: Descriptive Statistics
- Week 14: Probabilities
- Week 15: Graphs and Tree Diagrams
- Week 16: Inferential Statistics and Fallacies of Statistics

Part 1 & Part 2 approved by CRDAP on: 02 03 17

Part 2 approved by AD:

Date:

Part 2 approved by CRDAP Chair:

Date:

Rev02/15



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PART 3:

LUMINA DQP OUTCOMES – Use this reference sheet for **PART 2** of Master Course Syllabus.

Specialized Knowledge

- Describes the scope and principal features of the field of study, citing at least some of its core theories and practices, and offers a similar explication of at least one related field.
- Illustrates contemporary terminology used in the field.
- Generates substantially error-free products, reconstructions, data, juried exhibits or performances as appropriate to the field.

Broad Integrative Knowledge

- Describes how existing knowledge or practice is advanced, tested and revised
- Describes and examines a range of perspectives on key debates and their significance both within the field and in society.
- Illustrates core concepts of the field while executing analytical, practical or creative tasks.
- Selects and applies recognized methods of the field in interpreting characteristic discipline-based problems.
- Assembles evidence relevant to characteristic problems in the field, describes the significance of the evidence, and uses the evidence in analysis of these problems.
- Describes the ways in which at least two disciplines define, address and interpret the importance of a contemporary challenge or problem in science, the arts, society, human services, economic life or technology.

Intellectual Skills – Analytic Inquiry

- Identifies, categorizes and distinguishes among elements of ideas, concepts, theories and/or practical approaches to standard problems.

Intellectual Skills – Use of Information Resources

- Identifies, categorizes, evaluates and cites multiple information resources necessary to engage in projects, papers or performance in his or her program.

Intellectual Skills – Engaging Diverse Perspectives

- Describes how knowledge from different cultural perspectives would affect his or her interpretations of prominent problems in politics, society, the arts and/or global relations.

Intellectual Skills – Communication Fluency

- Presents accurate calculations and symbolic operations, and explains how such calculations and operations are used in either his or her specific field of study or in interpreting social and economic trends.
- Presents substantially error-free prose in both argumentative and narrative forms to general and specialized audiences.

Applied Learning

- Describes in writing at least one substantial case in which knowledge and skills acquired in academic settings are applied to a challenge in a non-academic setting; applies that learning to the question; and analyzes at least one significant concept or method related to his or her course of study in light of learning outside the classroom.
- Locates, gathers and organizes evidence on an assigned research topic addressing a course-related question or a question of practice in a work or community setting; offers and examines competing hypotheses in answering the question.

Civic Learning

- Describes his or her own civic and cultural background, including its origins and development, assumptions, and predispositions.
- Describes diverse positions, historical and contemporary, on selected democratic values or practices, and presents his or her own position on a specific problem where one or more of these values or practices are involved.
- Takes an active role in a community context (work, service, co-curricular activities, etc.), and examines the civic issues encountered and the insights gained from the community experience.

The Degree Qualifications Profile was adopted by CRDAP: April 11, 2012