



North Central Michigan College Master Course Syllabus

PART 1:

Course Name: Quantitative Reasoning Preparation

Course Number: MATH 108

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:

Prepares students with the algebraic background necessary for success in MATH 128, Quantitative Reasoning. Students will develop skills in solving equations that will arise in real world settings involving finance, statistics and general problem solving. Estimation, counting and similar arithmetic skills will be enhanced to prepare the student for further study in probability and mathematical modeling. Various types of graphs and graphing skills will be explored for use in a later collaborative problem solving environment that they will encounter in MATH 128.

Prerequisite (s): Successful completion of MATH 094 (or equivalent) 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:

- Solve simple linear and quadratic equations and systems of linear equations.
- Understand the importance of literal equations and have the ability to solve an equation for a specified variable.
- Understand the concept of a graph and be able to graph and interpret basic functions including linear and quadratic equations.
- Have an elementary understanding of exponential and logarithmic relationships.
- Function in the decimal number system and have learned various estimation techniques within that system.
- Understand basic counting and recursive arguments.

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.*

- Solve simple linear and quadratic equations and systems of linear equations. (DPQ 2, 13)
- Understand the importance of literal equations and have the ability to solve an equation for a specified variable. (DPQ 2, 13)
- Understand the concept of a graph and be able to graph and interpret basic functions including linear and quadratic equations. (DPQ 2, 10)
- Have an elementary understanding of exponential and logarithmic relationships. (DPQ 2, 13)
- Function in the decimal number system and have learned various estimation techniques within that system. (DPQ 2, 13)
- Understand basic counting and recursive arguments. (DPQ 2, 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, 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: Solving linear equations
- Week 2: Solving quadratic equations
- Week 3: Solving systems of equations
- Week 4: Technology for solving equations and systems of equations
- Week 5: The coordinate plane
- Week 6: Graphing basic functions
- Week 7: Interpretation of graphs
- Week 8: Number systems & fractions
- Week 9: Dimensional analysis & basic problems
- Week 10: Estimation skills
- Week 11: Basic exponential functions
- Week 12: Logarithmic functions
- Week 13: Properties of exponential and logarithmic functions
- Week 14: Fundamental counting principle
- Week 15: Permutations and combinations
- Week 16: Recursion

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

Part 2 approved by AD:

Date:

Part 2 approved by CRDAP Chair:

Date:



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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