



North Central Michigan College Master Course Syllabus

PART 1:

Course Name: Math for Health Professionals

Course Number: AH 116

Credit Hrs. 2 Lecture Hrs. 2 Lab Hrs. 0 Clinical Hrs. 0 Variable Hrs. 0

Total Hours of Instruction: 2 Total Contact Hours: 35.2
(Total Contact hour's formula: (lecture hrs. + lab hrs. + clinical hrs) x 17.6)

Course Description:

Designed for students majoring in nursing or allied health with an emphasis on math necessary for safe drug dosage calculation and medication administration. Topics will include solving problems and equations using fractions, decimals, percents, as well as using formulas and dimensional analysis. An overview of the metric system will also be provided. Emphasis will be placed on solving problems using drug calculations for medication administration.

Prerequisite (s): Admission to the nursing program

Co-requisite (s): None

Course Objectives:

At the completion of the course, the student will be able to:

- Use ratio, proportion, or dimensional analysis method to calculate drug dosages.
- Convert one system of measurement to another in order to determine correct drug dosage
- Correct calculation of IV medications and heparin infusion.
- Measure insulin correctly
- Calculate titration of critical care drugs
- Determine safe drug dosage for the elderly
- Calculate dosage of drugs for infants and children.

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.)*

- Use ratio, proportion, or dimensional analysis method to calculate drug dosages. (DQP# 2, 3, 6, 13)
- Convert one system of measurement to another in order to determine correct drug dosage (DQP# 2, 3, 6, 13)
- Correct calculation of IV medications and heparin infusion. (DQP # 2, 3, 6, 7 13)
- Measure insulin correctly (DQP# 2, 3, 6, 7, 13)
- Calculate titration of critical care drugs (DQP# 2, 3, 6, 7, 13)
- Determine safe drug dosage for the elderly (DQP# 2, 3, 6, 7, 13)
- Calculate dosage of drugs for infants and children. (DQP# 2, 3, 6, 7, 13)



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Suggested Methods of Instruction:

Classroom, lecture, case studies, and demonstration

Suggested Methods of Assessment and Evaluation:

Tests and quizzes

Adopted Text at Time of Course Adoption/Revision:

TEXTS: Castillo, S., McCullough, M. ((2012). Calculating Drug Dosages (3rd Ed.). Philadelphia, PA: FA Davis.

My Math Lab Access Code

Topics Covered During the Semester:

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

Week 1: Arithmetic Review

Week 2: Fractions and Decimals

Week 3: Simplifying expressions and solving equations with variables

Week 4: Ratios; solving proportions

Week 5: Percents; solving percent equations

Week 6: Metric system

Week 7: Using formulas; drug calculations

Week 8: Dimensional analysis

Week 9: Calculating drugs that require conversion

Week 10: Drip rates for IV drugs; IV pumps

Week 11: Calculating insulin, insulin pens, meal and bolus correction

Week 12: Heparin administration

Week 13: Calculate titration of critical care drugs

Week 14: Safe medication administration in children

Week 15: Safe medication administration in the elderly

Week 16: Final cumulative exam

Part 1 & Part 2 approved by CRDAP on:

Part 2 approved by AD: March 2016

Date:

Part 2 approved by CRDAP Chair: March 2016

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

1. 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.
2. Illustrates contemporary terminology used in the field.
3. Generates substantially error-free products, reconstructions, data, juried exhibits or performances as appropriate to the field.

Broad Integrative Knowledge

4. Describes how existing knowledge or practice is advanced, tested and revised
5. Describes and examines a range of perspectives on key debates and their significance both within the field and in society.
6. Illustrates core concepts of the field while executing analytical, practical or creative tasks.
7. Selects and applies recognized methods of the field in interpreting characteristic discipline-based problems.
8. Assembles evidence relevant to characteristic problems in the field, describes the significance of the evidence, and uses the evidence in analysis of these problems.
9. 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

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

Intellectual Skills – Use of Information Resources

11. 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

12. 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

13. 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.
14. Presents substantially error-free prose in both argumentative and narrative forms to general and specialized audiences.

Applied Learning

15. 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.
16. 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

17. Describes his or her own civic and cultural background, including its origins and development, assumptions, and predispositions.
18. 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.
19. 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