ILLINOIS VALLEY COMMUNITY COLLEGE

Course Outline

DIVISION: Health Professions

Course: ALH-1202 – Allied Health Dosage Calculations

Date: May, 2009

Semester Hours: 2

Prerequisite(s): None. MTH 0900 is recommended.

Delivery Method:

☐	**Lecture**	**0 Credit Hours**
☐	**Seminar**	**0 Credit Hours**
☐	**Lab**	**0 Credit Hours**
☐	**Clinical**	**0 Credit Hours**
☒	**Online**	
☐	**Blended**	

Offered: X ☐ **Fall** **X**☐ **Spring** **X**☐ **Summer**

IAI Equivalent –***Only for Transfer Courses***-go to *http://www.itransfer.org*:

CATALOG DESCRIPTION:

This course covers common mathematical requirements for Allied Health professions with a focus on nursing. It includes a review of the following: basic math, systems including conversions, metric, apothecary, and household, interpretations of drug labels, charting, abbreviations, and methods of calculations for oral, injectable, and intravenous drugs, calculations for specialty areas including pediatrics, critical care, labor and delivery. The Dimensional Analysis in the mathematical process is used in this course.

GENERAL EDUCATION GOALS ADDRESSED

[See the last page of this form for more information.]

Upon completion of the course, the student will be able:

[Choose those goals that apply to this course.]

X☐ To apply analytical and problem solving skills to personal, social and professional issues and situations.

☐ To communicate orally and in writing, socially and interpersonally.

☐ To develop an awareness of the contributions made to civilization by the diverse cultures of the world.

X☐ To understand and use contemporary technology effectively and to understand its impact on the individual and society.

X☐ To work and study effectively both individually and in collaboration with others.

X☐ To understand what it means to act ethically and responsibly as an individual in one's career and as a member of society.

☐ To develop and maintain a healthy lifestyle physically, mentally, and spiritually.

☐ To appreciate the ongoing values of learning, self-improvement, and career planning.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

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

1. Demonstrate understanding of systems used for drug administration
   - 1.0 identify the three measurement systems (metric, apothecary, and household) utilized to calculate medication dosages.
   - 1.1 perform the calculations necessary to convert a measurement expressed in one standard unit within the system to a measurement expressed in another unit within that same system, for the metric, apothecary, or household system.

2. Understanding conversions between the Metric, Apothecary, and Household Systems
   - 2.1 identify principles for converting medication dosages by weight between the metric and apothecary systems.
   - 2.2 convert medication dosages ordered by weight between the metric and apothecary systems.
   - 2.3 identify when to use the ratio and proportion method to convert dosages ordered by weight in one measurement system to the dose in another measurement system.
   - 2.4 identify principles for converting medication dosages ordered by liquid volume between the metric, apothecary, and household systems.
   - 2.5 convert medication dosages ordered by liquid volume from one system (liters, milliliters) to another (ounces, drops).

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES: (cont)

3. Demonstrate drug calculation methods.
   - 3.1 calculate medication dosages utilizing the **dimensional analysis method**.

4. Demonstrate principles of medication administration.
   - 4.1 demonstrate a basic knowledge of the abbreviations utilized in the administration of medications.
   - 4.2 identify the differences between brand names and generic names of medications.
   - 4.3 accurately interpret medication labels.
   - 4.4 identify the types of medication orders.
   - 4.5 identify the necessary components of a medication order.
   - 4.6 identify the "5 rights" of medication administration.
   - 4.7 accurately interpret appropriate military times.
   - 4.8 demonstrate accurate documentation of the administration of medications.

5. Understanding forms of medication administration.
   - 5.1 identify various supplies used to administer intravenous medications.
   - 5.2 identify various forms of intravenous medications.
   - 5.3 identify types of intravenous medication administration.
   - 5.4 calculate dosages of intravenous medications.

6. Understanding the use of Percentages
   - 6.1 identify the relationship of concentration to weight and volume.
   - 6.2 calculate the amount of medication in a given solution

7. Demonstrating alternate methods for medication administration.
   - 7.1 identify various alternate forms of medications (other than oral, parenteral, and enteral) that are referred to as **topical** medications.
   - 7.2 identify the two major categories of topical medications (percutaneous and transdermal).
   - 7.3 identify the methods of administration of the alternate medication forms.

8. Demonstrating critical care calculations
   - 8.1 identify terminology associated with the use of nomograms and titration.
   - 8.2 identify the common units of measure used for medications in solution.
   - 8.3 determine the concentration of a medication in solution.
   - 8.4 determine dosage per milliliter.
   - 8.5 determine infusion rates on the basis of concentration of medication in solution and volume of solution to be infused per unit time.
   - 8.6 determine infusion rates on the basis of dosage in relation to body weight and time.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES: (cont)

9. Demonstrating pediatric and pediatric critical care calculations
   - 9.1 identify factors influencing pediatric medication administration.
   - 9.2 recognize two methods of calculating drug dosages for the pediatric client.
   - 9.3 convert adult medication dosages to pediatric medication dosages.
   - 9.4 describe factors that influence intravenous (IV) medication administration in the pediatric client.

10. Demonstrating labor and delivery calculations.
    - 10.1 identify factors influencing administration of IV fluids and IV medications to the pregnant female.
    - 10.2 identify the types of fluids administered in care of the pregnant female.
    - 10.3 calculate infusion rates of medications ordered by concentration or volume.
    - 10.4 distinguish between the use of loading doses and fluid boluses for the pregnant client.
    - 10.5. calculate administration rates for loading doses and fluid boluses.

11. Understanding ccommunity calculations
    - 11.1 identify conversion factors often used in the community setting.
    - 11.2 describe the three methods for preparing a medication solution and the three ways in which the concentration of the solution may be expressed.
    - 11.3 calculate the volume of medication solution to prepare a solution of a specific concentration.
    - 11.4 calculate the volume of medication solution needed to prepare a weaker percent solution from a stronger percent solution.
    - 11.5 identify criteria for home intravenous therapy.

COURSE TOPICS AND CONTENT REQUIREMENTS:

1. Demonstrate understanding of systems used for drug administration

2. Understanding conversions between the Metric, Apothecary, and Household Systems

3. Demonstrate drug calculation methods.

4. Demonstrate principles of medication administration.

5. Understanding forms of medication administration.

6. Understanding the use of Percentage

7. Demonstrating alternate methods for medication administration.

COURSE TOPICS AND CONTENT REQUIREMENTS: (cont)

8. Demonstrating critical care calculations

9. Demonstrating pediatric and pediatric critical care calculations

10. Demonstrating labor and delivery calculations

11. Understanding ccommunity calculations

INSTRUCTIONAL METHODS:

Content and all assignments are presented through Evolve website. Quizzes and exams are directly related to the content areas and are typically assigned after each module. Critical thinking exercises and problems solving are also a component of this class.

INSTRUCTIONAL MATERIALS:

Clinical Calculations With Applications to general and Specialty Areas, Kee and Marshall,*Saunders,* 6th Ed.

Internet sites

Evolve website http://evolve.elsevier.com

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:
Text book reading assignments
Chapter review as assigned
Quizzes taken as assigned

OTHER REFERENCES

TEXT: Clinical Calculations With Applications to general and Specialty Areas, Kee and Marshall,*Saunders,* 6th Ed.

Evolve website http://evolve.elsevier.com

Form Revised: 11/24/08