

Course Syllabus

NOTE: This syllabus is subject to change during the semester. Please check this syllabus on a regular basis for any updates.

Department : Nursing -Vocational

Course Title : Clinical Calculations Made Easy: Solving Problems Using Dimensional Analysis- 5th Edition

Section Name : VNSG_1327_L9

Start Date : 08/27/2012

End Date : 12/14/2012

Modality : WEB-ENHANCED

Credits : 3

Instructor Information

Name : Ann McCalister

OC Email : amccalister@odessa.edu

OC Phone # : 432-335-6393

Course Description

VNSG 1327 Essentials of Medication Administration (51.1613)

(2-4) 3 hours

General principles of medication administration including determination of dosage, preparation, safe administration, and documentation of multiple forms of drugs. Instruction includes various systems of measurement. The student will demonstrate accurate dosage calculation; discuss the principles of safe medication administration; and identify the elements of accurate documentation of medication administration. Math proficiency is determined by examination.

Prerequisites/Corequisites

Prerequisites: Program Admission

Corequisites: VNSG 1502, VNSG 1260, VNSG 1500, VNSG 1505

Scans

1, 2, 3, 4, 5, 6, 9, 10, 11

Course Objectives

The Odessa College School of Vocational Nursing, Monahans Center, prepares individuals to provide safe, intelligent, compassionate care to persons of need in the community. Upon graduation the Vocational Nurse will have demonstrated competency in the following *Essential Competencies*.

ESSENTIAL COMPETENCIES OF GRADUATES OF TEXAS VOCATIONAL NURSING EDUCATIONAL PROGRAMS

I. Member of the Profession:

- A. Function within the nurse's legal scope of practice and in accordance with the policies and procedures of the employing health care institution or practice setting.
- B. Assume responsibility and accountability for the quality of nursing care provided to patients and their families.
- C. Contribute to activities that promote the development and practice of vocational nursing.
- D. Demonstrate responsibility for continued competence in nursing practice, and develop insight through reflection, self-analysis, self-care, and lifelong learning.

II. Provider of Patient-Centered Care:

- A. Use clinical reasoning and established evidence-based policies as the basis for decision making in nursing practice.
- B. Assist in determining the physical and mental health status, needs, and preferences of culturally, ethnically, and socially diverse patients and their families based on interpretation of

health-related data.

C. Report data to assist in the identification of problems and formulation of goals/ outcomes and patient-centered plans of care in collaboration with patients, their families, and the interdisciplinary health care team.

D. Provide safe, compassionate, basic nursing care to assigned patients with predictable health care needs through a supervised, directed scope of practice.

E. Implement aspects of the plan of care within legal, ethical, and regulatory parameters and in consideration of patient factors.

F. Identify and report alterations in patient responses to therapeutic interventions in comparison to expected outcomes.

G. Implement teaching plans for patients and their families with common health problems and well-defined health learning needs.

H. Assist in the coordination of human, information, and material resources in providing care for assigned patients and their families.

III. Patient Safety Advocate:

A. Demonstrate knowledge of the Texas Nursing Practice Act and the Texas Board of Nursing Rules that emphasize safety, as well as all federal, state, and local government and accreditation organization safety requirements and standards.

B. Implement measures to promote quality and a safe environment for patients, self, and others.

C. Assist in the formulation of goals and outcomes to reduce patient risks.

D. Obtain instruction, supervision, or training as needed when implementing nursing procedures or practices.

E. Comply with mandatory reporting requirements of the Texas Nursing Practice Act.

F. Accept and make assignments that take into consideration patient safety and organizational policy.

IV. Member of the Health Care Team:

A. Communicate and collaborate with patients, their families, and the interdisciplinary health care team to assist in the planning, delivery, and coordination of patient-centered care to assigned patients.

B. Participate as an advocate in activities that focus on improving the health care of patients and their families.

C. Participate in the identification of patient needs for referral to resources that facilitate continuity of care, and ensure confidentiality.

D. Communicate and collaborate in a timely manner with members of the interdisciplinary health care team to promote and maintain optimal health status of patients and their families.

E. Communicate patient data using technology to support decision making to improve patient care.

F. Assign nursing care to LVNs or unlicensed personnel based upon an analysis of patient or unit need.

G. Supervise nursing care provided by others for whom the nurse is responsible.

The student must be prompt in reporting for class and for clinical rotations. Tardiness, which is defined as being late in excess of fifteen minutes, is not professional and is an unacceptable practice. Absences are discouraged. The door to the classroom will be closed when instruction begins and any student who is not present at that time will be required to wait in a common area outside the classroom until the next break occurs.

1. When a student is to be absent or late to class, she or he is to notify the instructor.

If the Student is to be tardy or absent from a clinical rotation, the contact person designated by the instructor is to be notified as soon as possible before the absence or regular time to report on duty. Failure to do so will jeopardize the student's standing and may be considered voluntary termination by the student from the program. Failure to notify of tardiness or absence from class may result in written counseling. Two occurrences of tardiness will be counted as one absence from clinicals.

2. If it is medically necessary to miss a clinical experience, a physician's written excuse will be required.

3. The student is strongly encouraged to attend all class room sessions. Please refer to the Absence and Tardiness policy. Absences in excess of this policy may result in the dismissal of the student from the program.

Required Readings/Materials

a) You must purchase the following **required** readings/materials: Refer to Textbook List

b) You are encouraged to buy the following *optional* books/materials: None

After studying, "Clinical Calculations Made Easy: Solving Problems Using Dimensional Analysis", the student nurse will be able to:

- ☐ Define and interpret the symbols and vocabulary of basic mathematics.
- ☐ Create fractions from whole numbers.
- ☐ Insert leading zeros and eliminate trailing zeros.
- ☐ Convert Arabic and Roman numerals.
- ☐ Calculate sums, products, and multiples of numbers.
- ☐ Identify factors and multipliers.
- ☐ Calculate squares and square roots.
- ☐ Interpret and calculate values of bases and exponents
- ☐ Use mental arithmetic to calculate powers of base 10'
- ☐ Multiply and divide whole numbers and decimal numbers with powers of 10 by moving decimal Places.
- ☐ Distinguish decimal fractions from other fractions.
- ☐ Read and write decimal numbers.
- ☐ Round whole numbers and decimal numbers.
- ☐ Add, subtract, multiply, cancel, divide, and reduce simple, mixed, and improper fractions.
- ☐ Find lowest common denominators for fractions'
- ☐ Compare fraction size by creating equivalent fractions'
- ☐ Convert fractions, decimal numbers, and percents.
- ☐ Solve basic equations with fractions, decimal fractions, and whole numbers
- ☐ Estimate and evaluate answers.
- ☐ Calculate unit values.
- ☐ Examine a problem to identify the desired units for the answer
- ☐ Examine a problem to identify the units on hand that need to be converted'
- ☐ Select and orient appropriate conversion formulas.
- ☐ Analyze the dimensional analysis (DA) setup to determine whether it will yield the desired answer units.
- ☐ Estimate answers.
- ☐ Solve basic arithmetic and simple metric medication equations using DA and units and number cancellation.
- ☐ Evaluate answers.

After studying, "Measurement Units and Conversions for Medications", "Patient Records, Medication Orders, and Labels", "Solid and Liquid Oral Dose Calculations," the student vocational nurse will:

- ☐ Memorize the units of metric measurement used in medication orders.
- ☐ State equivalent values of weight (mass) and volume used in metric.
- ☐ Distinguish milligram, milliliter, and milliequivalent.
- ☐ Define the uses of the term Unit related to measurements and medications.
- ☐ Calculate basic metric oral medication problems using mental arithmetic and decimal placement.
- ☐ Verify metric conversions using dimensional analysis-
- ☐ Use approved abbreviations for metric units.
- ☐ Distinguish metric, household, and apothecary measurements'
- ☐ Interpret medication orders and labels.
- ☐ Identify abbreviations that cannot be used for handwritten medical records.
- ☐ Identify abbreviations that can lead to medications errors

- ☐ Identify forms of medications.
- ☐ Read and write time using the 24-hour clock.
- ☐ Describe the data from the order and label that must be entered in all medication and calculations.
- ☐ Describe medication-related nurse action that may lead to medication errors
- ☐ Identify patients' rights.
- ☐ Estimate, calculate, and evaluate a variety of solid and liquid medication doses
- ☐ Calculate dosages for liquid medications to the nearest tenth of a milliliter.
- ☐ Measure oral liquids in a calibrated measuring cup.
- ☐ Measure syringe volumes in 3-and S-mL, syringes.
- ☐ Calculate and evaluate safe dose ranges (SDR) for medication doses.
- ☐ After studying, "Syringe Measurements" and "Reconstitution of Powders and Liquids" "the student nurse will be able to:
 - ☐ State the total volume capacity for various syringes.
 - ☐ Differentiate the calibrations for various syringe sizes per milliliter'
 - ☐ State the lowest and nearest measureable dose for syringes.
 - ☐ Select the appropriate syringe size for stated volumes-
 - ☐ Draw a vertical line through an accurate dose on a syringe-
 - ☐ Select the appropriate syringe for selected purposes.
 - ☐ Identify safety principles related to syringes and needles.
 - ☐ Define needle gauge and three criteria for needle selection. After studying "Injectable Medication Calculations" and , "Basic Intravenous Calculations" ,the student nurse will be able to:
 - ☐ Distinguish routes of drugs for reconstitution.
 - ☐ Interpret directions for dilution of reconstituted medications.
 - ☐ Select the appropriate concentration to prepare for the ordered dose.
 - ☐ Calculate doses for reconstituted medications using DA equations.
 - ☐ Measure the appropriate close using a medicine cup and a syringe.
 - ☐ Identify appropriate notation on reconstituted notation medication labels.
 - ☐ Interpret directions for safe storage of reconstituted medications.
 - ☐ Calculate ratio dilutions for partial-strength solutions.
 - ☐ Calculate and measure intradermal, subcutaneous, and intramuscular doses.
 - ☐ Calculate and combine doses for two medications to be mixed in one syringe to nearest measurable dose.
 - ☐ Identify safety hazards of injectable medications.
 - ☐ Interpret basic Intravenous (IV) solution orders for peripheral infusion.
 - ☐ Identify contents of commonly ordered IV fluids.
 - ☐ Identify average flow rates for adults who are NPO and the general rationale for variations.
 - ☐ Estimate, calculate, and verify flow rates for intermittent and continuous IV solutions on gravity and electronic devices.
 - ☐ Calculate grams of dextrose and sodium in IV fluids.
 - ☐ Estimate and calculate the duration of flow for IV solutions in hours and minutes.
 - ☐ Identity patient safety assessments related to IV solution therapy
 - ☐ Interpret basic Intravenous (IV) solution orders for peripheral infusion.
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 - ☐ Estimate, calculate, and verify flow rates for intermittent and continuous IV solutions on gravity and electronic devices.
 - ☐ Calculate grams of dextrose and sodium in IV fluids.
 - ☐ Estimate and calculate the duration of flow for IV solutions in hours and minutes.
 - ☐ Identity patient safety assessments related to IV solution therapy.
 - ☐ Calculate infusion flow rates for the following units of measurement mg/ mL, Mcg/min, mcg/mL., mcg/hr, mg/hr, mcg/min, mcg/kg, mcg/kg/hr, mcq/kg/min, mg/ kg/ hr, mg/ kg/ min, and mEq/ hr.
 - ☐ Confirm IV medication orders with safe dose range (SDR) criteria.
 - ☐ Calculate schedules for manual IV direct push medications.
 - ☐ Calculate the parameters of flow rates for titrated IV infusions.
 - ☐ State the difference between central venous lines and peripheral venous lines.

- ☐ Calculate the calorie in selected IV solutions.
 - ☐ State the general purpose and contents of hyperalimentation (TPN) formulas.
 - ☐ Identify patient safety issues for the administration of IV medications.
- After studying, "Antidiabetic Agents" and "Anticoagulant Agents", the student nurse will be able to:
- ☐ Identify risks of look-alike generic oral antidiabetic products,
 - ☐ Contrast the various insulin products by onset of activity.
 - ☐ Calculate and titrate subcutaneous and IV insulin dosages based on blood glucose levels.
 - ☐ Evaluate blood glucose levels for prescribed insulin administration.
 - ☐ Select the appropriate syringe and measure syringe doses for subcutaneous insulin administration.
 - ☐ Identify the most common adverse effect of insulin therapy.
 - ☐ Define hypoglycemia and hyperglycemia.
 - ☐ Identify causes of, risks of, and nutrients needed for hypoglycemia.
 - ☐ Identify critical patient safety issues related to antidiabetic medications and blood glucose levels.
 - ☐ Differentiate oral and parenteral anticoagulant agents and related tests.
 - ☐ Calculate doses for oral and parenteral anticoagulant agents.
 - ☐ Evaluate and titrate anticoagulant doses based upon relevant laboratory tests.
 - ☐ Identify antidotes for anticoagulant therapy.
 - ☐ Identify critical patient safety issues related to anticoagulant therapy.
- After studying, "Pediatric Medication Calculations", the student nurse will be able to: Distinguish the milligram (mg), microgram (mcg), gram (g), and square meter (m²) units of measurement.
- ☐ Evaluate orders for minimum and maximum pediatric SDR doses.
 - ☐ Calculate pediatric weight-based doses for oral and parenteral routes.
 - ☐ Calculate pediatric doses based on body surface area.
 - ☐ Calculate flow rates for IV volume-control devices.
 - ☐ Initiate measures to prevent medication errors for pediatric patients.

Grading Criteria

1. A minimum grade of C is required in all nursing and allied health courses. Each component within a course must be completed with a C or above or the student will receive a failing grade. A student who fails to attain 75% on a unit examination must provide documentation of remediation by an approved tutor or student mentor. Arrangements must be made in conjunction with an instructor in the program.
2. A minimum grade of C must be maintained in the clinical area. This grade will be derived from the averages on nursing care plans, case studies, and all other written clinical assignments. Written work will be factored into the clinical nursing grade which is either 'Pass' or 'Fail.'
3. Any grade below 75% will be considered failing.
4. A report of grades will be distributed to each student at the completion of each semester.
5. A minimum grade of 90% is required on the math competency examination which is administered each semester. The student will have 3 opportunities to pass this examination. A student who does not successfully pass the examination on the first and second attempts will be required to show evidence of remediation with either an instructor or a student who has attained 95% or above on the examination. A student who is unable to pass the competency examination on the third opportunity will be dismissed from the program.

A = 90 to 100 B = 80 to 89 C = 75 to 79 D = 60 to 74 F = Below 60

Grading criteria are consistent throughout the nursing program at the Monahans Center.

The following method of evaluation will be used in assigning course grades:

Tests and Quizzes.....	70%
Daily Work/ ATI content exams.....	10%
Final Exam.....	20%

Special Needs

Odessa College complies with Section 504 of the Vocational Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. If you have any special needs or issues pertaining to your

access to and participation in this or any other class at Odessa College, please feel free to contact me to discuss your concerns. You may also call the Office of Disability services at 432-335-6861 to request assistance and accommodations.

Learning Resource Center(Library)

The Library, known as the [Learning Resources Center](#), provides research assistance via the LRC's

[catalog \(print books, videos, e-books\)](#) and [databases \(journal and magazine articles\)](#). [Research guides](#) covering specific subject areas, [tutorials](#), and the "Ask a Librarian" service provide additional help.

Student E--mail

Please access your [Odessa College Student E-mail](#), by following the link to either set up or update your account: <http://www.odessa.edu/gmail/>.

All assignments or correspondence will be submitted using your Odessa College email.

Student Portal

Please access your [Odessa College Student E-mail](#), by following the link to either set up or update

your account: <http://www.odessa.edu/gmail/>. **All assignments or correspondence will be submitted using your Odessa College email.**

Technical Support

For Blackboard username and password help and for help accessing your online course availability and student email account contact the Student Success Center at 432-335-6878 or online at https://www.odessa.edu/dept/ssc/helpdesk_form.htm.

Important School Policies

For information regarding student support services, academic dishonesty, disciplinary actions, special accommodations, or student's and instructors' right to academic freedom can be found in the [Odessa College Student Handbook](#).

Clinical Calculation Made Easy: Solving Problems Using Dimensional Analysis 2012
Timeline (Dates are subject to change)

August 27 – 31

Chapter 1

September 3 – 7

Chapter 2

September 10 – 14

Chapter 2

September 17 – 21

Chapter 3

September 24 – 28

Chapter 3

October 1 – 5

Chapter 4

October 8 – 12

Chapter 4

October 15 – 19

Chapter 5

October 22 – 26

Chapter 5

October 29 – 31 November 1 and 2

Chapter 5

November 5 – 9

September 18

Exam 1

October 2

Exam 2

October 16

Exam 3

October 23

Exam 4

November 6

Chapter 6

November 12 – 16

Chapter 6

November 26

Review

Exam 5

November 20

Exam 6

December 5

Final 10 AM-12PM