Mercer County Community College
Division of Science & Health Professions

Nursing Program

NRS 110
College Lab Manual

Fall 2010

Welcome to College Lab - The college lab is an environment to learn the skills essential to nursing practice. It is a place to learn a nursing procedure and safely practice the skills in a controlled setting. The college lab will include demonstration, videos, interactive learning, and clinical simulation of critical skills essential to the fundamentals of nursing practice. Students should practice the skill until a comfort level is achieved. All students will be required to perform a return demonstration for the critical skills outlined in this manual.

Students must achieve a satisfactory grade on all required critical skill procedures to pass the college lab portion of NRS 110. It is essential that students attend all college lab sessions to stay current with skills and topics. The college lab's goal is to prepare you for safe patient care in the healthcare facility.

Have a great semester!

The NRS 110 Course Team

Mercer County Community College
Division of Science and Health Professions
Nursing Department
NRS 110 Lab Manual Fall 2010

NRS 110 students are expected to:

1. Review related class notes, reading assignments and specific lab objectives prior to each college lab.
2. Participate in discussion topics listed for each lab.
3. Bring college lab manual to each lab.
4. Bring required equipment to each lab.
5. Properly perform return demonstration on selected skills.
6. Obtain instructor sign-off on all critical skills.
7. Attend all scheduled college lab sessions.
8. Arrive at the scheduled time for lab (repeated late arrivals will require intervention by NRS 110 Course Coordinator).

College Lab Weekly Content

Week 1: Introduction to College Lab, Hand Washing, Bed Making, Medical Asepsis.

Week 2: Body Mechanics, Lifting and moving patients, Bed bath, Range of Motion (ROM) exercises, Placing patient on bedpan.

Week 3: Surgical Asepsis and Infection Control.

Week 4: Dosage Calculation

Week 5: Dosage Calculation

Week 6: Medication Administration (oral & topical)

Week 7: Medication Administration (parenteral) Landmarking & needle selection

Week 8: Medication Administration (parenteral) Drawing up medication and injection administration.

Week 9: Dosage Calculation Exam

Week 10: Oxygen delivery devices, pulse oximeter, lung expansion techniques. anti-embolic techniques

Week 11: Elimination Lab, specimen collection, intake and output measurement

Week 12: Elimination Lab, incontinence and skin care

Week 13: Nutrition Lab, use and care of feeding tubes; nasogastric tubes

Week 14: Visual examinations and sign-offs

Week 15: Final sign-off of skills

Procedure for College Lab Critical Skill Sign-off

Students will be required to view the skill demonstration, practice the skill to achieve competency, and perform a return demonstration of the skill observed by the lab instructor. The student will have two (2) attempts to successfully complete the skill. If unsuccessful after the first attempt the student will need to practice and perform a second return demonstration of the skill observed by the lab instructor. If after the second attempt, the student remains unsuccessful, remediation with the NRS 110 lab instructor is required. The student will have an opportunity for a third attempt. If after the third attempt the student remains unsuccessful, the student will need to meet with the NRS 110 course coordinator for determination of further progress in the course. Students must obtain instructor sign-off on all NRS 110 critical skills by the end of the semester to successfully pass the college lab component of the course.

Required Textbooks/Resources:

1. Smith, S.F., Duell, D.J.; Martin, B.C. (2008). *Clinical Nursing Skills: Basic to Advanced Skills.* (7th ed.). Upper Saddle River: Pearson Education, Inc.

2. Brown, M., Mulholland, J.A. (2008*) Drug Calculations.* (8th ed.) St. Louis: Elsevier Mosby.

3. Potter, P. A., Perry, A. G. (2009) *Fundamentals of Nursing*. (7th ed.). St. Louis: Elsevier Mosby.

NRS 110 Lab Skills Evaluation **Student:_____**

	DATE/INSTRUCTOR SIGNATURE	
CRITICAL SKILLS	**1ST ATTEMPT**	**2ND ATTEMPT**
Bed Making		
Hand washing		
Body mechanics, Lifting, Moving, Transfer of patients		
Bed Bath & ROM exercises		
Donning sterile gloves		
Medication Administration (oral & topical)		
Medication Administration (IM & SC) (can be signed off in clinical)		
Dosage Calculation exam (Score of 90% or better)		
Application of oxygen devices, pulse oximeter, lung expansion techniques		
Application of anti-embolic therapies (SCD)		
Enteral feedings (NG or PEG)		
Incontinence Care		
Specimen collection (stool & urine)		
Care of nasogastric tube		
Intake & Output Calculation		

LAB #1

TITLE: INTRODUCTION TO COLLEGE LAB

MEDICAL ASEPSIS, HAND WASHING, BEDMAKING, STANDARD PRECAUTIONS,

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Make an occupied bed.
2. Demonstrate the ability to apply principles of medical asepsis to hand washing.
3. Perform proper procedure for hand washing.
4. Explain standard precautions
5. Demonstrate the ability to apply principles of medical asepsis to hand washing and the control of infection.

REQUIRED READING:

Smith, Duell & Martin: pgs. 177-184, 420-427, 428-433

CRITICAL SKILLS:

1. Hand washing
2. Bed making

LAB #2

TITLE: PERSONAL CARE & BED BATH, BODY MECHANICS, LIFTING & MOVING PATIENTS, RANGE OF MOTION(ROM) EXERCISES

LAB OBJECTIVES:

At the completion of this lab, the student will be able to demonstrate correct techniques for:

1. Assisting a client with hygiene needs related to bathing:
    a. Back care
    b. Foot care
    c. Perineal care
2. Assisting a client with hygiene needs related to:
    a. Oral care
    b. Shaving
    c. Shampoo
3 Provide denture care.
4 Assisting a client with the use of a bedpan/urinal.
5 Moving a client in bed.
6 Linen handling.
7 Identify the importance of maintaining proper body alignment for clients and nurses.
8. Demonstrate techniques for transferring a client.
9. Choose the appropriate assistive device for the client.
10. State two expected outcomes of using proper body mechanics.
11. Demonstrate the procedures for moving a client to the side of the bed, up in bed, turning to a lateral position and assisting out of bed.
12. Demonstrate active and passive range of motion (ROM) exercises

REQUIRED READING:

Smith, Duell & Martin: pgs. 185-223, 228-247, 343-355, 356-373, 381-386

CRITICAL SKILLS:

Bed Bath
Body Mechanics
Lifting, Moving, Transfer of patients
Range of motion (ROM) exercises

Additional skills

Shaving - pgs. 222-223
Denture Care – pg. 216
Preventing Skin Breakdown - pgs. 196-198
Back Care - pgs. 202-204
Foot Care - pg. 229
Perineal Care - pgs. 236-238
Use of a Bedpan/Urinal – pgs. 232-233
Oral Care - pgs. 214-215, 217-218

LAB #3

TITLE: SURGICAL ASEPSIS AND INFECTION CONTROL

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Demonstrate correct method of gloving, gowning, and mask use for isolation.
2. Discuss the various types of isolation precautions utilized in health care.
3. Demonstrate the ability to apply principles of surgical asepsis by donning sterile gloves.

REQUIRED READING:

Potter & Perry - Chap. 34
Smith, Duell and Martin - Chap. 14, pgs. 405-419, 434-443, 884-886

CRITICAL SKILLS (From Smith, Duell & Martin)
Donning and Removing Isolation Attire – pgs. 435-437
Donning and Removing Clean Gloves - pgs. 424-426
Donning Sterile Gloves – pgs,884-886

LAB # 4 & 5

TITLE: DOSAGE CALCULATION (ORAL & PARENTERAL)

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Perform nursing math to accurately calculate medication dosages
2. Accurately perform metric conversions
3. Calculate one and two step oral and parenteral medication metric conversion problems.

REQUIRED READING:

Website www.testandcalc.com
Smith, Duell & Martin – Chap. 18, pgs. 567-601, 1090
Brown – Chapters 1,2,3,4,5,6,9,10,11

PRACTICE ASSIGNMENT:

Worksheet for Dosage Calculation

CRITICAL SKILLS: (From Smith, Duell & Martin)

Successfully complete the required Drug & Dosage Calculation Test with a score of 90%. Students who do not achieve 90% on this exam must retest until they achieve the required 90%. The dosage calculation exam will be given during lab week 9.

Oral Drugs - pgs. 580-584
Topical Medications - pg. 586
Transdermal Drugs - pgs. 587-588
Eye Medications - pgs. 588-590
Eardrops - pgs.590-591
IV Flow Rate Calculation - pg. 1090
Sublingual Drugs - pg. 594
Parenteral Medication Administration – pgs,602-622

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NRS 110 Dosage Calculation Worksheet

The purpose of this worksheet is to prepare students for the dosage calculation portion of the course. This is a self taught module. The chapters will be assigned from the textbook, *Drug Calculations* 8th Edition by Brown & Mulholland The student will be expected to review the content in the assigned chapters and solve assigned practice problems. If the student has difficulty with solving problems, please review chapter content and seek out an instructor for additional assistance. The dosage calculation exam will be given week 9 of the semester. This exam will be given in college lab. Calculators will be allowed. The exam will be timed. The expectation for this exam is 90% or better. If the student does not achieve the 90 % on the first attempt, a remediation session must be attended by the student and a new test will be taken. The Dosage Calculation exam is graded as pass/fail with a grade of 90% or better designating the pass grade. **Please bring the Brown book to college lab for the next 4 weeks**

Textbook: Drug Calculations 8th Edition by Brown & Mulholland.

Review basic math concepts in Chapter 1 (General Mathematics) and Chapter 2 (Ratio and Proportion). Take the General Mathematics Self-Assessment to assess your math ability. Most of the math involved with dosage calculation centers on these basic math concepts. If you feel comfortable with these concepts and problems you should have no problem with dosage calculations.
If you are having difficulty with solving the problems in Chapter 1 & 2 you may benefit from visiting the campus Learning Center and seek out some assistance with basic math.

Next review concepts specific to nursing math and dosage calculation. The following Brown chapters should be reviewed for understanding of content.

Chapter 3: Safe Medication Administration
Chapter 4: Drug Measurements and Dose Calculations
Chapter 5: Medications from Powders and Crystals: Oral and Intramuscular
Chapter 6: Basic Intravenous Calculations
Chapter 7: Insulin
Chapter 10: Anticoagulants
Chapter 11: Children's Dosages

Solve a few problems in each of the above chapters to see if you have an understanding of the content. It is not necessary to solve all the problems. Again, if you are having difficulty understanding a particular content area, review the chapter and seek out additional assistance.

To further prepare for the dosage calculation exam, the student should be able to solve the problems found in the following Brown chapters. The answer key for all practice problems are located in the

back of the Brown book There is also a User Tutorial CD-ROM that is included with the textbook. It is beneficial to first review the chapter content then solve the assigned problems. Check your answers for accuracy then move on to the next chapter. The actual dosage calculation exam will include problems similar to what is assigned in this worksheet.

Chapter 3 Safe Medication Administration
Please complete problems on worksheets: 3A,3B,3C,3D,3G and Chapter 3 Final.

Chapter 4 Drug Measurements and Dose Calculations
Please complete problems on worksheets: 4A,4B,4C,4D,4E,4F,4G,4H,4I,4J,4K,4L,4M,4N and Chapter 4 Final

Chapter 5 Medications from Powders and Crystals
Please complete problems on worksheets: 5A,5B,5C,5D, and Chapter 5 Final

Chapter 6 Basic Intravenous Calculations
Please complete problems on worksheets:6A,6B,6C,6D,6E,6F and Chapter 6 Final

Chapter 9 Insulin
Please complete problems on worksheets:9A,9B, 9C, & 9I

Chapter 10 Anticoagulants
Please complete problems on worksheets: 10A

Chapter 11 Children's Dosages
Please complete problems on worksheets: 11A,11B, 11E, 11F, 11G,11H (no BSA formulas)

BODY WEIGHT CONVERSIONS

Change 150 lbs. to Kilograms. Divide 150 by 2.2 = 68 Kg.
Change 60 Kgs. to Pounds. Multiply 60 x 2.2 = 132 lbs.

USE OF RATIO AND PROPORTION

1 gram : 150 mg:: 0.8 grams : *x* mg

Mean

Extremes

1*x* = 0.8 x 150
1*x* = 120
x = 120 mg.

IV FLOW RATE

Calculate mL/hr	Calculate drops per minute
Total volume = mL/hr	Total volume x Drop factor = gtt/min
Total time = (hours)	Total time (minutes)

$\frac{1000\ mL}{6}$ = 166.6 mL/.hr or 167

$\frac{1000\ mL \times 15}{480\ min} = \frac{15{,}000}{480}$

= 31.25 gtt/min or 31 gtt/min

CALCULATE ML/HR FOR VOLUMETRIC INFUSION PUMP

$$\frac{Amount of Solution}{Minutes to Give} = \frac{mL/hr}{60 min}$$

$$\frac{50 mL}{30 min} = \frac{x mL}{60 min}$$

$30x = 3000$

$x = 100 mL/h$

LAB 6 & 7 & 8

TITLE: MEDICATION ADMINISTRATION (ORAL.TOPICAL, INTRAMUSCULAR & SUBCUTANEOUS)

LAB OBJECTIVES:

At the completion of these labs, the student will be able to:

1. Demonstrate safe administration of oral and topical medications.
2. Document medication administration on the medication administration record (MAR)
3. Calculate oral and parenteral drug problems
4. Recognize and perform appropriate metric conversions
5. Select proper equipment for intramuscular and subcutaneous medication administration
6. Demonstrate correct landmarking for parenteral injections
7. Demonstrate correct needle selection for parenteral injections.
8. Demonstrate safe administration of parenteral (IM, SC) medications.
9. Calculate large volume intravenous drip rates.
10. Identify parts of a syringe and indicate those that must remain sterile.
11. Demonstrate correct procedure for preparing injections from a vial, pre-filled syringe, and ampule.

REQUIRED READING:

Smith, Duell & Martin – Chapter 18

CRITICAL SKILLS:

Preparing injections – pg.603
Administering Subcutaneous Injections – pg 608
Administering Intramuscular Injections – pg.617 - 620
Administering Insulin Injections – pg. 610
Preparing Oral Medications 580-583
Administering Oral Medications – pg. 582-583

LAB # 9

TITLE: DOSAGE CALCULATION EXAM

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. ***Successfully complete the required Drug & Dosage Calculation Test with a score of 90%.*** Students who do not achieve 90% on this exam must retest until they achieve the required 90%. Calculators will be provided by lab instructor. Students are required to show all math calculations on the test paper.

LAB # 10

TITLE: OXYGENATION, OXYGEN DELIVERY DEVICES, PULSE OXIMETRY & ANTI-EMBOLIC TECHNIQUES

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Discuss the importance of respiratory preventive and maintenance measures such as coughing and deep breathing and incentive spirometry.
2. Discuss selected oxygen delivery devices.
3. Demonstrate correct application of nasal cannula and face masks.
4. Discuss positioning and techniques for administering chest physiotherapy.
5. Demonstrate proper technique for oral suctioning.
6. Demonstrate proper use of an incentive spirometer.
7. Discuss the correct use of the pulse oximeter.
8. Demonstrate anti-embolic therapies

REQUIRED READING:

Smith, Duell & Martin – Chap. 26, pgs. 942-966; Chap. 10, pg. 272; Chap. 26, pg. 959
Chapter 27 pgs. 1020-1024.

REQUIRED PROCEDURES: (In Smith, Duell & Martin)

Instructing client to deep breath and cough - pg. 947
Use of incentive spirometer - pg. 948
Use of nasal cannula - pg. 962
Using Pulse Oximetry-pg.959
Using an Oxygen Face Mask-pg. 962-963
Anti-embolic devices pgs 1020-1024

LAB # 11 & 12

TITLE: ELIMINATION LAB, URINE & STOOL COLLECTION, INCONTINENCE CARE

LAB OBJECTIVES:

At the completion of this lab, the student will be able to:

1. Discuss the importance of urinary and bowel elimination as a basic human need.
2. Demonstrate application of a condom catheter.
3. Demonstrate specimen collection methods for urine and stool.
4. Discuss enema administration..
5. Demonstrate incontinence care.
6. Demonstrate care of urinary and suprapubic catheters

REQUIRED READING:

Smith, Duell & Martin - Chap. 22,- pgs. 756-769, 789-794; Chap. 23 - pgs. 811-837, Chap. 20, pgs. 684-688, 689-693, Chap. 9 - pg. 238

CRITICAL SKILLS (In Smith, Duell & Martin):

Male Condom Catheter - pg. 767
Collecting Midstream Urine - pg. 685
Collection Specimen from a Closed System - pg. 793
Monitoring Intake & Output - pgs. 1104-1106, 764-765
Providing Incontinence Care - pg. 238

LAB #13

TITLE: NUTRITION & ENTERAL FEEDING TUBES

LAB OBJECTIVES:

At the completion of this lab, the student will able to:

1. Identify various types of tubes used for enteral feedings.
2. Describe the safe care of a patient requiring an enteral tube feeding.
3. Identify the type of patient that would require tube feedings.
4. Demonstrate irrigation and checking residual of a feeding tube.
5. Demonstrate checking placement of a feeding tube.
6. Calculate intake and output for patient

REQUIRED READING:

Smith, Duell & Martin - Chap. 19

CRITICAL SKILLS::

Irrigating/Maintaining Nasogastric Tube - pg. 657
Giving a Feeding Via a Nasogastric or PEG Tube- pgs. 664-666
Monitoring Intake & Output - pgs. 1104-1106, 764-765

LAB #14

Complete visual examinations and sign-offs

LAB #15

Final visual evaluation sign-offs.

Developed : 8/09
Revised: 1/10, 6/10