COURSE: 25.525 General Medicine

UNIT: 10.1 Therapeutic Self Study - Pharmacy

INTRODUCTION

Annotation:

The purpose of this unit is to introduce the student to pharmacy careers. Included in the unit will be: An overview of the pharmacy profession, pharmaceutical calculations, medical orders and prescription interpretation, drug classifications, and legal and safety aspects of pharmacy.

Grade(s):

X	9th
X	10th
X	11th
X	12th

Time: Ten 50 minute periods.

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Students with Disabilities:

For students with disabilities, the instructor should refer to the student's IEP to be sure that the accommodations specified are being provided. Instructors should also familiarize themselves with the provisions of Behavior Intervention Plans that may be part of a student's IEP. Frequent consultation with a student's special education instructor will be beneficial in providing appropriate differentiation.

FOCUS STANDARDS

GPS Focus Standards:

HS-TGM-4. Students will demonstrate an understanding of professional ethics and legal responsibilities.

a. Demonstrate techniques for maintaining confidentiality and privacy to include HIPAA regulations.
b. Acknowledge a personal code of ethics.
c. Explain the national professional standards including the American Pharmacy Association National Code of Ethics, state ethical standards, the Hippocratic Oath, state standards related to unlicensed assistive personnel and state standards for licensed personnel.

HS-TGM-8. Students will understand and utilize terminology related to the human anatomy.

a. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system.
b. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the respiratory system.
c. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the cardiovascular system.
d. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the musculoskeletal system.
e. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the endocrine system.
f. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the nervous system.
g. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the lymphatic system/immune system.
h. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the gastrointestinal system.
i. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the urinary tract system.
j. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the reproductive system.

HS-TGM-9. Students will acquire skills according to career interest and apply those skills in a clinical setting for a minimum of 40 hours.

a. Demonstrate understanding of knowledge and skills for career focus.
b. Perform objectives and complete assigned tasks in assigned clinical area according to facility standards according to their scope of practice.

HS-TGM-3. Students will demonstrate communication and appropriate customer service skills.

a. Examine and exhibit proper communication with the consumer.
b. Examine and exhibit proper communication with team members.
c. Examine and exhibit proper communication with the employer.
d. Understand and demonstrate how to communicate in a healthcare setting and convey critical client information to appropriate team members in a timely and professional manner.

GPS Academic Standards:

ELA 11C1. The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.

ELA9RL. The student understands and acquires new vocabulary and uses it correctly in reading and writing.

MM4P4. Students will make connections among mathematical ideas and to other disciplines.

National / Local Standards / Industry / ISTE:

UNDERSTANDINGS & GOALS

Enduring Understandings:

Students will understand that pharmaceutical services are very valuable in the therapeutic aspect of healthcare. They will further understand the role of the pharmacist within the healthcare setting. The student will gain understanding of the functions of pharmacy in the drug store, hospital and nursing home settings.

Essential Questions:

- What is the role of the pharmacy department within the HealthCare setting?
- State the goals of the practice of pharmacy.
- State the education, licensure, salary, of the pharmacist, pharmacy technician.
- Describe the major practice setting in pharmacy.
- Define key terms associated with pharmacy prescription, medication order, trade, generic drug names.
- List 5 duties of pharmacist/pharmacy technician.
- Understand the mathematics used in pharmacy.
- Define the common terms and medical abbreviations commonly used in pharmacy.
- Discuss the legal and safety issues associated with pharmacy.
- Name and describe the major organ systems in the human body.
- Name examples of drugs used for diseases of organ systems and describe their basic mechanisms of action.

Knowledge from this Unit:

- Understand the mathematical calculations utilized in the pharmacy profession.
- Understand the basic concepts of medication orders and prescriptions.
- Understand the legal and safety issues within the pharmacy profession.
- Utilize knowledge of pharmacology for treatment of various diseases.

Skills from this Unit:

- Perform basic mathematical calculations.
- Identify parts of a prescription.
- Identify equipment used within the pharmacy field.

ASSESSMENT(S)

Assessment Method Type: Select one or more of the following. Please consider the type(s) of differentiated instruction you will be using in the classroom.

_____ Pre-test
_X_ Objective assessment - multiple-choice, true- false, etc.
_X_ Quizzes/Tests
_X_ Unit test
_____ Group project
_____ Individual project
_X_ Self-assessment - May include practice quizzes, games, simulations, checklists, etc.
_X_ Self-check rubrics
__ Self-check during writing/planning process
__ Journal reflections on concepts, personal experiences and impact on one's life

_____
__ Reflect on evaluations of work from teachers, business partners, and competition judges
__ Academic prompts
__ Practice quizzes/tests

_____ Subjective assessment/Informal observations
__ Essay tests
__ Observe students working with partners
__ Observe students role playing

_____ Peer-assessment
__ Peer editing & commentary of products/projects/presentations using rubrics
__ Peer editing and/or critiquing

_____ Dialogue and Discussion
__ Student/teacher conferences
__ Partner and small group discussions
__ Whole group discussions
__ Interaction with/feedback from community members/speakers and business partners

_____ Constructed Responses
__ Chart good reading/writing/listening/speaking habits
__ Application of skills to real-life situations/scenarios

_____ Post-test

Assessment(s) Description/Directions:

Activities for Lesson 1

- With the use of a computer go to the GCIS website (gcis@peachstate.net) and answer the following questions:
    - State the goals of the practice of pharmacy.
    - State the education, licensure, salary of the pharmacists and pharmacy technicians.
    - List 5 duties of the pharmacist and pharmacy technician.
- Define these key terms using the information sheets, Diversified Health Occupations book, and other Healthcare Science textbooks. Understand that the abbreviations, and medical terminology used in pharmacy are the standard abbreviations used in all Healthcare terminology.

  Define: pharmacy, pharmacists, pharmacy technician, prescription, FDA, confidentiality
- Complete the word search.

Activities for Lesson 2

1. Each student is to spend as much practice time as necessary to become familiar with fractions, decimals, roman numerals, weight and measurement, ratio and proportion, and percent calculations. Resources for this activity will be your healthcare science textbooks, and related math textbooks.
2. Complete the evaluation and self check.

Activities for Lesson 3

1. Using a PDR, Web MD, or another internet source give three examples of a solid dosage form, liquid dosage form, and topical dosage form.

2. Name and explain the importance of the right routes of administered medications.
3. Identify the parts of a prescription.
4. Complete the evaluation and self check.

Activities for Lesson 4

1. Using your DHO, internet, and other text book resources discuss the 5 rights in preparing and dispensing medication.
2. Complete the evaluation and self check.

Activities for Lesson 5

1. Name the 9 major systems of the body.
2. Give an example of a disease related to each body system.
3. List types of medication administered for each disease.
4. Complete the evaluation and self check.

LEARNING EXPERIENCES

Sequence of Instruction

1. Identify the Standards. Standards should be posted in the classroom for each lesson.

HS-TGM-4. Students will demonstrate an understanding of professional ethics and legal responsibilities.
HS-TGM-8. Students will understand and utilize terminology related to the human anatomy.
HS-TGM-9. Students will acquire skills according to career interest and apply those skills in a clinical setting for a minimum of 40 hours.

HS-TGM-3. Students will demonstrate communication and appropriate customer service skills.
ELA 11C1. The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.
ELA9RL. The student understands and acquires new vocabulary and uses it correctly in reading and writing.
MM4P4. Students will make connections among mathematical ideas and to other disciplines.

2. Identify and review the unit vocabulary.

3. Review Essential Questions.

- What is the role of the pharmacy department within the HealthCare setting?
- State the goals of the practice of pharmacy.
- State the education, licensure, salary, of the pharmacist, pharmacy technician.
- Describe the major practice setting in pharmacy.
- Define key terms associated with pharmacy prescription, medication order, trade, generic drug names.
- List 5 duties of pharmacist/pharmacy technician.
- Understand the mathematics used in pharmacy.
- Define the common terms and medical abbreviations commonly used in pharmacy.
- Discuss the legal and safety issues associated with pharmacy.
- Name and describe the major organ systems in the human body.
- Name examples of drugs used for diseases of organ systems and describe their basic mechanisms of action.

4. Assessment Activity.

PHARMACY OVERVIEW

Lesson 1

Upon completion of this lesson the student will be able to:

1. State the goals of the practice of pharmacy
2. Describe the major practice setting in pharmacy.
3. State the importance of confidentiality with respect to patient information
4. Identify the roles and functions of the pharmacy technician.

Activities for Lesson 1

- With the use of a computer go to the GCIS website (gcis@peachstate.net) and answer the following questions:

  State the goals of the practice of pharmacy.

  State the education, licensure, salary of the pharmacists and pharmacy technicians.

  List 5 duties of the pharmacist and pharmacy technician.

- Define these key terms using the information sheets, Diversified Health Occupations book, and other Healthcare Science textbooks. Understand that the abbreviations, and medical terminology used in pharmacy are the standard abbreviations used in all Healthcare terminology.

Define: pharmacy, pharmacists, pharmacy technician, prescription, FDA, confidentiality

- Complete the word search.

Evaluation
Self-Check Questions

For each question, select the one best answer.

1. The basic goal of all pharmacists is to:
    a. prepare, compound, and dispense medications
    b. establish good relations with drug companies
    c. ensure safe and rational drug use
    d. educate the public about pharmacy practice

2. Which of the following is not an area where pharmacy practice is likely to be conducted?
    a. in hospitals
    b. through the mail
    c. in places of worship
    d. in retail stores

3. If a pharmacy technician's conversation with a patient about the patient's symptoms is overheard this is:
    a. a misdemeanor
    b. a violation of the Federal Privacy Act
    c. to be expected in public areas
    d. unfortunate, but not against the law

4. Which of the following would a pharmacy technician be likely to do on a typical day?
    a. price incoming drug shipments
    b. process a prescription
    c. keep records up-to-date
    d. all of the above

Lesson 2

Upon completion of this lesson the student will be able to:

1. Understand the mathematics used in pharmacy
2. Express Arabic quantities in the roman numeral section
3. Interpret and convert weights and measures in the following systems:
    *Metric system
    *Apothecary system
    *Avoirdupois system
    *Household measure

4. Convert a fractional numeral to a decimal numeral
5. Calculate mathematical problems involving ratio and proportion
6. Compute the conversion of temperature from Fahrenheit to Centigrade (or Celsius) degrees
7. Solve pharmaceutical dosage calculations for
    *Ratio strength

*Percent solutions
*Dosing
*Dilution of stock preparations
*Parenteral admixtures
*Rate calculations

Activities for Lesson 2

1. Each student is to spend as much practice time as necessary to become familiar with fractions, decimals, roman numerals, weight and measurement, ratio and proportion, and percent calculations. Resources for this activity will be your healthcare science textbooks, and related math textbooks.

2. Complete the evaluation and self check.

Evaluation
Self Check Questions

For each question, select the best answer.

1. In the fraction 6/12, the denominator is:
   a. 6
   b. 12
   c. ½
2. In the fraction 6/12, the number 6 is the:
   a. numerator
   b. denominator
3. A common denominator for the fractions 2/4 and 7/6 is:
   a. 4
   b. 6
   c. 12
   d. 3
4. Add the following fractions 1/3 + 7/4 =
   a. 8/7
   b. 25/12
   c. 7/12
   d. none of the above
5. Multiply the following fractions: 3/4 x 2/3 =
   a. 5/7
   b. 6/4
   c. 6/12
   d. none of the above

Lesson 3

Upon completion of this lesson the student will be able to:

1. Interpret the meaning of the common Latin terms and medical abbreviations used in writing prescriptions or medication orders.
2. Identify the dosage forms available for pharmaceutical products and a unique feature of each.
3. Recognize the routes of drug administration and the dosage forms used.
4. List the parts of a prescription.

Activities for Lesson 3

5. Using a PDR, Web MD, or another internet source give three examples of a solid dosage form, liquid dosage form, and topical dosage form.
6. Name and explain the importance of the right routes of administered medications.
7. Identify the parts of a prescription.
8. Complete the evaluation and self check.

Evaluation
Self Check

Directions: For each question, select one best answer.

1. Match the following Latin term or abbreviation with its appropriate meaning:

_____ a.c.	a. by mouth
_____ b.i.d.	b. twice a day
_____ h.s.	c. after meals
_____ ad lib	d. as much as wanted
_____ o.s.	e. before meals
_____ p.o.	f. right eye
_____ gtt.	g. left eye
_____ o.d.	h. at bedtime
_____ p.c.	i. drop

2. Match the following product type with its respective dosage form:

_____ solution	a. solids
_____ capsule	b. topicals
_____ suppository	c. liquids
_____ cream	d. miscellaneous
_____ emulsion	
_____ troches	
_____ suspension	
_____ sublingual tablet	
_____ aerosol	
_____ transdermal system	

3. Match the following:

_____ subcutaneous	a. into the subarachnoid space of the spinal cord
_____ intramuscular	b. through the skin into the layer between the outer skin and the muscle
_____ intravenous	c. directly into the heart
_____ intrathecal	d. into the muscle
_____ intracardiac	e. directly into a vein

4. Which of the following are parts of a prescription?

a. dispensing directions to the pharmacist
b. Rx symbol
c. prescriber's signature
d. date

e. all of the above

Lesson 4

Upon completion of this lesson the student will be able to:

1. Identify the legal and safety considerations associated with pharmacy.
2. Know what a hazardous substance is.

Activities for Lesson 4

3. Using your DHO, internet, and other text book resources discuss the 5 rights in preparing and dispensing medication.

4. Complete the evaluation and self check.

Evaluation
Self Check

1. List three federal laws affecting pharmacy.

2. List the storage requirements for a controlled substance.

3. Discuss pharmacy policy and procedures regarding hazardous chemicals.

4. Define caustic substance and toxic substance.

Lesson 5

Upon completion of this lesson the student will be able to:

1. Name and describe the major organ systems in the human body.
2. Name examples of drugs used for diseases of organ systems and describe their basic mechanisms of action.
3. Differentiate between the processes of absorption, distribution, metabolism, and excretion.
4. Differentiate between side effects and toxicities.

Activities for Lesson 5

5. Name the 9 major systems of the body.

6. Give an example of a disease related to each body system.

7. List types of medication administered for each disease.

8. Complete the evaluation and self check

Evaluation
Self-Check Questions

1. Which of the following types of medications is not commonly used on the skin?
    a. Antiseptics
    b. Anti-infectives
    c. Antihistamines
    d. Anti-inflammatories

2. Mydriatic eye preparations cause the eye to:
    a. contract
    b. dilate
    c. neither; these agents are not used in the eyes

3. Which of the following is not part of the gastrointestinal (GI) system?
    a. stomach
    b. salivary gland
    c. intestines
    d. liver
    e. mouth
    f. spleen

4. Which of the following are types of medications used in the GI system?
    1. antacids 2. antidiarrheals 3. antioxidants 4. antiulcers

    a. 1 and 3 only
    b. 2 and 4 only
    c. 2, 3, and 4 only
    d. 1, 2, and 4 only
    e. all the above

5. Which of the following is not part of the respiratory system?
    a. nasopharynx
    b. bronchial tree
    c. lungs
    d. mouth

6. Which of the following is not a type of respiratory system medication?
    a. bronchodilator
    b. nasal decongestant
    c. antibiotic
    d. expectorant

7. True or False. The cardiovascular system is responsible for supplying the body with oxygen and nutrients

8. Which of the following is not a type of cardiac medication?
    a. inotropic agent
    b. antihypertensive agent

c. vasodilator agent
d. antihyperlipidemic agent

9. Types of medications commonly used in the central nervous system include all of the following except:
   a. narcotics
   b. anti-inflammatories
   c. antianxiety agents
   d. antipyretics
   e. anticonvulsants

Attachments for Learning Experiences: Information sheets attached.

Notes & Reflections: Information sheets, internet sources, and textbook sources provided.

UNIT RESOURCES

Web Resources:

- see attached

Materials & Equipment:

- Information sheets

What 21st Century Technology was used in this unit:

	Slide Show Software		Graphing Software		Audio File(s)
	Interactive Whiteboard	X	Calculator		Graphic Organizer
	Student Response System		Desktop Publishing		Image File(s)
	Web Design Software		Blog		Video
	Animation Software		Wiki		Electronic Game or Puzzle Maker
	Email	X	Website		