

# PHT 102: PHARMACY CAREERS B

## Foothill College Course Outline of Record

Heading	Value
<b>Units:</b>	4
<b>Hours:</b>	4 lecture per week (48 total per quarter)
<b>Prerequisite:</b>	PHT 101.
<b>Degree &amp; Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	None
<b>Grade Type:</b>	Letter Grade (Request for Pass/No Pass)
<b>Repeatability:</b>	Not Repeatable

## Student Learning Outcomes

- Demonstrate understanding and implement skills needed to effectively and competently perform a technician job in an ambulatory pharmacy when controlling inventory functions, prescription processing and dispensing.
- Interpret, read, write, understand, communicate and define medical and pharmaceutical terminology as used in hospital pharmacy.
- Perform calculations and conversions utilizing metric, apothecary, household systems utilizing exact and approximate equivalents as appropriate.
- Accurately calculate and utilize the required ingredients for compounding pharmaceutical products from the various physician orders.
- Identify common pathophysiology of the Endocrine, Gastrointestinal, Reproductive, systems and prescription/non-prescription remedies, side effects and dosages of treatment
- Accurately utilize common pharmaceutical measuring, weighing and compounding devices to compound various medication formulations.

## Description

The second of three courses to be taken in series; intended for students enrolled in the CTE Pharmacy Careers Pathway Program. Topics of instruction build on content in the following areas; pharmacy law, dosage forms and calculations, pharmaceutical abbreviations, basic anatomy, physiology and medical terminology pertaining to the gastrointestinal, endocrine and reproductive systems, including diseases and medications used to treat conditions that affect these systems. Topics on inter-professional skills required to work effectively in a health care team.

## Course Objectives

The student will be able to:

- Demonstrate a working knowledge of drug dosages, routes of administration, and dosage forms.
- Demonstrate skill in the operation of common pharmaceutical measuring, weighing and compounding devices.
- Accurately use the metric, apothecary, avoirdupois and household systems to count and measure.
- Read and write proper medical notation on the drug order.
- Interpret and compare information on drug labels.

- Select proper containers for packaging of pharmaceutical preparations.
- Properly compound, label and document solid and liquid pharmaceutical products.
- Demonstrate the ability to follow established guidelines for manually or electronically generating accurate and complete labels.
- Demonstrate the ability to follow protocol to assemble appropriate patient information materials.
- Demonstrate the ability to count or measure the product and place in the proper container.
- Demonstrate the ability to complete the necessary records and documents.
- Demonstrate the ability to calculate the charge for the prescription.
- Identify the five pregnancy risk categories.
- Describe all schedules of controlled substances.
- Identify methods of record keeping, dispensing, and inventory of controlled substances.
- Explain the Five Rights of medication administration.
- Define, interpret, communicate, and apply pharmaceutical and medical terminology, abbreviations and symbols.
- Define, interpret, communicate, and apply medical terminology for the gastrointestinal system, endocrine system, reproductive systems.
- Describe the basic anatomy and pathophysiology of the gastrointestinal system.
- Identify common prescription and non-prescription medication and remedies for the treatment of disease states correlated with the gastrointestinal system.
- Describe the basic anatomy and pathophysiology of the endocrine system.
- Identify common prescription and non-prescription medication and remedies for the treatment of disease states correlated with the endocrine system.
- Describe the basic anatomy and pathophysiology of the reproductive system.
- Identify common prescription and non-prescription medication and remedies for the treatment of disease states correlated with the reproductive system.
- Understand the skills and scope of practice of other healthcare professionals in relation to the field of pharmacy.
- Analyze and demonstrate effective communication with other allied health professions.
- Apply appropriate modes of communication when interacting with a pediatric, adult, and geriatric patient.
- Calculate the oral dosages of drugs, both solid and liquid forms, using ratio-proportion and formula.
- Utilize and understand system of measurements.
- Perform calculations and conversions utilizing metric, apothecary, and household systems, utilizing exact and approximate equivalents as appropriate.

## Course Content

- General Drug Information
  - Dosage forms
  - Routes of administration
  - Importance of route of administration
- Review Basic Measuring Systems
  - Metric
  - Apothecary
  - Avoirdupois
  - Household

C. Equipment Used in Measuring, Weighing, Compounding, of Solids, Semi-Solids, and Liquids

1. Practice in weighing and measuring solids and liquids
2. Equipment and supplies used for dispensing pharmaceuticals

D. Practical Dispensing

1. Medication orders
  - a. Patient profile
  - b. Product identification
    - 1) Label
    - 2) Auxiliary labels
- c. Medical notation
- d. Notation specifying dosage, route, and frequency of medication

E. Drug Labels

1. Brand and generic names
2. Strengths
3. Forms
4. Total volume
5. Directions for mixing
6. Route of administration
7. Manufacturer name and lot number
8. Expiration date
9. Auxiliary labels

F. Packaging of Pharmaceutical Preparations

1. Quantity
2. Volume
3. Formulation
4. Light sensitivity
5. Child safety cap
6. Specialized container

G. Compounding Solid and Liquid Pharmaceuticals

H. Manual or Electronic Generation of Labels

1. Required information
- I. Patient Information
1. Drug information sheet
  2. Pharmacist medication counseling

J. Dispensing Protocols

1. Selecting appropriate container
2. Measuring volume or counting accurately

K. Record Keeping

1. State law requirements
2. Federal law requirements

L. Calculations for Dispensing Fees, Copays and Difference Pricing

1. Dispensing fess
2. Determination of copay
3. Difference pricing

M. Pregnancy Risk Categories

1. Pregnancy Category A
2. Pregnancy Category B
3. Pregnancy Category C
4. Pregnancy Category D
5. Pregnancy Category X
6. Pregnancy Category NR

N. Controlled Substances

1. Schedule I, II, III IV and V
2. General requirements and types of drugs
3. Receiving, storage and sale

O. Filling Controlled Substances

1. Schedule II prescriptions
2. Schedule III, IV, and V prescriptions
3. Inventory policy for Controlled substances
4. Transfer of Controlled substances

- a. Methods of transfer of Schedule II drugs among registrants

b. Transfer of Schedule III, IV, and V drugs among registrants

c. Execution of Form 222

P. Five Rights of Medication Administration

1. The right patient
2. The right drug
3. The right dose
4. The right route
5. The right time

Q. Pharmaceutical Terminology

1. Prefixes and suffixes
2. Nomenclature
3. Pharmaceutical abbreviations in relation to hospital pharmacy
4. Miscellaneous hospital pharmaceutical abbreviations
5. Application of hospital pharmaceutical abbreviations

R. Medical Terminology

1. The gastrointestinal system

- a. Prefixes and suffixes
  - b. Abbreviations
2. The endocrine system

- a. Prefixes and suffixes
- b. Abbreviations

3. The reproductive system

- a. Prefixes and suffixes
- b. Abbreviations

S. The Gastrointestinal System

1. Form and function of the GI system

2. Anatomy and physiology of the GI system

- a. Ingestion
- b. Absorption
- c. Excretion
- d. Auxiliary organ functions

3. Conditions affecting the GI system

- a. Conditions associated with the stomach

1) GERD

2) Peptic Ulcer Disease

- b. Conditions associated with the intestines

1) Inflammatory Bowel Disease

2) Ulcerative Colitis

3) Diarrhea

4) Constipation

5) Flatulence

- c. Misc conditions of the GI system

1) Nausea and vomiting

2) Colorectal Cancer

T. Common Therapeutic Agents Used to Treat Conditions of the GI System

1. GERD

2. Peptic Ulcer Disease

3. Inflammatory Bowel Disease

4. Ulcerative Colitis

5. Diarrhea

6. Constipation

7. Flatulence

8. Nausea and vomiting

9. Colorectal Cancer

U. The Endocrine System

1. Anatomy of the endocrine system

2. Structure and function of glands and hormones

- a. Hypothalamus

- b. Pituitary gland

- c. Pineal gland

- d. Thyroid gland

- e. Parathyroid gland
- f. Adrenal glands
- g. Pancreas
- h. Ovaries
- i. Testes
- 3. Conditions of the pituitary gland and hypothalamus
  - a. Syndrome of Inappropriate Antidiuretic Hormone secretion
  - b. Diabetes Insipidus
  - c. Hypopituitarism
  - d. Hypersecretion of growth hormone
- 4. Conditions of the thyroid gland
  - a. Hyperthyroidism
  - b. Hypothyroidism
- 5. Conditions of the parathyroid glands
  - a. Hyperparathyroidism
  - b. Hypoparathyroidism
- 6. Conditions of the adrenal glands
  - a. Cushing's Disease
  - b. Hyperaldosteronism
  - c. Addison's Disease
  - d. Adrenal medulla tumor
- 7. Conditions of the pancreas
  - a. Diabetes Mellitus
    - 1) Type 1
    - 2) Type 2
    - 3) Gestational Diabetes
- V. Common Therapeutic Agents Used to Treat Conditions of the Endocrine System
  - 1. Diabetes Insipidus
  - 2. Hypopituitarism
  - 3. Hypersecretion of growth hormone
  - 4. Hyperthyroidism
  - 5. Hypothyroidism
  - 6. Hyperparathyroidism
  - 7. Hypoparathyroidism
  - 8. Cushing's Disease
  - 9. Hyperaldosteronism
  - 10. Addison's Disease
  - 11. Adrenal medulla tumor
  - 12. Diabetes Mellitus
    - a. Type 1
    - b. Type 2
    - c. Gestational Diabetes
- W. The Reproductive System
  - 1. Anatomy and physiology of the female reproductive system
  - 2. Conditions affecting the female reproductive system
    - a. Menstrual disorders
    - b. Female Hypogonadism
    - c. Infertility
    - d. Contraception
    - e. Menopause
    - f. Pelvic Inflammatory Disease
  - 3. The anatomy of the male reproductive system
  - 4. Conditions affecting the male reproductive system
    - a. Male Hypogonadism
    - b. Benign Prostatic Hypertrophy
    - c. Prostate Cancer
    - 5. Sexually Transmitted Infections
- X. Common Therapeutic Agents Used to Treat Conditions of the Reproductive System
  - 1. Menstrual disorders
  - 2. Female Hypogonadism
  - 3. Infertility
  - 4. Contraception
    - a. Oral contraceptives
    - b. IUD
    - c. Injection
    - d. Transdermal patch
    - e. Vaginal ring
    - f. Implantable devices
    - g. Other forms of contraceptive
  - 5. Menopause
  - 6. Pelvic Inflammatory Disease
  - 7. Male Hypogonadism
  - 8. Benign Prostatic Hypertrophy
  - 9. Prostate Cancer
  - 10. Sexually Transmitted Infections
    - a. Antibiotics
    - b. Antivirals
- Y. Scope of Practice of Various Healthcare Professionals
  - 1. Duties, licensing, skills
  - 2. Working effectively with the healthcare team
- Z. Issues Related to Communication in Healthcare Environment with Various Healthcare Team Members
  - 1. Verbal and non-verbal communication
  - 2. Interprofessional communication
  - 3. Patient confidentiality and privacy
- AA. Patient Issues Related to Communication in the Healthcare Environment
  - 1. Pediatric patients
    - a. Management and communication with pediatric patients and family members
    - b. Team approach to pediatric patient care
    - c. Referral and consultation protocols for the pediatric patient
  - 2. Adult patients with other needs
    - a. Health literacy
    - b. Language barriers and using an interpreter
    - c. Culturally competent healthcare
  - 3. Geriatric patients
    - a. Management and communication with geriatric patients and family members
    - b. Team approach to geriatric patient care
    - c. Referral and consultation protocols for the geriatric patient
  - 4. This line is for formatting purposes only.
- AB. Mathematical Functions
  - 1. Percents
    - a. Relationship between percents and decimals
    - b. Convert percents to decimals and vice versa
  - 2. Exponents and scientific notation
    - a. Express numbers given in exponential form as whole numbers
    - b. Express large numbers in scientific notation
  - 3. This line is for formatting purposes only.
- AC. System of Measurements
  - 1. Units of measurement and abbreviations of the metric system
  - 2. Units of measurement and abbreviations of the apothecary system
  - 3. Units of measurement and abbreviations of the household system
  - 4. Units of measurement and abbreviations of Milli-equivalents, Units and International Units
  - 5. This line is for formatting purposes only.
- AD. Calculating and Converting Equivalents and Temperature
  - 1. Interpreting prescriptions and converting household, apothecary and metric measurements
    - a. Apothecary, metric and household systems conversions
    - b. Utilizing exact and approximate equivalents

2. Converting between different temperature scales and calculations with density and specific gravity
  - a. Fahrenheit to Celsius and vice versa
  - b. Density formula and calculation
  - c. Specific gravity
  - d. Perform pharmacy calculations using specific gravity

## Lab Content

Not applicable.

## Special Facilities and/or Equipment

- A. Textbooks, charts, worksheets.
- B. Audio visual aids, pharmacy clinical sites.
- C. Library with generalized and specialized references.
- D. Multimedia classroom.
- E. Computer access.
- F. Specialized pharmacy equipment.

## Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Evaluation methods may include, but are not limited to:

- A. Objective and comprehensive exams
- B. Quizzes
- C. Reflections journal
- D. Written research paper
- E. Oral presentation
- F. Class discussion participation
- G. Individual and group assessments
- H. Cooperative/interactive learning assignments
- I. Projects
- J. Computer activities
- K. Case studies
- L. Worksheets

## Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

- A. Lecture presentations and classroom discussion.
- B. Small group recitation sessions to discuss concepts.
- C. Cooperative/interactive learning exercises.
- D. Online modules utilizing software programs.
- E. Demonstration and class activities.
- F. Individual or group presentations regarding research topics followed by in-class discussion and evaluation.

## Representative Text(s) and Other Materials

Instructor generated materials: PowerPoint slides, worksheets, class activities.

Davis, Karen, and Anthony Guerra. Mosby's Pharmacy Technician Principles and Practice. 5th ed. St. Louis: Elsevier, 2018.

Powers, Mary, and Janet Wakelin. Pharmacy Calculations. 5th ed. Englewood: Morton Publishing Company, 2016.

## Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

- A. Weekly reading assignments from text and outside sources ranging from 10 to 20 pages per week
- B. Lecture: Weekly lecture covering subject matter from text assignment with extended topic information along with class discussion
- C. Review of handouts and relevant reading material
- D. Participating in critical thinking and case study exercises
- E. Exploring websites on related topics covered in lecture
- F. Study Ware CD-ROM Student Study Activities
- G. Completing review questions in textbook
- H. Research and planning of individual projects
- I. Completion of assigned online activities and projects
- J. Individual reports (written and oral) based on research
- K. Individual visitation of pharmacy
- L. Reflection journal

## Discipline(s)

Pharmacy Technology