CENTRAL TEXAS COLLEGE
SYLLABUS FOR HITT 1349
PHARMACOLOGY

Semester Hours Credit: 3

Instructor: _______________________

Office Hours: _______________________

I. INTRODUCTION

A. Course Description: Overview of the basic concepts of the pharmacological treatment of various diseases affecting major body systems. Summary of the principles and language of laboratory and diagnostic testing used in various diseases affecting major body systems.

B. This is a required course in the Medical Coding and Billing Associate degree and certificate and the Medical Documentation Specialist associate degree and certificate. The course may be used in the Medical Office Technology associate degree. You will be required to demonstrate proficiency in the skills learned in this course in the internship or clinical courses.

C. This course in conjunction with other appropriate courses prepares students to enter the health-related career fields.

D. Alphanumeric coding used throughout this syllabus denotes integration of SCANS occupational competencies (C1, etc.) and foundation skills (F1, etc.).

II. LEARNING OUTCOMES

Upon successful completion of Pharmacology, the student will:

A. Identify the drugs associated with the treatment process (C1, C5, C6, C7, C8, F1, F7, F11, F12, F16, F17).

B. Examine drug therapy, administration routes, actions and dosage calculations (C5, C6, C7, C8, F1, F2, F4, F10, F11, F12).

C. Identify procedures, techniques, and findings in laboratory and diagnostic testing (C5, C6, C8, F1, F2, F12, F16).

D. Differentiate among common laboratory and diagnostic tests, including diagnostic indications, techniques, expression of values, and significance of findings (C1, C5, C6, C7, C8, F1, F7, F11, F12, F16, F17).

E. Select and use appropriate medical references (C5, C6, C8, F1, F2, F12, F16).
III. INSTRUCTIONAL MATERIALS

A. The instructional materials identified for this course are viewable through www.ctcd.edu/books

B. Supplementary Materials:
Medical dictionary (virtual is acceptable)

IV. COURSE REQUIREMENTS

A. Reading Assignments: To be successful in this course, you must read and study the textbooks. Chapter assignments will be made with each lesson, and you are expected to complete all the work in the chapters including anecdotes or unusual drug information, historical notes, focus on healthcare issues, and chapter review activities. Even though you may not be required to turn all work in for grading, you are still responsible for the material covered in the textbook exercises and the exercises at the website.

B. Class Assignments: Assignments may include
   a. Internet research for reports on drugs and other relevant healthcare topics.
   b. Completion of chapter review exercises.

C. Multimedia Activities: Interactive courseware that includes additional chapter-specific exercises.

V. EXAMINATIONS

A. There will be exams (quizzes) to accompany the lessons of the course. These exams will cover information in the reading assignments, chapter exercises, the multimedia activities, and the class assignments. The majority of exam questions will be objective-type.

B. Dates for completion of the lessons, including the quizzes, will be announced in the schedule provided in the online or classroom syllabus.

C. The final exam will be cumulative and will be composed of objective-type questions.

VI. SEMESTER GRADE COMPUTATION

A. Exams/Final 50%
B. Class Assignments 50%

100%

For this course to be used to satisfy the requirements for an Office Technology certificate, a student must make at least a grade of C. A student may repeat the course until he or she achieves a grade of C or better.
VII. NOTES AND ADDITIONAL INSTRUCTIONS

A. Withdrawal from course: It is your responsibility as a student to officially drop a class if circumstances prevent attendance. Any student who desires to, or must, officially withdraw from a course after the first scheduled class meeting must file an Application for Withdrawal or an Application for Refund. The withdrawal form must be signed by the student.

Application for Withdrawal will be accepted according to the following schedule:

- Friday of 3rd week for 5-week courses
- Friday of 4th week for 6-week courses
- Friday of 6th week for 8-week courses
- Friday of 7th week for 10-week courses
- Friday of 9th week for 12-week courses
- Friday of 12th week for 16-week courses

The equivalent date (75% of the semester) will be used for sessions of other lengths. The specific last day to withdraw is published each semester in the Schedule Bulletin.

Students who officially withdraw will be awarded the grade of “W,” provided the student’s attendance and academic performance are satisfactory at the time of official withdrawal. Students must file a withdrawal application with the College before they may be considered for withdrawal.

A student may not withdraw from a class for which the instructor has previously issued the student a grade of “F” or “FN” for nonattendance.

B. An Administrative Withdrawal: Results when a student is absent an excessive number of times as defined in the current Central Texas College catalog and/or other published amendatory documentation. In such a case, the student is dropped from the course with a grade of F.

Under Section 51.907 of the Texas Education Code, “an institution of higher education may not permit a student to drop more than six courses, including any course a transfer student has dropped at another institution of higher education.” This statute was enacted by the State of Texas in spring 2007 and applies to students who enroll in a public institution of higher education as first-time freshmen in fall 2007 or later.

C. An Incomplete Grade: In keeping with College policy, the instructor may grant an incomplete grade in cases in which the student had completed the majority of the course work, but because of extenuating circumstances, is unable to complete the
requirement for the course. Prior approval from the instructor is required before the
grade of “IP” is recorded. Deadline for changing the IP grade is 110 days after the
scheduled end of the course. An IP grade can be replaced with the student’s actual
grade, including an F; but it may not be replaced with a W. At the end of the 110
calendar days if the student has not completed the remaining coursework as required
by the instructor, the IP will be converted to an FI and appear as an F on the student’s
official transcript.

D. **Cellular Phones:** Cellular phones will be turned off while the student is in the
   classroom or laboratory.

E. **Americans With Disabilities Act (ADA):** Disability Support Services
   provide services to students who have appropriate documentation of a
disability. Students requiring accommodations for class are responsible for
contacting the Office of Disability Support Services (DSS) located on the
central campus. This service is available to all students, regardless of
location. Explore the website at [www.ctcd.edu/disability-support](http://www.ctcd.edu/disability-support) for further
information. Reasonable accommodations will be given in accordance with the
federal and state laws through the DSS office.

F. **Instructor Discretion:** The instructor reserves the right of final decision in course
   requirements.

G. **Civility:** Individuals are expected to be cognizant of what a constructive educational
   experience is and respectful of those participating in a learning environment.
   Failure to do so can result in disciplinary action up to and including expulsion.

H. **Scholastic Honesty:** All students of the Office Technology program are required
   and expected to maintain the highest standards of scholastic honesty in the
   preparation of all work and in examinations. Each student should avoid:

   1. **Plagiarism:** the taking of passages or ideas from writings of others without
giving proper credit to the source.

   2. **Collusion:** working together with another person in the preparation of work
   unless such joint preparation is specifically approved in advance by the
   instructor.

   3. **Cheating:** giving or receiving information on an examination, homework, or
   projects.

   4. Students found guilty of scholastic dishonesty are subject to the Office
   Technology Department’s disciplinary action and CTC’s disciplinary
   committee; in addition, students are subject to having credit for courses
canceled.
VIII. COURSE OUTLINE

A. **Lesson 1: Introduction to Pharmacological Principles (Chapters 1, 2, 3 and 27 in pharmacology text)**

1. **Learning Outcomes:** Upon completion of Lesson 1, the student will achieve the following outcomes with at least 70% accuracy on a lesson assessment:

   a. Define key chapter terms and concepts.
   b. Describe the origin and content of various drug laws including function of the Food and Drug Administration (FDA), Drug Enforcement Agency (DEA) and the role of health professionals.
   c. Define and differentiate schedules of controlled substances.
   d. Define drug standards and describe drug classification systems.
   e. Differentiate between the chemical, generic, official, and trade/brand names of a drug.
   f. Define and explain restriction on sales of the following: OTC, legend drug and controlled substance.
   g. Describe terms indicating drug actions in drug reference sources.
   h. Identify five sources of drugs.
   i. Differentiate between drug actions, drug effects, systemic effects, local effects, and four different types of doses.
   j. Define the processes as they relate to the passage of drugs through the body and state conditions that may decrease the effectiveness of each: absorption, distribution, metabolism and excretion.
   k. Identify and contrast the various routes of drug administration.
   l. State the types of unexpected responses to drugs.
   m. List several drugs that are inappropriate for older adults and factors that lead to cumulative effects in older adults.
   n. Name at least five categories of drugs that frequently cause adverse side effects, mental problems, or contribute to falls in older adults.
   o. Describe the impact of polypharmacy on older adults.

2. **Learning Activities:**

   a. Chapter-specific research topics (C5, C6, C7, C8, F1, F2, F12)
   b. Chapter-specific issues for forums (discussions) (C5, C6, C7, F1, F7, F12, F17)
   c. Chapter Review Questions (C7, C8, F4, F11, F12, F16)
   d. Practical application of chapter material (C5, C6, C7, C8, F1, F2, F12)
   e. Multimedia activities (C1, C5, C6, C7, C8, F10, F12, F16)

3. **Lesson 1 Outline:**

   a. **Chapter 1** – Consumer Safety and Drug Regulations
b. Chapter 2 – Drug Names and References

c. Chapter 3 – Sources and Bodily Effects of Drugs

d. Chapter 27 - Drugs and Older Adults

B. Lesson 2: - Drug sources, forms, administration, systems of measurement and dosage calculations (Chapters 4, 5, 6 and 7 in pharmacology text)

1. Learning Outcomes: Upon completion of Lesson 2, the student will achieve the following outcomes with at least 70% accuracy on a lesson assessment:

   a. Define key chapter terms and concepts.
   b. Describe different oral, rectal and types of injectable drug forms.
   c. Contrast the various topical drug forms.
   d. Explain advantages of administering drugs via transdermal patch.
   e. Describe inhalable drug forms.
   f. Identify common abbreviations and symbols used for medication orders.
   g. List parts of a medication order and other items on a prescription blank.
   h. Describe responsibilities of a healthcare professional regarding verbal and telephone orders for medications.
   i. Interpret medical orders correctly.
   j. Compare and contrast the three systems of measurement.
   k. Identify the three steps for dosage calculations
   l. Convert from one system of measurement to another using the ratio and proportion method and use methods to solve dosage problems.
   m. List variables for safe dosage and ways to reduce medication errors.

2. Learning Activities:

   a. Chapter-specific research topics (C5, C6, C7, C8, F1, F2, F12)
   b. Chapter-specific issues for forums (discussions) (C5, C6, C7, F1, F7 F12, F17)
   c. Chapter Review Questions (C7, C8, F4, F11, F12, F16)
   d. Practical application of chapter material (C5, C6, C7, C8, F1, F2, F12)
   e. Multimedia activities (C1, C5, C6, C7, C8, F10, F12, F16)

3. Lesson 2 Outline:

   a. Chapter 4 – Medication Preparations and Supplies
   b. Chapter 5 – Abbreviations and Systems of Measurement
   c. Chapter 6 – Safe Dosage Calculations
   d. Chapter 7 – Responsibilities and Principles of Drug Administration

C. Lesson 3: Drug Administration: Gastrointestinal, and Parenteral and
Poison Control (Chapters 8, 9, and 10 in pharmacology text)

1. Learning Outcomes: Upon completion of Lesson 3, the student will achieve the following outcomes with at least 70% accuracy on a lesson assessment:

   a. Define key chapter terms and concepts.
   b. Describe advantages, disadvantages of and precautions when administering medications orally, by nasogastric, gastric tube, and rectally.
   c. Name four parenteral routes with systemic effects.
   d. Explain applications by different routes.
   e. Identify three conditions treated with transcutaneous delivery systems.
   f. Compare and contrast pros and cons of types of inhalation therapy.
   g. Identify parts of syringe, types of injections, purpose and sites.
   h. List two types of IV administration, and types of IV fluids.
   i. List four types of administration for local effects.
   j. Identify four routes poison may be taken into the body.
   k. List five conditions in which vomiting after ingesting poison can injure the patient.
   l. Describe the first step and required procedures in the event of poisoning and therapy for different types of poisoning.
   m. List recommended vaccinations by age group and the diseases vaccines are used to protect against.

2. Learning Activities:

   a. Chapter-specific research topics (C5, C6, C7, C8, F1, F2, F12)
   b. Chapter-specific issues for forums (discussions) (C5, C6, C7, F1, F7 F12, F17)
   c. Chapter Review Questions (C7, C8, F4, F11, F12, F16)
   d. Practical application of chapter material (C5, C6, C7, C8, F1, F2, F12)
   e. Multimedia activities (C1, C5, C6, C7, C8, F10, F12, F16)

3. Lesson 3 Outline:

   a. Chapter 8 – Administration by the Gastrointestinal Route
   b. Chapter 9 – Administration by the Parenteral Route
   c. Chapter 10 – Poison Control

D. Lesson 4: Drug Classifications: Vitamins, Skin, and Autonomic Nervous System (Chapters 11, 12, and 13 in pharmacology text)

1. Learning Outcomes: Upon completion of Lesson 4, the student will achieve the following outcomes with at least 70% accuracy on a lesson assessment:

   a. Define key chapter terms and concepts.
   b. Categorize vitamins and identify by letter, list their sources, functions, signs of deficiency and symptoms of overdose if known.
c. Describe common electrolytes, minerals and their sources, functions, and sign of deficiency.
d. Explain the role of antioxidants in nutritional therapy and issues with herbal products.
e. Identify indication, side effects, and precautions or contraindications of the nine major categories of skin medications.
f. Explain the factors that influence the absorption of skin medications.
g. Classify drugs according to their action and uses: antipruritic, emollient, keratolytic, enzymatic, antifungal, anti-infective or agents to treat burns and acne.
h. Compare and contrast characteristics of the four categories of autonomic nervous system drugs.
i. List the most frequently used (key) ANS drugs in each category, the conditions they are used to treat and possible side effects.
j. Name and interpret laboratory and diagnostic tests associated with dermatologic and neoplastic diseases.

2. Learning Activities:

a. Chapter-specific research topics (C5, C6, C7, C8, F1, F2, F12)
b. Chapter-specific issues for forums or discussions (C5, C6, C7, F1, F7 F12, F17)
c. Chapter Review Questions (C7, C8, F4, F11, F12, F16)
d. Practical application of chapter material (C5, C6, C7, C8, F1, F2, F12)
e. Multimedia activities (C1, C5, C6, C7, C8, F10, F12, F16)

3. Lesson 4 Outline:

a. Chapter 11 – Vitamins, Minerals, and Herbs
b. Chapter 12 – Skin Medications
c. Chapter 13 – Autonomic Nervous System Drugs

E. Lesson 5: Drug Classifications: Antineoplastic, Urinary System and Gastrointestinal Drugs (Chapters 14, 15, and 16 in pharmacology text)

1. Learning Outcomes: Upon completion of Lesson 5, the student will achieve the following outcomes with at least 70% accuracy on a Lesson assessment:

a. Define key chapter terms and concepts.
b. Name characteristics associated with administration and describe the major groups of antineoplastic agents and/or chemotherapy drugs; antimetabolite, alkylating, mitotic inhibitors, antitumor antibiotics, hormones, interferons, monoclonal antibodies, targeted therapies, vaccines, radioactive, and isotopes.
c. List common side effects and precautions for antineoplastic drug types.
d. Compare and contrast types of diuretics for use, side effects, precautions contraindications and drug interactions.

e. Explain medications given for gout, side effects and precautions.

f. Compare and contrast the therapeutic actions of drugs used to treat urinary conditions such as infections, pain and spasms; overactive bladder; benign prostatic hypertrophy; prostatitis; and hypertension.

g. Describes uses; side effects; precautions and contraindications; and interactions of antacids, antulcer and agents for gastroesophageal reflux disease (GERD), agents for irritable bowel syndrome (IBS), antidiarrheal agents, antiflatulents, cathartics and laxatives and antiemetics.

h. Identify drug examples from the eight categories of GI drugs.

i. Name and interpret laboratory and diagnostic tests associated with urinary and gastrointestinal systems.

2. **Learning Activities:**

   a. Chapter-specific research topics (C5, C6, C7, C8, F1, F2, F12)
   b. Chapter-specific issues for forums or discussions (C5, C6, C7, F1, F7 F12, F17)
   c. Chapter Review Questions (C7, C8, F4, F11, F12, F16)
   d. Practical application of chapter material (C5, C6, C7, C8, F1, F2, F12)
   e. Multimedia activities (C1, C5, C6, C7, C8, F10, F12, F16)

3. **Lesson 5 Outline:**

   a. Chapter 14 – Antineoplastic Drugs
   b. Chapter 15 – Urinary System Drugs
   c. Chapter 16 – Gastrointestinal Drugs

F. **Lesson 6: Drug Classifications: Anti-Infective, Eye Medications, Analgesics, Sedatives and Hypnotics (Chapters 17, 18, and 19 in pharmacology text)**

1. **Learning Outcomes:** Upon completion of Lesson 6, the student will achieve the following outcomes with at least 70% accuracy on a lesson assessment:

   a. Define key chapter terms and concepts.
   b. Identify indications, side effects, precautions and contraindications and interactions common to each category of anti-infectives; vaccines, antibiotics, aminoglycosides, cephalosporins, macrolides, penicillins, carbapenems, quinolones, tetracyclines, antifungals, antituberculosis agents, sulfonamides, antivirals, HIV/AIDS agents.
   c. Describe diseases that vaccines are used to treat.
   d. Explain the mechanism for resistant organism development and its significance.
   e. Name and describe the therapeutic effects of different categories of ophthalmic drugs used to treat conditions such as eye infections,
f. Explain categories of ophthalmic drugs such as anesthetic ophthalmics, mydriatics, and combination ophthalmic drugs.
g. Name and explain categories of ear, nose, and throat drugs such as decongestant, antihistamine, mast cell stabilizer, corticosteroid, antibiotic, anti-yeast, antitussive, and combination drugs.
h. Identify and classify generic and trade name eye, ear, nose, and throat drugs as to drug category and disease.
i. Compare and contrast the indications, actions and side effects of nonopioid, opioid and adjuvant analgesics, sedatives, and hypnotics.
j. Name and interpret laboratory and diagnostic tests associated with the ophthalmic, and ear, nose, and throat systems.

2. Learning Activities:
   a. Chapter-specific research topics (C5, C6, C7, C8, F1, F2, F12)
   b. Chapter-specific issues for forums or discussions (C5, C6, C7, F1, F7 F12, F17)
   c. Chapter Review Questions (C7, C8, F4, F11, F12, F16)
   d. Practical application of chapter material (C5, C6, C7, C8, F1, F2, F12)
   e. Multimedia activities (C1, C5, C7, C8, F10, F12, F16)

3. Lesson 6 Outline:
   a. Chapter 17 – Anti-Infective Drugs
   b. Chapter 18 – Eye Medications
   c. Chapter 19 – Analgesics, Sedatives, and Hypnotics

G. Lesson 7: Drug Classifications: Psychotropic Medications, Alcohol, Drug abuse, Musculoskeletal and Anti-Inflammatory and Anticonvulsants, Antiparkisonian Drugs and Agents for Alzheimer’s Disease (Chapters 20, 21, and 22 in pharmacology text)

1. Learning Outcomes: Upon completion of Lesson 7, the student will achieve the following outcomes with at least 70% accuracy on a lesson assessment:
   a. Define key chapter terms and concepts.
   b. Categorize the most commonly used psychotropic medications according to the following classifications: central nervous system (CNS) stimulants for promoting wakefulness and treating attention-deficit hyperactivity disorder (ADHD), antidepressants, antimanic agents for bipolar disorders, anxiolytics, and antipsychotic medications and tranquilizers.
   c. List the purposes, actions, side effects, interactions, and precautions
and contraindications for psychotrophic medications in common use.
d. Describe effects of alcohol, drug addiction, illegal drug abuse and treatments.
e. Name and describe the therapeutic effects of drugs used to treat neurologic conditions such as epilepsy, seizures, Alzheimer’s disease, Parkinson’s disease, and restless leg syndrome (RLS).
f. Differentiate among anti-inflammatory and anti-rheumatic drugs, NSAIDs, skeletal muscle relaxants, and osteoporosis therapy drugs.
g. Name and interpret laboratory and diagnostic tests associated with the musculoskeletal, neurologic and psychiatric systems

2. **Learning Activities:**

   a. Chapter-specific research topics (C5, C6, C7, C8, F1, F2, F12)
   b. Chapter-specific issues for forums or discussions (C5, C6, C7, F1, F7 F12, F17)
   c. Chapter Review Questions (C7, C8, F4, F11, F12, F16)
   d. Practical application of chapter material (C5, C6, C7, C8, F1, F2, F12)
   e. Multimedia activities (C1, C5, C7, C8, F10, F12, F16)

3. **Lesson 7 Outline:**

   a. **Chapter 20** – Psychotrophic Medications, Alcohol, and Drug Abuse
   b. **Chapter 21** – Musculoskeletal and Anti-Inflammatory Drugs
   c. **Chapter 22** – Anticonvulsants, Antiparkinsonian Drugs and Agents for Alzheimer’s Disease

**H. Lesson 8: Drug Classifications: Endocrine System Drugs, Reproductive System Drugs, Cardiovascular Drugs, Respiratory System Drugs and Antihistamines (Chapters 23, 24, 25 and 26 in pharmacology text)**

1. **Learning Outcomes:** Upon completion of Lesson 8, the student will achieve the following outcomes with at least 70% accuracy on a lesson assessment:

   a. Define key chapter terms and concepts.
   b. Identify the hormones secreted by these four endocrine glands: pituitary, adrenals, thyroid and pancreas.
   c. Explain conditions treated with corticosteroid therapy, four potential long-term steroid therapy side effects and dangers of anabolic steroids.
   d. Compare and contrast thyroid medications and disease states.
   e. Explain hypoglycemic and hyperglycemic symptoms, diseases and treatments.
   f. Name and describe various categories of gynecologic and obstetric drugs such as those used for prevention of pregnancy; infertility; during pregnancy, labor, and delivery; and abortion drugs.
Identify uses, side effects, and precautions for androgens, estrogens, progestins, and contraceptives.

Identify uses, side effects and precautions for labor and delivery drugs and other gonadotrophic drugs.

Describe erectile dysfunction medications.

Identify the different types and side effects of cardiac glycosides, antiarrhythmic agents, anti hypertensives, and coronary vasodilators.

Compare and contrast the therapeutic actions of drugs used to treat hypertension, hyperlipemia, congestive heart failure, angina pectoris, myocardial infarction, arrhythmias, peripheral vascular disease and other diseases of the cardiovascular system.

Name the six antilipemic categories, their actions and common drugs.

Identify uses, side effects, and precautions for antithrombotic/anticoagulants, thrombolytic, and hematopoietic agents and common drug names.

Describe the uses of and precautions of oxygen therapy.

List the medications used for smoking-cessation aids and precautions.

Classify a list of respiratory system drugs according to their action, uses, side effects and precautions.

List drug names, uses, side effect and precautions for bronchodilators and antitussives, antihistamines and decongestants, leukotriene inhibitors and mast cell stabilizers.

Name and interpret laboratory and diagnostic tests associated with the endocrine, gynecologic and obstetric, cardiovascular, hematologic and respiratory systems.

2. Learning Activities:

Chapter-specific research topics (C5, C6, C7, C8, F1, F2, F12)

Chapter-specific issues for forums or discussions (C5, C6, C7, F1, F7 F12, F17)

Chapter Review Questions (C7, C8, F4, F11, F12, F16)

Practical application of chapter material (C5, C6, C7, C8, F1, F2, F12)

Multimedia activities (C1, C5, C7, C8, F10, F12, F16)

3. Lesson 8 Outline:

Chapter 23 – Endocrine System Drugs

Chapter 24 – Reproductive System Drugs

Chapter 25 – Cardiovascular Drugs

Chapter 26 – Respiratory System Drugs and Antihistamines