PHARMACOLOGY FOR THE DENTAL HYGIENIST
DHYG 1235

CREDIT
2 Semester Credit Hours (Lecture/Hybrid)

MODE OF INSTRUCTION
Face to Face, Hybrid

PREREQUISITE/CO-REQUISITE:
Prerequisite: Admittance to Dental Hygiene Program; DHYG 1301; DHYG 1431; DHYG 1304; DHYG 1227
Co-Requisite: DHYG 1260; DHYG 1219; DHYG 2301; DHYG 1207

COURSE DESCRIPTION
Classification of drugs and their uses, actions, interactions, side effects, contraindications, with emphasis on dental applications.

COURSE OBJECTIVES
Upon completion of this course, the student will be able to:

- Differentiate the classification of drugs.
- Identify the uses, actions, and contraindications of drugs.
- Recognize systemic and oral manifestations associated with their use.

INSTRUCTOR CONTACT INFORMATION

Instructor:	Michelle DeMoss, RDH, MS
Email:	mdemoss@lit.edu
Office Phone:	409-247-4759
Office Location:	MPC 209
Office Hours:	Monday, 1:00- 3:00 pm, or by appointment

REQUIRED TEXTBOOK AND MATERIALS

- Haveles, Elena Bablenis, Applied Pharmacology for the Dental Hygienist, 9th Edition, Elsevier, 2022. ISBN: 9780323798631
- Jeske, Arthur H., Mosby's Dental Drug Reference, 13th Edition, Elsevier, 2022. ISBN: 9780323779364

REFERENCES

- Holland, Norman, and Michael Patrick Adams, Core Concepts in Pharmacology, 5th Edition, Pearson Education, Inc., 2021.
- Hitner, Henry, et al., Pharmacology, an Introduction, 8th Edition, McGraw Hill LLC, 2022.

Approved: Initials/date

COURSE CALENDAR

DATE	TOPIC & READINGS	ASSIGNMENTS
UNIT 1: General Principles, Autonomic Drugs, & Emergency Drugs		
Week 1	**'START HERE'** (Blackboard) **Course Introduction, Course Contract & Drug cards** **Chapter 1** Information, Sources, Regulatory Agencies, Drug Legislation & Prescription Writing **Chapter 2** Drug Action and Handling	Complete 'Start Here' in Blackboard -Complete Week 1 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm)
Week 2	**Chapter 3** Adverse Reactions **Chapter 4** Autonomic Drugs	-Complete Week 2 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm)
Week 3	**Chapter 21** Emergency Drugs	-Complete Week 3 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm)
	Unit 1 Exam **Chapters 1, 2, 3, 4, 21**	**LockDown Browser & Respondus Monitor Required for Exam**
UNIT 2: Drugs Used in Dentistry		
Week 4	**Chapter 5** Nonopioid (Nonnarcotic) Analgesics **Chapter 6** Opioid Analgesics (Narcotic) and Antagonists	-Complete Week 4 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm)
Week 5	**Chapter 7** Antiinfective Agents **Chapter 24** Natural/Herbal Products and Dietary Supplements	-Complete Week 5 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm)
	Unit 2 Exam **Chapters 5, 6, 7, 24**	**LockDown Browser & Respondus Monitor Required for Exam**
UNIT 3: Drugs Used in Dentistry (continued)		
Week 6	**Chapter 8** Antifungal and Antiviral Agents	-Complete Week 6 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm) **-Pharmacology Case Study Due**
Week 7	**Chapter 10** Local Anesthetics **Chapter 11** General Anesthetics	-Complete Week 7 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm)
Week 8	**Chapter 9** Antianxiety Agents **Chapter 25** Oral Conditions and Their Treatment	-Complete Week 8 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm)

	Unit 3 Exam **Chapters 8, 9, 10, 11, 25**	**LockDown Browser & Respondus Monitor Required for Exam**
	Spring Break	
UNIT 4: Drugs That May Alter Dental Treatment		
Week 9	**Chapter 12** Drugs for the Treatment of Cardiovascular Diseases	-Complete Week 9 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm)
Week 10	**Chapter 13** Drugs for the Treatment of Gastrointestinal Disorders **Chapter 14** Drugs for the Treatment of Seizure Disorders **Chapter 15** Drugs for the Treatment of Central Nervous System Disorders	-Complete Week 10 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm)
	Unit 4 Exam **Chapters 12, 13, 14, 15**	**LockDown Browser & Respondus Monitor Required for Exam**

Unit 5: Drugs That May Alter Dental Treatment (cont.), Pregnancy, & Substance Use Disorders		
Week 11	**Chapter 17** Drugs for the Treatment of Respiratory Disorders and Allergic Rhinitis	-Complete Week 11 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm) **Communication of Pharmacology Topics & Peer Evaluation (in class)**
Week 12	**Chapter 18** Drugs for the Treatment of Diabetes Mellitus **Chapter 19** Drugs for the Treatment of Other Endocrine Disorders	-Complete Week 12 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm) **Communication of Pharmacology Topics & Peer Evaluation (in class)**
Week 13	**Chapter 16** Adrenocorticosteroids **Chapter 20** Antineoplastic Drugs	-Complete Week 13 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm)
Week 14	**Chapter 22** Pregnancy and Breast Feeding **Chapter 23** Substance Use Disorders	-Complete Week 14 Hybrid Module & Assessments in Blackboard Due: By end of week (Fri, 11:59 pm)
	Unit 5 Exam **Chapters 16-20, 22, 23**	**LockDown Browser & Respondus Monitor Required for Exam**
Week 15	**Course Completion** **Comprehensive Final Exam**	

ATTENDANCE POLICY

Absenteeism

In order to ensure the students in the dental hygiene program achieve the necessary didactic and clinical competencies outlined in the curriculum, it is necessary that the student complete all assigned lecture classes, clinical and laboratory hours. It is the responsibility of the student to attend class, clinic or lab. The instructor expects each student to be present at each session.

It is expected that students will appear to take their exams at the regularly scheduled examination time. Make-up examinations will be given **only** if the absence is due to illness (confirmed by a physicians' excuse), a death in the immediate family, or at the discretion of the instructor.

If students are unable to attend lecture class, clinic or lab, it is **mandatory that you call the appropriate instructor prior to the scheduled class, clinic or lab time**. **An absence will be considered unexcused if the student fails to notify the course faculty prior to the start of class, clinic, or lab. Attendance through Blackboard Collaborate is considered an absence. The course instructor must be notified at least one hour prior to the beginning of class/lab if the student plans to attend through Blackboard Collaborate.** The student is responsible for all material missed at the time of absence. Extenuating circumstances will be taken into account to determine if the absence is excused. Extenuating circumstances might include but are not limited to funeral of immediate family member, maternity, hospitalization, etc. If the student has surgery, a debilitating injury, or an extended illness, a doctor's release will be required before returning to clinic.

a. **Fall/Spring Semesters:**
   Dental hygiene students will be allowed **two excused absences** in any lecture, clinic or lab. Absences must be accompanied by a written excuse on the next class day. In the event that a student misses class, clinic or lab beyond the allowed absences, the following policy will be enforced:
   2 absences = notification in Starfish
   Beginning with the third absence, **2 points** will be deducted from the final course grade for each absence thereafter.
   Two (2) points will be deducted from the final course grade for each unexcused absence.

Tardiness

Tardiness is disruptive to the instructor and the students in the classroom. A student is considered tardy if not present at the start of class, clinic or lab. It is expected that students will arrive on time for class, clinic or lab, and remain until dismissed by the instructor. If tardiness becomes an issue, the following policy will be enforced:

Tardy 1 time = notification in Starfish
Tardy 2 times = is considered an unexcused absence. (See the definition of an unexcused absence)

If a student is more than 15 minutes late to any class period, it will be considered an unexcused absence.

Students should plan on attending classes, labs and clinic sessions as assigned throughout the semester. Family outings, vacations and personal business should be scheduled when school is not in session and will not be considered excuses for missing assignments, examinations, classes, labs or clinic time.

DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process by the

specified drop date as listed on the Academic Calendar. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

STUDENT EXPECTED TIME REQUIREMENT

For every hour in class (or unit of credit), students should expect to spend at least two to three hours per week studying and completing assignments. For a 3-credit-hour class, students should prepare to allocate approximately six to nine hours per week outside of class in a 16- week session OR approximately twelve to eighteen hours in an 8-week session. Online/Hybrid students should expect to spend at least as much time in this course as in the traditional, face-to-face class.

COURSE REQUIREMENTS

Exams

Five (5) unit exams will be given. Exams will cover all learning content from the corresponding unit. There will be a comprehensive final exam (1) given at the end of the course.

Hybrid Learning Assessments

Hybrid content is delivered through weekly Blackboard Modules. Modules contain learning materials with correlating assessments.

Participation in classroom discussions and activities is also expected.

Pharmacology Case Study

The Pharmacology Case Study requires research and analysis of an individual mock-patient case, including medication history, drug indications, effects, and treatment considerations.

Professional Communication of Pharmacology Topics & Peer Evaluation

Each student will prepare and deliver a brief presentation on an assigned Pharmacology topic. The student will provide peer evaluation of two classmate presentations.

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

- Unit Exams (5) (50%)
- Final Exam (15%)
- Hybrid Learning Assessments (20%)
- Pharmacology Case Study (10%)
- Professional Communication of Pharmacology Topics & Peer Evaluation (5%)

GRADING SCALE

A = 92 - 100
B = 83 - 91
C = 75 – 82
D = 60 - 74
F = 59 and below

LIT does not use +/- grading scales

ACADEMIC DISHONESTY

Students found to be committing academic dishonesty (cheating, plagiarism, or collusion) may receive disciplinary action. Students need to familiarize themselves with the institution's Academic Dishonesty Policy available in the Student Catalog & Handbook at http://catalog.lit.edu/content.php?catoid=3&navoid=80#academic-dishonesty.

TECHNICAL REQUIREMENTS
The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at https://lit.edu/online-learning/online-learning-minimum-computer-requirements. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT
The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resource at Special Populations - Lamar Institute of Technology (lit.edu).

STUDENT CODE OF CONDUCT STATEMENT
It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

STARFISH
LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

ADDITIONAL COURSE POLICIES/INFORMATION

Assignment, Examination and Quiz Policy
Examinations will be based on objectives, lecture notes, handouts, assigned readings, audiovisual material and class discussions. Major examinations will consist of multiple choice, true/false, matching, short answer, and case study questions. No questions will be allowed during exams.

Students are expected to complete examinations as scheduled. Make-up examinations will be given ONLY if the absence is due to illness (confirmed by a physicians' excuse), a death in the immediate family, or at the discretion of the Instructor. All make-up examinations must be taken within two (2) weeks from the scheduled exam date. All examinations will be kept on file by the Instructor. Students may have access to the examination by appointment during the Instructor's office hours. Exams may be reviewed up to two (2) weeks following the exam date. **You may not copy, reproduce, distribute or publish any exam questions.** This action may result in dismissal from the program. A grade of "0" will be recorded for all assignments due

on the day of absences unless prior arrangements have been made with the Instructor.

Students must use their personal equipment, such as computer, MacBook, laptop, iPad, to take their exams and must not use their classmates'. School computers may be used if personal equipment is not available. Respondus Lockdown Browser and Respondus Monitor will be used for examinations therefore, a webcam is required to take the exam. The student is required to show the testing environment at the beginning of the exam to assure the instructor that it is clear of any study materials. Failure to do so will result in a 10-point exam grade deduction. If you need online assistance while taking the test, please call Online Support Desk at 409-951-5701 or send an email to lit-bbsupport@lit.edu.

It shall be considered a breach of academic integrity (cheating) to use or possess on your body any of the following devices during any examination unless it is required for that examination and approved by the instructor: cell phone, smart watch/watch phone, electronic communication devices (including optical), and earphones connected to or used as electronic communication devices. It may also include the following: plagiarism, falsification and fabrication, use of A.I., abuse of academic materials, complicity in academic dishonesty, and personal misrepresentation. Use of such devices during an examination will be considered academic dishonesty. The examination will be considered over, the student will receive a zero for the exam and will receive disciplinary action. This policy also applies to assignments and quizzes.

Students with special needs and/or medical emergencies or situations should communicate with their instructor regarding individual exceptions/provisions. It is the student's responsibility to communicate such needs to the instructor.

Mandatory Tutoring

If a student receives a failing grade on any major exam, the student will be required to meet with course instructor within 2 weeks of the failed exam. One on one concept review by appointment with the course instructor will be provided and/or written academic warning when a student is failing to meet minimal requirements in the classroom setting.

Electronic Devices

Students must receive the instructor's permission to operate electronic devices in the classroom and lab. Texting on cell phones will not be allowed during class or clinic.

Late coursework

Assignments, Quizzes and Tests must be completed by the due date. Late submissions or completion will not be accepted and will result in a zero for that assignment/quiz/test.

Remediation

Remediation is available by appointment.
See Student Handbook for more information about remediation policies.

*** Faculty has the authority to modify the above policies if unusual circumstances mandate a change. Please refer to the Student Handbook for a complete listing of program policies.**

COURSE OUTLINE

Part I: General Principles

Chapter 1: Information, Sources, Regulatory Agencies, Drug Legislation & Prescription Writing

1. History
2. Role of the Dental Hygienist
3. Sources of Information
4. Drug Names
5. Federal Regulations and Regulatory Agencies
6. Clinical Evaluation of a New Drug
7. Drug Legislation
8. Prescription Writing
9. Dental Hygiene Considerations
10. Academic Skills Assessment
11. Clinical Applications

Chapter 2: Drug Action and Handling

1. Characterization of Drug Action
2. Mechanism of Action of Drugs
3. Pharmacokinetics
4. Clinical Pharmacokinetics
5. Factors that Alter Drug Effects
6. Routes of Administration and Dose Forms
7. Dental Hygiene Considerations
8. Academic Skills Assessment
9. Clinical Case Study

Chapter 3: Adverse Reactions

1. Definitions and Classifications
2. Clinical Manifestations of Adverse Reactions
3. Toxicologic Evaluation of Drugs
4. Recognizing Adverse Drug Effects
5. Dental Hygiene Considerations
6. Academic Skills Assessment
7. Clinical Case Study

Part II: Drugs Used in Dentistry

Chapter 4: Autonomic Drugs

1. Autonomic Nervous System
2. Parasympathetic Autonomic Nervous System
3. Sympathetic Autonomic Nervous System
4. Dental Hygiene Considerations
5. Academic Skills Assessment
6. Clinical Case Study

Chapter 5: Nonopioid (Nonnarcotic) Analgesics

1. Pain
2. Classification
3. Salicylates
4. Nonsteroidal Antiinflammatory Drugs
5. Acetaminophen
6. Drugs Used to Treat Gout
7. Drugs Used to Treat Arthritis
8. Dental Hygiene Considerations
9. Academic Skills Assessment
10. Clinical Case Study

Chapter 6: Opioid (Narcotic) Analgesics and Antagonists

1. History
2. Classification
3. Mechanism of Action
4. Pharmacokinetics
5. Pharmacologic Effects
6. Adverse Reactions
7. Specific Opioids
8. Dental Use of Opioids
9. Chronic Dental Pain and Opioid Use
10. Dental Hygiene Considerations
11. Academic Skills Assessment
12. Clinical Case Studies

Chapter 7: Antiinfective Agents

1. Evolution of a Dental Infection
2. Definitions
3. Infection
4. Resistance
5. Indications for Antimicrobial Agents
6. General Adverse Reactions and Disadvantages Associated with Antiinfective Agents
7. Penicillin Varieties
8. Cephalosporins
9. Macrolides
10. Tetracyclines
11. Clindamycin
12. Metronidazole
13. Rational Use of Antiinfective Agents in Dentistry
14. Antimicrobial Agents for Nondental Use
15. Antituberculosis Agents
16. Topical Antibiotics
17. Antibiotic Prophylaxis Used in Dentistry
18. Dental Hygiene Considerations

19. Academic Skills Assessment
20. Clinical Case Study

Chapter 8: Antifungal and Antiviral Agents

1. Antifungal Agents
2. Antiviral Agents
3. Dental Hygiene Considerations
4. Academic Skills Assessment
5. Clinical Case Study

Chapter 9: Antianxiety Agents

1. Definitions
2. Benzodiazepines
3. Mechanism of Action
4. Barbiturates
5. Nonbenzodiazepine-Nonbarbiturate Sedative-Hypnotics
6. Nonbenzodiazepine Receptor Hypnotics
7. Melatonin Receptor Agonist
8. Melatonin
9. Orexin Receptor Antagonist
10. Centrally Acting Muscle Relaxants
11. Miscellaneous Agents
12. General Comments about Antianxiety Agents
13. Dental Hygiene Considerations
14. Academic Skills Assessment
15. Clinical Case Study

Chapter 10: Local Anesthetics

1. History
2. Ideal Local Anesthetic
3. Chemistry
4. Mechanism of Action
5. Pharmacokinetics
6. Pharmacologic Effects
7. Adverse Reactions
8. Composition of Local Anesthetic Solutions
9. Local Anesthetic Agents
10. Vasoconstrictors
11. Choice of Local Anesthetic
12. Topical Anesthetics
13. Doses of Local Anesthetic and Vasoconstrictor
14. Dental Hygiene Considerations
15. Academic Skills Assessment
16. Clinical Case Study

Chapter 11: General Anesthetics

1. History
2. Mechanism of Action

3. Adverse Reactions
4. General Anesthetics
5. Balanced General Anesthesia
6. Dental Hygiene Considerations
7. Academic Skills Assessment
8. Clinical Case Study

Part III: Drugs That May Alter Dental Treatment

Chapter 12: Drugs for the Treatment of Cardiovascular Diseases

1. Dental Implications of Cardiovascular Disease
2. Hypertension
3. Heart Failure
4. Angiotensin II Receptor Neprilysin Inhibitor
5. I_1 Channel Inhibitor
6. Cardiac Glycosides
7. Antianginal Drugs
8. Antiarrhythmic Agents
9. Antihyperlipidemic Agents
10. Proprotein Convertase Subtilisin/ Kexin Type 9 Inhibitors
11. Drugs That Affect Blood Coagulation
12. Thienopyridines
13. Drugs That Increase Blood Clotting
14. Dental Hygiene Considerations
15. Academic Skills Assessment
16. Clinical Case Study

Chapter 13: Drugs for the Treatment of Gastrointestinal Disorders

1. Gastrointestinal Drugs
2. Drugs Used to Treat Gastrointestinal Diseases
3. Celiac Disease
4. Dental Hygiene Considerations
5. Academic Skills Assessment
6. Clinical Case Study

Chapter 14: Drugs for the Treatment of Seizure Disorders

1. Epilepsy
2. Drug Therapy of Patients with Epilepsy
3. Dental Treatment of the Patient with Epilepsy
4. Nonseizure Uses of Antiepileptics

5. Dental Hygiene Considerations
6. Academic Skills Assessment
7. Clinical Case Study

Chapter 15: Drugs for the Treatment of Central Nervous System Disorders

1. Psychiatric Disorders
2. Antipsychotic Agents
3. Antidepressant Agents
4. Drugs for Treatment of Bipolar Disorder
5. Dental Hygiene Considerations
6. Academic Skills Assessment
7. Clinical Case Study

Chapter 16: Adrenocorticosteroids

1. Mechanism of Release
2. Classification
3. Definitions
4. Routes of Administration
5. Mechanism of Action
6. Pharmacologic Effects
7. Adverse Reactions
8. Uses
9. Corticosteroid Products
10. Dental Implications
11. Dental Hygiene Considerations
12. Academic Skills Assessment
13. Clinical Case Study

Chapter 17: Drugs for the Treatment of Respiratory Disorders and Allergic Rhinitis

1. Respiratory Diseases
2. Drugs Used to Treat Respiratory Diseases
3. Dental Implications of the Respiratory Drugs
4. Allergic Rhinitis
5. Dental Hygiene Considerations
6. Academic Skills Assessment
7. Clinical Case Study

Chapter 18: Drugs for the Treatment of Diabetes Mellitus

1. Pancreatic Hormones
2. Diabetes Mellitus
3. Drugs Used to Manage Diabetes
4. Treatment of Hypoglycemia
5. Dental Hygiene Considerations
6. Academic Skills Assessment

7. Clinical Case Study

Chapter 19: Drugs for the Treatment of Other Endocrine Disorders
1. Pituitary Hormones
2. Thyroid Hormones
3. Female Sex Hormones
4. Male Sex Hormones
5. Other Agents That Affect Sex Hormone Systems
6. Dental Hygiene Considerations
7. Academic Skills Assessment
8. Clinical Case Study

Chapter 20: Antineoplastic Drugs
1. Use of Antineoplastic Agents
2. Mechanisms of Action
3. Classification
4. Adverse Drug Effects
5. Combinations
6. Dental Implications
7. Dental Hygiene Considerations
8. Academic Skills Assessment
9. Clinical Case Study

Part IV: Special Situations

Chapter 21: Emergency Drugs
1. General Measures
2. Categories of Emergencies
3. Emergency Kit for the Dental Office
4. Dental Hygiene Considerations
5. Academic Skills Assessment
6. Clinical Case Study

Chapter 22: Pregnancy and Breastfeeding
1. General Principles
2. Pregnancy
3. Breast Feeding
4. Dental Drugs
5. Dental Hygiene Considerations
6. Academic Skills Assessment
7. Clinical Case Study

Chapter 23: Substance Use Disorders
1. General Considerations

2. Central Nervous System Depressants
3. Sedative-Hypnotics
4. Central Nervous System Stimulants
5. Psychedelics (Hallucinogens)
6. Identifying the Substance User
7. The Impaired Dental Hygienist
8. Dental Hygiene Considerations
9. Academic Skills Assessment
10. Clinical Case Study

Chapter 24: Natural/Herbal Products and Dietary Supplements

1. Limited Regulation
2. Safety of Herbal and Nutritional Products
3. Drug Interactions
4. Standardization of Herbal Products
5. Good Manufacturing Practice
6. Herbal Supplements Used in Oral Health Care
7. Essential Oil Mouth Rinse
8. Dental Hygiene Considerations
9. Academic Skills Assessment
10. Clinical Case Study

Chapter 25: Oral Conditions and Their Treatment

1. Infectious Lesions
2. Immune Reactions
3. Miscellaneous Oral Conditions
4. Inflammation
5. Drug-Induced Oral Side Effects
6. Agents Commonly Used to Treat Oral Lesions
7. Dental Hygiene Considerations
8. Academic Skills Assessment
9. Clinical Case Study

COURSE OBJECTIVES

Chapter 1: Information, Sources, Regulatory Agencies, Drug Legislation, and Prescription Writing

1. Discuss the history of pharmacology and its relationship to the dental hygienist.
2. List where detailed and updated information on medications can be found.
3. Define the ways in which drugs are named and the significance of each.
4. Define generic equivalence and how it is related to drug substitution.
5. Describe the acts and agencies within the federal government designed to regulate drugs.
6. Identify the four phases of clinical evaluation involved in drug approval and the five schedules of drugs.
7. Discuss the history of drug legislation, including:
   - List the five schedules of controlled substances
   - Explain package inserts and black box warnings
   - Differentiate between labeled and off-label uses
   - Explain orphan drugs and drug recalls
8. Prescription writing. Become familiar with the basics of prescription writing as well as describing the parts of the prescription and prescription label regulations.

Chapter 2: Drug Action and Handling

1. Differentiate dose, potency, and efficacy in the context of the actions of drugs.
2. Explain the pharmacologic effect of a drug.
3. Discuss the major steps of pharmacokinetics: absorption, distribution, metabolism, and excretion.
4. Explain how altering absorption, distribution, metabolism, and excretion can affect clinical pharmacokinetics.
5. Explain how half-life relates to clinical pharmacokinetics.
6. Provide example of factors that may alter the effect of a drug.
7. Summarize the various routes of drug administration and the common dose forms used.

Chapter 3: Adverse Reactions

1. Define an adverse drug reaction, and name five categories of reaction.
2. Discuss the risk-to-benefit ratio of the use of a drug for therapeutic effect and its potential adverse reactions.
3. Explain how the toxic effects of drugs are evaluated.
4. Discuss the importance of recognizing adverse drug effects.

Chapter 4: Autonomic Drugs

1. Identify the major components and functional organization of the autonomic nervous system.
2. Discuss the major neurotransmitters in the sympathetic autonomic nervous system and the importance of receptors.
3. Discuss the pharmacologic effects, adverse reactions, contraindications, and dental considerations of cholinergic agents, which act on the parasympathetic nervous system.
4. Discuss the pharmacologic effects, adverse reactions, contraindications, and dental considerations of anticholinergic agents which act on the parasympathetic nervous system.

5. Discuss the pharmacologic effects, adverse reactions, contraindications, and dental considerations of adrenergic agents and list several specific adrenergic agents.
6. Explain the workings of adrenergic blocking agents and neuromuscular blocking agents.

Chapter 5: Nonopioid (Nonnarcotic) Analgesics

1. Describe pain and its purpose and main components.
2. Discuss the classification of analgesic agents and the chemistry, pharmacokinetics, pharmacologic effects, adverse reactions, toxicity, drug interactions, and uses of aspirin.
3. Define the term *nonsteroidal antiinflammatory drug*, and discuss the chemistry, pharmacokinetics, pharmacologic effects, adverse reactions, toxicity, drug interactions, and uses of these drugs, giving several examples of these.
4. Discuss the properties, pharmacologic effects, adverse reactions, drug interactions, uses, and dosing of acetaminophen.
5. Explain the disease known as *gout*, and summarize the drugs used to treat it.
6. Explain the disease known as rheumatoid arthritis and summarize the mechanism of action of the classes of drugs used to treat it.

Chapter 6: Opioid (Narcotic) Analgesics and Antagonists

1. Explain the classification, mechanism of action, and pharmacokinetics of opioids.
2. List and describe the pharmacologic effects and potential adverse reactions of opioids.
3. Discuss the addiction potential of opioids, including treatment.
4. Name and explain the analgesic actions of the most common opioid agonists.
5. Discuss the actions and provide examples of the mixed opioids.
6. Summarize the mechanism of action and adverse reactions of tramadol.
7. Apply the use of opioids to dentistry.

Chapter 7: Antiinfective Agents

1. Outline the history and basic principles of infection and its relevance to dentistry, including:
   -Define the terms pertinent to a discussion about infection.
   -Identify the factors that determine the likelihood of an infection.
   -Describe the importance of cultures and sensitivity in relation to infections.
   -Discuss the reasons and understanding of “resistance” as important regarding infections.
2. Summarize the principal indications for the use of antimicrobial agents.
3. Name and describe the major adverse reactions and disadvantages associated with the use of antiinfective agents.
4. Discuss penicillins, cephalosporins, macrolides, tetracyclines—their chemical makeup, properties, mechanisms of action, uses, and potential adverse reactions—and name several specific types of each.
5. Name and describe two other types of antibiotics and antiinfectives, including their chemical makeup, properties, mechanisms of action, potential adverse reactions, and uses.
6. Discuss the rationale for the use of antiinfective agents in dentistry.
7. Discuss antimicrobial agents for nondental uses including their pharmacokinetics, mechanism of action, adverse reactions, and spectrum of uses.
8. Describe the drugs used to treat tuberculosis and the difficulties this disease presents.

9. Discuss the use of topical antibiotics in dentistry.
10. Summarize the concept and practice of antibiotic prophylaxis in dentistry.

Chapter 8: Antifungal and Antiviral Agents

1. Name several types of antifungal agents and discuss their indications in dentistry and potential adverse reactions.
2. Discuss the use of antiviral agents in the treatment of herpes simplex.
3. Describe the various drugs and drug combinations used to treat acquired immunodeficiency syndrome.
4. Describe the various drugs used to treat chronic hepatitis.

Chapter 9: Antianxiety Agents

1. Discuss the value of patient relaxation in dentistry.
2. Describe the pharmacokinetics, mechanism of action, pharmacologic effects, adverse reactions, drug interactions, medical uses and dental relevance of the benzodiazepines and barbiturates.
3. Name and briefly describe the mechanism of action of the nonbenzodiazepine-nonbarbiturate sedative-hypnotics and the nonbenzodiazepine-nonbarbiturate receptor agonists.
4. Name a melatonin receptor agonist and summarize its actions.
5. Explain the workings of the centrally acting muscle relaxants and how they are used.
6. Name and briefly describe a few of the miscellaneous muscle relaxant agents that can be used.
7. Discuss some general precautions about which the dental practitioner should be aware with the use of antianxiety agents.

Chapter 10: Local Anesthetics

1. Discuss the history and reasons for the use of local anesthetics in dentistry, including:
    - List the properties an ideal local anesthetic would possess.
    - Describe the importance of understanding the chemistry involved in local anesthetic agents.
2. Explain the mechanism of action, pharmacokinetics, pharmacologic effects, and adverse reactions of local anesthetics.
3. Describe the composition of each of the drugs used in local anesthetic solutions, and summarize the factors involved in the choice of a local anesthetic.
4. Briefly discuss the use, types, and doses of topical anesthetics used in dentistry.

Chapter 11: General Anesthetics

1. Summarize the history of general anesthesia in dentistry.
2. Describe how general anesthesia works and the stages and planes involved, as well as possible adverse reactions associated with its use.
3. Compare and contrast the classifications of general anesthesia.
4. Discuss the use of nitrous oxide in dentistry, including how it works, the pharmacologic effects, adverse reactions, and contraindications.
5. Name and describe several types of halogenated hydrocarbons.
6. List the goals of surgical anesthesia and the importance of using balanced general anesthesia.

Chapter 12: Drugs for the Treatment of Cardiovascular Disease

1. Identify the dental implications of cardiovascular disease including the contraindications to treatment, vasoconstrictor use and its relationship to periodontal disease.
2. Define hypertension, describe the categories it is divided into and identify its treatment with the various types of antihypertensive agents, including:
    - Describe the mechanisms of action, pharmacologic effects, adverse reactions, and uses of the various antihypertensive agents.
    - Identify potential drug interactions and the dental implications of these drugs.
    - Discuss the management of dental patients taking these drugs.
3. Describe heart failure and identify drugs commonly used to treat it, including the mechanisms of action, pharmacologic effects, and adverse reactions.
4. Discuss the use of digoxin and the management of dental patients taking it.
5. Define angina pectoris and describe the types of drugs used to treat it; identify the dental implications of these drugs.
6. Define arrhythmia and dysrhythmia and describe how the heart maintains its normal rhythm.
7. Describe the classifications, mechanisms of action, adverse reactions, and uses of antiarrhythmic agents, and identify the issues to consider in dental treatment.
8. Define hyperlipidemia and hyperlipoproteinemia and summarize the types of drugs used to restore cholesterol homeostasis in the body including the dental implications of their use.
9. Describe the role of warfarin in blood coagulation and the potential adverse reactions and interactions associated with its use.
10. Identify several other drugs that affect blood coagulation.

Chapter 13: Drugs for the Treatment of Gastrointestinal Disorders

1. Summarize the most common types of gastrointestinal diseases and their impact on oral health care.
2. Name and describe the types of drugs used to treat gastrointestinal diseases, their uses, adverse reactions, drug interactions and any implications to dentistry, including:
    - The role of H_2-receptor blockers in the treatment of peptic ulcer disease and gastroesophageal reflux disease.
    - The role of proton pump inhibitors and antibiotics in the treatment of peptic ulcer disease and gastroesophageal reflux disease.
    - The role of antacids in the treatment of peptic ulcer disease and gastroesophageal reflux disease.
3. Discuss several miscellaneous gastrointestinal drugs that can be used and their possible side effects.
4. List the different types of laxatives and know the advantages and disadvantages of each.
5. List the medications used to treat diarrhea.
6. Define the term antiemetic and give examples of drugs used to treat vomiting and nausea.
7. Discuss the medications used to manage chronic inflammatory bowel disease (IBD).

Chapter 14: Drugs for the Treatment of Seizure Disorders

1. Define epilepsy, and briefly summarize the various types of seizures.
2. Discuss drug therapy of patients with epilepsy and describe the general adverse reactions to

antiepileptic agents.

3. Summarize the pharmacologic effects, adverse reactions, and drug interactions of the main antiepileptics— valproate, lamotrigine, levetiracetam, oxcarbazepine, carbamazepine, and phenytoin.
4. Discuss ethosuximide and benzodiazepines (two miscellaneous antiepileptics) and describe the workings of each.
5. Provide several examples of new types of antiepileptics, including the mechanism of action, indications, and adverse reactions of each.
6. Outline the dental treatment of patients with epilepsy.

Chapter 15: Drugs for the Treatment of Central Nervous System Disorders

1. Name and describe the three categories of functional disorders discussed in this chapter.
2. Outline some basic precautions that the dental health care professional should keep in mind when treating patients with psychiatric disorders.
3. Discuss antipsychotic agents and their mechanism of action as well as the following:
    - Identify first-generation antipsychotics, their adverse reactions, drug interactions, uses, and dental implications.
    - Identify second-generation antipsychotics, their adverse effects, drug interactions, uses, and dental implications.
4. Discuss antidepressant agents, including:
    - Describe the mechanism of action and adverse reactions of selective serotonin reuptake inhibitors.
    - Describe the mechanism of action and adverse effects of serotonin norepinephrine reuptake inhibitors.
    - Describe the mechanism of action, adverse reactions, and drug interactions of the tricyclic antidepressants.
5. Name several other types of antidepressants and their possible adverse reactions and dental implications.
6. List several drugs used to treat bipolar disorder.

Chapter 16: Adrenocorticosteroids

1. Define adrenocorticosteroids and describe how the body releases them.
2. Summarize the classification, administration, mechanism of action, and pharmacologic effects of adrenocorticosteroids.
3. Describe the various adverse reactions and uses of adrenocorticosteroids, including their application to dentistry.
4. List several examples of corticosteroid products and describe the ways in which they are differentiated.
5. List several dental implications to the use of steroids.

Chapter 17: Drugs for the Treatment of Respiratory Disorders and Allergic Rhinitis

1. Summarize the two groups of respiratory diseases.
2. Name and describe the mechanisms of action of several types of drugs used to treat respiratory diseases.

3. Discuss the types of drugs used to treat respiratory infections, including the implications to dentistry.
4. Define allergic rhinitis and describe the dental implications, pharmacologic effects, adverse reactions, and toxicity of antihistamines.
5. Describe the dental implications, pharmacologic effects, and adverse reactions of the intranasal corticosteroids.
6. Discuss montelukast, cromolyn sodium, and ipratropium bromide and describe their role in treating allergic rhinitis. Also describe the adverse reactions of ipratropium bromide.
7. Describe the use of decongestants, including:
    - Discuss the pharmacologic effects, adverse reactions and uses in treating allergies.
    - Discuss the use of intranasal decongestants as an alternative to oral decongestants.

Chapter 18: Drugs for the Treatment of Diabetes Mellitus

1. Describe the importance of the hormones released by the endocrine glands in maintaining homeostasis, including:
    - Discuss the two primary hormones secreted by the pancreas and their role in relation to diabetes mellitus.
    - Define diabetes mellitus and describe the two types of this disease, its complications, and issues involving dentistry, cautions, and contraindications in the treatment of patients with diabetes.
2. Describe the systemic complications of diabetes and the evaluation of the dental patient with diabetes.
3. Discuss the goals of therapy and describe the types of drugs used to treat diabetes.
5. Discuss four new drugs being used to treat diabetes and summarize their mechanism of action and possible adverse effects.
6. Discuss the treatment of hypoglycemia.

Chapter 19: Drugs for the Treatment of Other Endocrine Disorders

1. Discuss pituitary hormones, and the functions of the anterior and posterior pituitary glands and describe the negative feedback mechanism that takes place in endocrine glands.
2. Provide an overview of the thyroid hormones, conditions known as hypothyroidism and hyperthyroidism, and antithyroid drugs.
3. Summarize the major female and male sex hormones and describe several types of hormonal contraceptives.
4. Discuss other agents that affect sex hormone systems.

Chapter 20: Antineoplastic Drugs

1. Discuss antineoplastic agents and summarize their use, mechanisms of action, and classification.
2. Describe several adverse drug effects associated with antineoplastic agents.
3. Discuss the dental implications of patients planning to take or actively taking antineoplastic drugs.

Chapter 21: Emergency Drugs

1. Summarize the general measures a dental professional should follow to train for an emergency, including:
    - Describe the necessary preparation for treatment in the event of an emergency.
    - List what can be done to help minimize the occurrence of an emergency in the dental office.
    - List the steps that should be followed if an emergency does occur in the dental office.
2. Name and describe several categories of emergencies and provide common examples within each category.
3. List the critical drugs to include in a dental office emergency kit and several examples of second- or third-level drugs that would be optional.
4. Name several pieces of equipment that would be included in the emergency kit.

Chapter 22: Pregnancy and Breastfeeding

1. List the two main concerns in the administration of drugs during pregnancy.
2. Describe the pregnancy trimesters in relation to dental treatment, define teratogenicity, outline the US Food and Drug Administration's prescription drug use in special populations, including pregnancy, lactation and females and males of reproductive potential, and discuss how breastfeeding affects dental drug use.
3. Name several types of local anesthetic, antiinfective, and antianxiety agents, and state their indications or contraindications for pregnant women.

Chapter 23: Substance Use Disorders

1. Define substance use disorder.
2. Name several types of central nervous system depressants that are commonly abused, and outline the typical pattern of abuse, treatment, adverse reactions, management of overdose and withdrawal, and dental treatment implications of each.
3. Identify several types of central nervous system stimulants that are commonly abused.
4. Describe the pattern of abuse and the withdrawal and treatment options associated with tobacco use and summarize the role of the dental hygienist in tobacco cessation.
5. Discuss several psychedelic hallucinogens, and recognize the symptoms produced by their use.
6. Discuss ways in which the dental hygienist can identify patients or colleagues who may be abusing drugs.

Chapter 24: Natural/Herbal Products and Dietary Supplements

1. Discuss why people choose herbal products over traditional medicine.
2. Discuss the federal legislation governing herbal and dietary products.
3. Discuss the safety of herbal and nutritional products and explain the adverse effects associated with their use and their impact on oral health care.
4. Explain the drug interactions associated with herbal products and their impact on oral health care.
5. Discuss the standardization of herbal products and the Good Manufacturing Practice standard introduced by the US Food and Drug Administration.
6. Discuss the herbal supplements that are used in oral health care.

Chapter 25: Oral Conditions and Their Treatment

1. Name several common infectious lesions of the oral cavity and summarize the treatments for each.
2. Describe immune reactions resulting in canker sores and lichen planus and discuss the treatments for each.
3. Name several oral conditions that result from inflammation and the measures used to treat them.
4. Discuss treatment options for xerostomia and name several other possible drug-induced oral side effects.
5. Discuss the pharmacologic agents most commonly used to treat oral lesions.