

DISCLAIMER: This is an example syllabus that is subject to change at faculty discretion.



Master Course Syllabus

Term, Year, and Section

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Course Information

CHM-260 Pharmacology

3 credit hours

Calendar: 2024-2026

https://web.doane.edu/sites/default/files/2025-02/25-26%20OLA%20Calendar%202.25_1.pdf

The calendar lists pertinent dates regarding drop and withdrawal dates.

Instructor Information

Name:

Email Address:

Office Hours:

Response Time

If you need to contact me directly, my preference is that you email me. Please allow 24 hours for me to respond to emails Monday through Friday and 48 hours on the weekend.

Communicating With the Instructor

When questions arise throughout the course, please remember to check the following resources for an answer before reaching out to me:

1. Course Syllabus
2. Announcements
3. The Question Center discussion board

Question Center Discussion

The Question Center Discussion is a great place for you to ask questions and get answers from your peers and from me. You are encouraged to post your questions here before reaching out directly to me

unless it is a time-sensitive matter. If you have questions of a personal nature such as relating to a personal emergency, questioning a grade on an assignment, or something else that needs to be communicated privately, you are welcome to contact me directly via email or phone.

Technology Help

If you have a question about the technology being used in the course, please contact the Doane University Service Center for assistance, their contact information is listed later in the syllabus. If there are third-party tools utilized in the course, please reach out to them directly.

Course Details

Catalog Description

Pharmacology is the study of how chemical agents, both natural and synthetic drugs, affect physiological systems. This course will focus both on the cellular/molecular mechanisms of drug action and the clinical uses of the drugs. Students who successfully complete this course will demonstrate increased knowledge in autonomic, cardiovascular, neuro, endocrine, reproductive systems and other areas of pharmacology. This course will help to prepare students for admission to Certified Registered Nurse Anesthetist (CRNA), Veterinary and other Health Science-related graduate programs that require a background in pharmacological sciences.

Course Prerequisites

General Chemistry and General Biology

Course Textbook and Materials

Required

Basic Concepts in Pharmacology: What You Need to Know for Each Drug Class - 6th edition

- ISBN #: 9781264264841
- Author: Janet Springer, MD
- Publisher Website:

<https://www.mhprofessional.com/basic-concepts-in-pharmacology-what-you-need-to-know-for-each-drug-class-sixth-edition-9781264264841-usa-group>

In addition to the book, this course uses online resources such as articles and videos.

Required Technology

- Microsoft Word



Course books and materials can be purchased at [Doane Online Bookstore via eFollet](#). Select this course from the dropdown menu.

Learning Objectives and Course Outline

Course Objectives

By the end of the course, you will be able to:

1. Apply pharmacological learning and concepts in conjunction with other basic science disciplines to form the educational foundation for health science careers.
2. Apply classification and mechanisms of drug action to clinical problems related to the treatment of human disease.
3. Apply core principles of drug therapy in terms of bioavailability, pharmacokinetics, pharmacodynamics, side effects, contraindications and drug interactions.

Course Outline

Module	Topic	Assessments & Activities	Aligned Objectives
1	Pharmacodynamics and Pharmacokinetics	<ul style="list-style-type: none"> • Receptor Table Assignment • Efficacy/Potency Problem Set Assignment • Case Study 1 – Acid/Base Problem • Case Study 2 – CYP450 Liver Enzyme Problem • Pharmacodynamics and Pharmacokinetics Quiz 	<ul style="list-style-type: none"> • Compare and contrast the different types of drug receptors with respect to their cellular location and cell signaling systems. • Classify drugs as agonists, partial agonists and antagonists. • Define and distinguish potency and efficacy using drug concentration versus response curves. • Classify drug antagonism and differentiate between competitive and noncompetitive antagonists. • Identify factors that influence drug transport across biological membranes. • Apply the Henderson-Hasselbalch equation to solve problems involving ionization of weak acids or weak bases. • Assess the consequences of CYP450 enzyme induction or inhibition on hepatic drug metabolism.



Module	Topic	Assessments & Activities	Aligned Objectives
			<ul style="list-style-type: none"> ● Identify different hepatic enzymes involved in metabolism.
2	Autonomics	<ul style="list-style-type: none"> ● Case Study 1– Vision Loss ● Case Study 2 – Cholinergic Excess ● Cholinergic & Adrenergic Drugs Table Assignment ● Autonomics Quiz 	<ul style="list-style-type: none"> ● Explain the role of cholinergic neurotransmission in the Autonomic Nervous System (ANS). ● Explain the role of adrenergic transmission in the ANS. ● Describe the synthesis and effects of the endogenous adrenergic agonist's norepinephrine & epinephrine. ● Define the effects, uses, and toxicology of muscarinic agonists and acetylcholinesterase inhibitors. ● Explain the effects and uses of selective alpha- and beta-adrenergic receptor antagonists. ● Identify the side effects and precautions of using cholinergic and adrenergic receptor antagonists.
3	Cardiovascular Pharmacology I	<ul style="list-style-type: none"> ● Case Study 1 – Hypertensive Patient ● Case Study 2 – Acute Heart Failure ● Drugs for Hypertension and Heart Failure Table Assignment ● Cardiovascular Pharmacology I Quiz 	<ul style="list-style-type: none"> ● Discuss the proposed mechanisms by which the various classes of antihypertensive drugs act and relate this to the physiological determinants of blood pressure. ● Explore the side-effects of the antihypertensive drugs and discuss the proposed mechanism(s) responsible for these adverse effects. ● Describe the pathophysiology of congestive heart failure (CHF). ● Discuss the various mechanisms of the positive inotropic drugs. ● Compare and contrast the mechanisms of action of Ca²⁺ channel blockers, ACE inhibitors,



Module	Topic	Assessments & Activities	Aligned Objectives
			<p>Angiotensin receptor blockers (ARBs), thiazide diuretics and alpha1 adrenergic antagonists.</p> <ul style="list-style-type: none"> Identify the important side effects, contraindications, cautions and drug interactions of the drugs used to treat CHF.
4	Cardiovascular Pharmacology II	<ul style="list-style-type: none"> Case Study 1 – Pulmonary Embolism Case Study 2 – “High Cholesterol” Drugs for Clotting Disorders & Dyslipidemia Table Assignment Cardiovascular Pharmacology II Quiz Mid-Way Reflection Discussion 	<ul style="list-style-type: none"> Describe the pathways for blood coagulation and platelet aggregation. Discuss the mechanisms of action of the anticoagulant drugs heparin, warfarin and the novel oral anticoagulants. Discuss the mechanisms of action for the antithrombotic drugs aspirin, clopidogrel and abciximab. Describe the biochemistry of lipoprotein synthesis. Identify the mechanism of action and side effects of dyslipidemia drugs.
5	Central Nervous System	<ul style="list-style-type: none"> Case Study 1 – Depression Case Study 2 – Anxiolytic/Insomnia Antidepressant and Anxiolytic Drug Table Assignment Central Nervous System Quiz 	<ul style="list-style-type: none"> Relate the proposed neurotransmitter imbalances in depressive disorders to the proposed mechanism of action of drugs used to treat these disorders. Classify the major classes of antidepressant drugs (TCAs, SSRIs, SNRIs and Atypical) and their primary cellular targets. Compare and contrast adverse effects of the major classes of antidepressants, including the mechanism(s) for these effects where known.



Module	Topic	Assessments & Activities	Aligned Objectives
			<ul style="list-style-type: none"> ● Differentiate between sedative, hypnotic and anesthetic CNS drug effects. ● Describe the uses of benzodiazepines with different durations of action in treating anxiety. ● When compared with benzodiazepines, describe the advantages and disadvantages of using buspirone and antidepressants for managing anxiety.
6	Analgesia and Anti-Inflammation	<ul style="list-style-type: none"> ● Case Study 1 – Drug Overdose ● Case Study 2 – Rheumatoid Arthritis ● Opioids and NSAIDs Drug Table Assignment ● Pain and Inflammation Quiz 	<ul style="list-style-type: none"> ● Describe the pharmacological responses associated with the stimulation of the neuronal Mu opioid receptor ● Explain how opioid drugs decrease pain transmission by inhibiting the ascending pain pathway and activating the descending pain pathway. ● Describe the major side effects and considerations in the use of opioid drugs. ● Discuss the use of methadone and naloxone in the treatment of opioid use disorder and opioid overdoses ● Identify the mechanism of action and therapeutic uses of NSAIDs and acetaminophen. ● Describe the advantages and disadvantages of using selective cyclooxygenase-2 (COX-2) inhibitors.
7	Endocrine	<ul style="list-style-type: none"> ● Case Study – Diabetes ● Insulin and Oral Hypoglycemic Agent 	<ul style="list-style-type: none"> ● List examples of short-, intermediate-, and long-acting insulins including their use in treating Type 1 diabetes.



Module	Topic	Assessments & Activities	Aligned Objectives
		Drug Table Assignment • Endocrine Quiz	<ul style="list-style-type: none"> • Explain the mechanism of action and benefits of the oral hypoglycemic agents in treating Type 2 diabetes. • Describe the side effects and considerations in the use of the oral hypoglycemic agents. • Compare the benefits versus adverse effects of the GLP-1 agonists when used for treating obesity.
8	Reproduction and Gonadal Hormones	<ul style="list-style-type: none"> • Case Study 1 - Breast Cancer • Case Study 2 - Benign Prostatic Hyperplasia • Oral Contraceptives and Gonadal Hormone Regulators Drug Table Assignment • Reproduction and Gonadal Hormone Regulation Quiz 	<ul style="list-style-type: none"> • Describe the combination oral contraceptive, the progestin only "minipill", the "morning after pill" and the other progestin contraceptive formulations. • List the major adverse effects and contraindications for the use of estrogen- and progestin-containing oral contraceptives. • Define the term "Selective Estrogen Receptor Modulators" (SERMs) including an outline of the therapeutic utility of these drugs. • Describe the mechanism of action and clinical uses of RU486 (mifepristone), finasteride and anastrozole.

Course Requirements

This is an online course and there will **not be any face-to-face class sessions**. All communications, submissions of assignments, course interactions, and posting of grades will utilize Canvas LMS (<https://doane.instructure.com>). You must have a **reliable internet connection** throughout the duration of the course.



Attendance/Participation

Attendance in an online course means logging into Canvas regularly and participating in all of the activities that are posted in the course. In addition, check your Doane University email account regularly, as I may send important information about the course.

Class Preparation

Preparation for class means reading the assigned readings and reviewing all information required for that module. You should plan to work on this course every day. Regular engagement is expected for online courses.

Netiquette Guidelines

At heart, Netiquette (etiquette for the Internet) is simple, good manners and business courtesy. Some of it may seem basic, but some infringements can result in major problems for others or can create an unintended insult to another user. The guidelines are adapted from *The Core Rules of Netiquette* by Virginia Shea (1994). For more information, please review the [Netiquette Guidelines](#) in the Student Resource Center.

Computer Requirements

For the successful use of Canvas please refer to Doane University's [minimum computer requirements](#). This also includes:

- Reliable computer and internet connection
- A web browser (Chrome or Mozilla Firefox)
- Adobe Acrobat Reader (free)
- Word processing software—Microsoft Word or Google Docs
- Webcam and mic*

*For privacy purposes, use of a webcam is **optional** during video conferencing and recording.

Campus Network or Canvas Outage

When access to Canvas is not available for an extended period of time (greater than one entire evening - 6 pm until 11 pm) you can reasonably expect that the due date for assignments will be changed to the next day.

Drop and Add Dates

If you feel it is necessary to withdraw from the course, please contact your advisor for full details on the types of withdrawals that are available and their procedures.



Federal requirements state that students must complete 75% of the coursework to be eligible to receive an incomplete for the course. If students fall more than two weeks behind, they cannot meet this requirement.

Academic Integrity

Fundamental to our mission, our core values, and our reputation, Doane University adheres to high academic standards. Students of Doane University are expected to conduct themselves in a manner reflecting personal and professional integrity. Disciplinary actions may be taken against students whose academic behavior is not congruent with the expectations of the University. Students are responsible for adhering to the standards detailed in this policy. Not being familiar with these standards does not mean that the students will not be accountable for adherence to them. Additional details on the Academic Integrity policy for violating academic integrity are published in the undergraduate and graduate catalogs. Please review [Doane University's Academic Integrity Policy](#).

Course Grading

Submitting Assignments

All assignments, unless otherwise communicated to me, must be submitted via Canvas. Each assignment will have a designated place to submit your work. All materials, assignments, and deadlines are subject to change without prior notice. It is your responsibility to stay in touch with me and review the course site, including Announcements, regularly to learn about changes to assignments or due dates.

Grading Scale

Assignment of letter grades is based on a percentage of points earned. The letter grade will correspond with the following percentages achieved. All course requirements must be completed before a grade is assigned.

A 100 – 94%

A- < 94 - 90%

B+ < 90 - 87%

B < 87 – 84%

B- < 84 - 80%

C+ < 80 - 77%

C < 77 – 74

C- < 74 - 70%

D+ < 70 - 67%

D < 67 – 64

D- < 64 - 61%

F < 61 - 0%

Grading Scheme

The following outlines the points breakdown for how grades will be calculated:



Assignment	Total Points	Weighted Grade
Table/Problem Assignments (9) - 10 points each	90	21%
Case Studies (15) - 10 points each	150	35%
Self-Introduction Discussion (1) - 10 points	10	2%
Discussions (2) - 10 points each	20	5%
Quizzes (8) - 20 points each	160	37%
Total	430	100 %

Proctored Assessments:

This course may contain proctored quizzes & exams, which are **not optional**. For these proctored events, Doane uses a third-party provider, which is a secure, online proctoring service that allows you to complete your exam from any chosen location at any time. Proctoring provides your instructor with the assurance that any suspicious activity by test takers will be monitored and reported. The cost of the proctoring is included in the tuition and fees for this course.

Late or Missed Assignments

All assignments must be completed and turned in to finish the course. Unless you discuss a late assignment with me prior to the assignment due date, your assignment will lose 20% each day it is late.

Assignment & Assessment Feedback

Please allow 1-3 days for feedback on assignments. Be sure to review all of my feedback, as this will help you reflect on what you have learned while receiving suggestions for improvement.

Grade Appeals

Students who believe that their grade was miscalculated due to a mathematical error should contact the instructor within **ten (10) days of the grade posting**. A student is encouraged to talk with their advisor to offer an assessment of the concern and to clarify the steps of the appeal process. More information is published in the [Undergraduate and Graduate Catalogs](#).



Support and Services

Technical Support

If you are in need of technical assistance, please access the [Self-Service Portal](#). You may reach the help desk at 402-826-8411 or by email at helpdesk@doane.edu.

Accessibility Statement

In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, professional disability specialists and support staff at Doane University facilitate a comprehensive range of academic support services and accommodations for qualified students with disabilities. Doane University staff coordinate student transitions from high schools and community colleges, conduct in-service training for faculty and staff, enable the resolution of accessibility issues, conduct community outreach, and facilitate collaboration among Doane University staff on disability policies, procedures, and accommodations.

Accommodations & Disability Services

[Doane University's Disability Services Office](#) will provide guidance on accommodations and universal access. To request accommodations please complete the [Self-Identification Form](#) and visit the website for additional information as soon as possible.

Academic Support

Doane University offers all of its students access to [Academic Support](#) services.

Title IX Requirements: Mandatory Reporting

At Doane, all university employees, including faculty, are considered Mandatory Reporters. As a Mandatory Reporter, I am required to report incidents of sexual misconduct and relationship violence to the Title IX Coordinator and, thus, cannot guarantee confidentiality. This means that if you tell me about an incident of sexual harassment, sexual assault, domestic violence, dating violence, stalking and/or other forms of prohibited discrimination, I have to share the information with the University's Title IX Coordinator. My report does not mean that you are officially reporting the incident. This process is in place to ensure you have access to and are able to receive the support and resources you need. For additional information, including confidential resources, please visit the [Campus Advocacy, Prevention, and Education \(CAPE\) Project](#).

Anti-Harassment Policy

Doane University, referred to as the "University", is committed to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community. This policy addresses the University's responsibilities under Title IX, the Violence Against



Women Reauthorization Act of 2013, and the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act ("Clery Act"). More information is published in the [Student Handbooks](#).

Instructional Technology Accessibility and Privacy Policies

[Technology accessibility and privacy policies](#) are available on the Student Resource Center within the Canvas LMS.

Regular and Substantive Interaction

The U.S. Department of Education mandates that online courses include "regular and substantive interaction" (RSI) between students and instructors to be considered distance education. This course adheres to the RSI expected of all distance education courses. The course adheres to the regular component through

- a clear schedule of due dates for lessons, readings, and assessments
- an instructor of record who monitors student progress in the course and alerts the students who are not engaging adequately in the course.

The substantive interaction is achieved through

- assessment of students' work with feedback on a scheduled basis
- an active discussion board about course content monitored by the instructor
- providing information about the course content on a regular basis or in response to questions.

Syllabus Addendum & Disclaimer

I (the instructor) view the course syllabus as an educational contract between myself and each student. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. I reserve the right to make changes to the syllabus as deemed necessary. Students will be notified in a timely manner of any syllabus changes via email or in the course site Announcements. Please remember to check your Doane University email and the course site Announcements often.

Syllabus Changes

The instructor and Doane University reserve the right to make changes as necessary to this course syllabus. All students will be notified of any changes.

Syllabus Addendum

Each student is responsible for being aware of the policies, resources, and expectations as specified in the [Doane Syllabus Addendum](#).

