

## Fundamentals of Pharmacology

Fall 2023

**Course** - BIOL 220

Prerequisites - BIOL 103 or BIOL 202

Class days - M, W, F

Credit Hours - 3 (lecture 3 hrs/wk)

Class location - 004 Pierce Hall

Class time - 10:00 - 10:50

Final - Day 1, Mon. Dec. 11, 11:00-1:00

**Instructor** - Dr. Engle

Phone - 814-886-6552

Office Hours - M 12:30-1, T 12-2, W 9-10,

W 12:30-1, R 9-10, 12-2, F 9-10

Office - 211 Pierce Hall

Email - JEngle@mtaloy.edu

Web page - www.DrEngle.net

**Text** - Whalen, K. et al. 2022. Lippincott Illustrated Reviews: Pharmacology 8<sup>th</sup> ed. Wolters Kluwer. 664pp. ISBN 9781975170554

### Course description

This course focuses on the interaction of pharmaceuticals on human physiological pathways with an emphasis on mechanisms of action. In this respect, students will gain a foundation of the modality of where and how different drugs and drug classes function.

### Grading

Exams will be given in lecture following each chapter with specific dates announced. Exams will consist of multiple choice, matching, and questions requiring paragraph answers. Exams will be based on both lecture and text book material. Attendance at all exams is required.

Scale - A=100-92%, B+=91-88%, B=87-83%, C+=82-79%, C=78-74%, D=73-65%, F=64-0%  
Other grades (E, W, WP, WF) will be assigned as described in the College Catalog.

### Bibliography

Acosta, W. R. (2013). *Pharmacology for health professionals* 2<sup>nd</sup> ed. Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins.

Clementi, F., & Fumagalli, G. (2015). *General and molecular pharmacology: Principles of drug action*. Hoboken, NJ: John Wiley.

Gaskell, E. E., & Rostron, C. (2013). *Therapeutics and human physiology: How drugs work*. Oxford, U.K.: Oxford UP.

Golan, D. E., & Tashjian, A. H. (2012). *Principles of pharmacology: The pathophysiologic basis of drug therapy* 3<sup>rd</sup> ed. Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins.

Grajeda-Higley, L. (2000). *Understanding pharmacology: a physiologic approach*. Stamford, CT: Appleton & Lang.

Palmer, M., Honek, J. F., & Dieckmann, T. (2012). *Biochemical Pharmacology*. Hoboken, NJ: John Wiley.

Rice, Peter J., & American Pharmacists Association. (2014). *Understanding drug action: An introduction to pharmacology*. Washington, D.C.: American Pharmacists Association.

In addition to the above policies and procedures, the instructor reserves the right to alter, augment, or delete from existing policies if in so doing the proper atmosphere for teaching and learning is maintained. All such policy changes will be announced.

<b>Course Outline</b>	<b>Learning Objectives</b>	<b>Chapter</b>
Introduction to Drugs	Describe the different drug classifications Differentiate between the different schedules of drugs Explain the different names for drugs	
Pharmacokinetics	Explain how medications are absorbed Describe how a drug can be biotransformed by metabolism	1
Drug-Receptor Interactions and Pharmacodynamics	Define pharmacodynamics Describe cellular signal transduction	2
<b>Exam 1</b>		
OTC Medications	List and associate the generic names of medications and their trade names Explain what the different medications are used for and they work	
Chemotherapeutics (aka antibiotics)	Identify the mechanism of action (target) of each class of drugs Explain the modes of resistance	28-33
<b>Exam 2</b>		
Antihypertensives & Diuretics	Identify the mechanism of action (target) of each class of drugs Explain the effects of this class of drugs on the renal system	8 & 9
<b>Exam 3</b>		
Antianginal, Lipid transport, & Drugs for Hyperlipidemia	Describe the different ways to modify heart beat Explain how lipids are transported through the body	12 & 14
<b>Exam 4</b>		
Anticoagulants & Antiplatelet Agents	Explain the effects of anticoagulants and antiplatelets on the clotting cascade Identify the modes of action for different anticholesterol medications	13
<b>Exam 5</b>		
Drugs Affecting the Endocrine System	Differentiate between drugs for hyper- and hypothyroidism Discriminate the mechanisms of actions for the treatment of diabetes	23, 24
<b>Exam 6</b>		
Estrogens and Androgens	Distinguish the steroid hormone therapeutics	25
<b>Exam 7</b>		
Respiratory and Antihistamines	Distinguish medications used to treat asthma and COPD Explain the role of antihistamines	41
<b>Exam 8</b>		
Gastrointestinal and Urological Medications	Describe the mechanism of action for acid inhibitors Identify the drugs used to treat urological disorders	42
<b>Exam 9</b>		
Bone disorders and Anti-inflammatory Agents	Distinguish the drugs used to inhibit bone loss List the anti-inflammatory agents	27

## MAC Policies

### Weather Delays and Compressed Schedule

In the event of a delayed opening, MAC will follow a compressed schedule. This will provide students with the opportunity to attend all scheduled classes on delay days with each class meeting for a shorter than usual session. For the Compressed Schedule for delay days, go to the following link: <http://www.mtaloy.edu/delays-cancelations>

### Technology and Communication Assistance Statement

All students are expected to regularly log in to the Canvas course website. The site contains the syllabus and assignments, and supplementary materials will be placed there on a regular basis. Furthermore, important announcements will be posted on the site (especially if a class period is canceled due to weather, illness, etc.). For assistance in using Canvas, please contact the Canvas administrator at (Canvas@mtaloy.edu).

College offices and instructors often communicate important information through the MAC email system. Students should check their school email account regularly. For technical or log-in credential questions, please contact the help desk at (helpdesk@mtaloy.edu or 814-886-6502).

### College Academic Integrity Statement

Mount Aloysius College is committed to the academic integrity of the entire community. All share responsibility for maintaining high standards of academic integrity, and no forms of academic dishonesty are tolerated. Forms of academic dishonesty include but are not restricted to: giving or receiving unauthorized assistance on an examination, project, or assignment; using unauthorized forms of assistance such as crib notes or cell phones on an examination; falsification of data or plagiarism (using another person's ideas or words as your own); and lying or falsifying reasons for missing examinations or class.

A student found guilty of lying, cheating, or plagiarism, depending on the nature of the offense and the history of the student, is usually subject to one or both of the following: a grade of zero on the assignment, project, or examination or a grade of F in the course. All cases of lying, cheating, or plagiarism where a punishment is incurred are reported to the Senior Vice President of Academic Affairs, who maintains a record of all offenses. Serial offenders may be subject to suspension or dismissal.

### College Accommodations Statement

Mount Aloysius College is committed to providing reasonable accommodations to students with disabilities. Students with disabilities who wish to request an accommodation are required to contact Michele Leamer, Office Manager, Student Health and Wellness Center (MLeamer@mtaloy.edu or 814-886-6515) to formally request accommodations and provide supporting documentation. If you receive approval for accommodations, it is important that you stop in at the start of the semester so necessary arrangements can be made.

### Attendance Policy

Attendance at all lecture and lab sessions is mandatory. It is your responsibility to notify the instructor **prior** to missing an exam or laboratory and you must have a valid reason. The instructor reserves the right to judge the validity of the excuse. If you miss an exam, you are responsible for taking the exam within one week of your return. There are no makeup labs unless you are able to come to another section during the same week and obtain instructor permission. *Failure of the student to follow the steps outlined above will result in a grade of "0" for the missed exam or lab!*

### Conflict Resolution

Should a student encounter difficulty with course content or other aspects of the course, the first action should be to make an appointment to speak with the instructor. The instructor may suggest resources on campus or other tips to assist student learning. If a student has concerns with their instructor, then the best course of action is to seek out a meeting with the Science and Math Department Chair, Dr. John Whitlock, 814-886-6536, JWhitlock@mtaloy.edu. to discuss the difficulties. If an agreeable decision is not reached, the student should then request a meeting with the Dean, Dr. Chris Lovett, 814-886-6458, CLovett@mtaloy.edu. The Faculty, Department Chairs, and Deans are committed to treating all students with respect and fairness. Additional information is outlined in the academic grievance policy in the College catalog.

### Title IX: Confidentiality and Responsible Employee Statement

Mount Aloysius College faculty are committed to creating a safe learning environment for all members of our community, free from gender and sex-based discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking, in accordance with Title IX of the Education Amendments of 1972.

Please note that the Title IX and Sexual Misconduct Policy designates all faculty members, including teaching assistants, as "Responsible Employees." Under Mount Aloysius College's policy, all "Responsible Employees" must report all disclosures of sex or gender-based discrimination or violence to Mount Aloysius' Title IX Coordinator, Dr. Robin Gore, Vice President for Student Affairs, rgore@mtaloy.edu or 814-886-6426. The Title IX Coordinator will reach out to provide resources, support, and information after receiving a report, but community members are not required to respond to such outreach. Reported information will remain private.

If you have (or someone you know has) experienced any form of sex or gender-based discrimination or violence and wish to speak with someone *confidentially*, please contact one of our counselors at counseling@mtaloy.edu or call 814-886-6515. For more information regarding Mount Aloysius College's Title IX procedures, reporting, or support measures, please visit [sites.google.com/mtaloy.edu/titleix/home](https://sites.google.com/mtaloy.edu/titleix/home).

*Disclosures of gender and sex-based discrimination or violence made in relation to an assignment and/or educational prompt will not result in a referral to Mount Aloysius College's Title IX Coordinator unless requested otherwise.*