COURSE SYLLABUS

Degree Program: BS Pharmacy (2018)

Program Learning Outcomes:
PLO 1: Practice pharmacy in a professional, legal and ethical manner with commitment for continuing professional development
PLO 2: Work effectively with inter- and multi-professional teams in various settings to manage medicines-related issues of individuals, communities and health facilities
PLO 3: Communicate medicines information effectively to patients, carers, healthcare providers, community members and other stakeholders
PLO 4: Produce quality pharmaceutical products to achieve optimum health outcomes for patients and communities
PLO 5: Disseminate research findings to improve medication use, pharmacy education and pharmacy service delivery

A. Course Catalogue Description

Course Title: Pharmacology for Pharmacy 2

Course Number: Pharm 126	**Credit Units:** 2.0 Units	**Number of Hours: 32 Hours**	**Year Level offered: 2nd Year**	**Semester Offered: 2nd Semester**

Meeting Type/Instructional Format: Lec

Course Description: Pharmacology of autacoids, pain medicines and drugs affecting the musculo-skeletal, respiratory, hematopoietic, digestive, cardiovascular, and endocrine, genitourinary, and reproductive systems

Prerequisites: Pharmacology for Pharmacy 1 (Pharm 125)

Corequisites: N/A

Course Stipulation (if any): N/A

Course Goals:	To develop a comprehensive understanding of pharmacodynamics and pharmacokinetics as applied to the clinical properties and rational uses of autacoid, analgesic, anti-inflammatory, immunomodulatory, cancer chemotherapy, cardiovascular, renal, respiratory, digestive, and endocrine drugs in the Philippines

B. Relationship of Course Learning Outcomes to Program Learning Outcomes		Program Learning Outcomes			
Course Learning Outcomes		**PLO1**	**PLO2**	**PLO3**	**PLO4**
CLO1:	Discuss concepts in pharmacokinetics and of pharmacodynamics in relation to the drug development process and target patient outcomes in clinical practice in the context of autacoids, pain medicines and drugs affecting the respiratory, digestive, cardiovascular, and endocrine systems;	I			
CLO2:	Characterize autacoids, pain medicines and drugs affecting the respiratory, digestive, cardiovascular, and endocrine systems according to therapeutic indications and physiologic effects.	I	I	I	I

I – Introduced D- Demonstrated R- Reinforced

C. Course Content

Topics	Number of Hours
I. Autacoids A. Antihistamines B. Serotonin Agonists and Antagonists C. Prostaglandins	2 Hours
II. Pain Medicines and Drugs used in Joint Disorders A. Acetaminophen and NSAIDs B. Disease Modifying Anti-rheumatic Drugs C. Drugs used in Gout	2 Hours
III. Cancer Chemotherapy A. Plant Alkaloids B. Antibiotic Anticancer Agents C. Hormonal Agents D. Alkylating Agents E. Antimetabolites F. Miscellaneous Anticancer Drugs	4 Hours

IV.	Drugs Used to Treat Blood and Dyslipidemia A. Agents Used in Anemia B. Anticoagulant, Thrombolytic and Antiplatelet Agents C. Agents used in Dyslipidemia	4 Hours
V.	Drugs Affecting the Respiratory Systems A. Drugs for Bronchial Asthma and Chronic Obstructive Pulmonary Diseases B. Expectorants, Antitussives, and Mucolytics C. Drugs for Colds and Allergic Rhinitis	4 Hours
VI.	Cardiovascular-Renal Drugs A. Antihypertensive Agents B. Vasodilators and the Treatment of Angina Pectoris C. Drugs Used in Heart Failure D. Agents Used in Cardiac Arrhythmias E. Diuretic Agents	6 Hour
VII.	Drugs Used for Gastrointestinal Disorders A. Drugs Used in Acid-Peptic Disease B. Laxatives C. Anti-diarrheal Drugs D. Anti-emetic Drugs	4 Hours
VIII.	Endocrine Drugs A. Hypothalamic and Pituitary Hormones B. Thyroid and Antithyroid Drugs C. Adrenocorticosteroids and Adrenocortical Antagonists D. Gonadal Hormones and Inhibitors E. Pancreatic Hormones and Antidiabetic Drugs F. Agents that Affect Bone Mineral Homeostasis	6 Hours

D. Course Coverage

Week	Learning Outcomes	LLOs with CLOs	Course Topics	Essential or Key Questions	Teaching and Learning Activities	Assessment Methods and Tools	Core Readings/Learning Resources

1	General Objective: 1. Discuss concepts in pharmacokinetics and of pharmacodynamics in relation to the drug development process and target patient outcomes in clinical practice in the context of autacoids. 2. Characterize autacoids according to therapeutic indications and physiologic effects Specific Objectives: 1. Define autacoids 2. Classify autacoids based on chemical structures 3. Discuss pharmacokinetic profile of autacoids 4. Discuss autacoid-receptor mechanisms leading to physiologic responses 5. Discuss mechanisms of action and therapeutic uses of drugs acting as autacoid agonists and antagonists 6. Discuss adverse effects, contraindications and drug-drug interactions	Write the CLO numbers addressed by the LLOs	I. Orientation II. Autacoids A. Antihistamines B. Serotonin Agonists and Antagonists C. Prostaglandins	What are the mechanisms of action, indications, adverse effects, kinetic profiles, and major interactions of antihistamines, serotonin receptor agonists and antagonists, and prostaglandin receptor agonists in the Philippines?	● Film Showing ● Lecture	Formative Assessment: ● Class participation ● Quiz Summative Assessment: ● Written Exam (30%)	● Educational video ● Powerpoint presentation ● Guide questions ● Projector ● Computer ● Whiteboard marker ● References
2	General Objective: 1. Discuss concepts in pharmacokinetics and of pharmacodynamics in relation to the drug development	Write the CLO numbers addressed	III. Pain Medicines and Drugs used in	What are the mechanisms of action, indications, adverse	● Lecture ● Graded Group Journal Activity	Formative Assessment: ● Group Seatwork ● Quiz	● Powerpoint presentation ● Projector ● Computer ● Whiteboard marker

	process and target patient outcomes in clinical practice in the context of pain medicines. 2. Characterize pain medicines according therapeutic indications and physiologic effects. <u>Specific Objectives</u>: 1. Discuss pain categories 2. Categorize pain medicines based on chemical class 3. Explain the mechanisms of action of drugs in relation to their indications 4. Discuss pharmacokinetic properties of pain medicines 5. Discuss the common adverse effects of drugs and appropriate management 6. Discuss why drugs are contraindicated to specific patients or conditions 7. Identify common drug-drug interactions 8. Identify the innovator drugs among all drugs discussed	by the LLOs	Joint Disorders A. Acetaminophen and NSAIDs B. Disease Modifying Anti-rheumatic Drugs C. Drugs used in Gout	effects, kinetic profiles, and major interactions of Paracetamol, non-steroidal anti-inflammatory drugs, drugs for gout, conventional synthetic DMARDs, targeted synthetic DMARDs, and biological DMARDs in the Philippines?		<u>Summative Assessment</u>: ● Written Exam (30%)	● References
3-4	<u>General Objective</u>: 1. Discuss concepts in pharmacokinetics and of pharmacodynamics in relation to the drug development		III. Cancer Chemotherapy A. Plant Alkaloids	What are the mechanisms of action, indications, adverse	● Film Showing – cancer cell characteristics ● Lecture ● Group ● Journal Activity	<u>Formative Assessment</u>: ● Seatwork ● Homework ● Quiz	● Educational video ● Powerpoint presentation ● Projector ● Computer

	process and target patient outcomes in clinical practice in the context of anti-cancer drugs. 2. Characterize anti-cancer drugs according therapeutic indications and physiologic effects. <u>Specific Objectives</u>: 1. Explain chemotherapy goals 2. Categorize chemotherapeutic agents based on cell-cycle specificity 3. Explain the mechanisms of action of drugs in relation to their indications 4. Discuss pharmacokinetic properties of anticancer drugs 5. Discuss the common adverse effects of drugs and appropriate management 6. Discuss why drugs are contraindicated to specific patients or conditions 7. Identify common drug-drug interactions 8. Identify the innovator drugs among all drugs discussed 9. Identify recently developed anti-cancer drugs and their mode of action: immunotherapy drugs and targeted therapy		B. Antibiotic Anticancer Agents C. Hormonal Agents D. Alkylating Agents E. Antimetabolites F. Miscellaneous Anticancer Drugs	effects, kinetic profiles, and major interactions of anticancer drugs in the Philippines?		<u>Summative Assessment</u>: ● Written Exam (40%)	● Whiteboard marker ● References

5	EXAM 1						
6-7	<u>General Objective</u>: 1. Discuss concepts in pharmacokinetics and of pharmacodynamics in relation to the drug development process and target patient outcomes in clinical practice in the context of drugs for blood disorders. 2. Characterize drugs for blood disorders according therapeutic indications and physiologic effects. <u>Specific Objectives</u>: 1. Discuss the pharmacokinetic profile of the drugs 2. Explain the mechanisms of action of drugs in relation to their indications 3. Discuss the common adverse effects of drugs and appropriate management 4. Discuss why drugs are contraindicated to specific patients or conditions 5. Identify common drug-drug interactions 6. Identify the innovator drugs among all drugs discussed		II. Drugs Used to Treat Blood and Dyslipidemia A. Agents Used in Anemia B. Anticoagulant, Thrombolytic and Antiplatelet Agents C. Agents used in Dyslipidemia	What are the mechanisms of action, indications, adverse effects, kinetic profiles, and major interactions of anticoagulants, antiplatelets, fibrinolytics, anemia drugs, and drugs for dyslipidemia in the Philippines?	● Lecture ● Group Activity with Guide Questions	<u>Formative Assessment</u>: ● Seatwork ● Quiz <u>Summative Assessment</u>: ● Written Exam (50%)	● Powerpoint presentation ● Projector ● Computer ● Whiteboard marker ● References

7-8	General Objective: 1. Discuss concepts in pharmacokinetics and of pharmacodynamics in relation to the drug development process and target patient outcomes in clinical practice in the context of drugs for respiratory disorders. 2. Characterize drugs for respiratory disorders according therapeutic indications and physiologic effects. Specific Objectives: 1. Discuss the pharmacokinetic profile of the drugs 2. Explain the mechanisms of action of drugs in relation to their indications 3. Discuss the common adverse effects of drugs and appropriate management 4. Discuss why drugs are contraindicated to specific patients or conditions 5. Identify common drug-drug interactions 6. Identify the innovator drugs among all drugs discussed		III. Drugs Affecting the Respiratory Systems A. Drugs for Bronchial Asthma and Chronic Obstructive Pulmonary Diseases B. Expectorants, Antitussives and Mucolytics C. Drugs for Colds and Allergic Rhinitis	What are the mechanisms of action, indications, adverse effects, kinetic profiles, and major interactions of asthma drugs, COPD drugs, expectorants, antitussives, mucolytics, and medicines for colds and allergic rhinitis in the Philippines?	● VLE Film Showing (uploaded) - pathophysiology ● Lecture ● Group Activity: ● Patient Cases	Formative Assessment: ● Seatwork ● Group Work ● Quiz Summative Assessment: ● Written Exam (50%)	● Educational Video ● Powerpoint presentation ● Patient Cases ● Projector ● Computer ● References
9	EXAM 2						

10-12	General Objective: 1. 1. Discuss concepts in pharmacokinetics and of pharmacodynamics in relation to the drug development process and target patient outcomes in clinical practice in the context of cardiovascular-renal drugs. 2. Characterize cardiovascular-renal drugs according therapeutic indications and physiologic effects. Specific Objectives: 1. Discuss the pharmacokinetic profile of the drugs 2. Explain the mechanisms of action of drugs in relation to their indications 3. Discuss the common adverse effects of drugs and appropriate management 4. Discuss why drugs are contraindicated to specific patients or conditions 5. Identify common drug-drug interactions 6. Identify the innovator drugs among all drugs discussed		III. Cardiovascular-Renal Drugs A. Antihypertensive Agents B. Vasodilators and the Treatment of Angina Pectoris C. Drugs Used in Heart Failure D. Agents Used in Cardiac Arrhythmias E. Diuretic Agents	What are the mechanisms of action, indications, adverse effects, kinetic profiles, and major interactions of calcium channel blockers, vasodilators and other anti-anginals, RAAS blockers, beta blockers, alpha-2 adrenergic receptor agonists, diuretics, inotropics, and antiarrhythmic drugs in the Philippines?	● VLE Film Showing (uploaded) - diuretics ● Lecture ● Small Group Discussion with Guide Questions	Formative Assessment: ● Seatwork ● Groupwork ● Quiz Summative Assessment: ● Written Exam (60%)	● Educational Video ● Powerpoint presentation ● Picture Handouts with Guide Questions ● Projector ● Computer ● References
12-13	General Objective: 1. Discuss concepts in pharmacokinetics and of		III. Drugs Used for	What are the mechanisms of action,	● Flipped classroom/Lecture	Formative Assessment: ● Seatwork	● Educational Video ● Powerpoint presentation

	pharmacodynamics in relation to the drug development process and target patient outcomes in clinical practice in the context of drugs for gastrointestinal disorders. 2. Characterize drugs for gastrointestinal disorders according therapeutic indications and physiologic effects. <u>Specific Objectives</u>: 1. Discuss the pharmacokinetic profile of the drugs 2. Explain the mechanisms of action of drugs in relation to their indications 3. Discuss the common adverse effects of drugs and appropriate management 4. Discuss why drugs are contraindicated to specific patients or conditions 5. Identify common drug-drug interactions 6. Identify the innovator drugs among all drugs discussed		Gastrointestinal Disorders A. Drugs Used in Acid-Peptic Disease B. Laxatives C. Anti-diarrheal Drugs D. Anti-emetic Drugs	indications, adverse effects, kinetic profiles, and major interactions of drugs for acid-peptic diseases, laxatives, anti-diarrheals, and anti-emetics in the Philippines?		● Homework ● Quiz <u>Summative Assessment</u>: ● Written Exam (40%)	● Projector ● Computer ● References
13	EXAM 3						
14-16	<u>General Objective</u>: 1. Discuss concepts in pharmacokinetics and of pharmacodynamics in		III. Endocrine Drugs A. Hypothalamic and	What are the mechanisms of action, indications,	● VLE Film Showing (uploaded) – hormone receptor mechanism ● Lecture	<u>Formative Assessment</u>: ● Seatwork ● Quiz	● Educational Video ● Powerpoint presentation ● Projector

	relation to the drug development process and target patient outcomes in clinical practice in the context of endocrine drugs. 2. Characterize endocrine drugs according to therapeutic indications and physiologic effects. <u>Specific Objectives</u>: 1. Discuss the pharmacokinetic profile of the drugs 2. Explain the mechanisms of action of drugs in relation to their indications 3. Discuss the common adverse effects of drugs and appropriate management 4. Discuss why drugs are contraindicated to specific patients or conditions 5. Identify common drug-drug interactions 6. Identify the innovator drugs among all drugs discussed		Pituitary Hormones B. Thyroid and Antithyroid Drugs C. Adrenocorticoids and Adrenocortical Antagonists D. Gonadal Hormones and Inhibitors E. Pancreatic Hormones and Antidiabetic Drugs F. Agents that Affect Bone Mineral Homeostasis	adverse effects, kinetic profiles, and major interactions of hypothalamic and pituitary hormones and derivatives, thyroid and antithyroid drugs, glucocorticoid and mineralocorticoid receptor agonists and antagonists, gonadal hormones and inhibitors, pancreatic hormones and antidiabetics, and bone mineral homeostasis drugs in the Philippines?		<u>Summative Assessment</u>: ● Written Exam (100%)	● Computer ● References
16	EXAM 4						
E. Course Requirements							
1	Seatworks						

2	Group Works
3	Homeworks
4	Quizzes
5	Exam 1
6	Exam 2
7	Exam 3
8	Exam 4

F. Assessment Plan (formative and summative evaluation)

SAMPLE ASSESSMENT PLAN

SAMPLE FORMATIVE ASSESSMENT

COURSE ASSESSMENT PLAN			
Assessment Component	**Course Learning Outcomes**		
	CLO1	CLO2	[redacted]
Written Exam 1 (17.5%)	MCQ True or False Essay		
Written Exam 2 (17.5%)		MCQ True or False Essay	

Written Exam 3 (17.5%)		MCQ True or False Essay
Written Exam 4 (17.5%)		MCQ True or False Essay
Quizzes (15%)		
Activities (10%)		Rubric
Participation (5%)		
Final Examination (80%)		
Prefinal Grade (20%)		

FORMATIVE ASSESSMENT METHODS

1. Observations
2. Quizzes
3. Concept Mapping
4. Mind Mapping
5. Interactive notebooks/journals
6. Questioning
7. Role playing
8. Simulations
9. Demonstration & Return Demonstration
10. Mentoring

***Summative** = assessment of learning*

***Formative** = assessment for learning*

G. References

1	Brunton, LL, Hilal-Dandan R, and Bjorn Knollman. (2017). Goodman & Gilman's The Pharmacological Basis of Therapeutics, 13th ed. New York: McGraw-Hill.
2	Katzung BG. (2017). Lange: Basic and Clinical Pharmacology, 14th ed. New York: McGraw-Hill.
3	Whalen K, et.al. (2018). Lippincott's Illustrated Reviews: Pharmacology, 7th ed. Baltimore: Wolters Kluwer Health/Lippincott Williams & Wilkins.
H. List of Faculty	
1	Francis R. Capule, RPh, MS, PhD Associate Professor 3 Department of Clinical, Social and Administrative Pharmacy Email: frcapule@up.edu.ph
2	Jean Flor C. Casauay, RPh, MS Assistant Professor 7 Department of Clinical, Social and Administrative Pharmacy Email: jccasauay@up.edu.ph
3	Jarvin Enosh T. Tan, RPh, MA Assistant Professor 1 Department of Clinical, Social and Administrative Pharmacy Email: jttan@up.edu.ph
4	James Louie D. Tronco, RPh, MD Assistant Professor 3 Department of Clinical, Social and Administrative Pharmacy Email: jdtronco@up.edu.ph