COURSE SYLLABUS

Degree Program: BS Pharmacy (2018)

Program 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: QUALITY MANAGEMENT FOR CLINICAL PHARMACY PRACTICE

Course Number: CLIN PHARM 171	**Credit Units: 2 units**	**Number of Hours: 2 hours lecture + 3 hours laboratory per week**	**Year Level offered: 3rd Year**	**Semester Offered: 1st Semester**

Meeting Type/Instructional Format: Face-to-face lectures and laboratory sessions using ARAL for materials and submissions

Course Description: Clin Pharm 170 is a comprehensive course designed to deepen your understanding and application of pharmacokinetics and therapeutic drug monitoring within the context of pharmaceutical care. This course comprises 2-units of lecture and 1-unit of laboratory work, offering a balanced approach that integrates theoretical knowledge with practical skills. Through engaging lectures, you will explore the principles of drug absorption, distribution, metabolism, and excretion, and how these factors influence drug therapy outcomes. This course is essential for developing the expertise needed to ensure safe and effective medication use in clinical practice.

Prerequisites: Pharm 126 & Pharm 130

Corequisites: None

Course Stipulation (if any): None

Course Goals:

This course aims to:

1. Equip students with the knowledge and skills to apply pharmacokinetic principles in clinical practice.
2. Enable students to design and adjust drug dosage regimens to achieve therapeutic targets while minimizing toxicity.

B. Relationship of Course Learning Outcomes to Program Learning Outcomes

Course Learning Outcomes		Program Learning Outcomes							
		PLO1	PLO2	PLO3	PLO4	PLO5			
CLO1:	Relate the principles of drug absorption, distribution, metabolism, and excretion to optimal drug use in patients	I	I	D		R			
CLO2:	Design or adjust drug dosage regimens to maintain plasma/serum concentrations within therapeutic range.	D	D	R		R			

I – Introduced D- Demonstrated R- Reinforced

C. Course Content

Topics	Number of Hours
I. Introduction to Pharmacokinetics A. Introduction to pharmacokinetics and pharmacodynamics B. Mathematical fundamentals in pharmacokinetics C. Drug administration, absorption, and bioavailability D. Drug distribution E. Drug elimination and clearance	10
II. Compartmental Models in Pharmacokinetics A. One-compartment model	6

B. Multicompartment model C. Nonlinear pharmacokinetics	
III. Dosage Regimens A. IV bolus B. IV infusion C. Oral absorption D. Multiple dosage regimens E. Modified-release drug products and devices	6
IV. Clinical Pharmacokinetics A. Relationship between pharmacokinetics and pharmacodynamics B. Therapeutic drug monitoring C. Individualized therapy D. Application in clinical practice	8

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	Explain the scope of PK and PD in clinical pharmacy; Apply basic mathematical concepts relevant to PK calculations.	CLO1	Introduction to PK and PD; Mathematical fundamentals in PK	How do PK and PD concepts guide drug therapy decisions? What math skills are needed in PK?	Lecture-discussion; Q&A; Problem-solving	Quiz; Problem set	All references
2	Describe drug administration, absorption, and bioavailability; Relate these processes to therapy outcomes.	CLO1	Drug administration, absorption, and bioavailability	What factors influence absorption and bioavailability?	Lecture-discussion; Q&A; Problem-solving	Quiz; Problem set	All references

3	Explain factors affecting drug distribution and calculate related parameters.	CLO1	Drug distribution	How does protein binding influence distribution and dosing?	Lecture-discussion; Q&A; Problem-solving	Quiz; Problem set	All references
4	Describe drug elimination and clearance; Perform clearance and half-life calculations.	CLO1	Drug elimination and clearance	How do clearance and half-life guide dosage adjustments?	Lecture-discussion; Q&A; Problem-solving	Quiz; Problem set	All references
5	Apply one-compartment model equations in PK calculations for IV bolus dosing.	CLO1, CLO2	One-compartment model; IV bolus	How does the one-compartment model predict plasma drug levels?	Lecture-discussion; Q&A; Problem-solving	Quiz; Problem set	All references
6	First Examination						
7	Differentiate multicompartment models and solve related PK problems.	CLO1, CLO2	Multicompartment model	How do multicompartment models better represent drug distribution?	Lecture-discussion; Q&A; Problem-solving	Quiz; Problem set	All references
8	Calculate drug concentrations for IV infusion and oral absorption scenarios.	CLO1, CLO2	IV infusion; Oral absorption	How do infusion rate and bioavailability affect	Lecture-discussion; Q&A; Problem-solving	Quiz; Problem set	All references

				steady-state concentration?			
9	Apply PK principles to dose adjustment in special populations (e.g., renal/hepatic impairment).	CLO1, CLO2	Pharmacokinetics of special populations	How should doses be adjusted for patients with altered PK?	Lecture-discussion; Q&A; Problem-solving	Quiz; Problem set	All references
10	Design multiple dosage regimens and calculate accumulation and fluctuation.	CLO1, CLO2	Multiple dosage regimens	How do accumulation and dosing interval affect therapy?	Lecture-discussion; Q&A; Problem-solving	Quiz; Problem set	All references
11	Analyze PK-PD relationships and their implications for dosing.	CLO1, CLO2	Relationship between PK and PD	How do PK-PD models optimize dosing?	Lecture-discussion; Q&A; Problem-solving	Quiz; Case analysis	All references
12	Second Examination						
13	Explain the principles and process of TDM.	CLO1, CLO2	Therapeutic drug monitoring	Why and when is TDM needed?	Lecture-discussion; Q&A; Problem-solving	Quiz; Lab exercise	All references
14	Use patient-specific PK data to adjust dosage regimens.	CLO2	Individualized therapy	How can PK data guide personalized dosing?	Lecture-discussion; Q&A; Problem-solving	Problem set	All references
15	Integrate PK and TDM data into clinical dosing decisions.	CLO1, CLO2	Application in clinical practice	How is PK/TDM data applied in patient care?	Lecture-discussion; Q&A; Problem-solving	Group output	All references

16	Present PK/TDM case and justify dosing decisions.	CLO1, CLO2	Case presentation	How can PK principles be communicated to healthcare teams?	Oral presentation; Q&A	Presentation rubric; Peer/self-evaluation	All references

E. Course Requirements

1	Long Examinations (2) – 40%
2	Problem Sets – 25%
3	Case Presentation – 15%
4	Quizzes and/or Reporting – 10%
5	Class Participation and Attitude – 10%

F. Assessment Plan (formative and summative evaluation)

SAMPLE ASSESSMENT PLAN

COURSE ASSESSMENT PLAN			
Assessment Component		**Course Learning Outcomes**	
Assessment Component		**CLO1**	**CLO2**
Written Exam 1 (20%)	Summative Assessment	MCQ (1-50)	Problem Solving (50 points)
Written Exam 2 (20%)	Summative Assessment	MCQ (1-50)	Problem Solving (50 points)
Class Participation, Attitude (10%)	Formative Assessment	Face to face	Face to face
Quizzes, Reporting (10%)	Formative Assessment	Face to face	Face to face

SAMPLE FORMATIVE ASSESSMENT

Problem Sets (25%)	Formative Assessment	Face to face	Face to face
Case Presentation (15%)	Formative Assessment	Face to face	Face to face

Summative = assessment of learning ***Formative = assessment for learning***

G. References

1	Bauer, L. (2008). *Applied Clinical Pharmacokinetics* (2nd ed.). McGraw-Hill.
2	Rosenbaum, S. (2016). *Basic Pharmacokinetics and Pharmacodynamics* (2nd ed.). Wiley.
3	Shargel, L. & Yu, A. (2016). *Applied Biopharmaceutics & Pharmacokinetics* (7th ed.). McGraw-Hill.

H. List of Faculty

1	Frances Lois U. Ngo, RPh, MHSS Assistant Professor 2 Clinical, Social, and Administrative Pharmacy Department
2	Adrian Chester Uy, RPh, RChT - Course Coordinator Instructor 4 Clinical, Social, and Administrative Pharmacy Department
3	Maria Patricia S, Ugalde, RPh Instructor 1 Clinical, Social, and Administrative Pharmacy Department