Course Specification

Therapeutics V

I. Course Identification and General Information:

1	**Course Title:**	Therapeutics V				
2	**Course Code & Number:**	**B1101585**				
3	**Credit hours:**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		2				2
4	**Study level/ semester at which this course is offered:**	**5 Year/ first semester**				
5	**Pre –requisite (if any):**	**B1101473**				
6	**Co –requisite (if any):**	**NA**				
7	**Program (s) in which the course is offered:**	Bachelor of PharmD				
8	**Language of teaching the course:**	**English**				
9	**Location of teaching the course:**	**Thamar University - Health Science Faculty**				
10	**Prepared By:**	**Dr. Abdulrazzaq Y. A. Al Khazzan**				
11	**Date of Approval**					

II. Course Description:

Neurologic and psychiatric disorders are involving important topics related to defects on organs resulting in imbalance of hormones, electrolytes, or minerals required for body functions. The course discusses brief definition, pathophysiology, underlying causes, clinical manifestations, the optimal drug therapy, patient counseling, drug monitoring, and evaluation the therapeutic outcomes for Alzheimer, Multiple Sclerosis, Epilepsy, Parkinson, Pain Management, Headache, Substance-Related Disorders, Schizophrenia, Major Depressive, Bipolar, Generalized Anxiety, Panic, and Social Anxiety, Sleep Disorders. Pathophysiology and pharmacology courses associated to neurologic and psychiatric disorders should be taken as prerequisites. Methods of instructor-student interactive lectures and interactive class discussions are primary in teaching this course.

III. Course Objectives:

This course aims to:

1. Making the student familiar with common neurologic and psychiatric disorders.
2. Equip student to illustrate pathophysiology, causes, risk factors, clinical manifestations and complications of common neurologic and psychiatric disorders.
3. Enable student to select an appropriate therapy regimen, advice and educate patients about the correct use of their medications.
4. Prepare student to suggest prophylaxis methods, lifestyle modifications, and the safety of medications used for treatment of neurologic and psychiatric disorders.

Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A5 Outline principles of clinical pharmacology, therapeutics and Pharmacovigilance,	a1. Explain basic information regarding neurologic and psychiatric disorders including; definition, pathogenesis, causes, risk factors, clinical manifestations, and diagnostic tools. a2. Design appropriate treatment regimen that include; doses, optimum use, adverse effects, doses for special conditions, and contraindications for patients with neurologic and psychiatric disorders.

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B2 Design risk reduction strategies to ensure patient safety and prevent medication errors, drug interaction, and adverse drug effects,	b1 Recommend suitable methods for prescribing, dispensing, and administering of medications to ensuring their safety and efficacy. b2 Provide patient-counseling and educational programs to dealing and reducing drug therapy problems. b3 Suggest drug therapy regimen using patient individualization therapy, to achieve drug optimizing and safety.
B3 Solve problems to reduce drug therapy problems	
B4 Select drug therapy regimen using mathematical, genomic, clinical pharmacokinetic and pharmacodynamics principles for optimizing the patient therapy and medication safety	

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	**Professional and Practical Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
C1 Advise the patients and health care professionals for optimizing medicines use.	c1 Give patients and health care providers suitable advices on the safe and effective use of medicines for patient with neurologic and psychiatric disorders.

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	**Transferable (General) Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
D2 Use information systems and computer software in order to enhance the delivery of pharmaceutical care,	d1 Make better familiar with the reliable drug information resources and how to be used. d2 Assess information concerning neurologic and psychiatric disorders and their drugs obtained from different information sources. d3 Use appropriate search strategies for research in computerized secondary databases.
D3 Work effectively individually and in a team	
D4 Have the skills of decision-making and time management and life- long learning	

Alignment Course Intended Learning Outcomes		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Explain basic information regarding neurologic and psychiatric disorders; including definition, pathogenesis, causes, risk factors, clinical manifestations, and diagnostic tools.	Cooperative and Participatory Lectures	- Quiz - Exam - In-class participation
a2. Design appropriate treatment regimen that include; doses, optimum use, adverse effects, doses for special conditions, and contraindications for patients with neurologic and psychiatric disorders.	Cooperative and Participatory Lectures	- Quiz - Exam - In-class participation
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1 Recommend suitable methods for prescribing, dispensing, and administering of medications to ensuring their safety and efficacy.	- Critical thinking - Class discussion	- Discussion - Oral questions
b2 Provide patient-counseling and educational programs to dealing and reducing drug therapy problems.		
b3 Suggest drug therapy regimen using patient individualization therapy, to achieve drug optimizing and safety.	- Critical thinking - Class discussion	- Discussion - Oral questions

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1 Give patients and health care providers suitable advices on the safe and effective use of medicines for patient with neurologic and psychiatric disorders.	- Cooperative and Participatory Lectures	- Homework - Exam

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1 Make better familiar with the reliable drug information resources and how to be used.	- Duties & activities - Seminars - Home works	- Assessment discussions, seminars and assignments
d2 Assess information concerning neurologic and psychiatric disorders and their drugs obtained from different information sources.		
d3 Use appropriate search strategies for research in computerized secondary databases.	- Duties & activities - Seminars - Home works	Evaluate seminars and assignments

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	Neurologic disorders	- Alzheimer Disease	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Multiple Sclerosis	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Epilepsy	2	4	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Parkinson Disease	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Pain Management	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Headache	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
2	- **Mid-semester exam**		1	1	a1, a2, b1, b3
3	Psychiatric disorders	- Substance-Related Disorders	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Schizophrenia	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Major Depressive Disorder	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Bipolar Disorder	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Generalized Anxiety Disorder, Panic Disorder, and Social Anxiety Disorder	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Sleep Disorders	1	2	a1, a2, b1, b2, b3, c1, d1, d2,

					d3
4	- **Final-semester exam**		1	2	a1, a2, b1, b3
Number of Weeks /and Units Per Semester			**15**	**29**	

B – Case Studies and Practical Aspect: (Not applicable)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1				
2				
3				
4				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:

1. Interactive lectures
2. Class discussion
3. Brainstorming
4. Duties & activities
5. Seminars
6. Home works
7. Office hours (Tutorials)

VII. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Homework/Assignment/quiz (1)	a1, a2, b1, b3, d1, d2, d3	5th	5
2	Attention-Deficit/Hyperactivity Disorder	a1, a2, b1, b3, d1, d2, d3	10th	5

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Quizzes	5th	5	5%	a1, a2, b1, b3, d1, d2, d3
2	Assignments & Presentation	10th	5	5%	a1, a2, b1, b3, d1, d2, d3
3	Mid-Term exam	7th	30	30%	a1, a2, b1, b3
4	Final Exam theory		60	60%	a1, a2, b1, b3
Total			**100**	**100%**	

IX. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1. Wells BG, DiPiro J, Schwinghammer TL., DiPiro C.; (2021), Pharmacotherapy handbook, 11th ed New York: McGraw-Hill.
2. Marie A. Chisholm-Burns *et al*, (2019), Pharmacotherapy: Principles & practice, 5th edition, McGra Hill Companies, Inc., United States of America.

2- Essential References.

1. Joseph Dipiro, (2020), Pharmacotherapy: pathophysiologic approaches, 11th edition, McGr Hill Companies, Inc., United States of America
2. Walker and Edwards, (2018), Clinical Pharmacy and Therapeutics, 6th edition, Elsevier Ltd UK

3- Electronic Materials and Web Sites *etc.*

1. Word Document or Portable Data Files (PDF) for Lectures that would be Delivered.
2. American College of Clinical Pharmacy (ACCP) http://www.accp.com

Course Specification
Communication Skills and Marketing

I. Course Identification and **General Information**:						
1	**Course Title:**	**Communication Skills and Marketing**				
2	**Course Number & Code:**	**B1101513**				
3	**Credit hours:**	C.H	TOTAL			
		Th.	Seminar	Pr	Tr.	
		2			2	
4	**Study Level/ Semester at which this Course is offered:**	**Level 5/ semester 1**				
5	**Pre –Requisite (if any):**					
6	**Co –Requisite (if any):**					
7	**Program (s) in which the Course is Offered:**	Bachelor of **Pharma D**				
8	**Language of Teaching the Course:**	English				
9	**Study System:**	semester				
10	**Mode of Delivery:**	Full Time				
11	**Location of Teaching the Course:**	Faculty of Medical Science				
12	**Prepared by:**					
13	**Date of Approval:**					

II. Course **Description**:

This course is composed of marketing and promotion concepts and teach pharmacy students the advanced prin of marketing and promotion in order to apply them in a pharmaceutical practical context. It prepares students t variety of careers in the pharmacy field including pharmaceutical sales, health information management, and pharmacy distribution system development.

III. Aims and Intended learning outcomes (**ILOs**) of **the** course:

1. Aims of The Course:

The overall aims of the course are:

- **To a**chieve advanced understanding of the marketing environment and promotion activities within a market, their implications and usage in practice within all pharmaceutical marketing professions..

2. Intended learning outcomes (ILOs) of the course:

A. Knowledge And Understanding:

- **After successful completion the course, students will be able to:**

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1- Understand the Pharmaceutical Marketing Functions.	• Lectures • Discussion Sessions • Assignments	• Periodic exam (Quizzes) • Home Assignments • Exams
a2- Explain the Principles of sales promotion, advertising and the ethics of sales.		
a3- Know the principles of accounting		
a4- Understand and explain the major components of the marketing management process.		
a5- Recognize the process and legal steps of new product development and promotion		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1- Suggest theoretical concepts and applied techniques marketing analysis, planning, and management	• Discussion Sessions • Problem solving • Group Discussion	• Oral presentations • Home assignments
b2- Develop critical thinking and decision-making skills		
b3- Identify the marketing relating problems and solve it		
b4- Develop marketing and communication activities for a specific product		
©Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1- Apply a variety of marketing concepts.	• Discussion Sessions • Assignments	• Oral presentations • Exams • LAB report
c2- Create pharmaceutical promotion composition.		
c3- Collect, analyze and interpret information and data from different segments of the pharmaceutical marketplace.		
c4- Design a suitable marketing plan		
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1- Enhance communication skills	• iscussion Sessions • ssignments that require collecting information from the internet.	• ral presentations • riting
d2- Adapt with the ever-changing external environment		

IV. Course Content**:**

A. Theoretical Aspect:

Order	Topic List / Units	Sub Topics List	Week Due	Contact Hours	ILOs
1	**Introduction to pharmaceutical marketing**		١	٢	a1, a4,b1,c3, d1,d2
2	**Selling General Concepts**	- What's selling? And why do pharmacy students study it? - Role of salespeople in society, Role of Medical Reps. - Mythology of selling "common Myths in selling" - Characteristics of sale careers and its paths - Personal characteristic of salespeople and some important personality elements	**2**	**4**	a2,b2,c3,d2

3	**Selling and prescribing process** **Pharmaceutical Detailing**	- Introduction to the job of pharmaceutical detailing - Detailing Sequence and how to ask for Business (AFTB) - Classification of Doctor's call and setting objectives - Classification of Doctor's in your working area - Management of time and territory (MTT) - Identifying and Developing Doctor's need - Relating and reinforcing customers needs - Matching products benefits to Doctor's expressed needs(FAB concept) - The use of reprints and samples during business call - Obtaining feedback , both positive and negative - Art of listening during doctor call, including guides to good listening and disciplines of this art - Handling various Doctor's attitudes - Types of doctor's objectives - Handling doctor's objectives - Gaining commitment and following up - Evaluation of the doctor call "Post Call analysis"	٥	١٠	a2,a3,a5,c1,c4,d2
4	**Retail Selling in Pharmacies**	- Introduction and general concepts - Problems in retail selling - Ways and methods on increasing the pharmacy sales - Striking the balance between profits and ethics in pharmacy business - The approach in retailing - Making the sale - Technique of substitution for (OTC) and consumable Products not pharmaceuticals	٣	٦	b3,c3,d2
5	**Marketing Principles and Concepts**	- Selling versus Marketing and Marketing function - Product management in pharmaceutical companies - Marketing principles and some useful function	**3**	٦	a1,b1,b2,b5,c2,c4,d1,d2
	Number of Weeks /and Units Per Semester		**14**	**28**	

V. Schedule of Assessment Tasks for Students During the Semester:					
No	**Assessment Tasks**	**Week Due**	**Mark**	**Proportion of Final Assessment**	**Aligned CILOs(symbols)**
1	**Participation, quizzes**	**Each week**	**10**	**10%**	a1, a2, a4, b1,b2, c3,d2
2	**Research, assignments**	**6th week**	**10**	**10%**	a1, a3, b1, b2, c4, d2
3	**Mid –Exam**	**7th week**	**20**	**20%**	a1.a2,a3, b1,b2, d1,d2
4	**Final Exam (theoretical)**	16th week	**60**	**60%**	a1.a2,a3, b1,b2, d1,d2
	Total		**100**	**100%**	

VI. Learning Resources:	
1. Required Textbook(s) (maximum two).	
	1. 1984 Principles and Practice of Management - Peter Drucker. 2. Principles of Management - Koontz O'Donnel. 3. Business Organization and Management - Shukla. 4. Business Organization - Ghosh. 5. Double Entry Book Keeeping - Batliboi. 6. Professional Pharmacy - Jain and Sharma.
2. Recommended Readings and Reference Materials.	
	1. Understanding and Responding to Pharmaceutical Promotion- a practical guide, 1st ed., World Health Organization/ Health Action International collaborative project. 2. Preparing the marketing plan, AMA marketing toolbox, American Marketing Association marketing toolbox. Parmerlee, David, 2000. ISBN: 0658001345
3. Essential References.	
	1. Marketing, Kerin, Roger A.**, International edition., 2006. ISBN: 0-07-111608-7** 2. Pharmaceutical Marketing, Brent L. Rollins & Matthew Perri, 2013, **ISBN-10:** 1449697992 **ISBN-13:** 978-1449697990
4. Other Learning Material.	
	- Data show projector

I. Course **Policies**:	
١	**Class Attendance:** □ Absence from lectures and/or tutorials shall not exceed 25%. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college shall not be allowed to take the final examination and shall receive a mark of zero for the course.

٢	**Tardy:** □ Students should be attending the classes as its required for the assessments if the student is 15 minutes late in attending to the class for more than two classes he will loss 50% of quizzes mark.
٣	**Exam Attendance/Punctuality:** □ All examination and their roles will be according to Students affairs regulations
٤	**Assignments & Projects:** - Student who is submitting the assignments or the projects on time, will be awarded good percentage in grading of participation.
٥	**Cheating**: - All students must be an ideal behavior and respect each other, their teachers and respect the roles of the colleague. In addition, students should follow safety roles while working in the lab. Those who has been caught in any cheating case will be punished according to the Students affairs regulations
6	**Plagiarism**: □ Student will be punished depend upon gravity of the action and according to Students affairs regulations which might be ranged from rewriting the homework to suspension or dismissal
7	**Other policies:** - Using mobile or another electronic device capable to store or transfer data in class during the lecture or the exam is forbidden.

Course Specification

I. Course Identification and General Information:

1	**Course Title:**	Clinical Cases III				
2	**Course Code & Number:**	B1101567				
3	**Credit hours:**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
					1	1
4	**Study level/ semester at which this course is offered:**	**Fifth Year/ First semester**				
5	**Pre –requisite:**	**NA**				
6	**Co –requisite:**	B1101575				
7	**Program (s) in which the course is offered:**	**Bachelor of PharmD**				
8	**Language of teaching the course:**	**English**				
9	**Location of teaching the course:**	**Thamar University - Health Science Faculty**				
10	**Prepared By:**	**Dr. Abdulrazzaq Y. A. Al Khazzan**				
11	**Date of Approval**					

II. Course Description:

Clinical cases III course is a tutorial course designed to train students to dealing well with the real cases that would be encountered them in the future clinical training. This course emphasizes on respiratory and GIT diseases that include cases studies in the following topics: Acute Asthma, chronic Asthma, COPD, Pulmonary Arterial Hypertension, Cystic Fibrosis, GERD, PUD, Nausea and Vomiting, Inflammatory Bowel Disease, Constipation, Diarrhea, Irritable Bowel Syndrome, Pancreatitis, Portal Hypertension and Cirrhosis, and Viral Hepatitis. Components to be covered in each topic are case summary, problem identification, desired outcome, therapeutic alternatives, optimal plan, outcome evaluation, and patient education. The co-requisite course of clinical cases III is Therapeutics IV. Case-based learning and group discussion are two methods of teaching this course.

III. Course Objectives:

This course aims to:

1. Making student able to discuss basic information related to respiratory and GIT diseases.
2. Equip student to identify the treatment goals, algorithm, and optimal therapy regimen for patients with respiratory and GIT diseases.
3. Enable student to provide an appropriate advising and educating for patients with respiratory and GIT diseases about his/her diseases and medications.
4. Help student to recommend prophylaxis methods, lifestyle modifications, and safety use of medications for patients with respiratory and GIT diseases.

Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A5 Outline principles of clinical pharmacology, therapeutics and Pharmacovigilance,	a1. Identify information of presenting case concerning the respiratory and GIT diseases such as, causes, risk factors, pathogenesis, signs & symptoms, and diagnostic tools. a2. Determine an appropriate treatment regimen for patients with respiratory and GIT diseases including; doses, optimum use, adverse effects, doses for special groups of patients, and contraindications.

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B2 Design risk reduction strategies to ensure patient safety and prevent medication errors, drug interaction, and adverse drug effects,	b1 Discuss an appropriate method for prescribing, dispensing, and administering of medications to ensuring their safety and efficacy. b2 Solve drug-related issues using patient-counseling and educating programs to reducing and dealing with drug therapy problems. b3 Choose drug therapy regimen using patient individualization therapy, to achieve medication optimizing and safety.
B3 Solve problems to reduce drug therapy problems	
B4 Select drug therapy regimen using mathematical, genomic, clinical pharmacokinetic and pharmacodynamics principles for optimizing the patient therapy and medication safety	

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	**Professional and Practical Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
C1 Advise the patients and health care professionals for optimizing medicines use.	c1 Justify appropriately the treatment evaluation outcomes for patients with respiratory and GIT diseases. c2 Recommend effective programs to provide advices for patients and health care providers on the safe and effective use of medicines for respiratory and GIT diseases.

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	**Transferable (General) Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
D2 Use information systems and computer software in order to enhance the delivery of pharmaceutical care,	d1 Assess available drug information resources to get reliable and valid clinical data.
D3 Work effectively individually and in a team	d2 Coordinate with hospitals and health care related centers to perform pharmaceutical care for patient effectively.
D4 Have the skills of decision-making and time management and life- long learning	d3 Make appropriate decisions based on evidence-based studies.

Alignment Course Intended Learning Outcomes

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Identify information of presenting case concerning the respiratory and GIT diseases such as, causes, risk factors,	Lectures (in various ways, cooperative and participatory teaching, etc.)	- Quiz - Exam - in-class participation

pathogenesis, signs & symptoms, and diagnostic tools.		
a2. Determine an appropriate treatment regimen for patients with respiratory and GIT diseases including; doses, optimum use, adverse effects, doses for special groups of patients, and contraindications.		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1 Discuss an appropriate method for prescribing, dispensing, and administering of medications to ensuring their safety and efficacy. b2 Solve drug-related issues using patient-counseling and educating programs to reducing and dealing with drug therapy problems. b3 Choose drug therapy regimen using patient individualization therapy, to achieve medication optimizing and safety.	- Class discussion - Interactive lectures - Class discussion - Brainstorming - Duties & activities - Seminars	- Quiz - Exam - Oral questions

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1 Justify appropriately the treatment evaluation outcomes for patients with respiratory and GIT diseases. c2 Recommend effective programs to provide advices for patients and health care providers on the safe and effective use of	- Duties & activities - Seminars - Homework	- Exam - Oral questions

medicines for respiratory and GIT diseases.		

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1 Assess available drug information resources to get reliable and valid clinical data.	- Duties & activities - Seminars - Home works	- Quiz - Exam - Oral questions
d2 Coordinate with hospitals and health care related centers to perform pharmaceutical care for patient effectively.		
d3 Make appropriate decisions based on evidence-based studies.		

V. Course Content:

A – Theoretical Aspect: (It is covered in a separate course**)**

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1		-			
2		-			
3		-			
4		-			
	-				
Number of Weeks /and Units Per Semester					

B – Case Studies:

Order	Cases topic	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	- Acute & Chronic Asthma	2	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
2	- COPD	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
3	- Pulmonary Arterial Hypertension	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
4	- Cystic Fibrosis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
5	- GERD	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
6	- PUD	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
7	- Nausea and Vomiting	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
8	- Inflammatory Bowel Disease	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
9	- Constipation, Diarrhea	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
10	- Pancreatitis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
11	- Portal Hypertension and Cirrhosis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
12	- Viral Hepatitis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
Number of Weeks /and Units Per Semester		13	13	

VI. Teaching strategies of the course:

1. Interactive lectures
2. Class discussion
3. Brainstorming
4. Duties & activities
5. Seminars
6. Home works
7. Office hours (Tutorials)

VII. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Homework/Assignment/quiz (1)	a1, a2, b1, b3, d1, d2, d3	5th	5
2	Homework/Assignment/quiz (2)	a1, a2, b1, b3, d1, d2, d3	10th	5

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Quizzes	5th	5	5%	a1, a2, b1, b3, d1, d2, d3
2	Presentation	10th	5	5%	a1, a2, b1, b3, d1, d2, d3
3	Mid-Term exam	7th	30	30%	a1, a2, b1, b3
4	Final Exam theory		60	60%	a1, a2, b1, b3
Total			**100**	**100%**	

IX. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1. Terry L. Schwinghammer *et al*, (2017), Pharmacotherapy Casebook: A Patient-Focused Approach, 10th edition, McGraw-Hill Education, United States of America.
2. Cate Whittlesea and Karen Hodson, (2019), Clinical Pharmacy and Therapeutics, 6th edition, Elsevier Ltd., UK

2- Essential References.

1. Bartke, Andrzej; Constanti, Andrew (2019), Basic endocrinology: for students of pharmacy and allied health sciences, 1st edition, Routledge;CRC, UK
2. Marie A. Chisholm-Burns and others, (2019), Pharmacotherapy: Principles & practice, 5nd edition,

	McGraw-Hill Companies, Inc., United States of America. 3. Joseph Dipiro, (2020), Pharmacotherapy: pathophysiologic approaches, 11th edition, McGraw-Hill Companies, Inc., United States of America 4. Koda-Kimble *et al*, (2018), Applied Therapeutics: The Clinical Use of Drugs, 11th edition, Lippincott Williams & Wilkins, Philadelphia, United States of America.
3- Electronic Materials and Web Sites *etc*.	
	1. Word Document or Portable Data Files (PDF) for Lectures that would be Delivered. 2. American College of Clinical Pharmacy (ACCP) http://www.accp.com

Course Specification of

Clinical Toxicology

I. Course Identification and General Information:						
1	**Course Title:**	**Clinical Toxicology**				
2	**Course Code &Number:**	**B1101548**				
3	**Credit hours:**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		2				2
4	**Study level/ semester at which this course is offered:**	*Level 5/ semester 1*				
5	**Pre –requisite (if any):**	**B1101437**				
6	**Co –requisite (if any):**					
7	**Program (s) in which the course is offered:**	Bachelor of Pharmacy Doctor (Pharma D)				
8	**Language of teaching the course:**	English				
9	**Location of teaching the course:**	Thamar University - Faculty of Medical Sciences				
10	**Prepared By:**	**Dr. Ahmed G. Al- Akydy – Dr. Ahmed Al-Washli**				
11	**Date of Approval**	2021				

II. Course Description:

This course focuses on the role of pharmacist to deal with poisoning by drug and medical products., Also gives student the skills to deal with emergency treatment of the overdosed patient. toxicity in special individuals, as well as, drug abuse and hallucinogens toxicity are also included.

III. Course Objectives:

1. To provide general knowledge on toxicology, detection and isolation of poisons.
2. To provide student with knowledge of symptoms of toxicity, appropriate measures for management and first aid measures after exposure to different types of toxic substances.

I. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

After completing the course, the student will be able to:

a1.Describe typical poisoning of selected drugs and differentiate poisonings by clinical presentation and LAB tests

a 2. Describe the toxic responses of selected classes of therapeutic agents on various organs and systems

a3. explain the prevention, diagnosis, and treatment of poisoning with medications.

Knowledge and Understanding PILOs		Knowledge and Understanding CILOs	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
A1	Explain the fundamentals of general sciences and the basic and biomedical sciences and their relations to pharmacy profession.		
A2	Illustrate the fundamentals of social and behavioral sciences relevant to pharmacy, ethics of health care and its impact on their relationship with patients and other healthcare professionals.		
A3	Describe relationships between chemical structure of compounds of pharmaceutical and medicinal interest and biological activities	a2	**Describe** the toxic responses of selected classes of therapeutic agents on various organs and systems.
A4	Define basic principles of drug: target identification, design, informatics, and mechanisms of action	a3	**Explain** the prevention, diagnosis, and treatment of poisoning with medications

A5	Outline principles of clinical pharmacology, therapeutics and Pharmacovigilance.	a1	**Describe** typical poisoning of selected drugs and differentiate poisonings by clinical presentation and LAB tests

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

b1.Evaluate the effects of a given toxic drugs on the human body

b2. select appropriate laboratory tests to determine the identity and severity of poisoning of drugs.

b3. determine different methods and techniques in the management and treatment of poisoning cases of therapeutic and non-therapeutic agents.

Intellectual Skills PILOs		**Intellectual Skills CILOs**	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
B1	Classify the synthetic and natural drugs according to their mechanism of action, systemic effect, therapeutic uses, contraindication and toxicity	**b1**	**Evaluate** the effects of a given toxic drugs on the human body
B2	Design risk reduction strategies to ensure patient safety and prevent medication errors, drug interaction, and adverse drug effects,		
B3	Solve problems to reduce drug therapy problems	**b2**	**Select** appropriate laboratory tests to determine the identity and severity of poisoning of drugs.
B4	Select drug therapy regimen using mathematical, genomic, clinical pharmacokinetic and pharmacodynamics principles for optimizing the patient therapy and medication safety	**b3**	**Determine** different methods and techniques in the management and treatment of poisoning cases of therapeutic and non-therapeutic agents.

Professional and Practical Skills

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

c1.Apply the knowledge with the clinical skills and laboratory tests in diagnoses of the different drugs toxicities on human body.

c2. Use the appropriate antidotes for the corresponding drug poisoning, their mechanisms of actions, routes of administration and any special precautions.

c3. utilize different methods and techniques in the management and treatment of poisoning cases of therapeutic and non-therapeutic agents.

Professional and Practical Skills PILOs		Professional and Practical Skills CILOs	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
C1	Handle the chemical, biological, and pharmaceutical materials safely		
C2	Operate different pharmaceutical equipment and instruments		
C3	Extract active substances from different sources.		
C4	Carry outpatient physical assessment.	c1	**Apply** the knowledge with the clinical skills and laboratory tests in diagnoses of the different drugs toxicities on human body.
C5	Advise the patients and health care professionals for optimizing medicines use.	c2	**Use** the appropriate antidotes for the corresponding drug poisoning, their mechanisms of actions, routes of administration and any special precautions.
		c3	**Utilize** different methods and techniques in the management and treatment of poisoning cases of therapeutic and non-therapeutic

			agents.

Transferable (General) Skills :			
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes) **d1. Make** informed, rational, and responsible decisions about different issues in clinical toxicology. **d2. communicate** effectively with general population, others health care providers regarding any issu the field of toxicology.			
Transferable (General) Skills PILOs		**Transferable (General) Skills CILOs**	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
D1	Communicate effectively and ethically with patients, public, and health care professionals.	**d2**	**Communicate** effectively with general population, others health care providers regarding any issue in the field of toxicology.
D2	Use information systems and computer softwares in order to enhance the delivery of pharmaceutical care,	**d1**	**Make** informed, rational, and responsible deci about different issues in clinical toxicology.
D3	Work effectively individually and in a team	**d2**	**Communicate** effectively with general population, others health care providers regarding any issue in the field of toxicology.
D4	Have the skills of decision-making and time management and lifelong learning		

IV. Alignment Course Intended Learning Outcomes

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
a1.	**Describe** typical poisoning of selected drugs and differentiate poisonings by clinical presentation and LAB tests	• Lectures • Discussion Sessions • Assignments	• Periodic exam (Quizzes) • Evaluate assignments • Mid & final exam
a 2.	**Describe** the toxic responses of selected classes of therapeutic agents on various organs and systems		
a3.	**Explain** the prevention, diagnosis, and treatment of poisoning with medications.		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
b1.	**Evaluate** the effects of a given toxic drugs on the human body	• Discussion Sessions • Problem solving • Group discussion • Assignments	• Oral presentations • Evaluate assignments • Mid & final exam
b2.	**select** appropriate laboratory tests to determine the identity and severity of poisoning of drugs.		
b3.	**determine** different methods and techniques in the management and treatment of poisoning cases of therapeutic and non-therapeutic agents.		

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
c1.	**Apply** the knowledge with the clinical skills and laboratory tests in diagnoses of the different drugs toxicities on human body.	• Discussion sessions • Assignments	• Oral presentations • Theory & Practical exams • LAB report • Evaluate assignments
c2.	**Use** the appropriate antidotes for the corresponding drug poisoning, their mechanisms of actions, routes of administration and any special precautions.		
c3.	**utilize** different methods and techniques in the management and treatment of poisoning cases of therapeutic and non-therapeutic agents.		

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
d1.	**Make** informed, rational, and responsib decisions about different issues in clinic toxicology.	• Discussion Sessions • Assignments that require collecting information from the internet.	• Oral presentations • Writing
d2.	**Communicate** effectively with general population, others health care provide regarding any issue in the field of toxico		

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	**Introduction to clinical toxicology**		1w	2	a1; a2;
2	**Evaluation of the Poisoned individual**	- Poisoned Patient history - Physical assessment of the poisoned patient - Laboratory assessment of the poisoned patient - Radiographic evaluation	1w	2	a1; a3; b2; c1; d2
3	**Poisoning in special individuals**	- Poisoning in children - Poisoning in adult - Poisoning in elderly - Reproductive female - Poisoning in pregnancy	1w	2	a2; b1; d2
4	**Toxidromes**	- Specific antidotes - Nonspecific antidotes - Specific antagonists	1w	2	a3; b3; c2; d1
5	**Drugs intoxication**	- **Toxicity of different analgesic drugs** o Acetaminophen o Salicylates o NSAIDs	1w	2	a1; a2; a3; b1; b2; b3; c1; c2; c3; d2
		- **Toxicity of different painkiller drugs** o Opioids	1w	2	a1; a2; a3; b1; b2; b3; c1; c2; c3; d2
		- **Toxicity of different CNS acting drugs** o Hypnotics (barbiturates, benzodiazepines)	1w	2	a1; a2; a3; b1; b2; b3; c1; c2; c3; d2
		- **Toxicity of different CNS acting drugs** o Stimulants [amphetamines, decongestants, methylxanthines (e.g. caffeine, theophylline)]	1w	2	a1; a2; a3; b1; b2; b3; c1; c2; c3; d2
		- **Toxicity of different CNS**	1w	2	a1; a2; a3; b1;

		acting drugs ○ Antidepressants ○ Anticonvulsants			b2; b3; c1; c2; c3; d2
		- Toxicity of CVS acting drugs ○ Cardiac glycosides ○ Beta-blockers ○ Calcium channel blockers	1w	2	a1; a2; a3; b1; b2; b3; c1; c2; c3; d2
		- **Toxicity of blood acting drugs** ○ Anticoagulants ○ Antiplatelets ○ Alteplase ○ Antithyroid drugs	1w	2	a1; a2; a3; b1; b2; b3; c1; c2; c3; d2
		- **Toxicity with autacoid drugs** ○ Antihistamine ○ Serotonergic drugs	1w	2	a1; a2; a3; b1; b2; b3; c1; c2; c3; d2
		- **Poisoning with** ○ Antidiabetic drugs ○ Antithyroid drugs ○ Hormonal contraceptives ○ Vitamins	1w	2	a1; a2; a3; b1; b2; b3; c1; c2; c3; d2
		- Drugs abuse - Hallucinogens	1w	2	a1; a2; a3; b1; b2; b3; c1; c2; c3; d2
Number of Weeks /and Units Per Semester			**14**	**28**	

VI. Teaching strategies of the course:

- Lectures
- Discussion sessions
- Media Presentations: Power Point, Video
- Assignments
- Solving of problems

V. Assignments:

No	Assignments	Mark	Week Due	Aligned CILOs(symbols)
1	Participation	5	Weekly	a1; a2; a3; b1; b2; b3; c2
2	Quizzes	5	Weekly	a1; a2; a3; b1; b2; b3; c2
3	Research	5	6th W	a2; a3; b1; b2; b3; c3; d1; d2
4	Assignments	5	6th W	a1; a2; a3; b1; b2; b3; c2; d1; d2
5	Mid – Exam (theoretical)	20	7th W	a1; a2; a3; b1; b2; b3; c2
	Total score	**40%**		

V. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments & Homework, Tasks & Presentation	Fortnightly	10	10%	a1; a2; a3; b1; b2; b3; c2; d1; d2
2	Quizzes	W6	5	5%	a1; a2; a3; b1; b2; b3; c2
3	Mid-Term exam	W8	20	20%	a1; a2; a3; b1; b2; b3; c2
4	Practical reports	W12	5	5%	a1; a2; a3; b1; b2; b3; c1; c2
6	Final Exam theory	W16	60	60%	a1; a2; a3; b1; b2; b3; c2
Total			**100**	**100%**	

VI. Learning Resources:

1- Required Textbook(s) (maximum two).

1. Goldfrank's Toxicologic Emergencies, 8th Edition / Editors: Flomenbaum, Neal E.; Goldfrank, Lewis R.; Hoffman, Robert S.; Howland, Mary Ann; Lewin, Neal A.; Nelson, Lewis S. / 2006 McGraw-Hill
2. Olson KR, "*Poisoning & Drug Overdose"*, 6th edition, McGraw Hill, 2012

2- Essential References.

3. Color Atlas of Human Poisoning / James Diaz / Published in 2006 by **Supplementary** CRC Press Taylor & Francis Group
4. Clinical toxicology : principles and mechanisms, 2nd Ed. 2010 by Barile, Frank A.

3- Electronic Materials and Web Sites *etc.*

Electronic Web Sites:

- **www.google.com**
- **www.pubmed.com**
- **www.biomed.net**
- **www.ncbi.nlm.nih.gov**

University: Thamar University
Faculty: Medical Sciences
Program: Bachelor of Medical Sciences (Pharm. D., Laboratory Medicine, Nursing)

Research Methodology

I. Course Identification and General Information:					
1	**Course Title:**	*Research Methodology*			
2	**Course Number and Code:**	**B1102485**			
3	**Credit hours: 2 CH**		Lecture/Tutorial	Practical session	TOTAL
		Contact hours/week	1 hours		15 contact hours
		Duration of term	15 weeks		
		Total Number of Contact hours/term	15 hours		
4	**Study level/ semester at which this course is offered:**	4th level/ Semester 1			
5	**Pre –requisite (if any):**	*Health Determinants, Epidemiology, Biostatistics*			
6	**Co –requisite (if any):**				
7	**Program (s) in which the course is offered:**	Pharm. D., Laboratory Medicine, Nursing			
8	**Language of teaching the course:**	English			
9	**Location of teaching the course:**	Faculty of Medical Sciences, Thamar University Main Campus, Dhamar City.			
10	**Prepared By:**	Dr. Abdulelah H. Al-Adhroey			
11	**Approved By:**				

I. Course Description:

Research Methodology course is aimed to assist students to develop fundamental skills in medical research and scientific communication. This course offers medical students an opportunity to assemble their preclinical and clinical knowledge and skills have acquired during the earlier medical sciences levels to realize a minor medical research (clinical, laboratory or epidemiological reports). This course aimed in offering students with skills required to formulate a research proposal related to faculty's planned or ongoing researches.

III. Intended learning outcomes (ILOs) of the course:

(A) Knowledge and Understanding Skills:

By the end of the course, the student should be able to:

A1- Recognize a research proposal following a responsible research methodology in identifying research problem, objectives, design, variables, ethics and data collection techniques; and in planning data analysis and interpretation as well as project management.

(B) Intellectual Skills:

By the end of the course, the student should be able to:

b1- Formulate a research proposal including the main components of the scientific research.

© Professional and Practical Skills:

By the end of the course, the student should be able to:

c1- Apply a scientific method in collecting and recording research data in laboratory, field, or clinical setting, or from existing data set.

c2- Plan for management of research proposal, data analysis and interpretation meeting an acceptable scientific justification.

c3- Prepare a preliminary research proposal following an acceptable academic writing style.

(D) Transferable and General Skills:

By the end of the course, the student should be able to:

d1- Utilize statistical computer programs and information technology required to personal and professional development.

Theoretical and Practical Aspect:

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1.	• Outline the faculty planned or ongoing researches related topics and distribution of students by research topics to small research groups, six each.	1	1	b1 c1- c3
2.	• Identifying and prioritizing problems	1	1	
3.	• Identifying problems statement and analysis	1	1	
4.	• Studying literature review of research problems	1	1	
5.	• Deciding objectives of research	1	1	
6.	• Overviewing research design	1	1	
7.	• Selecting type of study	1	1	
8.	• Compose a research report following an acceptable academic writing style	1	1	
9.	• Recognizing ethical issues	1	1	
10.	• Describing research variables	1	1	
11.	• Deciding study sample and sample	1	1	
12.	• Asserting techniques for collection and pretesting	1	1	
13.	• Planning for data analysis and interpretation	1	1	
14.	• Project management	1	1	
15.	• Submitting the research proposal	1	1	
Number of Weeks /and Units Per Year			15 h	

V- Teaching strategies of the course:

1- Lectures
2- Supervised training sessions
3- Small research group activities

VI- Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Research proposal progress report	b1- b3 c1	7	40

2	Submission of research proposal	b1-b3 c1	13	40
3	Oral presentation of research proposal	d1-d2	15	20

VII- Schedule of Assessment Tasks for Students During the Year:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Research proposal progress report	7	40	40%	b1- b3 c1
2	Submission of research proposal	13	40	40%	b1-b3 c1
3	Oral presentation of research proposal	15	20	20%	d1-d2
	Total		100	100%	

VIII- Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1. Amar-singh, H.S.S., Bakar, A.A., Sararaks, S., (2008). The Medical Research Handbook: Planning a Research Project. Perak, Malaysia. Clinical Research Center Perak and the Institute for Health Systems Research.
2. منظمة الصحة العالمية. (2011). طب المجتمع: الكتاب الطبي الجامعي. بيروت, لبنان: اكاديميا انترناشيونال.

2- Essential References.

1. Sanyal, P. (2015). Community Medicine: A Students Manual, 1st edition. New Delhi, London, Philadelphia, Panama: Jaypee Brothers Medical Publishers (P) Ltd.
2. Park, K. (2015) Park's Textbook of Preventive and Social Medicine, 23th edition, Jabalpur, India: Bhanot.

3- Electronic Materials and Web Sites *etc*.

1. World Health Organization: www.who.int
2. Centers for Disease Control and Prevention: www.cdc.gov

IX. Course Policies:

1	**Class Attendance:**

	- Attendance of students is taken at the beginning of lecture time as it is required for the assessments of students.
2	**Tardy:** **- The student will be regarded as absent if he/she is 15 minutes late in attending to the class.** **- Absence from lectures and/or tutorials shall not exceed 25%. Students who exceed the 25% limit without a medical or emergency excuse acceptable to and approved by the dean of the college shall not be allowed to enter the final examination.**
3	**Exam Attendance/Punctuality:** **- All examination and their roles will be according to students-affairs regulations.**
4	**Assignments & Projects:** **- Student who is submitting the assignments or the projects on time, will be awarded good percentage in grading of participation**
5	**Cheating:** **- All students must be an ideal behavior and respect each other and their teachers.** **- Students who has been caught in any cheating case will be punished according to the students-affairs regulations.**
6	**Plagiarism:** **- Student will be punished according to student-affairs regulations which can reach to the separation.**
7	**Other policies:** **- The student should follow the instructions of exams' entrance.** **- The student should follow all the systems & laws of the university.**

Faculty**: Faculty of Medical Sciences**
Program: **Bachelor of Medical Sciences**
Course: **Biostatistics**

I. Course Identification and General Information:

1	**Course Title:**	**Biostatistics**					
2	**Course Code & Number:**	**B1101528**					
3	**Credit hours:**	C.H					TOTAL
		Th.	Seminar	Pr	Tr.		
		2					2
4	**Study level/ semester at which this course is offered:**	5 *Level, first semester*					
5	**Pre –requisite (if any):**						
6	**Co –requisite (if any):**						
7	**Program (s) in which the course is offered:**	*Bachelor Degree* ***Pharma D***					
8	**Language of teaching the course:**	*English*					
9	**Location of teaching the course:**	*Building B, Faculty of Medical Sciences, Thamar University Main Campus.*					
10	**Prepared By:**	*Assoc. Prof. Dr. Abdulelah H. Al-Adhroey* *Dr. Mohammed A. Al-Kholani*					
11	**Date of Approval**						

II. Course Description:

Biostatistics course is intended to provide medical sciences students with fundamental concepts of the theoretical and applied skills of biostatistics making them able to calculate and interpret common statistical measures used in describing and analyzing health and clinical data. Topics include: Sources of health information; Organization, summarizing and displaying of data; Common statistic measurements to describe medical data , statistic tests for the confidence, differences, and compare risk; statistics formula to analyze the relationships, survival, and clinical investigations and screening.

III. Course Objectives:

After completing this program, students would be able to

- Demonstrate theoretical knowledge for the purposes and methods of the steps of statistical data processing (organization, summarization and displaying) related to the medical and health fields.
- Classify the collected raw data according to the types of variables that are being studied.
- Choose appropriate statistical tables, graphs and charts to display data, and its analyze
- Calculate and interpret common statistical measures used in describing and analyzing medical and health data.
- Apply the SPSS program in data analysis.

IV. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A	a1- describe fundamental features of biostatics, and their applications.
A	a2 explain the kind, uses and sources of health information-
A	a3 explain principles of random sampling, systematic sampling, stratified sampling, cluster Sampling..
A	A4 describe basic concepts and methods for interpreting and communicating data
A	A5 discus the common statistics used for medical data description including percentage, mode, median, mean
A	A6 Explain Statistic tests of the confidence, differences, compare risk, and analyze relationships
A	A7 explain the major differences among linear regression, logistic regression and regression models for survival analyses
A	A8- describe the processes, uses, and evaluation of surveillance and screening of diseases

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B	b1-solve problems in the fields of health by using suitable statistical measures and methods.
B	b2 differentiate among random sampling, systematic sampling, stratified sampling, cluster sampling
B	b3 classify the collected raw data according to the types of variables that are being studied
B	b4 choose appropriate statistical tables, graphs and charts to display data, and its analyze.
B	b5 select the appropriate display format according to the data type.

B	b6 distinguish, calculate, and interpret measures occurrence of diseases, and mortality measures

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	**Professional and Practical Skills CILOs**
After completing this program, students would be able to:	**After completing this course, students would be able to:**
C	c1- Use the elementary functions of Excel or SPSS program to conduct statistical analysis and draw graphs
C	c2- Prepare and apply graphical and tabular methods to display data, and its analyze

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	**Transferable (General) Skills CILOs**
After completing this program, students would be able to:	**After completing this course, students would be able to:**
D1	d1 Adopt the principles of lifelong learning needed for continuous professional development.
	d2 Evaluate information including the use of information technology where applicable

V. Alignment Course Intended Learning Outcomes

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a 1	Interactive lectures Discussion Brain Storm Seminars..	Written Exam Assignments Presentations Quizzes
a 2		
a 3		
a 4		
a 5		
a 6		
a 7		

a 8		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b 1 b 2 b 3 b 4 b 5 b 6	- Interactive lectures - discussion and dialog - Brain Storm - Problem solving - Seminars. - Case study	Exam Assignments Presentations.

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1 **c2**	Exercises in the class. Group (Small group) discussion Independent study	Exams Assignments Presentation/ observation Case Report

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1 d2	- Independent study - Group work activities - Written researches	Exams Assignments / homework Presentation/ observation

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	**INTRODUCTION TO BIOSTATISTICS**	• Biostatistics: definition, importance in medical and heath fields • What kind of health information do we need? • Uses of health information • Sources of health information	1	2	a1. a2, a3, b1
2	**SAMPLING METHODS**	Random sampling, Systematic Sampling, Stratified Sampling, Cluster Sampling. Sample size	1	2	a1, a3; b1, b2
3	**SUMMARIZING DATA**	• Organizing data • Types of variable: *measurement scale types* • Frequency distributions • Methods for Summarizing Data	1	2	a1, a4; b1,b3
4	**COMMON STATISTICS WHICH DESCRIBE MEDICAL DATA**	• Percentages • Mean • Median • Mode • Standard deviation and variance	1	2	a1, a5; b1
5	**STATISTICS WHICH TEST CONFIDENCE**	• Confidence intervals • P values	1	2	a1,a6; b1
6	**STATISTICS WHICH TEST DIFFERENCES**	• t tests and other parametric tests • Mann-Whitney and other non-parametric tests • Chi-squared	1	2	a1,a6; b1; d1
7	**STATISTICS WHICH COMPARE RISK**	• Risk ratio • Odds ratio • Risk reduction and numbers needed to treat • Using Computer Technology	1	2	a1,a6;; b1 ; c1
8	Midterm Exam.		1	2	a1-a6; b1-b3
9	**STATISTICS WHICH ANALYZE RELATIONSHIPS**	• Correlation • Regression	1	2	a1,a6; b1
10	**STATISTICS WHICH**	• Survival analysis: life tables and Kaplan–Meier	1	2	a1,a7; b1

	ANALYZE SURVIVAL	plots • The Cox regression model			
11	**STATISTICS WHICH ANALYZE CLINICAL INVESTIGATIONS AND SCREENING**	• Sensitivity, specificity and predictive value • Level of agreement and Kappa	1	2	a1,a8; b1

12	**DISPLAYING DATA**	• Introduction to tables and graphs
		• Tables
		  • One-variable tables
		  • Two- and three-variable tables
		  • Tables of statistical measures other than frequency
		  • Composite tables
		  • Table shell
		  • Creating class intervals
		Using Computer Technology
			1	2	a1,a4; b1, b4,b5 ; c1, c2; d1-d2

13	**DISPLAYING DATA**	• Graphs
		  • Arithmetic-scale line graphs
		  • Semilogarithmic-scale line graphs
		  • Histograms
		  • Population pyramid, frequency polygons and cumulative frequency and survival curves, and scatter diagrams
		  • Bar charts, grouped, stacked 100% component, deviation bar charts and pie charts
		  • Dot plots and box plots and forest plots, phylogenetic and decision trees
		  • Maps
		• Using Computer Technology
			1	2	a1,a4; b1,b4,b5; c1, c2; d1-d2

14	**OTHER CONCEPTS**	• Multiple testing adjustment • 1-and 2-tailed tests	1	2	a1; b1,b6; d1-d2

		• Incidence • Prevalence (= Point Prevalence Rate) • The power of a study: probability to detect a statistically significant difference. • Bayesian statistics • Mortality measures rates			
15	**STATISTICS AT WORK**	Real-life examples of how researchers use statistical techniques to describe and analyze their work addresses.	1	2	a1-a7; b1-b6
16	Final Exam.		1	2	a1-a8; b1-b6; c2
	Total		16	32	

VI. Teaching strategies of the course:

1- Interactive lectures.
2- Group discussion.
3- Practical training in the laboratory.
4- Seminars.
5- Written researches.

VII. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Quiz	a1,a2,a6; b1	3,10	7
2	Homework /Research reports/ Tasks	a1,a6 ; b1,b6; d1	6,14	5
4	Research and seminar	a1,a4; b1, b4,b5; d1-d2	12,13	8

V. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Quizzes; Homework/ Research reports; Research and seminar	3, 6 ,10, 12,13, 14	20	20%	a1,a2, a4,a6; b4,b5, b6; d1,d2
2	Midterm exam(MCQ& Written)	8	20	20%	a1-a6; b1-b3,c1
3	Final exam (MCQ& Written)	16	60	60%	a1-a8; b1-b6; c2
Total			**100**	**100%**	

VIII. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1- Harris M, Taylor Gordon. (2004). MEDICAL STATISTICS MADE EASY. London And New York ,Martin Dunitz, an imprint of the Taylor & Francis Group

Sanyal, P. (2015). Community Medicine: A Students Manual, 1st edition. New Delhi, London, Philadelphia, Panama: Jaypee Brothers Medical Publishers (P) Ltd.

2- U.S. Department of Health and Human Services: Centers for Disease Control and Prevention (CDC). (2012). Principles of Epidemiology in Public Health Practice: An Introduction to Applied Epidemiology and Biostatistics, 3rd Edition. Atlanta, USA: CDC.

2- Essential References.

1. Sanyal, P. (2015). Community Medicine: A Students Manual, 1st edition. New Delhi, London, Philadelphia, Panama: Jaypee Brothers Medical Publishers (P) Ltd.
2. منظمة الصحة العالمية. (2011). طب المجتمع: الكتاب الطبي الجامعي. بيروت, لبنان: اكاديميا انترناشيونال.
3. U.S. Department of Health and Human Services: Centers for Disease Control and Prevention (CDC). (2012). Principles of Epidemiology in Public Health Practice: An Introduction to Applied Epidemiology and Biostatistics, 3rd Edition. Atlanta, USA: CDC.
4. Agrawal, S., et al. (2009). Textbook of Public Health and Community Medicine, 1st edition. New Delhi, India: Department of Community Medicine, AFMC, WHO, India Offi
5. Park, K. (2015) Park's Textbook of Preventive and Social Medicine, 23th edition, Jaba India: Bhanot.

3- Electronic Materials and Web Sites *etc*.	
	1. World Health Organization: www.who.int 2. Centers for Disease Control and Prevention: www.cdc.gov

Faculty**: Faculty of Medical Sciences**
Program: **Bachelor of Medical Sciences**
Course: **Biostatistics**

I. Course Identification and General Information:

1	**Course Title:**	**Biostatistics**				
2	**Course Code & Number:**	……				
3	**Credit hours:**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		2				2
4	**Study level/ semester at which this course is offered:**	*3rd Level, first semester , Laboratory Medicine*				
5	**Pre –requisite (if any):**					
6	**Co –requisite (if any):**					
7	**Program (s) in which the course is offered:**	*Bachelor Degree Course: Pharma D*				
8	**Language of teaching the course:**	*English*				
9	**Location of teaching the course:**	*Building B, Faculty of Medical Sciences, Thamar University Main Campus.*				
10	**Prepared By:**	*Assoc. Prof. Dr. Abdulelah H. Al-Adhroey*				
11	**Date of Approval**					

VII. Course Description:

Biostatistics course is intended to provide medical sciences students with fundamental concepts of the theoretical and applied skills of biostatistics making them able to calculate and interpret common statistical measures used in describing and analyzing health and clinical data. Topics include: Sources of health information; Organization, summarizing and displaying of data; Common statistic measurements to describe medical data , statistic tests for the confidence, differences, and compare risk; statistics formula to analyze the relationships, survival, and clinical investigations and screening.

VIII. Course Objectives:

After completing this program, students would be able to

- Demonstrate theoretical knowledge for the purposes and methods of the steps of statistical data processing (organization, summarization and displaying) related to the medical and health fields.
- Classify the collected raw data according to the types of variables that are being studied.
- Choose appropriate statistical tables, graphs and charts to display data, and its analyze
- Calculate and interpret common statistical measures used in describing and analyzing medical and health data.
- Apply the SPSS program in data analysis.

IX. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A	a1- describe fundamental features of biostatics, and their applications.
A	a2 explain the kind, uses and sources of health information-
A	a3 explain principles of random sampling, systematic sampling, stratified sampling, cluster Sampling..
A	A4 describe basic concepts and methods for interpreting and communicating data
A	A5 discus the common statistics used for medical data description including percentage, mode, median, mean
A	A6 Explain Statistic tests of the confidence, differences, compare risk, and analyze relationships
A	A7 explain the major differences among linear regression, logistic regression and regression models for survival analyses
A	A8- describe the processes, uses, and evaluation of surveillance and screening of diseases

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B	b1-solve problems in the fields of health by using suitable statistical measures and methods.
B	b2 differentiate among random sampling, systematic sampling, stratified sampling, cluster sampling
B	b3 classify the collected raw data according to the types of variables that are being studied
B	b4 choose appropriate statistical tables, graphs and charts to display data, and its analyze.
B	b5 select the appropriate display format according to the data type.

B	b6 distinguish, calculate, and interpret measures occurrence of diseases, and mortality measures

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	**Professional and Practical Skills CILOs**
After completing this program, students would be able to:	**After completing this course, students would be able to:**
C	c1- Use the elementary functions of Excel or SPSS program to conduct statistical analysis and draw graphs
C	c2- Prepare and apply graphical and tabular methods to display data, and its analyze

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	**Transferable (General) Skills CILOs**
After completing this program, students would be able to:	**After completing this course, students would be able to:**
D1	d1 Adopt the principles of lifelong learning needed for continuous professional development.
	d2 Evaluate information including the use of information technology where applicable

X. Alignment Course Intended Learning Outcomes

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a 1	Interactive lectures Discussion Brain Storm Seminars..	Written Exam Assignments Presentations Quizzes
a 2		
a 3		
a 4		
a 5		
a 6		
a 7		

a 8		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b 1 b 2 b 3 b 4 b 5 b 6	- Interactive lectures - discussion and dialog - Brain Storm - Problem solving - Seminars. - Case study	Exam Assignments Presentations.

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1 **c2**	Exercises in the class. Group (Small group) discussion Independent study	Exams Assignments Presentation/ observation Case Report

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1 d2	- Independent study - Group work activities - Written researches	Exams Assignments / homework Presentation/ observation

IX. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	**INTRODUCTION TO BIOSTATISTICS**	• Biostatistics: definition, importance in medical and heath fields • What kind of health information do we need? • Uses of health information • Sources of health information	1	2	a1. a2, a3, b1
2	**SAMPLING METHODS**	Random sampling, Systematic Sampling, Stratified Sampling, Cluster Sampling. Sample size	1	2	a1, a3; b1, b2
3	**SUMMARIZING DATA**	• Organizing data • Types of variable: *measurement scale types* • Frequency distributions • Methods for Summarizing Data	1	2	a1, a4; b1,b3
4	**COMMON STATISTICS WHICH DESCRIBE MEDICAL DATA**	• Percentages • Mean • Median • Mode • Standard deviation and variance	1	2	a1, a5; b1
5	**STATISTICS WHICH TEST CONFIDENCE**	• Confidence intervals • P values	1	2	a1,a6; b1
6	**STATISTICS WHICH TEST DIFFERENCES**	• t tests and other parametric tests • Mann-Whitney and other non-parametric tests • Chi-squared	1	2	a1,a6; b1; d1
7	**STATISTICS WHICH COMPARE RISK**	• Risk ratio • Odds ratio • Risk reduction and numbers needed to treat • Using Computer Technology	1	2	a1,a6;; b1 ; c1
8	Midterm Exam.		1	2	a1-a6; b1-b3
9	**STATISTICS WHICH ANALYZE RELATIONSHIPS**	• Correlation • Regression	1	2	a1,a6; b1
10	**STATISTICS WHICH**	• Survival analysis: life tables and Kaplan–Meier	1	2	a1,a7; b1

	ANALYZE SURVIVAL	plots • The Cox regression model			
11	**STATISTICS WHICH ANALYZE CLINICAL INVESTIGATIONS AND SCREENING**	• Sensitivity, specificity and predictive value • Level of agreement and Kappa	1	2	a1,a8; b1

12	**DISPLAYING DATA**	• Introduction to tables and graphs
		• Tables
		  • One-variable tables
		  • Two- and three-variable tables
		  • Tables of statistical measures other than frequency
		  • Composite tables
		  • Table shell
		  • Creating class intervals
		Using Computer Technology
			1	2	a1,a4; b1, b4,b5 ; c1, c2; d1-d2

13	**DISPLAYING DATA**	• Graphs
		  • Arithmetic-scale line graphs
		  • Semilogarithmic-scale line graphs
		  • Histograms
		  • Population pyramid, frequency polygons and cumulative frequency and survival curves, and scatter diagrams
		  • Bar charts, grouped, stacked 100% component, deviation bar charts and pie charts
		  • Dot plots and box plots and forest plots, phylogenetic and decision trees
		  • Maps
		• Using Computer Technology
			1	2	a1,a4; b1,b4,b5; c1, c2; d1-d2

14	**OTHER CONCEPTS**	• Multiple testing adjustment • 1-and 2-tailed tests	1	2	a1; b1,b6; d1-d2

		• Incidence • Prevalence (= Point Prevalence Rate) • The power of a study: probability to detect a statistically significant difference. • Bayesian statistics • Mortality measures rates			
15	**STATISTICS AT WORK**	Real-life examples of how researchers use statistical techniques to describe and analyze their work addresses.	1	2	a1-a7; b1-b6
16	Final Exam.		1	2	a1-a8; b1-b6; c2
	Total		16	32	

X. Teaching strategies of the course:

1- Interactive lectures.
2- Group discussion.
3- Practical training in the laboratory.
4- Seminars.
5- Written researches.

XI. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Quiz	a1,a2,a6; b1	3,10	7
2	Homework /Research reports/ Tasks	a1,a6 ; b1,b6; d1	6,14	5
4	Research and seminar	a1,a4; b1, b4,b5; d1-d2	12,13	8

VI. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Quizzes; Homework/ Research reports; Research and seminar	3, 6 ,10, 12,13, 14	20	20%	a1,a2, a4,a6; b4,b5, b6; d1,d2
2	Midterm exam(MCQ& Written)	8	20	20%	a1-a6; b1-b3,c1
3	Final exam (MCQ& Written)	16	60	60%	a1-a8; b1-b6; c2
Total			**100**	**100%**	

XII. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1- Harris M, Taylor Gordon. (2004). MEDICAL STATISTICS MADE EASY. London And New York ,Martin Dunitz, an imprint of the Taylor & Francis Group

Sanyal, P. (2015). Community Medicine: A Students Manual, 1st edition. New Delhi, London, Philadelphia, Panama: Jaypee Brothers Medical Publishers (P) Ltd.

2- U.S. Department of Health and Human Services: Centers for Disease Control and Prevention (CDC). (2012). Principles of Epidemiology in Public Health Practice: An Introduction to Applied Epidemiology and Biostatistics, 3rd Edition. Atlanta, USA: CDC.

2- Essential References.

1. Sanyal, P. (2015). Community Medicine: A Students Manual, 1st edition. New Delhi, London, Philadelphia, Panama: Jaypee Brothers Medical Publishers (P) Ltd.
2. منظمة الصحة العالمية. (2011). طب المجتمع: الكتاب الطبي الجامعي. بيروت, لبنان: اكاديميا انترناشيونال.
3. U.S. Department of Health and Human Services: Centers for Disease Control and Prevention (CDC). (2012). Principles of Epidemiology in Public Health Practice: An Introduction to Applied Epidemiology and Biostatistics, 3rd Edition. Atlanta, USA: CDC.
4. Agrawal, S., et al. (2009). Textbook of Public Health and Community Medicine, 1st edition. New Delhi, India: Department of Community Medicine, AFMC, WHO, India Offi
5. Park, K. (2015) Park's Textbook of Preventive and Social Medicine, 23th edition, Jaba India: Bhanot.

3- Electronic Materials and Web Sites *etc*.	
	1. World Health Organization: www.who.int 2. Centers for Disease Control and Prevention: www.cdc.gov

Course Specification of

Pharmacy management

I. Course Identification and General Information:						
1	**Course Title:**	Pharmacy management				
2	**Course Code &Number:**	**PH1124164**				
3	**Credit hours:**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		1				1
4	**Study level/ semester at which this course is offered:**	*Level 5/ semester 1*				
5	**Pre –requisite (if any):**					
6	**Co –requisite (if any):**	**B1101583**				
7	**Program (s) in which the course is offered:**	Bachelor of Pharmacy Doctor (Pharma D)				
8	**Language of teaching the course:**	English				
9	**Location of teaching the course:**	Thamar University - Faculty of Medical Sciences				
10	**Prepared By:**	Dr. Ahmed G. Al- Akydy **– Dr. Ahmed Al-Washli**				
11	**Date of Approval**	2021				

II. Course Description:

This course is intended to provide student with knowledge of principle concepts of pharmacy management. The course covers basic management and accounting principles for community, and hospital practice regarding practice management. These include strategic management, personal management, human resource management, operations management and financial aspects of pharmacy management that can be used in the delivery of patient care.

III. Course Objectives:

1. To provide student with essential knowledge related to pharmacy administration including organization, operational management and financial aspects.
2. To develop the student skills in diagnoses and managing of problems related to pharmacy administration field.
3. To enhance the positive attitudes towards work in field of pharmacy administration.
4. To provide a broad introduction to business management with a pharmacy focus.

I. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

After completing the course, the student will be able to:

a1. **Describe** the key concepts related to operational management, strategic planning financial aspects, human resource management, quality assurance, managing personal and identify methods to incorporate these concepts into pharmacy practice

a2. **Outline** the application of pharmacy management in different managerial functions including customer service, purchasing and inventory process, types of stocks, list steps of strategic planning, and steps of planning process.

a3. **recognize** the concepts of managing personal focusing on professionalism, business ethics, management of time and workflow management that could be utilized to manage others in the capacity of a pharmacy manager.

Knowledge and Understanding PILOs		Knowledge and Understanding CILOs	
After completing this program, students would be able to:		After completing this course, students would be able to:	
A1	Explain the fundamentals of general sciences and the basic and biomedical sciences and their relations to pharmacy profession.		

A2	Illustrate the fundamentals of social and behavioral sciences relevant to pharmacy, ethics of health care and its impact on their relationship with patients and other healthcare professionals.	a1	**Describe** the key concepts related to operational management, strategic planning financial aspects, human resource management, quality assurance, managing personal and identify methods to incorporate these concepts into pharmacy practice
		a2	**Outline** the application of pharmacy management in different managerial functions including customer service, purchasing and inventory process, types of stocks, list steps of strategic planning, and steps of planning process.
		a3	**Recognize** the concepts of managing personal focusing on professionalism, business ethics, management of time and workflow management that could be utilized to manage others in the capacity of a pharmacy manager.
A3	Describe relationships between chemical structure of compounds of pharmaceutical and medicinal interest and biological activities		
A4	Define basic principles of drug: target identification, design, informatics, and mechanisms of action		
A5	Outline principles of clinical pharmacology, therapeutics and Pharmacovigilance.		

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

b1.Select the proper drugs and **design** the proper therapeutic plan for a patients with various disease conditions using the pharmacy administration principles, such as, applying techniques in planning, and management

b2.Interpret the basic financial statements, ratios used in business analysis and identify sections of the business plan that would be applicable to managing or owning a business**.**

b3. Identify and **integrate** effective management methods that focus on quality assurance, effective and efficient pharmacy operations while maintaining a safe practice environment.

Intellectual Skills PILOs		Intellectual Skills CILOs	
After completing this program, students would be able to:		After completing this course, students would be able to:	
B1	Classify the synthetic and natural drugs according to their mechanism of action, systemic effect, therapeutic uses, contraindication and toxicity		
B2	Design risk reduction strategies to ensure patient safety and prevent medication errors, drug interaction, and adverse drug effects,	**b3**	**Identify** and **integrate** effective management methods that focus on quality assurance, effective and efficient pharmacy operations while maintaining a safe practice environment.
B3	Solve problems to reduce drug therapy problems		
B4	Select drug therapy regimen using mathematical, genomic, clinical pharmacokinetic and pharmacodynamics principles for optimizing the patient therapy and medication safety	**b1**	**Select** the proper drugs and **design** the proper therapeutic plan for a patients with various disease conditions using the pharmacy administration principles, such as, applying techniques in planning, and management

Professional and Practical Skills

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

c1. Utilize pharmacy administration to ensure correct and safe supply of medical products.

c2. Apply the knowledge with pharmacy management for the best decision to estimate the profit in purchasing and inventory processes of the drugs.

c3.Use legal and ethical guidelines to demonstrate conflict versus negotiation, inventory and purchasing management and major job attitudes.

Professional and Practical Skills PILOs		Professional and Practical Skills CILOs	
After completing this program, students would be able to:		After completing this course, students would be able to:	
C1	Handle the chemical, biological, and pharmaceutical materials safely	c1	**Utilize** pharmacy administration to ensure correct and safe supply of medical products.
C2	Operate different pharmaceutical equipment and instruments		
C3	Extract active substances from different sources.		
C4	Carry outpatient physical assessment.		
C5	Advise the patients and health care professionals for optimizing medicines use.	c3	**Use** legal and ethical guidelines to demonstrate conflict versus negotiation, inventory and purchasing management and major job attitudes.

Transferable (General) Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

d1 . **Communicate** effectively with other health care professionals, utilizing of the proper pharmaceuti management.

d2. Invent effective and reasonable solutions related to problems of medications, according to pharmacy management.

d3. Has time management, rational thinking, and prudent judgment and in field of pharmacy administration.

Transferable (General) Skills PILOs		Transferable (General) Skills CILOs	
After completing this program, students would be able to:		After completing this course, students would be able to:	
D1	Communicate effectively and ethically with patients, public, and health care professionals.	d1	**Communicate** effectively with other health car professionals, utilizing of the proper pharmace management.
D2	Use information systems and computer softwares in order to enhance the delivery of pharmaceutical care,	d2	**Invent** effective and reasonable solutions related to problems of medications, according to pharmacy management.
D3	Work effectively individually and in a team		
D4	Have the skills of decision-making and time management and lifelong learning	d3	Has time management, rational thinking, and prudent judgment and in field of pharmacy administration.

IV. Alignment Course Intended Learning Outcomes

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
a1	**Describe** the key concepts related to operational management, strategic planning financial aspects, human resource management, quality assurance, managing personal and identify methods to incorporate these concepts into pharmacy practice	• Lectures • Discussion Sessions • Assignments	• Periodic exam (Quizzes) • Evaluate assignments • Mid & final exam
a2.	**Outline** the application of pharmacy management in different managerial functions		

	including customer service, purchasing and inventory process, types of stocks, list steps of strategic planning, and steps of planning process.		
a3.	**Recognize** the concepts of managing personal focusing on professionalism, business ethics, management of time and workflow management that could be utilized to manage others in the capacity of a pharmacy manager.		
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
b1.	**Select** the proper drugs and **design** the proper therapeutic plan for a patients with various disease conditions using the pharmacy administration principles, such as, applying techniques in planning, and management	• Discussion Sessions • Problem solving • Group discussion • Assignments	• Oral presentations • Evaluate assignments • Mid & final exam
b2.	**Interpret** the basic financial statements, ratios used in business analysis and identify sections of the business plan that would be applicable to managing or owning a business**.**		
b3.	**Identify** and **integrate** effective management methods that focus on quality assurance, effective and efficient pharmacy operations while maintaining a safe practice environment.		

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
c1.	**Utilize** pharmacy administration to ensure correct and safe supply of medical products.	• Discussion sessions • Assignments	• Oral presentations • Theory & Practical exams • LAB report • Evaluate assignments
c2.	**Apply** the knowledge with pharmacy management for the best decision to estimate the profit in purchasing and inventory processes of the drugs.		
c3.	**Use** legal and ethical guidelines to demonstrate conflict versus negotiation, inventory and purchasing management and major job attitudes.		

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
d1 .	**Communicate** effectively with other health professionals, utilizing of the proper pharmaceutical management.	• Discussion Sessions • Assignments that require collecting information from the internet.	• Oral presentations • Writing
d2.	**Invent** effective and reasonable solutions related to problems of medications, accord pharmacy management.		
d3.	Has time management, rational thinking, a prudent judgment and in field of pharmacy administration.		

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	**Management of Pharmacy Practice**	- **Concept of Management** o Definition & skills. o Principles of Management o Organizational Structure & Behavior o Change management	1w	2	a1; c1;
		- **Management functions** o Strategic Management o SWOT analysis o Steps of strategic planning o Organizing	1w	2	a1; a2, b1; b3; c1;
		- **Financial concepts** o Finance management approaches o Types of ownership Small business ownership o Financial statements o Financial assessment	1w	2	a1; b2; c1; d3
		- **Financial concepts(cont.)** o Financial ratios o Productivity o Financial aspects of business, and business plan	1w	2	a1; a3; b2;b3;c1; d3
2	Human Resource Management and	- Team work, conflict management, leadership, becoming a role model, management styles	1w	2	a1; b1; c3; d1

	Leadership	- Interviewing and hiring of staff, performance management, performance appraisals, training and development of staff, workload management	1w	2	a1; b1; c1; d1
		- Customer service. - Unions in pharmacy practice	1w	2	a1; a2; b1;c1; d1
		- Concepts, tools, techniques and application of marketing in the health care and health insurance plan	1w	2	a1; b1; c1; d1
3	Managing Operations	- Pharmacy layout/design - Workflow management - Scheduling - Time management - Safety in the workplace	1w	2	a1; b3; c1; d3
		- **Material Management** o Inventory management and control o Purchasing (objectives, process) o Turnover o Stores (types of stocks) o IT and automation in pharmacy o Loss prevention	1w	2	a1; a2; b3; c2; c3; d2
		- **Production Management** o Visible and Invisible inputs o Methodology of Activities o Performance Evaluation o Technique Process o Flow Process o Maintenance Management	1w	2	a1; b3;c1; d1
4	Quality assurance in pharmacy practice	- **Quality Assurance in Pharmacy Practice – Community** o Management of drug shortages, recalls, disposal of drugs, expired drugs o Reporting errors, medication incidents	1w	2	a1; b3; c1; d2
		- **Quality Assurance in Pharmacy Practice – Hospital**	1w	2	a1; b3; c1; d2

		○ Management of drug shortages, recalls, disposal of drugs, expired drugs ○ Reporting errors ○ Medication incidents			
5	**Managing Personal Practice**	- Business Ethics - Pharmacy manager responsibilities - Time management 3rd party plans	1w	2	a1; a3; b2; c1; c3; d3
Number of Weeks /and Units Per Semester					

VI. Teaching strategies of the course:

- Lectures
- Discussion sessions
- LAB Class
- Media Presentations: Power Point, Video
- Assignments
- Solving of problems

V. Assignments:

No	Assignments	Mark	Week Due	Aligned CILOs(symbols)
1	Participation	5	Weekly	a1; a2; a3; b1; b2; d2
2	Quizzes	5	Weekly	a1; a2; a3; b1; b2; d2
3	Research	5	6th W	a12 a3; b1; b2; b3;c1; c2; d2;

4	Assignments	5	6th W	a1; a2; a3; b1; b2;c1; d2
5	Mid – Exam (theoretical)	20	7th W	a1; a2; a3; b1; b2;
	Total score	**40%**		

V. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments & Homework, Tasks & Presentation	Fortnightly	10	10%	a1; a2; a3; b1; b2;c1; d2
2	Quizzes	W6	5	5%	a1; a2; a3; b1; b2; d2
3	Mid-Term exam	W8	20	20%	a1; a2; a3; b1; b2
4	Practical reports	W12	5	5%	a1; a2; a3; b1; b2; c2
6	Final Exam theory	W16	60	60%	a1; a2; a3; b1; b2
Total			**100**	**100%**	

VI. Learning Resources:

1- Required Textbook(s) (maximum two).

1. Pharmacy Business Management, Steven Kayne, Glasgow, England.
2. Financial Management for Pharmacists, Norman V. Carroll, Carroll.

2- Essential References.	
	1. Desselle S. Zgarrick D. Alston G. Pharmacy Management: Essentials for all Practice Settings. 3 rd e (2012). McGraw-Hill. 1. Chisholm-Burns, M., Vaillancourt, A.M. & Sheperd, M. (eds.) (2011). Pharmacy management, leardership, and finance. Sudbury, Mass.: Jones and Bartlett Publishers.
3- Electronic Materials and Web Sites *etc.*	
	- http://www.accesspharmacy.com.

Course Specification of

Pharmacy Practice I

I. Course Identification and General Information:							
1	**Course Title:**	Pharmacy Practice I					
2	**Course Code &Number:**	**B1101515**					
3	**Credit hours:**	C.H				TOTAL	
		Th.	Seminar	Pr	Tr.		
		2				2	
4	**Study level/ semester at which this course is offered:**	*Level 5/ semester 1*					
5	**Pre –requisite (if any):**	B1101478					
6	**Co –requisite (if any):**						
7	**Program (s) in which the course is offered:**	Bachelor of Pharmacy Doctor (Pharma D)					
8	**Language of teaching the course:**	English					
9	**Location of teaching the course:**	Thamar University - Faculty of Medical Sciences					
10	**Prepared By:**	**Dr. Ahmed G. Al- Akydy – Dr. Ahmed Al-Washli**					
11	**Date of Approval**	2021					

II. Course Description:

This course provides the student with knowledge the basic principles of pharmacy practice. It focus on institutional and community pharmacy practices, the provision not only of the drug required but also the necessary services (before, during or after treatment) to assure optimally safe and effective therapy, handle drug prescriptions , OTC drugs. Also describing and defining the disease pathophysiology and the appropriate therapeutic interventions and information required to treat different systemic diseases, as GI, respiratory CNS disorders, as well as, some infestations.

III. Course Objectives:

1. To Know the basic skills of pharmacy practice
2. To differentiate between prescription and the non-prescription drugs (OTC), and errors in prescription.
3. To learn the applications of drugs in the treatment of different diseases

I. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

After completing the course, the student will be able to:

a1. Understand the basic principles of pharmacy practice and its and the different services in the community and hospital levels.

a2, Describe the role of the pharmacist in counseling of patients and other health care providers for effective and safe use of prescribing and OTC drugs in the community and hospital setting,.

a3. Explain the application of drugs in the treatment of various diseases and know drug related problems and how manage them.

Knowledge and Understanding PILOs		Knowledge and Understanding CILOs	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
A1	Explain the fundamentals of general sciences and the basic and biomedical sciences and their relations to pharmacy profession.	a1	Understand the basic principles of pharmacy practice and its and the different services in the community and hospital levels.
A2	Illustrate the fundamentals of social and behavioral sciences relevant to pharmacy, ethics of health care and its impact on their relationship with patients and other healthcare professionals.	a2	Describe the role of the pharmacist in counseling of patients and other health care providers for effective and safe use of prescribing and OTC drugs in the community and hospital setting,.
A3	Describe relationships between chemical structure of compounds of pharmaceutical and medicinal interest and biological activities		
A4	Define basic principles of drug: target identification, design, informatics, and mechanisms		

	of action		
A5	Outline principles of clinical pharmacology, therapeutics and Pharmacovigilance.	a3	Explain the application of drugs in the treatment of various diseases and know drug related problems and how manage them.

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

b1. Predict possible drug interactions and other prescription related problems to ensure their safety use in the treatment of GI, respiratory, CNS and infestations diseases in both community and hospital setting.

b2. Select the proper strategies using principles of pharmacy practice as, clinical pharmacokinetic and pharmacodynamics principles, for presenting effective and safe treatment for patients with disorders related GI, respiratory, and CN systems

b3. Interpret patient leaflets and medication prescriptions for patients in both community and hospital setting.

Intellectual Skills PILOs		Intellectual Skills CILOs	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
B1	Classify the synthetic and natural drugs according to their mechanism of action, systemic effect, therapeutic uses, contraindication and toxicity		
B2	Design risk reduction strategies to ensure patient safety and prevent medication errors, drug interaction, and adverse drug effects,	b1	Predict possible drug interactions and other prescription related problems to ensure their safety use in the treatment of GI, respiratory, CNS and infestations diseases in both community and hospital setting.
B3	Solve problems to reduce drug therapy problems	**b3**	Interpret patient leaflets and medication prescriptions for patients in both community and hospital setting.

B4	Select drug therapy regimen using mathematical, genomic, clinical pharmacokinetic and pharmacodynamics principles for optimizing the patient therapy and medication safety	b2	Select the proper strategies using principles of pharmacy practice as, clinical pharmacokinetic and pharmacodynamics principles, for presenting effective and safe treatment for patients with disorders related GI, respiratory, and CN systems

Professional and Practical Skills

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

c1. Apply good pharmacy practice in individual management and therapeutic monitoring of drugs used in the treatment of different disorders.
c2. Counsel patients about their disease and importance of their safety and correct use of both prescribing and OTC drugs on their health.

c3- Utilize the concepts of pharmaceutical care in management of drug related problems.

Professional and Practical Skills PILOs		**Professional and Practical Skills CILOs**	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
C1	Handle the chemical, biological, and pharmaceutical materials safely		
C2	Operate different pharmaceutical equipment and instruments		
C3	Extract active substances from different sources.		
C4	Carry outpatient physical assessment.		

C5	Advise the patients and health care professionals for optimizing medicines use.	c1	Apply good pharmacy practice in individual management and therapeutic monitoring of drugs used in the treatment of different disorders.
		c2	Counsel patients about their disease and importance of their safety and correct use of both prescribing and OTC drugs on their health.
		c3	Utilize the concepts of pharmaceutical care in management of drug related problems.

Transferable (General) Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

d1. Interact effectively with patients, the public and health care professionals; including communication, interpretation and presentation of applications of drugs both written and oral

d2. Advice the patients and other health care professionals about safe and proper use of medicines

d3, Work effectively in a team in a variety of health care settings.

Transferable (General) Skills PILOs		**Transferable (General) Skills CILOs**	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
D1	Communicate effectively and ethically with patients, public, and health care professionals.	d1	Interact effectively with patients, the public and health care professionals; including communication, interpretation and presentation of applications of drugs both written and oral
D2	Use information systems and computer softwares in order to enhance the delivery of pharmaceutical care,	**d2**	Advice the patients and other health care professionals about safe and proper use of medicines
D3	Work effectively individually and in a team	**d3**	Work effectively in a team in a variety of health care settings.

D4	Have the skills of decision-making and time management and lifelong learning		

II. Alignment Course Intended Learning Outcomes

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
a1	**Understand** the basic principles of pharmacy practice and its and the different services in the community and hospital levels.	• Lectures • Discussion Sessions • Assignments	• Periodic exam (Quizzes) • Evaluate assignments • Mid & final exam
a2	**Describe** the role of the pharmacist in counseling of patients and other health care providers for effective and safe use of prescribing and OTC drugs in the community and hospital setting.		
a3	**Explain** the application of drugs in the treatment of various diseases and know drug related problems and how manage them.		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
b1	**Predict** possible drug interactions and other prescription related problems to ensure their safety use in the treatment of GI, respiratory, CNS and infestations diseases in both community and hospital setting.	• Discussion Sessions • Problem solving • Group discussion • Assignments	• Oral presentations • Evaluate assignments • Mid & final exam

	and hospital setting.		
b2	**Select** the proper strategies using principles of pharmacy practice as, clinical pharmacokinetic and pharmacodynamics principles, for presenting effective and safe treatment for patients with disorders related GI, respiratory, and CN systems		
b3	**Interpret** patient leaflets and medication prescriptions for patients in both community		

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
c1	**Apply** good pharmacy practice in individual management and therapeutic monitoring of drugs used in the treatment of different disorders.	• Discussion sessions • Assignments	• Oral presentations • Theory & Practical exams • LAB report • Evaluate assignments
c2	**Counsel** patients about their disease and importance of their safety and correct use of both prescribing and OTC drugs on their health.		
c3	**Utilize** the concepts of pharmaceutical care in management of drug related problems.		

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
d1	**Interact** effectively with patients, the public and health care professionals; including communication, interpretation and presentation of applications of drugs both written and oral	• Discussion Sessions • Assignments that require collecting information from the internet.	• Oral presentations • Writing

d2	**Advice** the patients and other health care professionals about safe and proper use of medicines		
d3	**Work** effectively in a team in a variety of health care settings.		

B – Case Studies and Practical Aspect: (if any)

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	Introduction to pharmacy practice	- **Terminologies and concepts**: primary, secondary and tertiary care - **Pharmacy Practice:** institutional, hospital, ward clinical and community pharmacy - **Patients**: confidentiality, compliance, counseling, informed consent. - Good Pharmacy Practice (GPP)	1w	2	a1; a2; b2;
2	Medical prescription	- Prescription **event**-monitoring - Types and sources of medication errors - Risk and its measurement	1w	2	a2; b1; b3; c2; d1; d2
3	OTC drugs		1w	2	a2; b3; c3; d2
4	Drug - related	Drug interaction	1w	2	a3; b1; c3;

	problems				d2
		Adverse drug effects	1w	2	a3; b1; d2
5	Patient Information Leaflet	- Drug orders - Medication Records	1w	2	a2; a3; b3; d1; d2
6	Patient counseling and education		1w	2	a2; b2; c2; d1; d2
7	Applications and therapeutic considerations in:	- GIT disorders: o Diarrhea o Constipation o Vomiting o Hemorrhoids	1w	2	a3; b1; b2; c1; c3; d3
8	Seminar		1w	2	a2; a3; b1; b3; c1; c3; d1; d3
9	Applications and therapeutic considerations in:	- Respiratory diseases o Inhaler devices o Common cold o Influenza o Allergic rhinitis o Cough	1w	2	a3; b1; b2; c1; c3; d3
10	Seminar		1w	2	a2; a3; b1; b3; c1; c3; d1; d3
11	Applications and therapeutic considerations in:	- Nervous system disorders o Headache o Migraine	1w	2	a3; b1; b2; c1; c3; d3
12	Seminar		1w	2	a2; a3; b1; b3; c1; c3; d1; d3
13	Applications and therapeutic considerations in infestations	- Head lice - Scabies - Threadworm	1w	2	a3; b1; b2; c1; c3; d3
Number of Weeks /and Units Per Semester			**14**	**24**	

V. Teaching strategies of the course:

- Lectures
- Discussion sessions
- Media Presentations: Power Point, Video
- Assignments
- Solving of problems

V. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Participation	2.5	Weekly	a1; a2; a3; b1; b2
2	Quizzes	2.5	Weekly	a1; a2; a3; b1; b2
3	Research	2.5	6th W	a2; a3; b3; c1; c3; d1; d3
4	Assignments	2.5	6th W	a2; a3; b2; b3; c1; c2; d3
	Mid – Exam (theoretical)	10	7th W	a1; a2; a3; b1
	Final Exam (practical)	30	15th W	c1; c2;c3
	Total score	**50%**		

V. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments & Homework, Tasks & Presentation	Fortnightly	5	5%	a2; a3; b2; b3; c1; c2; d3
2	Quizzes	W6	2.5	2.5%	a1; a2; a3; b1; b2
3	Mid-Term exam	W8	10	10%	a1; a2; a3; b1
4	Practical reports	W12	2.5	2.5%	a1; a2; a3; b1;c1;c3
	Final exam practical	W 15	30	30%	c1; c2;c3
6	Final Exam theory	W16	50	50%	a1; a2; a3; b1
Total			**100**	**100%**	

VI. Learning Resources:

1- Required Textbook(s) (maximum two).

1. Mary Anne Koda-Kimble, Lloyd Yee Young, Wayne A Kradjan, B. Joseph Guglielmo, Brian K Alldredge. Applied Therapeutics: The Clinical Use of Drugs. 9th edition. Lippincott Williams & Wilkins, 2004.
2. A. David Rodrigues Drug-Drug Interactions Second Edition. New Jersey, USA, 2008

2- Essential References.

A Practial Guide to Contemporary Pharmacy Practie by Judith E. Thomson, Lippincot Williams & Wilkins
2. Introductin to Hospital and Health-System Pharmacy Practie by David A. Holdford and Thomas R. Brown

3- Electronic Materials and Web Sites *etc*.

	http://online.lexi.com/lco/action/login

Course Specification

I. Course Identification and General Information:

1	**Course Title:**	Therapeutics VI				
2	**Course Code & Number:**	**B1101586**				
3	**Credit hours:**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		2				2
4	**Study level/ semester at which this course is offered:**	**Fifth Year/ Second semester**				
5	**Pre –requisite (if any):**	**B1101475**				
6	**Co –requisite (if any):**	**NA**				
7	**Program (s) in which the course is offered:**	**Bachelor of PharmD**				
8	**Language of teaching the course:**	**English**				
9	**Location of teaching the course:**	**Thamar University - Health Science Faculty**				
10	**Prepared By:**	**Dr. Abdulrazzaq Y. A. Al Khazzan**				
11	**Date of Approval**					

II. Course Description:

Infectious diseases including many of most important illness caused by organisms such as; bacteria, viruses, fungi or parasites; and may lead to death if not treated. This course contains Central Nervous System Infections, Lower & Upper Respiratory Tract Infections, Infective Endocarditis, Tuberculosis, Gastrointestinal Infections, Parasitic Diseases, Urinary Tract Infections and Prostatitis, Sexually Transmitted Infections, Sepsis and Septic Shock, and Superficial Fungal Infections. An overview definition, pathophysiology, underlying causes, clinical manifestations, optimal drug therapy, counseling, monitoring, and therapeutic outcomes evaluation are components covered. Prerequisites related to this course must be studied prior. Interactive lectures and discussions are main teaching methods.

III. Course Objectives:

This course aims to:

1. Giving student essential knowledge about common **Infectious diseases**.
2. Enable student to specify causes, risk factors, clinical manifestations and complications in different infectious diseases.
3. Qualify student to select prophylaxis methods, lifestyle modifications, and optimal therapy regimen **for Infectious diseases**.
4. Provide patient advice and educate about the correct use of their medications.

Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A5 Outline principles of clinical pharmacology, therapeutics and Pharmacovigilance,	a1. Explain basic information regarding **Infectious diseases** including; definition, pathogenesis, causes, risk factors, clinical manifestations, and diagnostic tools. a2. Restate available treatment regimens that include; doses, optimum use, adverse effects, doses for special conditions, and contraindications for patients with **Infectious diseases**.

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B2 Design risk reduction strategies to ensure patient safety and prevent medication errors, drug interaction, and adverse drug effects,	b1 Design suitable methods for prescribing, dispensing, and administering of medications to ensuring their safety and efficacy. b2 Give patient-counseling and educational programs to dealing and reducing drug therapy problems. b3 Select drug therapy regimen using patient individualization therapy, to achieve drug optimizing and safety.
B3 Solve problems to reduce drug therapy problems	
B4 Select drug therapy regimen using mathematical, genomic, clinical pharmacokinetic and pharmacodynamics principles for optimizing the patient therapy and medication safety	

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	**Professional and Practical Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
C1 Advise the patients and health care professionals for optimizing medicines use.	c1 Provide patients and health care providers with suitable advices on the safe and effective use of medicines for patient with **Infectious diseases**.

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	**Transferable (General) Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
D2 Use information systems and computer software in order to enhance the delivery of pharmaceutical care,	d1 Make better familiar with the reliable drug information resources and how to be used. d2 Evaluate information regarding **Infectious diseases** and their drugs obtained from different information sources. d3 Use appropriate search strategies for research in computerized secondary databases.
D3 Work effectively individually and in a team	
D4 Have the skills of decision-making and time management and life- long learning	

Alignment Course Intended Learning Outcomes

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Explain basic information regarding **Infectious diseases**; including definition, pathogenesis, causes, risk factors, clinical manifestations, and diagnostic tools.	Cooperative and Participatory Lectures	- Quiz - Exam - In-class participation
a2. Restate available treatment regimens that include; doses, optimum use, adverse effects, doses for special conditions, and contraindications for patients with **Infectious diseases**.	Cooperative and Participatory Lectures	- Quiz - Exam - In-class participation

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1 Design suitable methods for prescribing, dispensing, and administering of medications to ensuring their safety and efficacy.	- Critical thinking - Class discussion	- Discussion - Oral questions
b2 Give patient-counseling and educational programs to dealing and reducing drug therapy problems.		
b3 Select drug therapy regimen using patient individualization therapy, to achieve drug optimizing and safety.	- Critical thinking - Class discussion	- Discussion - Oral questions

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1 Provide patients and health care providers with suitable advices on the safe and effective use of medicines for patient with **Infectious diseases.**	- Cooperative and Participatory Lectures	- Homework - Exam

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1 Make better familiar with the reliable drug information resources and how to be used.	- Duties & activities - Seminars - Home works	- Assessment discussions, seminars and assignments
d2 Evaluate information regarding **Infectious diseases** and their drugs obtained from different information sources.		
d3 Use appropriate search strategies for research in computerized secondary databases.	- Duties & activities - Seminars - Home works	Evaluate seminars and assignments

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	Infectious diseases	- Antimicrobial Regimen Selection	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Central Nervous System Infections	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Lower Respiratory Tract Infections	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Upper Respiratory Tract Infections	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Tuberculosis	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Gastrointestinal Infections	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
2		- **Mid-semester exam**	1	1	a1, a2, b1, b3
		- Parasitic Diseases	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Urinary Tract Infections and Prostatitis	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Sexually Transmitted Infections	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Sepsis and Septic Shock	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Infective Endocarditis	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Superficial Fungal Infections	1	2	a1, a2, b1, b2, b3, c1, d1, d2,

					d3
3	- **Final-semester exam**		1	2	a1, a2, b1, b3
Number of Weeks /and Units Per Semester			**14**	**27**	

B – Case Studies and Practical Aspect: (Not applicable)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1				
2				
3				
4				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:

1. Interactive lectures
2. Class discussion
3. Brainstorming
4. Duties & activities
5. Seminars
6. Home works
7. Office hours (Tutorials)

VII. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Intra-Abdominal Infections, Malaria and Dengue fever (1)	a1, a2, b1, b3, d1, d2, d3	5th	5
2	Antimicrobial Prophylaxis in Surgery, Vaccines and Toxoids (2)	a1, a2, b1, b3, d1, d2, d3	10th	5

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments & Presentation /Quizzes	5th	5	5%	a1, a2, b1, b3, d1, d2, d3
2	Assignments & Presentation	10th	5	5%	a1, a2, b1, b3, d1, d2, d3
3	Mid-Term exam	7th	30	30%	a1, a2, b1, b3
4	Final Exam theory		60	60%	a1, a2, b1, b3
Total			**100**	**100%**	

IX. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1. Wells BG, DiPiro J, Schwinghammer TL., DiPiro C.; (2021), Pharmacotherapy handbook, 11th ed New York: McGraw-Hill.
2. Marie A. Chisholm-Burns *et al*, (2019), Pharmacotherapy: Principles & practice, 5th edition, McGra Hill Companies, Inc., United States of America.

2- Essential References.

1. Joseph Dipiro, (2020), Pharmacotherapy: pathophysiologic approaches, 11th edition, McGr Hill Companies, Inc., United States of America
2. Frederick S. Southwick (2020), Infectious Diseases: A Clinical Short Course, 4th E., McGra Hill Education.
3. Walker and Edwards, (2018), Clinical Pharmacy and Therapeutics, 6th edition, Elsevier Ltd UK

3- Electronic Materials and Web Sites *etc.*

1. Word Document or Portable Data Files (PDF) for Lectures that would be Delivered.
2. American College of Clinical Pharmacy (ACCP) http://www.accp.com

Course Specification

I. Course Identification and General Information:

1	**Course Title:**	Clinical Cases IV				
2	**Course Code & Number:**	B1101568				
3	**Credit hours:**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
					1	1
4	**Study level/ semester at which this course is offered:**	**Fifth Year/ Second semester**				
5	**Pre –requisite:**	**NA**				
6	**Co –requisite:**	B1101576 & B1101577				
7	**Program (s) in which the course is offered:**	**Bachelor of PharmD**				
8	**Language of teaching the course:**	**English**				
9	**Location of teaching the course:**	**Thamar University - Health Science Faculty**				
10	**Prepared By:**	**Dr. Abdulrazzaq Y. A. Al Khazzan**				
11	**Date of Approval**					

II. Course Description:

The clinical cases IV is a tutorial course aims to prepare students to dealing well with the real cases in the future clinical training. This course emphasizes on infectious and hematologic diseases that include cases studies in the following topics: Sickle Cell & Iron Deficiency Anemias, Deficiency of Vitamin B12 & Folic Acid, Bacterial Meningitis, Acute Bronchitis, Otitis Media, Rhinosinusitis, Acute Pharyngitis, Diabetic Foot Infection, Infective Endocarditis, Tuberculosis, Lower Urinary Tract Infection, Pyelonephritis, Sepsis, Bacterial Vaginosis & Candida Vaginitis. The co-requisite courses are Therapeutics VI & VII. Primary methods of teaching this course are case-based learning and group discussion.

III. Course Objectives:

This course aims to:

1. Making student able to discuss basic information related to hematologic and infectious diseases.
2. Equip student to identify the treatment goals, algorithm, and optimal therapy regimen for patients with hematologic and infectious diseases.
3. Enable student to provide an appropriate advising and educating for patients with hematologic and infectious diseases about his/her diseases and medications.
4. Help student to recommend prophylaxis methods, lifestyle modifications, and safety use of medications for patients with hematologic and infectious diseases.

Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A5 Outline principles of clinical pharmacology, therapeutics and Pharmacovigilance,	a1. Identify information of presenting case concerning the hematologic and infectious diseases such as, causes, risk factors, pathogenesis, signs & symptoms, and diagnostic tools. a2. Determine an appropriate treatment regimen for patients with hematologic and infectious diseases including; doses, optimum use, adverse effects, doses for special groups of patients, and contraindications.

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B2 Design risk reduction strategies to ensure patient safety and prevent medication errors, drug interaction, and adverse drug effects,	b1 Discuss an appropriate method for prescribing, dispensing, and administering of medications to ensuring their safety and efficacy. b2 Solve drug-related issues using patient-counseling and educating programs to reducing and dealing with drug therapy problems. b3 Choose drug therapy regimen using patient individualization therapy, to achieve medication optimizing and safety.
B3 Solve problems to reduce drug therapy problems	
B4 Select drug therapy regimen using mathematical, genomic, clinical pharmacokinetic and pharmacodynamics principles for optimizing the patient therapy and medication safety	

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	**Professional and Practical Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
C1 Advise the patients and health care professionals for optimizing medicines use.	c1 Justify appropriately the treatment evaluation outcomes for patients with hematologic and infectious diseases. c2 Recommend effective programs to provide advices for patients and health care providers on the safe and effective use of medicines for hematologic and infectious diseases.

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	**Transferable (General) Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
D2 Use information systems and computer software in order to enhance the delivery of pharmaceutical care,	d1 Assess available drug information resources to get reliable and valid clinical data.
D3 Work effectively individually and in a team	d2 Coordinate with hospitals and health care related centers to perform pharmaceutical care for patient effectively.
D4 Have the skills of decision-making and time management and life- long learning	d3 Make appropriate decisions based on evidence-based studies.

Alignment Course Intended Learning Outcomes

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Identify information of presenting case concerning the hematologic and infectious diseases	Lectures (in various ways, cooperative and participatory teaching,	- Quiz - Exam - in-class participation

such as, causes, risk factors, pathogenesis, signs & symptoms, and diagnostic tools.	etc.)	
a2. Determine an appropriate treatment regimen for patients with hematologic and infectious diseases including; doses, optimum use, adverse effects, doses for special groups of patients, and contraindications.		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1 Discuss an appropriate method for prescribing, dispensing, and administering of medications to ensuring their safety and efficacy. b2 Solve drug-related issues using patient-counseling and educating programs to reducing and dealing with drug therapy problems. b3 Choose drug therapy regimen using patient individualization therapy, to achieve medication optimizing and safety.	- Class discussion - Interactive lectures - Class discussion - Brainstorming - Duties & activities - Seminars	- Quiz - Exam - Oral questions

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
c1 Justify appropriately the treatment evaluation outcomes for patients with hematologic and infectious diseases. c2 Recommend effective programs to provide advices for patients and health care providers on the	- Duties & activities - Seminars - Homework	- Exam - Oral questions

safe and effective use of medicines for hematologic and infectious diseases.		

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1 Assess available drug information resources to get reliable and valid clinical data.	- Duties & activities - Seminars - Home works	- Quiz - Exam - Oral questions
d2 Coordinate with hospitals and health care related centers to perform pharmaceutical care for patient effectively.		
d3 Make appropriate decisions based on evidence-based studies.		

V. Course Content:

A – Theoretical Aspect: (It is covered in a separate course)

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1		-			
2		-			
	-				
Number of Weeks /and Units Per Semester					

B – Case Studies:

Order	Cases topic	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	- Sickle Cell & Iron Deficiency Anemia	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
2	- Deficiency of Vitamin B12 & Folic Acid	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
3	- Bacterial Meningitis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
4	- Acute Bronchitis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
5	- Otitis Media	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
6	- Rhinosinusitis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
7	- Acute Pharyngitis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
8	- Diabetic Foot Infection	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
9	- Infective Endocarditis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
10	- Tuberculosis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
11	- Lower Urinary Tract Infection	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
12	- Pyelonephritis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
13	- Sepsis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
14	- Bacterial Vaginosis & Candida Vaginitis	1	1	a1, a2, b1, b2, b3, c1, d1, d2, d3
Number of Weeks /and Units Per Semester		14	14	

VI. Teaching strategies of the course:

1. Interactive lectures
2. Class discussion
3. Brainstorming
4. Duties & activities
5. Seminars
6. Home works
7. Office hours (Tutorials)

VII. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Homework/Assignment/quiz (1)	a1, a2, b1, b3, d1, d2, d3	5th	5
2	Homework/Assignment/quiz (2)	a1, a2, b1, b3, d1, d2, d3	10th	5

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Quizzes	5th	5	5%	a1, a2, b1, b3, d1, d2, d3
2	Presentation	10th	5	5%	a1, a2, b1, b3, d1, d2, d3
3	Mid-Term exam	7th	30	30%	a1, a2, b1, b3
4	Final Exam theory		60	60%	a1, a2, b1, b3
Total			**100**	**100%**	

IX. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1. Terry L. Schwinghammer *et al*, (2017), Pharmacotherapy Casebook: A Patient-Focused Approach, 10th edition, McGraw-Hill Education, United States of America.
2. Cate Whittlesea and Karen Hodson, (2019), Clinical Pharmacy and Therapeutics, 6th edition, Elsevier Ltd., UK

2- Essential References.

1. Marie A. Chisholm-Burns and others, (2019), Pharmacotherapy: Principles & practice, 5nd edition, McGraw-Hill Companies, Inc., United States of America.
2. Joseph Dipiro, (2020), Pharmacotherapy: pathophysiologic approaches, 11th edition, McGraw-Hill Companies, Inc., United States of America
3. Koda-Kimble *et al*, (2018), Applied Therapeutics: The Clinical Use of Drugs, 11th edition, Lippincott Williams & Wilkins, Philadelphia, United States of America.

3- Electronic Materials and Web Sites *etc.*

1. Word Document or Portable Data Files (PDF) for Lectures that would be Delivered.
2. American College of Clinical Pharmacy (ACCP) http://www.accp.com

Course Specification of
Pharmacy Legislations and Ethics

I. Course Identification and General Information:							
1	**Course Title:**	Pharmacy Legislations and Ethics					
2	**Course Code &Number:**	B1101514					
3	**Credit hours:**	C.H				TOTAL	
		Th.	Seminar	Pr	Tr.		
		1				1	
4	**Study level/ semester at which this course is offered:**	Level 5/ semester 2					
5	**Pre –requisite (if any):**						
6	**Co –requisite (if any):**						
7	**Program (s) in which the course is offered:**	Bachelor of Pharmacy Doctor (Pharma D)					
8	**Language of teaching the course:**	English					
9	**Location of teaching the course:**	Thamar University - Faculty of Medical Sciences					
10	**Prepared By:**	**Dr. Ahmed G. Al- Akydy – Dr. Ahmed Al-Washli**					
11	**Date of Approval**	2021					

II. Course Description:

This course provides student with the knowledge of the laws, legislations, and tariffs that regulate the pharmacy profession in Republic of Yemen. It focuses on the nature of practicing of pharmacy profession and its relationship with some social issues, such as, the abortion, conditions of opening of pharmaceutical establishments, trade and industry of drugs and medical preparations, laws that regulate narcotics and those influent on mind and conditions of the information offices. In addition to the contraventions and sanctions according to laws in republic of Yemen.

III. Course Objectives:

1. To offer the student with the laws, regulations and related ethical issues regarding to the practice of pharmacy profession.
2. To understand the principles of professional behavior and how professionals are developed.
3. To recognize ethical issues related to the development, promotion, sales, prescription, and use of drugs and medical devices.

I. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

After completing the course, the student will be able to:

a1. Understand the ethics and legislations of pharmacy profession and the ethics of scientific research.

a2. know the principles of proper documentation of control narcotics and those influent on mind.
a3. List the rules for drug registration and trade and the laws and regulations that govern them.

Knowledge and Understanding PILOs		**Knowledge and Understanding CILOs**	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
A1	Explain the fundamentals of general sciences and the basic and biomedical sciences and their relations to pharmacy profession.		
A2	Illustrate the fundamentals of social and behavioral sciences relevant to pharmacy, ethics of health care and its impact on their relationship with patients and other healthcare professionals.	a1	**Understand** the ethics and legislations of pharmacy profession and the ethics of scientific research.
		a2	know the principles of proper documentation of control narcotics and those influent on mind.
		a3	**List** the rules for drug registration and trade and the laws and regulations that govern them.
A3	Describe relationships between chemical structure of compounds of pharmaceutical and medicinal interest and biological activities	a3	

A4	Define basic principles of drug: target identification, design, informatics, and mechanisms of action		
A5	Outline principles of clinical pharmacology, therapeutics and Pharmacovigilance.	a2	**Outline** the application of CAM in maintaining optimum health and prevention of different human diseases.

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

b1. Estimate health hazards concerning drug abuse, misuse and select a proper ethically system in this practice.

b2. Organize rules for registration, trade and sale of drugs and medical preparations.

B3. Identify the conditions that must be met at the pharmacist, which is required to grantee the license to practice the profession and the laws and regulations that govern the pharmaceutical practice system.

Intellectual Skills PILOs		**Intellectual Skills CILOs**	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
B1	Classify the synthetic and natural drugs according to their mechanism of action, systemic effect, therapeutic uses, contraindication and toxicity		
B2	Design risk reduction strategies to ensure patient safety and prevent medication errors, drug interaction, and adverse drug effects,	**b1**	**Estimate** health hazards concerning drug abuse, misuse and select a proper ethically system in this practice.
B3	Solve problems to reduce drug therapy problems	**b2**	**Organize** rules for registration, trade and sale of drugs and medical preparations
B4	Select drug therapy regimen using mathematical, genomic, clinical pharmacokinetic and pharmacodynamics principles for optimizing the patient therapy and medication safety	**b3**	**Identify** the conditions that must be met at the pharmacist, which is required to grantee the license to practice the profession and the laws and regulations that govern the pharmaceutical practice system.

Professional and Practical Skills

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

c1. Utilize legal and ethical, to ensure correct patient rights.

c2. Apply the rules, regulations and legislations governing the practice of pharmacy.

c3. Raise public awareness on social, and health hazards of drug abuse as well as, the sanctions that regulate the use of drugs and herbals affecting on the mind.

Professional and Practical Skills PILOs		Professional and Practical Skills CILOs	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
C1	Handle the chemical, biological, and pharmaceutical materials safely		
C2	Operate different pharmaceutical equipment and instruments		
C3	Extract active substances from different sources.		
C4	Carry outpatient physical assessment.	c1	Utilize legal and ethical, to ensure correct patient rights.
C5	Advise the patients and health care professionals for optimizing medicines use.	c2	**Apply** the rules, regulations and legislations governing the practice of pharmacy.
		c3	Raise public awareness on social, and health hazards of drug abuse as well as, the sanctions that regulate the use of drugs and herbals affecting on the mind.

Transferable (General) Skills :			
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes) **d1** Communicate ethically with patient, public, and other healthcare team using verbal and writing communications. **d2** Work effectively either individually or within a team in a variety of health care settings, considering legalizations and ethics of pharmacy profession			
Transferable (General) Skills PILOs		**Transferable (General) Skills CILOs**	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
D1	Communicate effectively and ethically with patients, public, and health care professionals.	**d1**	Communicate ethically with patient, public, and other healthcare team using verbal and writing communications.
D2	Use information systems and computer softwares in order to enhance the delivery of pharmaceutical care,		
D3	Work effectively individually and in a team	**d2**	Work effectively either individually or within a team in a variety of health care settings, considering legalizations and ethics of pharmacy profession
D4	Have the skills of decision-making and time management and lifelong learning		

II. Alignment Course Intended Learning Outcomes
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching

Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
a1	**Understand** the ethics and legislations of pharmacy profession and the ethics of scientific research.	• Lectures • Discussion Sessions • Assignments	• Periodic exam (Quizzes) • Evaluate assignments • Mid & final exam
a2	**Know** the principles of proper documentation of control narcotics and those influent on mind.		
a3	**List** the rules for drug registration and trade and the laws and regulations that govern them.		
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
b1	**Estimate** health hazards concerning drug abuse, misuse and select a proper ethically system in this practice.	• Discussion Sessions • Problem solving • Group discussion • Assignments	• Oral presentations • Evaluate assignments • Mid & final exam
b2	**Organize** rules for registration, trade and sale of drugs and medical preparations.		
b3	**Identify** the conditions that must be met at the pharmacist, which is required to grantee the license to practice the profession and the laws and regulations that govern the pharmaceutical practice system.		

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
c1	**Utilize** legal and ethical, to ensure correct patient rights.	• Discussion sessions • Assignments	• Oral presentations • Theory & Practical

c2	**Apply** the rules, regulations and legislations governing the practice of pharmacy.		exams • LAB report • Evaluate assignments
c3	**Raise** public awareness on social, and health hazards of drug abuse as well as, the sanctions that regulate the use of drugs and herbals affecting on the mind.		

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
d1	**Communicate** ethically with patient, public, and other healthcare team using verbal and writing communications.	• Discussion Sessions • Assignments that require collecting information from the internet.	• Oral presentations • Writing
d2	**Work** effectively either individually or within a team in a variety of health care settings, considering legalizations and ethics of pharmacy profession		

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	**Ethics of pharmacy profession**		1w	1	a1; b3; c1; d1; d2

2	**Practicing of pharmacy profession**	- Conditions of obtaining of licencing of practicing of profession - Rights and duties of pharmacist	1w	1	a3; b3; c2; d1; d2
3	**Law of pharmaceutical establishments**		2w	2	a3; b1; b3 c2; d2
4	**Law of industry & trade medications**	- Registration of companies and manufactories of medications and medical preparations	1w	1	a3; b1; b2; c2; d2
		- Import - Export -	1w	1	a3; b2; c2; d1; d2
		- Distribution and trade of medications - the contraventions and sanctions according to laws in republic of Yemen. -	1w	1	a3; b2; c2; d1
5	**Narcotic drugs**		1w	1	a2; b1; c3; d1
6	**Drugs affecting the mind**		1w	1	a2; b1; c3; d1
	Guideline of OTC drugs		1w	1	a3; b2; c2; d1
7	**Information advertisement & scientific offices**		1w	1	a3; b1; b2; b3 c2; d1; d2
8	**Pharmaceutic audit**		1w	1	a3; b1; b2; c2; d2
9	**Ethics of scientific research**		1w	1	a1; b1; c1; d2
10	**Pharmacy profession-associated social issues**	- Abortion - Beneficent killing - Organs abalienating	1w	1	a1; b3; c1; d1
Number of Weeks /and Units Per Semester			**14**	**14**	

VI. Teaching strategies of the course:

- Lectures
- Discussion sessions
- Media Presentations: Power Point, Video
- Assignments
- Solving of problems

VII. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Participation	5	Weekly	a1; a2; a3; b1; b2; c2
2	Quizzes	5	Weekly	a1; a2; a3; b1; b2; c2
3	Research	5	6th W	a2; a3; b2; b3; c1; d1; d2
4	Assignments	5	6th W	a1; a2; a3; b2; b3; c2; d1
	Mid – Exam (theoretical)	20	7th W	a1; a2; a3; b1; b2
	Total score	**40%**		

V. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments & Homework, Tasks & Presentation	Fortnightly	10	10%	a1; a2; a3; b2; b3; c2; d1
2	Quizzes	**W6**	5	5%	a1; a2; a3; b1; b2; c2
3	Mid-Term exam	**W8**	20	20%	a1; a2; a3; b1; b2
4	Practical reports	**W12**	5	5%	a1; a2; a3; b1; b2; c1; c3
6	Final Exam theory	**W16**	60	60%	a1; a2; a3; b1; b2
Total			**100**	**100%**	

VIII. Learning Resources:

1- **Required Textbook(s) (maximum two).**

1. Stone,P., Pharmacy practice (3rd edition) (2002)
2. **Remington's Pharmaceutical Science, Ed., Alfonso R. Gennaro, Lippincott, Williams & Wilkins, 20th Editin**

2- **Essential References.**

- **Pharmacy Practice Law in the republic of Yemen, the Ministry of Health** and population:

1. قرار رئيس مجلس الوزراء رقم (390) بشأن لائحة تنظيم صناعة وتجارة الادوية والمستلزمات الطبية وما في حكمها- 2010
2. قانون رقم 3 بشأن مكافحة الاتجاروالاستعمال غير المشروعين للمخدرات والؤثرات العقلية -1993

	3. قانون مزاولة المهن الطبية والصيدلانية -2002
3- **Electronic Materials and Web Sites *etc*.**	

Course Specification of

Pharmacoeconomics & pharmacovigilance

I. Course Identification and General Information:							
1	Course Title:	Pharmacoeconomics & pharmacovigilance					
3	Course Code &Number:	**B1101517**					
3	Credit hours:	C.H				TOTAL	
		Th.	Seminar	Pr	Tr.		
		2				2	
4	Study level/ semester at which this course is offered:	*Level 5/ semester 2*					
5	Pre –requisite (if any):	B1101583					
6	Co –requisite (if any):						
7	Program (s) in which the course is offered:	Bachelor of Pharmacy Doctor (Pharma D)					
8	Language of teaching the course:	English					
9	Location of teaching the course:	Thamar University - Faculty of Medical Sciences					
10	Prepared By:	**Dr. Ahmed G. Al- Akydy – Dr. Ahmed Al-Washli**					
11	Date of Approval	2021					

II. Course Description:

This course is to introduce students to the fundamental methods of pharmacoeconomic analysis. Topics include the terminology used in pharmacoeconomics, research methods frequently used in pharmacoeconomics, the role of pharmacoeconomics in the drug development process and health care decision making relevant to the practice of pharmacy, cost/benefit assessment, public health systems. The second part of this course provides the student with the basic terminologies used in pharmacovigilance, and trains student of various methods that can be used to generate safety data and signal detection, and develops the skills of classifying drugs, diseases and adverse drug reactions.

III. Course Objectives:

1. To introduce student to the basic principles and concepts of pharmacoeconomics.
2. To familiarize student with the different types of cost analysis that used in pharmacoeconomics
3. To enable the student to deal with adverse drug reaction reporting systems and communication in pharmacovigilance

I. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

After completing the course, the student will be able to:

a1. Understand the fundamental aspects of pharmacoeconomics in therapeutic plan.

a2. Define cost-minimisation, cost-effectiveness, cost-utility and cost-benefit.

a3. Know the different methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle and drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation

Knowledge and Understanding PILOs		Knowledge and Understanding CILOs	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
A1	Explain the fundamentals of general sciences and the basic and biomedical sciences and their relations to pharmacy profession.		
A2	Illustrate the fundamentals of social and behavioral sciences relevant to pharmacy, ethics of health care and its impact on their relationship with patients and other healthcare professionals.	a1	**Understand** the fundamental aspects of pharmacoeconomics in therapeutic plan.
		a2	**Define** cost-minimisation, cost-effectiveness, cost-utility and cost-benefit.
A3	Describe relationships between chemical structure of compounds of pharmaceutical and medicinal interest and biological activities		

A4	Define basic principles of drug: target identification, design, informatics, and mechanisms of action		
A5	Outline principles of clinical pharmacology, therapeutics and Pharmacovigilance.	a3	**Know** the different methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle and drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

b1. Select the proper drugs for various disease conditions using pharmacoeconomics principles.

b2. Differentiate between the different methods of cost analysis (cost-minimisation, cost-effectiveness, cost-utility and cost-benefit.

b3. Detection of new adverse drug reactions and their assessment based on the principle information of pharmacovigilance

Intellectual Skills PILOs		Intellectual Skills CILOs	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
B1	Classify the synthetic and natural drugs according to their mechanism of action, systemic effect, therapeutic uses, contraindication and toxicity		
B2	Design risk reduction strategies to ensure patient safety and prevent medication errors, drug interaction, and adverse drug effects	b3	**Detection** of new adverse drug reactions and their assessment based on the principle information of pharmacovigilance
B3	Solve problems to reduce drug therapy problems		
B4	Select drug therapy regimen using mathematical, genomic, clinical	b1	**Select** the proper drugs for various disease conditions using pharmacoeconomics

	pharmacokinetic and pharmacodynamics principles for optimizing the patient therapy and medication safety		principles.
		b2	**Differentiate** between the different methods of cost analysis (cost-minimisation, cost-effectiveness, cost-utility and cost-benefit.

Professional and Practical Skills			
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes) c1. Utilize the economic principles, and estimate cost profits in a given processes for optimizing therapeutic care c2. Apply the principles of pharmacoeconomics for calculation of cost-minimisation, cost-effectiveness, cost-utility and cost-benefit in pharmacotherapy. c3. Apply the appropriate methods in pharmacovigilance to evaluate the drug safety in patients particularly in paediatrics, geriatrics, pregnancy and lactation			
Professional and Practical Skills PILOs		**Professional and Practical Skills CILOs**	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
C1	Handle the chemical, biological, and pharmaceutical materials safely		
C2	Operate different pharmaceutical equipment and instruments		
C3	Extract active substances from different		

	sources.		
C4	Carry outpatient physical assessment.		
C5	Advise the patients and health care professionals for optimizing medicines use.	c2	**Apply** the principles of pharmacoeconomics for calculation of cost-minimisation, cost-effectiveness, cost-utility and cost-benefit in pharmacotherapy.
		c1	**Utilize** the economic principles, and estimate cost profits in a given processes for optimizing therapeutic care
		c3	**Apply** the appropriate methods in pharmacovigilance to evaluate the drug safety in patients particularly in paediatrics, geriatrics, pregnancy and lactation

Transferable (General) Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

d1. Use information systems and computer softwares in order to enhance the delivery of pharmacoeconomic in therapeutic care.

D2. Work effectively as a part of a team to perform the required tasks related to pharmacovigilance.

Transferable (General) Skills PILOs		Transferable (General) Skills CILOs	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
D1	Communicate effectively and ethically with patients, public, and health care professionals.	d1	
D2	Use information systems and computer softwares in order to enhance the delivery of pharmaceutical care,	**d1**	**Use** information systems and computer softwares in order to enhance the delivery of pharmacoeconomic in therapeutic care.

D3	Work effectively individually and in a team	**d2**	**Work** effectively as a part of a team to perform the required tasks related to pharmacovigilance.
D4	Have the skills of decision-making and time management and lifelong learning		

II. Alignment Course Intended Learning Outcomes

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
a1	**Understand** the fundamental aspects of pharmacoeconomics in therapeutic plan.	• Lectures • Discussion Sessions • Assignments	• Periodic exam (Quizzes) • Evaluate assignments • Mid & final exam
a2	**Define** cost-minimisation, cost-effectiveness, cost-utility and cost-benefit		
a3	**Know** the different methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle and drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
b1	**Select** the proper drugs for various disease conditions using pharmacoeconomics principles.	• Discussion Sessions • Problem solving • Group discussion • Assignments	• Oral presentations • Evaluate assignments • Mid & final exam
b2	**Differentiate** between the different methods of cost		

	analysis (cost-minimisation, cost-effectiveness, cost-utility and cost-benefit.		
b3	**Detection** of new adverse drug reactions and their assessment based on the principle information of pharmacovigilance		

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
c1	**Utilize** the economic principles, and estimate cost profits in a given processes for optimizing therapeutic care	• Discussion sessions • Assignments	• Oral presentations • Theory & Practical exams • LAB report • Evaluate assignments
c2	**Apply** the principles of pharmacoeconomics for calculation of cost-minimisation, cost-effectiveness, cost-utility and cost-benefit in pharmacotherapy.		
c3	**Apply** the appropriate methods in pharmacovigilance to evaluate the drug safety in patients particularly in paediatrics, geriatrics, pregnancy and lactation		
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
d1	**Use** information systems and computer softwares in order to enhance the delivery of pharmacoeconomic in therapeutic care.	• Discussion Sessions • Assignments that require collecting information from the internet.	• Oral presentations • Writing
d2	**Work** effectively as a part of a team to perform the required tasks related to		

	pharmacovigilance.		

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	**Principles of Pharmacoeconomic**	- Definitions - Principles for evaluating and conducting pharmacoeconomics studies	1w	2	a1; b1; c1;
2	Types **and methods of Pharmacoeconomic** analyses		1w	2	a1; b1;
3	**Applications of Pharmacoeconomics**	- Strategies for integrating pharmacoeconomics measurements and drug therapy	1w	2	a1; b1;c1; d1
		- In strategic management of hospitals	1w	2	a1;
4	Cost	- Cost description, types and methods - Measuring and estimating costs	1w	2	a1; b2; c2;
		- Cost-effectiveness and incremental analysis - Cost-minimization analysis	1w		a2; b2; c2;
		- Cost-utility analysis - Cost-benefit analysis	1w		a2; b2; c2;
		- Describe the steps involved in determining the cost of therapy or services	1w	2	a2; b2; c2;
7	**Introduction to Pharmacovigilance •**	- History and development of Pharmacovigilance Importance of safety monitoring of Medicine	1w	2	a3; d2
8	**Introduction to adverse drug**	- Definitions and classification of ADRs •	1w	2	a3; b3; c3;

	reactions •	- Detection and reporting • Methods in causality assessment - Management of adverse drug reactions			d2
9	**Information resources in pharmacovigilance**	- Basic drug information resources - Specialized resources for ADRs	1w	2	a3; b3;
10	**Vaccine safety surveillance**	- Vaccine Pharmacovigilance - Vaccination failure - Adverse events following immunization	1w	2	a3; b3;c3;
11	**Pharmacovigilance methods**	- Passive surveillance – - Spontaneous reports and case series - Active surveillance – - Comparative observational studies – Cross sectional study, case control study and cohort study •	1w	2	a3; b3; c3; d2
12	**Drug safety evaluation in special population**	- Geriatrics - Paediatrics - Pregnancy - Lactation	1w	2	a3; b3; c3;
Number of Weeks /and Units Per Semester					

VI. Teaching strategies of the course:

- **Lectures**
- **Discussion sessions**
- **Media Presentations: Power Point, Video**
- **Assignments**
- **Solving of problems**

V. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Participation	5	Weekly	a1; a2; a3; b1; c1
2	Quizzes	5	Weekly	a1; a2; a3; b1
3	Research	5	6th W	a2; a3; b2; b3; c2; c3; d1; d2
4	Assignments	5	6th W	a1; a2; a3; b2; b3; c2; c3; d1
	Mid – Exam (theoretical)	20	7th W	a1; a2; a3; b1
	Total score	**40%**		

V. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments & Homework, Tasks & Presentation	Fortnightly	10	10%	a1; a2; a3; b2; b3; c2; c3; d1
2	Quizzes	W6	5	5%	a1; a2; a3; b1
3	Mid-Term exam	W8	20	20%	a1; a2; a3; b1
4	Practical reports	W12	5	5%	a1; a2; a3; b1;c2; c3
6	Final Exam theory	W16	60	60%	a1; a2; a3; b1
Total			**100**	**100%**	

VII. Learning Resources:

1- Required Textbook(s) (maximum two).

1. Pharmacoeconomics: From Theory to Practice (Drug Discovery) Renee J. G. Arnold 2009
2. Textbook of Pharmacovigilance: S K Gupta, Jaypee Brothers, Medical Publishers.

2- Essential References.

1. Pharmacoeconomics. Tom Walley, Alan Haycox, Angela Bolandb Churchill Livingstone, 2004
2. Principles of Pharmacoeconomics. J Lyle Bootman, Raymond J Townsend, and William F McGha 3rd Ed. 08/28/2004.
3. Stephens' Detection of New Adverse Drug Reactions: John Talbot, Patrick Walle, WileyPublishe

3- Electronic Materials and Web Sites *etc*.

Course Specification

I. Course Identification and General Information:

1	**Course Title:**	Therapeutics VII				
2	**Course Code & Number:**	B1101577				
3	**Credit hours:**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		2				2
4	**Study level/ semester at which this course is offered:**	**Fifth Year/ Second semester**				
5	**Pre –requisite (if any):**	**B1101476**				
6	**Co –requisite (if any):**	**NA**				
7	**Program (s) in which the course is offered:**	**Bachelor of PharmD**				
8	**Language of teaching the course:**	**English**				
9	**Location of teaching the course:**	**Thamar University - Health Science Faculty**				
10	**Prepared By:**	**Dr. Abdulrazzaq Y. A. Al Khazzan**				
11	**Date of Approval**					

II. Course Description:

Hematology and oncology disorders course is especially important for clinical pharmacists who would work in cardiac and/or cancer clinics or centers. This course contains Anemia, Coagulation and Platelet Disorders, Sickle Cell Disease, Cancer Chemotherapy and Treatment, Breast Cancer, Prostate Cancer, Lung Cancer, Skin Cancer, Colorectal Cancer, Ovarian Cancer, Acute Leukemia, Malignant Lymphomas. An overview, pathophysiology, underlying causes, clinical manifestations, optimal drug therapy, counseling, monitoring, and therapeutic outcomes evaluation are the components that would covered in each topic. Prerequisites related to this course must be studied prior. Interactive lectures and discussions are main teaching methods.

III. Course Objectives:

This course aims to:

1. Provide student primary knowledge about common hematology and oncology disorders.
2. Help student to specify causes, risk factors, clinical manifestations and complications in different hematology and oncology disorders.
3. Qualify student to select prophylaxis methods, lifestyle modifications, and optimal therapy regimen for hematology and oncology disorders.
4. Prepare student to advice and educate patient regarding the correct use of his/her medications.

Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A5 Outline principles of clinical pharmacology, therapeutics and Pharmacovigilance,	a1. Gather basic information regarding hematology and oncology disorders including; overview, pathophysiology, causes, potential risk factors, clinical manifestations, and diagnostic tools. a2. Outline suitable treatment regimens that include; doses, optimum use, adverse effects, doses for special individuals, and contraindications for patients with hematology and oncology disorders.

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B2 Design risk reduction strategies to ensure patient safety and prevent medication errors, drug interaction, and adverse drug effects,	b1 Design suitable methods for prescribing, dispensing, and administering of medications to ensuring their safety and efficacy.
B3 Solve problems to reduce drug therapy problems	b2 Give patient-counseling and educational programs to dealing and reducing drug therapy problems.
B4 Select drug therapy regimen using mathematical, genomic, clinical pharmacokinetic and pharmacodynamics principles for optimizing the patient therapy and medication safety	b3 Select drug therapy regimen using patient individualization therapy, to achieve drug optimizing and safety.

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	**Professional and Practical Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
C1 Advise the patients and health care professionals for optimizing medicines use.	c1 Provide patients and health care providers with suitable advices on the safe and effective use of medicines for patient with Hematology and oncology disorders.

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	**Transferable (General) Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
D2 Use information systems and computer software in order to enhance the delivery of pharmaceutical care,	d1 Make better familiar with the reliable drug information resources and how to be used. d2 Evaluate information regarding Hematology and oncology disorders and their drugs obtained from different information sources. d3 Use appropriate search strategies for research in computerized secondary databases.
D3 Work effectively individually and in a team	
D4 Have the skills of decision-making and time management and life- long learning	

Alignment Course Intended Learning Outcomes		
(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1. Gather basic information regarding hematology and oncology disorders including; overview, pathophysiology, causes, potential risk factors, clinical manifestations, and diagnostic tools.	Cooperative and Participatory Lectures	- Quiz - Exam - In-class participation
a2. Outline suitable treatment regimens that include; doses, optimum use, adverse effects, doses for special individuals, and contraindications for patients with hematology and oncology disorders.	Cooperative and Participatory Lectures	- Quiz - Exam - In-class participation
(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1 Design suitable methods for prescribing, dispensing, and administering of medications to ensuring their safety and efficacy.	- Critical thinking - Class discussion	- Discussion - Oral questions
b2 Give patient-counseling and educational programs to dealing and reducing drug therapy problems.		
b3 Select drug therapy regimen using patient individualization therapy, to achieve drug optimizing and safety.	- Critical thinking - Class discussion	- Discussion - Oral questions

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	**Teaching strategies**	**Assessment Strategies**
c1 Provide patients and health care providers with suitable advices on the safe and effective use of medicines for patient with Hematology and oncology disorders.	- Cooperative and Participatory Lectures	- Homework - Exam

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1 Make better familiar with the reliable drug information resources and how to be used.	- Duties & activities - Seminars - Home works	- Assessment discussions, seminars and assignments
d2 Evaluate information regarding Hematology and oncology disorders and their drugs obtained from different information sources.		
d3 Use appropriate search strategies for research in computerized secondary databases.	- Duties & activities - Seminars - Home works	- Evaluate seminars and assignments

V. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	Hematologic disorders	- Anemia	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Coagulation and Platelet Disorders	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Sickle Cell Disease	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
2	Oncologic disorders	- Cancer Chemotherapy and Treatment	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Breast Cancer	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
3	- **Mid-semester exam**		1	1	a1, a2, b1, b3
4	Oncologic disorders	- Prostate Cancer	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Lung Cancer	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Skin Cancer	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Colorectal Cancer	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Ovarian Cancer	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Acute Leukemia	1	2	a1, a2, b1, b2, b3, c1, d1, d2, d3
		- Malignant Lymphomas	1	2	a1, a2, b1, b2, b3, c1, d1, d2,

					d3
5	- **Final-semester exam**		1	2	a1, a2, b1, b3
Number of Weeks /and Units Per Semester			**14**	**27**	

B – Case Studies and Practical Aspect: (Not applicable)

Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1				
2				
3				
4				
Number of Weeks /and Units Per Semester				

VI. Teaching strategies of the course:

1. Interactive lectures
2. Class discussion
3. Brainstorming
4. Duties & activities
5. Seminars
6. Home works
7. Office hours (Tutorials)

VII. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Hematopoietic Stem Cell Transplantation (1)	a1, a2, b1, b3, d1, d2, d3	5th	5
2	Supportive Care in Oncology (2)	a1, a2, b1, b3, d1, d2, d3	10th	5

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments & Presentation /Quizzes	5th	5	5%	a1, a2, b1, b3, d1, d2, d3
2	Assignments & Presentation/Quizzes	10th	5	5%	a1, a2, b1, b3, d1, d2, d3
3	Mid-semester Exam	7th	30	30%	a1, a2, b1, b3
4	Final-semester Exam		60	60%	a1, a2, b1, b3
Total			**100**	**100%**	

IX. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1. Wells BG, DiPiro J, Schwinghammer TL., DiPiro C.; (2021), Pharmacotherapy handbook, 11th ed New York: McGraw-Hill.
2. Marie A. Chisholm-Burns *et al*, (2019), Pharmacotherapy: Principles & practice, 5th edition, McGra Hill Companies, Inc., United States of America.

2- Essential References.

1. Joseph Dipiro, (2020), Pharmacotherapy: pathophysiologic approaches, 11th edition, McGr Hill Companies, Inc., United States of America
2. Walker and Edwards, (2018), Clinical Pharmacy and Therapeutics, 6th edition, Elsevier Ltd UK

3- Electronic Materials and Web Sites *etc.*

1. Word Document or Portable Data Files (PDF) for Lectures that would be Delivered.
2. American College of Clinical Pharmacy (ACCP) http://www.accp.com

Course Specification of

Pharmacy Practice 2

I. Course Identification and General Information:							
1	**Course Title:**	Pharmacy Practice II					
2	**Course Code &Number:**	**B1101516**					
3	**Credit hours:**	C.H				TOTAL	
		Th.	Seminar	Pr	Tr.		
		2				2	
4	**Study level/ semester at which this course is offered:**	*Level 5/ semester 2*					
5	**Pre –requisite (if any):**	B1101479					
6	**Co –requisite (if any):**						
7	**Program (s) in which the course is offered:**	Bachelor of Pharmacy Doctor (Pharma D)					
8	**Language of teaching the course:**	English					
9	**Location of teaching the course:**	Thamar University - Faculty of Medical Sciences					
10	**Prepared By:**	**Dr. Ahmed G. Al- Akydy – Dr. Ahmed Al-Washli**					
11	**Date of Approval**	2021					

II. Course Description:

This course focus on institutional and community pharmacy practices, the provision not only of the drug required but also the necessary services (before, during or after treatment) to assure optimally safe and effective therapy. Also describing and defining the disease pathophysiology and the appropriate therapeutic interventions and information required to treat different systemic diseases related as musculoskeletal , hormone, kin ,eye and ear problems. In addition to the appropriate therapeutic interventions during pregnancy and lactation periods and some specific product requests.

III. Course Objectives:

1. To Know the different pharmacy services within the hospital and the methods of and methods of drug distribution, patient counseling I.V. admixture unit.
2. To Illustrate the importance of pharmaceutical skills to the pharmacy profession such as, drug information, drug therapy monitoring.
3. To learn the applications of drugs in the treatment of different diseases

I. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

After completing the course, the student will be able to:

a1. Understand the basic principles of pharmacy practice and its applications both in community and hospital pharmacy.

a2. Identify the therapeutic drug monitoring of some drug that used in the management of different systemic disorders.

a2. Describe the role of the pharmacist for understanding the effects of drugs on fetus during different stages of pregnancy and contraindicated drugs in pregnant and lactating mothers..

Knowledge and Understanding PILOs		Knowledge and Understanding CILOs	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
A1	Explain the fundamentals of general sciences and the basic and biomedical sciences and their relations to pharmacy profession.	a1	Understand the basic principles of pharmacy practice and its applications both in community and hospital pharmacy.
A2	Illustrate the fundamentals of social and behavioral sciences relevant to pharmacy, ethics of health care and its impact on their relationship with patients and other healthcare professionals.		
A3	Describe relationships between chemical structure of compounds of pharmaceutical and medicinal interest and biological activities		

A4	Define basic principles of drug: target identification, design, informatics, and mechanisms of action		
A5	Outline principles of clinical pharmacology, therapeutics and Pharmacovigilance.	a2	**Identify** the therapeutic drug monitoring of some drug that used in the management of different systemic disorders.
		a3	Describe the role of the pharmacist for understanding the effects of drugs on fetus during different stages of pregnancy and contraindicated drugs in pregnant and lactating mothers. .

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

b1. Select the proper methods to ensure safe application of drugs that used in the management of disorders related to musculoskeletal , hormone, kin ,eye and ear problems.

b2.assess possible drug interactions and other prescription related problems for drugs that used in the treatment of different disorders an suggest the proper resolution for them

b3. Integrate a suitable therapeutic plan for special patients like pregnant and lactating women.

Intellectual Skills PILOs		**Intellectual Skills CILOs**	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
B1	Classify the synthetic and natural drugs according to their mechanism of action, systemic effect, therapeutic uses, contraindication and toxicity		
B2	Design risk reduction strategies to ensure patient safety and prevent medication errors, drug interaction, and adverse drug effects,	b2	assess possible drug interactions and other prescription related problems for drugs that used in the treatment of different disorders an suggest the proper resolution for them
B3	Solve problems to reduce drug therapy problems		

B4	Select drug therapy regimen using mathematical, genomic, clinical pharmacokinetic and pharmacodynamics principles for optimizing the patient therapy and medication safety	b1	**Select** the proper methods to ensure safe application of drugs that used in the management of disorders related to musculoskeletal , hormone, kin ,eye and ear problems.
		b3	Integrate a suitable therapeutic plan for special patients like pregnant and lactating women.

Professional and Practical Skills

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

c1. Apply good pharmacy practice in the appropriate applications of drug pharmacokinetic which help in individual drug dosing and drug monitoring.

c2. Counsel patients about their disease, instructions about diet, missed dose, for both prescription and OTC drugs to ensure safe use of medications.

c3. Design patient monitoring plan, and clinical intervention for drug therapy problems to achieve the most effective, most safe, and economic drug regimen.

Professional and Practical Skills PILOs		**Professional and Practical Skills CILOs**	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
C1	Handle the chemical, biological, and pharmaceutical materials safely		
C2	Operate different pharmaceutical equipment		

	and instruments		
C3	Extract active substances from different sources.		
C4	Carry outpatient physical assessment.		
C5	Advise the patients and health care professionals for optimizing medicines use.	c1	Apply good pharmacy practice in the appropriate applications of drug pharmacokinetic which help in individual drug dosing and drug monitoring.
		c2	Design patient monitoring plan, and clinical intervention for drug therapy problems to achieve the most effective, most safe, and economic drug regimen.
		c3	Design patient monitoring plan, and clinical intervention for drug therapy problems to achieve the most effective, most safe, and economic drug regimen.

Transferable (General) Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

d1. Interact effectively with patients, the public and health care professionals; including communication, interpretation and presentation of applications of drugs both written and oral

d2. Advice the patients and other health care professionals about safe and proper use of medicines

d3. Work effectively in a team in a variety of health care settings.

Transferable (General) Skills PILOs		Transferable (General) Skills CILOs	
After completing this program, students would be able to:		**After completing this course, students would be able to:**	
D1	Communicate effectively and ethically with patients, public, and health care professionals.	d1	Interact effectively with patients, the public and health care professionals; including communication, interpretation and

			presentation of applications of drugs both written and ora
D2	Use information systems and computer softwares in order to enhance the delivery of pharmaceutical care,	**d2**	Advice the patients and other health care professionals about safe and proper use of medicines
D3	Work effectively individually and in a team	**d3**	Work effectively in a team in a variety of health care settings.
D4	Have the skills of decision-making and time management and lifelong learning		

II. Alignment Course Intended Learning Outcomes

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
a1	**Understand** the basic principles of pharmacy practice and its applications both in community and hospital pharmacy.	• Lectures • Discussion Sessions • Assignments	• Periodic exam (Quizzes) • Evaluate assignments • Mid & final exam
a2	**Identify** the therapeutic drug monitoring of some drug that used in the management of different systemic disorders.		
a3	**Describe** the role of the pharmacist for understanding the effects of drugs on fetus during different stages of pregnancy and contraindicated drugs in pregnant and lactating mothers..		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

b1	**Select** the proper methods to ensure safe application of drugs that used in the management of disorders related to musculoskeletal , hormone, kin ,eye and ear problems.	• Discussion Sessions • Problem solving • Group discussion • Assignments	• Oral presentations • Evaluate assignments • Mid & final exam
b2	**assess** possible drug interactions and other prescription related problems for drugs that used in the treatment of different disorders an suggest the proper resolution for them		
b3	**Integrate** a suitable therapeutic plan for special patients like pregnant and lactating women		

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skillsto Teaching Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
c1	**Apply** good pharmacy practice in the appropriate applications of drug pharmacokinetic which help in individual drug dosing and drug monitoring.	• Discussion sessions • Assignments	• Oral presentations • Theory & Practical exams • LAB report • Evaluate assignments
c2	**Counsel** patients about their disease, instructions about diet, missed dose, for both prescription and OTC drugs to ensure safe use of medications.		
c3	**Design** patient monitoring plan, and clinical intervention for drug therapy problems to achieve the most effective, most safe, and economic drug regimen		
(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:			
Course Intended Learning Outcomes		Teaching strategies	Assessment Strategies
d1	**Interact** effectively with patients, the public and health care professionals; including	• Discussion Sessions	• Oral presentations

	communication, interpretation and presentation of applications of drugs both written and oral	• Assignments that require collecting information from the internet.	• Writing
d2	**Advice** the patients and other health care professionals about safe and proper use of medicines		
d3	**Work** effectively in a team in a variety of health care settings.		

B – Case Studies and Practical Aspect: (if any)

Order	Units/Topics List	Sub Topics List	Number of Weeks	contact hours	Learning Outcomes (CILOs)
1	Introduction to pharmacy practice		1w	2	a1; c1
	Applications and therapeutic considerations in musculoskeletal conditions	- Acute back pain - Activity- related/sports- related soft tissue injuries	1w	2	a1; a2; b1; c2; c3; d1; d3
7	Applications and therapeutics considerations in:	- Common eye disorders	1w	2	a1; a2; b1; c2; c3; d1; d3
		- Common ear disorders	1w	2	a1; a2; b1; c2; c3; d1; d3

		- Common skin disorders	1w	2	a1; a2; b1; c2; c3; d1; d3
	Seminar		1w	2	a2; a3; b1; b2; c2; c3; d1; d3
8	Applications and therapeutic considerations in women's health	- Pregnancy - Lactation	1w	2	a3; b3; c1; c2; d2
10		- Menstrual disturbances - Vaginal problems	1w	2	a1; a2; a3; b1; b3; c2; c3; d1; d3
		- Contraceptive devices - Emergency hormonal contraception	1w	2	a3; d3; b1; b3; c1; d2
11	Seminar		1w	2	a2; a3; b1; b2; b3; c2; c3;d1; d3
13	Applications and therapeutics considerations in.	- Hormone disorders	1w	2	a1; a2; b1; c2; c3; d1; d3
14	Specific product requests	- Nutritional supplements	1w	2	a1; a3; c1; c2; c3; d1; d3
		- Nicotine replacement therapy	1w	2	a1; a2; b1; c2; c3; d1; d3
	Seminar		1w	2	a2; a3; b1; b2; c2; c3; d1; d3
Number of Weeks /and Units Per Semester			**14**	**24**	

V. Teaching strategies of the course:

- Lectures
- Discussion sessions
- Media Presentations: Power Point, Video
- Assignments
- Solving of problems

V. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Participation	2.5	Weekly	a1; a2; a3; b1
2	Quizzes	2.5	Weekly	a1; a2; a3; b1
3	Research	2.5	6th W	a2; a3; b2; b3; d1; d3
4	Assignments	2.5	6th W	a2; a3; b2; b3; c2; c3; d1; d3
	Mid – Exam (theoretical)	10	7th W	a1; a2; a3; b1
	Final Exam (practical)	30	15th W	c1; c2;c3
	Total score	**50%**		

V. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments & Homework, Tasks & Presentation	Fortnightly	5	5%	a2; a3; b2; b3; c2; c3; d1; d3
2	Quizzes	W6	2.5	2.5%	a1; a2; a3; b1
3	Mid-Term exam	W8	10	10%	a1; a2; a3; b1
4	Practical reports	W12	2.5	2.5%	a1; a2; a3; b1; c2
	Final exam practical	W 15	30	30%	c1; c2;c3
6	Final Exam theory	W16	50	50%	a1; a2; a3; b1
Total			**100**	**100%**	

VI. Learning Resources:

1- Required Textbook(s) (maximum two).

1. Mary Anne Koda-Kimble, Lloyd Yee Young, Wayne A Kradjan, B. Joseph Guglielmo, Brian K Alldredge. Applied Therapeutics: The Clinical Use of Drugs. 9th edition. Lippincott Williams & Wilkins, 2004.
2. Applied therapeutics: the clinical use of drugs. Tenth edition. Wolters KluwerLippincott Williams &Wilkins, USA, 2013

2- Essential References.

1. Introductin to Hospital and Health-System Pharmacy Practie by David A. Holdford and Thomas R. Brown
3. Communicatin Skills in Pharmacy Practie : A Practial Guide for Students and Practiiners, by Robert S. Beardsley, Carole Kimberlin and William N. Tindall

3- Electronic Materials and Web Sites *etc*.

	http://online.lexi.com/lco/action/login