هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Toxicology and Pharmacology for Public Health
Course Code:	PHE26456
Program:	Bachelor of Public Health
Department:	Public Health
College:	Applied Medical Sciences
Institution:	University of Bisha
Version:	1
Last Revision Date:	1/2/1445

وزارة التعليم - جامعة بيشة
Ministry Of Education - University Of Bisha
وكالة الجامعة للشؤون التعليمية

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 2 (2+0)					
2. Course type					
A.	☐University	☐ College	☒ Department	☐Track	☐Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: 7th level / 4th year					
4. Course general Description:					
This course provides a comprehensive understanding of the principles, and applications of pharmacology and toxicology within the context of public health. It focuses on the pharmacology and therapeutics, pharmacokinetics, pharmacodynamics, and toxicity of drugs. It also provides information concerning toxicology and environmental toxicology, toxic action, and defense responses to toxicants and pollutants.					
5. Pre-requirements for this course (if any)**:**					
N/A					
6. Pre-requirements for this course (if any)**:**					
N/A					
7. Course Main Objective(s):					
By the end of this course, students will: 1- Develop a fundamental concepts and terminology related to pharmacology and toxicology. 2- Gain insight into the mechanisms of action, therapeutic uses, and potential side effects of drugs commonly used in public health. 3- Learn how to evaluate the safety of pharmaceuticals, herbal remedies, and other therapeutic agents, considering factors like dosage, drug interactions, and adverse effects. 4- Apply pharmacological principles to public health interventions, including the rational use of drugs in disease prevention, health promotion, and management of epidemics and pandemics. 5- Critically evaluate public health policies related to pharmaceutical regulation, drug access, and drug pricing, considering ethical, economic, and equity perspectives. 6- Enhance skills in communicating pharmacological and toxicological information to diverse audiences, including the public, healthcare providers, and policymakers, to promote health literacy and informed decision-making. 7- Analyze the impact of environmental pollutants, and toxins on public health, including the assessment of risk factors and strategies for mitigation.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	26	86.66%
2	E-learning	4	13.33%
3	Practical	-	-
4	Interactive learning (TBL and PBL)	-	-

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	26
2.	Laboratory/Studio (practical)	-
3.	Interactive learning (TBL and PBL)	-
4.	Field	-
5.	Tutorial	-
6.	E-learning	4
7.	Others : Self-learning	45
Total		75

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Describe pharmacology, therapeutics, and pharmacokinetics, targets of drug action, pharmacodynamics, and drug toxicity.	K7	Lectures, Assignments, E-learning activities	Written exam, Continuous assessment (quizzes, assignments, seminars)
1.2	Recognize toxicology, environmental toxicology, environmental change, global climate change, and environmental pollution.	K7		
1.3	Describe toxic action of toxicants and pollutants, factors affecting toxic substances actions, routes of administration and biotransformation of toxic substances and defense responses to toxicants and pollutants	K7		
1.4	Memorize air, soil, and water pollutants, herbicides, pesticides, insecticides, heavy metals and other related toxic materials	K7		
2.0	**Skills**			
2.1	Perform frameworks for ecological risk assessment.	S2	Lectures, Active learning,	Written exam, Continuous assessment (quizzes, assignments, seminars)
2.2	Formulate problems used in frameworks for ecological risk assessment.	S3		
2.3	Analyze ecological risks	S4		

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	**Values, autonomy, and responsibility**			
3.1	Adhere to ethical standards and moral principles in the practice of the profession	V1	Lectures, Active learning,	In class evaluation
3.2	Demonstrate responsibility for self-directed lifelong learning by choosing the own learning needs and utilizing information and communication technology.	V2		

C. Course Content

No	List of Topics	Contact Hours
1	Pharmacology and therapeutics; drug nomenclature, drug classes, drug modalities, and routes of administration.	2
2	Pharmacokinetics; absorption, bioavailability, distribution, body compartments, and volume of distribution.	2
3	Pharmacokinetics; phase 1 and 2 reactions, first-pass metabolism, excretion, first- and zero-order kinetics, therapeutic window.	2
4	Targets of drug Action; common drug mechanisms, receptors, enzymes, ion channels, and transporters, new drug mechanisms, protein-based, gene-based, and cell-based therapies.	2
5	Pharmacodynamics; receptor and ligand binding, dose response relationships, Individual variation, pharmacogenetics.	2
6	Drug toxicity; toxic and lethal dosing, mechanisms of drug toxicity, drug interactions, adverse drug reactions and side effects.	2
7	Introduction to toxicology and environmental toxicology	2
8	Environmental change and public health. Global climate change. Environmental pollution.	2
9	Toxic action of toxicants and pollutants. Occurrence of toxicants.	2
10	Factors affecting toxic substances actions. Routes of administration. Biotransformation, metabolism, and distribution of toxic substances.	2
11	Defense responses to toxicants and pollutants.	2
12	Air, soil, and water pollutants.	2
13	Pesticides, insecticides, heavy metals and other related toxic materials.	2
14	Mutagenic, teratogenic and carcinogenic actions of toxicants	2
15	Ecological risk assessment, basic components of risk assessment. Risk assessment uses, importance and framework.	2
Total		**30**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	E-learning activities	3rd, 5th, 9th	**15%**
2.	Assignments	6th , 10th	**5%**
3.	Seminar/ oral exam	11th	**5%**
4.	Mid exam(theory)	**8th**	**20%**
5.	In-class evaluation	**All through**	**2.5%**
6.	In-lab evaluation	**All through**	**2.5%**
7.	Final exam (theory)	**End of semester**	**50%**
	Total		**100%**

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	1. Karen Whalen Pharm D, Lippincott Illustrated Reviews: Pharmacology, 8th Edition, 2022. 2. Bertram G. Katzung, Todd W. Vanderah. Basic and Clinical Pharmacology, 15th edition. 2020 3. Bronwen Bryant, Kathleen Knights, Andrew Rowland, Shaunagh Darroch. Pharmacology for Health Professionals. 5th Edition. Elsevier. 2018. 4. Ming-Ho Yu. Environmental Toxicology, Biological and Health Effect of Pollutants. Second edition. CRC press. Washington, DC. 2004.
Supportive References	1. Philip C. Burcham. An Introduction to Toxicology, springer. 2013
Electronic Materials	--
Other Learning Materials	- Saudi electronic library

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms, laboratories
Technology equipment (projector, smart board, software)	data show, Smart Board, software
Other equipment (depending on the nature of the specialty)	Well-equipped clinical chemistry lab.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Faculty staff members, Program Leaders, Peer Reviewers	Direct / Indirect
Effectiveness of Students assessment	Faculty staff members, Program Leaders, Peer Reviewers	Direct / Indirect
Quality of learning resources	Students, Faculty, Program Leaders, Peer Reviewer.	Direct / Indirect
The extent to which CLOs have been achieved	Faculty and program quality unit, Program Leaders, Peer Reviewer.	Direct / Indirect
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	

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