

Course Synopsis of Environmental Toxicology- ZYU5303

Semester and Level	Semester 1– Level 05					
Course Code	ZYU5303					
Course Title	Environmental Toxicology					
Credit value	03					
Core/Optional	Optional					
Prerequisites	Completion/ concurrent registration of level 04 courses					
Hourly breakdown	Theory		Practical	Independent Learning	Assessment	Total
	32 hrs (16 Sessions)	08 hrs (4 DSs)	24 hrs (4 days Lab)	88 hrs (Sessions [48hrs]+ Practical [12hrs] + Online [10hrs] + recommended readings [12hrs])	03 hrs (1 CAT x 1.5hrs) + (1 Practical test x 1.5hrs)	150hrs
Course Aim/s.	<ol style="list-style-type: none"> To provide knowledge on environmental, organismal and sub-organismal aspects of toxicology To provide basic laboratory skills and analytical tools in environmental toxicology To develop necessary analytical/research skills to understand and explore how an environmental contamination issue should be handled and minimised risks on the environment. To develop the ability to solve problems, analyse, interpret information and to engage in effective communication 					
PLOs addressed by course	<ul style="list-style-type: none"> PLO 01- PLO 07 					
Course Learning Outcomes (CLO)	<p>Upon completion of this course, students will be able to:</p> <ul style="list-style-type: none"> CLO1: Describe the basic concepts in toxicology, risk assessment and environmental monitoring (PLO1) CLO2: Describe and explain major pollutants in the environment, their fate and the risk on the environment (PLO1, PLO2) CLO3: Explain biological responses of animals to various types of xenobiotics and identify biomarkers and bioindicators (PLO1-PLO3) CLO4: Demonstrate practical and analytical skills in fundamental laboratory techniques to explain principles of environmental toxicology (PLO1-PLO7) CLO5: Application of knowledge to understand environmental contamination issues and to propose monitoring and mitigatory measures (PLO1-PLO7) 					
Content (Main topics, sub topics)	<ul style="list-style-type: none"> UNIT I FUNDAMENTALS OF ENVIRONMENTAL TOXICOLOGY- The development of environmental toxicology, Concepts and definitions, Toxicity levels: Sub organismal, organismal and ecosystem, Major classes of contaminants, Environmental changes and health, Assessment criteria of Toxicity UNIT II TOXICOKINETICS OF CHEMICAL STRESSORS- Routes of toxicant uptake, Biotransformation and detoxification, Bioaccumulation, elimination and biomagnification, Factors influencing toxicokinetics of toxicants, Biotransformation of xenobiotics, Biological responses to xenobiotics: Acute, chronic, lethal and sublethal effects, Occupational toxicology, Endocrine disruption, mutagenic pollutants, and environmental cancers, Soil, water and air pollution 					

	<ul style="list-style-type: none"> UNIT III METHODOLOGICAL APPROCHES AND RISK ASSESSMENT- Concepts and principles for biological indicators, Ecological approach to toxicology, Environmental Modelling, Exposure assessments, Risk assessments and environmental monitoring 	
Teaching Learning methods	<ul style="list-style-type: none"> Self- learning: Course material in print (16 Sessions ×3), Online components (10 hrs), Recommended readings (12 hrs) Compulsory contact sessions: Laboratory classes - 4 days x 6hrs- 24 hrs Non-compulsory contact sessions – 4 Day schools- 8 hrs Continuous assessments: 1 NBT + 1 Practical test (PT)- 3 hrs 	
Assessment strategy	Overall CA Mark (OCAM): 40%	Final Assessment: 60%
	Theory (70%): NBT: MCQ/SEQ – 1 x 1.0hrs Practical (30%): Practical test –1.5hrs OCAM Computation: 70% NBT + 30% Practical test Minimum 40 marks compulsory for PT	Theory: 100% 1 paper (Essay) – 2hrs
Recommended Readings:	<ol style="list-style-type: none"> 1. Wright, D. A., & Welbourn, P. (2002). <i>Environmental Toxicology (Vol. 11)</i>. Cambridge University Press. 2. Walker, C.H.; Sibly, R.M.; Hopkin, S.P.; Peakall, D.B. (2006). <i>Principles of Ecotoxicology</i>. Taylos & Francis Group, LLC. 3rd ed. 344p. ISBN 0-8493-3635-5. 	