Course Synopsis of Environmental Toxicology- ZYU5303

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<tr><td>Semester and Level</td><td colspan="6">Semester 1– Level 05</td></tr>
<tr><td>Course Code</td><td colspan="6">ZYU5303</td></tr>
<tr><td>Course Title</td><td colspan="6">Environmental Toxicology</td></tr>
<tr><td>Credit value</td><td colspan="6">03</td></tr>
<tr><td>Core/Optional</td><td colspan="6">Optional</td></tr>
<tr><td>Prerequisites</td><td colspan="6">Completion/ concurrent registration of level 04 courses</td></tr>
<tr><td rowspan="2">Hourly breakdown</td><td colspan="2">Theory</td><td>Practical</td><td>Independent Learning</td><td>Assessment</td><td>Total</td></tr>
<tr><td>32 hrs (16 Sessions)</td><td>12 hrs (4 DSs)</td><td>24 hrs (4 days Lab/Field)</td><td>84 hrs (Sessions [48hrs]+ Practical [12hrs] + Online [10hrs] + recommended readings [8hrs])</td><td>03 hrs (1 CAT x 1.5hrs) + (1 Practical test x 1.5hrs)</td><td>150hrs</td></tr>
<tr><td>Course Aim/s.</td><td colspan="6">1. To provide knowledge on environmental, organismal and sub-organismal aspects of toxicology
2. To provide basic laboratory skills and analytical tools in environmental toxicology
3. To develop necessary analytical/research skills to understand and explore how an environmental contamination issue should be handled and minimised risks on the environment.
4. To develop the ability to solve problems, analyse, interpret information and to engage in effective communication</td></tr>
<tr><td>PLOs addressed by course</td><td colspan="6">• PLO 01- PLO 07</td></tr>
<tr><td>Course Learning Outcomes (CLO)</td><td colspan="6">Upon completion of this course, students will be able to:
• 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)</td></tr>
<tr><td>Content (Main topics, sub topics)</td><td colspan="6">• UNIT I FUNDAMENTALS OF ENIVIRONMENTAL 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</td></tr>
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<tr><td></td><td colspan="2">• 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</td></tr>
<tr><td>Teaching Learning methods</td><td colspan="2">• 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</td></tr>
<tr><td rowspan="2">Assessment strategy</td><td>Overall CA Mark (OCAM): 40%</td><td>Final Assessment: 60%</td></tr>
<tr><td>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</td><td>Theory: 100%
1 paper (Essay) – 2hrs</td></tr>
<tr><td>Recommended Readings:</td><td colspan="2">1. Wright, D. A., & Welbourn, P. (2002). Environmental Toxicology (Vol. 11). Cambridge University Press.
2. Walker, C.H.; Sibly, R.M.; Hopkin, S.P.; Peakall, D.B. (2006). Principles of Ecotoxicology. Taylos & Francis Group, LLC. 3rd ed. 344p. ISBN 0-8493-3635-5.</td></tr>
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