Department of Liberal Education
Era University, Lucknow
Course Outline
Effective From: 2023-24

Name of the Program	**B.A. / B.Sc. (LIBERAL EDUCATION)**			**Year/ Semester:**	**3rd / 6th**
Course Name	**Ecotoxicology and Occupational Health Hazard**	**Course Code:**	**EVA307**	**Type:**	**Theory**
Credits	**04**			**Total Sessions Hours:**	**60 Hours**
Evaluation Spread	**Internal Continuous Assessment:**	**50 Marks**		**End Term Exam:**	**50 Marks**
Type of Course	○ Compulsory	◉ Core		○ Creative	○ Life Skill
Course Objectives	1. Learn about the mechanisms and short- and long-term risk of exposures to environmental contaminants. 2. Understand about health hazards associated with different occupational activities and measures to minimize the impact.				
Course Outcomes(CO): *After the successful course completion, learners will develop following attributes:*					
Course Outcome (CO)	**Attributes**				
CO1	Know about environmental toxicants and understand their mechanism of toxicity as well as detoxification in human body.				
CO2	Students learn about short-term and long-term detrimental health impacts of environmental toxicants exposure and be able to take actions to prevent them.				
CO3	Understand and learn the extent of health and life risk on different age group of workers associated with variable working conditions.				
CO4	Learn about hazard mitigation strategies and be able to adopt safety measures at work place.				
Pedagogy	Interactive, discussion-based, student-centered, presentation.				
Internal Evaluation Mode	Mid-term Examination: 20 Marks Activity: 10 Marks Class test: 05 Marks Online Test/Objective Test: 05 Marks Assignments/Presentation: 05 Marks Attendance: 05 Marks				
Session Details	**Topic**			**Hours**	**Mapped CO**
Unit 1	**Introduction to environmental toxicants** ● Concept of health and disease ● Major environmental toxicants ● Toxicity test, Exposure effect relationship, different route of exposure ● Synergistic and antagonistic effect Bioaccumulation, Biomagnification, bioactivation, Biotransformation and Detoxification **Activity**: Make a scrapbook on environmental toxicants: sources and impact.			12	CO1

Unit 2	**Health risk of environmental toxicants** • Communicable and non-communicable diseases • Toxins vs poison, target vs non-target toxicity • Organ specific toxicity: hepatotoxicity, neurotoxicity & reproductive toxicity • Oxidative stress, cancer & mutation • Community health education **Activity**: Create flashcards (5 cards by each student) to disseminate information related to community helpers and practices facilitating health hazard prevention.	19	CO2
Unit 3	**Occupational hazards** • Occupational hazards: Concept • Types of hazards: physical, chemical, biological, and radiation • Associated occupational risk: Mining, construction, agriculture, traffic police, & hazardous waste management • Case study: Cobalt mining in Congo & child labor **Activity**: Collect information and write report on illegal child labor and health impacts.	14	CO3
Unit 4	**Occupational health issues and management** • Occupational health issues: silicosis, pneumoconiosis, byssinosis, dermatitis, farmers' lung disease • Case study: COVID 19 & health risk for health care workers • Industrial/occupational hygiene • Mitigation of occupational hazards **Activity**: Collect data through personal interview/questionnaire from healthcare workers related to occupational health issues and safety measures taken, aware them and document.	15	CO4

CO-PO and PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1		3	3	3	3		3	1	3	1	2		2	
CO2		3	3	3	3		3	1	3	1	2		2	
CO3		3	2	2	3		3	1	3	1	3	3	1	
CO4		3	2	2	3		3	3	3	1	3	3	2	2

Strongcontribution-3,Averagecontribution-2, Lowcontribution-1,

Suggested Readings:

Text- Books	1. Wayne G. Landis, Ruth M. Sofield, Ming-Ho Yu. Introduction to Environmental toxicology. CRC Press. 4th Edition. 2. Peter G. C. Campbell, Peter V. Hodson, Pamela M. Welbourn, David A. Wright. 2022. Ecotoxicology. Cambridge University Press.
Reference Books	1. Sigmund F. Zakrzewski. 2002. Environmental Toxicology. Oxford University Press, 3rd edition. 2. S. K. Haldar. 2023. Industrial and Occupational Health. CBS Publishers & Distributors, 2nd Edition.
Para Text	**Unit 1:** 1. Xenobiotics and Health- https://juniperpublishers.com/oajt/OAJT.MS.ID.555641.php **Unit 2:** 1. Bhopal gas tragedy- https://www.youtube.com/watch?v=HZirRB32qzU&ab_channel=USCSB 2. Radiation contamination-

	https://www.cdc.gov/nceh/radiation/emergencies/contamination.htm **Unit 3:** 1. Organ specific toxicity - https://chem.libretexts.org/Bookshelves/Environmental_Chemistry/Toxicology_MSDT/6%3A_Principles_of_Toxicology/Section_3%3A_Toxic_Effects/3.4%3A_Organ_Specific_Toxic_Effects **Unit4:** 1. Pneumoconiosis- https://www.youtube.com/watch?v=k3AQyx3_ElU&ab_channel=PulmonaryFibrosisFoundation

Recapitulation & Examination Pattern

Internal Continuous Assessment:

Component	**Marks**	**Pattern**
Mid-term Exam	20	**Section A:** Contains **10** MCQs/Fill in the blanks/One Word Answer/ True-False type of questions. Each question carries **0.5 marks.** **Section B:** Contains **07** descriptive questions out of which **05** questions are to be attempted. Each question carries **03 marks**.
Activity	10	Will be decided by subject teacher
Class Test	05	Contains **05 descriptive questions.** Each question carries **01** marks.
Online Test/ Objective Test	05	Contains **10 multiple choice questions.** Each question carries **0.5** marks.
Assignment/ Presentation	05	Assignment to be made on topics and instruction given by subject teacher
Attendance	05	As per policy
Total Marks	**50**	

Course created by: Dr. Swati Sachdev **Signature:**	**Approved by: Prof. Venkatesh Dutta** **Signature:**