FACULTY OF PUBLIC HEALTH

Master of Public Health (MPH) Degree Program in Occupational and Environmental Health

PROGRAM OUTCOMES – COURSE OUTCOMES

MAPPING

PROGRAMME OUTCOMES (PO)

Upon completion of the MPH (Occupational & Environmental Health) program, the candidate should be able to:

PO1: Acquire in-depth knowledge on the various disciplines related to the field of occupational and environmental health

PO2: Recognize, assess and manage hazards and health risks prevailing at different occupational and environmental settings

PO3: Understand the environmental risk factors prevailing in communities and inform appropriate policy actions to improve public health

PO4: Enhance the research and analytical skills to design and conduct quality research in the area of occupational and environmental health

PO5: Critically think, analyze the data and interpret information on the basis of economic, political, social, ethical and cultural context

PO6: Be efficient in occupational and environmental health practice with leadership qualities and relevant skills

COURSE OUTCOMES (CO)

Year I

SEMESTER I

Introduction to Epidemiology (PH101T)

Upon completion of the units the student shall be able to:

CO101.1: Quantify disease measures, including measures of frequency, measures of association and measures of effect

CO101.2: Demonstrate skills in the application of causal inference criteria in assessing causation from previously conducted epidemiological studies

CO101.3: Design basic epidemiological studies independently

CO101.4: To understand the role of bias and confounding and the methods to reduce their influences in epidemiological studies

Introduction to Biostatistics (PH103T)

Upon completion of the units the student shall be able to:

CO103.1: Apply basic statistical concepts to generate simple descriptive for health datasets.

CO103.2: Interpret results or statistical summaries commonly provided in health literature.

CO103.3: Develop skills to apply statistical methods for drawing inferences from given data sets.

CO103:4: Practice statistical hypothesis tests including methods for statistical inference.

Fundamentals of Occupational and Environmental Health (PH105T)

Upon completion of the units the student shall be able to:

CO105.1: Be able recognize sources, pathways and health effects associated with major categories environmental and occupational risk factors.

CO105.2: Develop an understanding of attributable health burdens from these risk factors at the global and national scales

CO105.3: Gain an in-depth knowledge on common sources, routes of exposure and mechanisms for health effects for important categories of occupational and environmental hazards

CO105.4: Become familiar with specific legal and regulatory provisions concerning environmental and occupational hazards

Environmental and Occupational Toxicology (PH107T)

Upon completion of the units the student shall be able to:

CO107.1: Understand the types of toxic effects exerted by chemicals on organ systems within the human body

CO107.2: Develop familiarity with laboratory toxicity testing protocols

CO107.3: Be able to refer key resources related to toxicological information and modeling methods

CO107.4: Develop skills to conduct risk assessments using available sources of information

Professional Skills Development (PH109T)

Upon completion of the units the student shall be able to:

CO109.1: Develop good written and oral communication abilities

CO109.2: Develop an understanding of team building and leadership skills

CO109.3: Develop knowledge regarding capacities needed to work independently within diverse work environments

CO109.4: Develop critical thinking, creativity and effective communication

Epidemiology and Biostatistics Lab I (PH151P)

Upon completion of the units the student shall be able to:

CO151.1: Interpret choices of commonly used study designs in research studies and compare differences between different standardization methods

CO151.2: Generate descriptive tables and graphs to summarize data as well as draw inferences

CO151.3: Develop familiarity with 'R' packages

CO151.4: Practice techniques for organization of data, in preparation for data analyses

Toxicology and Environmental Quality Monitoring Lab (PH153P)

Upon completion of the units the student shall be able to:

CO153.1: Become familiar with toxicity testing methods

CO153.2: Demonstrate skills in using monitoring techniques for selected air, water and soil pollutants

CO153.3: Develop skills to interpret toxicity assessment reports in comparison to regulatory requirements and prepare short reports

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Year I

SEMESTER II

Applied Epidemiology (PH102T)

Upon completion of the units the student shall be able to:

CO102.1: Understand population disease screening methods data

CO102.2: Demonstrate practical skills in designing questionnaires, data collection, analysis and archival of epidemiological

CO102.3: Practice the skills in developing a surveillance methods for a given condition and identifying outbreaks

CO102.4: Quantify the role of environmental epidemiology in solving environmental health problems

Intermediate Biostatistics (PH104T)

Upon completion of the units the student shall be able to:

CO104.1: Understand critical methods for analysis of datasets

CO104.2: Develop skills to analyze the development of logistic and liner regression models

CO104.3: Demonstrate skills to apply tests of inferences

CO104.4: Estimate and interpret associations between continuous/ categorical dependent and independent variables while adjusting for confounders and effect modifiers.

Fundamentals of Industrial Hygiene (PH106T)

Upon completion of the units the student shall be able to:

CO106.1: Identify physical, chemical, biological and psychosocial agents, factors, stressors generated or associated with defined sources, operations or processes

CO106.2: Describe the effects of exposure to workplace hazards and scientific methods used in hazard analysis and risk assessment

CO106.3: Implement how to Anticipate, Identify, Evaluate occupational health hazards that may exist in the workplace and understand different approaches for controlling workplace hazards.

CO106.4: Recommend control strategies to mitigate or reduce exposure on the basis regulatory requirements.

Fundamentals of Industrial Safety (PH108T)

Upon completion of the units the student shall be able to:

CO108.1: Understand the nature of safety hazards prevalent in the work environment.

CO108.2: Demonstrate the capabilities to investigate and report accidents, identify methods to resolve the safety related issues through applying appropriate management techniques and help to comply with the regulatory requirements.

CO108.3: Estimate the relationship between the hazards and inadequate/poor management

CO108.4: Plan on emergency and disaster preparedness measures and perform a mock drill through demonstration and site visits.

Epidemiology and Biostatistics lab II (PH152P)

Upon completion of the units the student shall be able to:

CO152.1: Do literature search independently using PubMed

CO152.2: Design simple epidemiological research studies

CO152.3: Analyse and interpret data from previously collected datasets

CO152.4: Evaluate screening methods used in public health practice and research

Industrial Hygiene Lab (PH154P)

Upon completion of the units the student shall be able to:

CO154.1: Conduct industrial hygiene monitoring and measurements for physical, chemical and biological agents

CO154.2: Compare with international and national hygiene standards

CO154.3: Demonstrate industrial hygiene report writing skills and communication.

CO154.4: Develop competence in report writing and communication.

Industrial Safety Lab (PH156P)

Upon completion of the units the student shall be able to:

CO156.1: Perform job hazard analysis and safety inspection at work places

CO156.2: Demonstrate incidence metrics, fire load calculations and perform chemical risk assessments

CO156.3: Assess ergonomic issues and recommend controls

CO156.4: Execute studies related to audit procedures on ISO 14001 and OHSAS 18001

Year II

SEMESTER III

Environmental Exposure Assessment Strategies and Control Techniques (PH201T)

Upon completion of the units the student shall be able to:

CO201.1: Interpret results of exposure assessments and recommend control approaches

CO201.2: Recommend an optimal choice of exposure assessment methods for specific exposure situations

CO201.3: Demonstrate knowledge of policies, laws, regulations and guidelines that are relevant to selected environmental health issues.

CO201.4: Implement strategies for control based on integrated exposure assessments across environmental media

Social and Behavioral Sciences in Public Health (PH203T)

Upon completion of the units the student shall be able to:

CO203.1: Understand the basic concepts of anthropology and epidemiology on health and diseases

CO203.2: Workout qualitative research methods with relevant tools for public health research

CO203.3: Assess the approaches and theories about complex health-related behavior

CO203.4: Demonstrate the relevance of behavioral research methods and tools for public health research

Health Policy and Management (PH205T)

Upon completion of the units the student shall be able to:

CO205.1: Learn the economic aspects of health care and role of socioeconomic factors affecting the health and medical insurance.

CO205.2: Understand programs and initiatives covered under the National Health Policy..

CO205.3: Gain knowledge on the National Health Policy and its importance

CO205.4: Know the achievements from National Health Programs

Applied Ergonomics (PH207T)

Upon completion of the units the student shall be able to:

CO207.1: Develop an ergonomic strategy at work

CO207.2: Perform basic ergonomic assessment and appraising the risks

CO207.3: Select suitable type of ergonomic control methods and applying appropriate measures for a given occupational situation

CO207.4: Apply ergonomic principles to examine as well as design workplace and work

International Health (PH209T)

Upon completion of the units the student shall be able to:

CO209.1: Understand the role of multi-sectoral approaches to address health concerns at the national and global levels.

CO209.2: Understand the ramifications of the burden of disease and the role of specific risk factors within public health programs

CO209.3: Recognize the importance of health burdens in scoping local and global health policies

CO209.4: Scope out priority action plans especially for situations involving disasters and emergencies

Public Health Nutrition (PH211T)

Upon completion of the units the student shall be able to:

CO211.1: Understand the role of nutrition within public health programs

CO211.2:Become familiar with Millennium Development Goals as related to nutrition.

CO211.3: Know the current status of MDGs goals achieved in India

CO211.4: Scope out nutritional assessment and intervention strategies within communities

Advanced Seminar in Occupational & Environmental Health (PH213P)

Upon completion of the units the student shall be able to:

CO213.1: Collect scientific information from sources (e.g. journals, science magazines, books, etc.)

CO213.2: Learn about current significant topics in the field of global occupational and environmental health

CO213.3: Communicate effectively and informatively *via* presentations and essay write-up assignments

CO213.4: Assess current occupational and environmental health issues and to develop deeper subject knowledge in these areas

Exposure Assessment Lab (PH251P)

Upon completion of the units the student shall be able to:

CO251.1: Gain knowledge on laboratory and field protocols used for exposure monitoring

CO251.2: Develop skills in performing sampling and analyses for specific pollutants in air, water and food

CO251.3: Develop proficiency in laboratory and field protocols for exposure monitoring

CO251.4: Apply skills in evaluation of exposure assessment reports and recommend follow up actions on the basis of regulatory requirements

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Year II

SEMESTER IV

Project Dissertation (PH252P)

Upon completion of the units the student shall be able to:

CO252.1: Analyze data mined through the project of interest in the field of environmental and occupational health.

CO252.2: Show the potential capacity building that has been learned through the MPH program

CO252.3: Explore expertise and skills in the domain of environmental and occupational health

CO252.4: Transform potential expertise into allied job profile with good laboratory practice, compliance and standard protocols.

Air Quality Assessment (PH202T)

Upon completion of the units the student shall be able to:

CO202.1: Build skills on recognition, assessment and control for specific IAQ and AAQ parameters

CO202.2: Conduct simple IAQ and AAQ assessments and recommend follow up actions

CO202.3: Interpret advanced IAQ and AAQ assessment reports

CO202.4: Understand regulatory requirements pertaining to IAQ and AAQ

Public Health Communication (PH204T)

Upon completion of the units the students shall be able to:

CO204T: understand important updates in all public health activities.

CO204.2: Learn various f methods for health communication that include techniques to make effective use of media

CO204.3: Develop communication materials for use in health promotion initiatives

CO204.4: Engage in dissemination and/or awareness raising events surrounding specific health concerns

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Ability Enhancement – Compulsory Course

Environmental Sciences (AAE 004)

Upon completion of the units the students shall be able to:

COAE04.1: Understand and describe the processes and mechanisms by which hazards are produced, released, transported, and modified in the environment and affect health

COAE04.2: Identify the implications of environmental policies and standards on compliance with regulatory, standard setting organizations and International policies

COAE04.3: Apply management practices to environmental and occupational health issues.

COAE04.4: to participate in outreach activities including environmental applications and problem solving in off-campus community settings.

Open to other students: Elective courses offered by the Department of EHE, Faculty of Public Health

Introduction to Occupational Health (AGE030)

Upon completion of the units the students shall be able to:

COGE30.1: Recognize sources, pathways and health effects associated with major categories environmental and occupational risk factors.

COGE30.2: Develop an understanding of attributable health burdens from these risk factors at the global and national scales

COGE30.3: Be familiar with specific legal and regulatory provisions concerning environmental and occupational hazards

COGE30.4: To assess important legislative and regulatory elements that govern the management of environmental and occupational health risks

Biomedical Waste Management (AGE031)

Upon completion of the units the students shall be able to:

COGE31.1: Demonstrate required mechanisms on the environmental and occupation hazards of improper BMW management.

COGE31.2: Execute good analytical practices for a systematic approach in the management of BMW

COGE31.3: Gain knowledge in various advanced management strategies and technological solutions in BMW management, treatment and disposal.

COGE31.4: Familiar with the applicable legislations and regulations for treatment and disposal.

Basic quantitative research tools for clinical and public health research (ASL010)

Upon completion of the units the students shall be able to:

COSL10.1: Understand the evolution and role of hypothetico-deductive model in scientific inquiry

COSL10.2: Demonstrate skills in conducting a systematic literature search using PubMed

COSL10.3: Demonstrate basic skills in developing questionnaires and collection of data

COSL10.4: Develop capacities in developing database using Microsoft Excel, entering, cleaning and organizing data for further statistical analysis

Health Science Data Analysis using R-Statistical Software (ASL011)

Upon completion of the units the students shall be able to:

COSL11.1: Provide foundation to computational and analytical skill in health science data analysis using case studies.

COSL11.2: Demonstrate their basic skills in developing questionnaires and collection of data

COSL11.3: Demonstrate skills in developing database using Microsoft Excel and cleaning the data

COSL11.4: Identify appropriate statistical tool, analysis data and interpret the results

Occupational Health Services (ASE012)

Upon completion of the units the students shall be able to:

COSE12.1: Understand the functions of the Occupational Health Centre and the statutory requirements in an industry

COSE12.2: Evacuate a patient from workplace in case of emergency

COSE12.3: Maintain the first aid boxes and first aid post in work areas and can successfully motivate the employees to complete their periodical medical examination

COSE12.4: Maintain safe custody and retrieve the medical records if required.

FACULTY OF PUBLIC HEALTH

MPH (Occupational and Environmental Health)

PROGRAM OUTCOMES (PO) – COURSE OUTCOMES (CO)

MAPPING

YEAR - I

SEMESTER – I

(H- High; M- Medium; L- Low)

Introduction to Epidemiology **(PH101T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO101.1	H	H	M	H	M	L
	CO101.2	H	H	H	H	H	L
	CO101.3	H	H	H	H	H	M
	CO101.4	H	H	M	H	H	L

Introduction to Biostatistics **(PH103T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO103.1	L	M	M	H	H	H
	CO103.2	M	M	H	H	H	H
	CO103.3	M	M	H	H	H	H
	CO103.4	M	M	H	H	H	H

Fundamentals of Occupational and Environmental Health **(PH105T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO105.1	H	H	H	H	H	M
	CO105.2	H	M	H	M	M	H
	CO105.3	M	H	H	H	H	M
	CO105.4	H	H	H	H	M	H

Environmental and Occupational Toxicology **(PH107T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO107.1	H	M	H	H	L	M
	CO107.2	M	H	M	H	M	M
	CO107.3	M	H	H	H	H	M
	CO107.4	H	M	M	H	M	M
	CO107.5	M	H	H	M	H	M

Prof	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**

	CO109.1	H	M	M	H	H	L
	CO109.2	H	H	H	H	M	L
	CO109.3	H	M	M	M	H	L
	CO109.4	H	M	M	H	H	L

Epidemiology and Biostatistics Lab I **(PH151P)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO151.1	H	H	H	H	M	M
	CO151.2	H	H	H	H	H	M
	CO151.3	H	M	L	L	M	L
	CO151.4	H	M	L	M	H	L

Toxicology and Environmental Quality Monitoring Lab **(PH153P)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO153.1	M	H	M	H	M	M
	CO153.2	M	M	H	H	H	M
	CO153.3	H	M	M	H	M	M
	CO153.4	M	H	M	M	H	M

YEAR - I

SEMESTER – II

Appli ed Epid emio	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**

	CO102.1	H	H	H	H	H	H
	CO102.2	H	H	H	H	H	H
	CO102.3	H	H	H	H	H	M
	CO102.4	H	H	H	H	H	H

Intermediate Biostatistics **(PH104T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO104.1	L	M	H	H	H	H
	CO104.2	M	M	H	H	H	H
	CO104.3	M	M	H	H	H	H
	CO104.4	M	M	H	H	H	H

Fundamentals of Industrial Hygiene **(PH106T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO106.1	H	M	H	M	M	H
	CO106.2	H	H	H	M	H	M
	CO106.3	H	H	M	M	M	H
	CO106.4	H	M	H	M	H	M

Fundamentals of Industrial Safety **(PH108T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO108.1	H	H	H	H	M	H
	CO108.2	H	H	M	H	M	H
	CO108.3	H	H	M	H	M	H
	CO108.4	H	H	M	H	M	H

Epidemiology and Biostatistics Lab II **(PH152T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO152.1	H	M	L	L	L	L
	CO152.2	H	H	H	H	H	M
	CO152.3	H	H	H	H	H	M
	CO152.4	H	L	L	L	M	H

Undu	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**

	CO154.1	H	H	H	M	M	M
	CO154.2	M	H	M	M	H	M
	CO154.3	H	M	H	H	M	L
	CO154.4	H	H	H	M	M	L

Industrial Safety Lab **(PH156P)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO156.1	H	H	H	H	H	H
	CO156.2	H	H	H	H	M	M
	CO156.3	H	H	H	H	M	M
	CO156.4	H	H	H	H	M	M

YEAR - II

SEMESTER – III

Environmental Exposure Assessment Strategies and Control Techniques **(PH201T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO201.1	H	H	H	H	H	M
	CO201.2	H	H	H	H	H	M
	CO201.3	H	H	H	H	H	H
	CO201.4	H	H	H	M	H	H

Social and Behavioral Sciences in Public Health **(PH203T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO203.1	H	M	H	H	H	H
	CO203.2	H	M	H	H	H	H
	CO203.3	H	M	H	H	H	H
	CO203.4	H	M	H	H	H	H

Health Policy and Management **(PH205T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO205.1	H	H	H	H	H	H
	CO205.2	H	M	H	H	H	H
	CO205.3	H	H	H	M	M	M
	CO205.4	M	M	M	H	H	H

Applied Ergonomics **(PH207T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO207.1	M	H	H	M	L	M
	CO207.2	M	H	H	H	M	M
	CO207.3	H	H	H	H	M	H
	CO207.4	H	H	H	H	M	H

International Health **(PH209T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO209.1	M	M	H	H	H	H
	CO209.2	H	H	M	H	H	H
	CO209.3	H	H	H	H	M	M
	CO209.4	H	H	H	M	M	M

Public Health Nutrition **(PH211T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO211.1	H	H	H	H	H	H
	CO211.2	H	M	H	H	M	H
	CO211.3	H	H	H	H	M	M
	CO211.4	H	H	H	H	H	H

Advanced Seminar Series in Occupational & Environmental Health **(PH213T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO213.1	M	M	M	M	M	M
	CO213.2	M	M	M	H	H	H
	CO213.3	M	M	M	M	M	M
	CO213.4	H	H	M	H	M	M

Exposure Assessment Lab **(PH251T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO251.1	H	H	H	H	H	M
	CO251.2	H	H	H	H	H	H
	CO251.3	H	H	H	H	H	H

YEAR - II

SEMESTER – IV

Dissertation **(PH252T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO252.1	H	M	M	H	H	M
	CO252.2	M	M	M	H	H	M
	CO252.3	M	M	H	H	H	H
	CO252.4	H	M	M	H	H	H

Air Quality Assessment **(PH202T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO202.1	H	H	H	H	H	M
	CO202.2	H	H	H	H	H	H
	CO202.3	H	M	H	H	H	H
	CO202.4	H	H	H	H	H	M

Public Health Communication **(PH204T)**	CO	PO1	PO2	PO3	PO4	PO5	PO6
	CO204.1	M	L	M	M	H	H
	CO204.2	H	L	H	L	L	H
	CO204.3	H	L	H	L	M	H
	CO204.4	H	L	H	L	M	H

Ability Enhancement – Compulsory Course

Environmental Sciences **(AE004T)**	CO	PO1	PO2	PO3	PO4	PO5	PO6
	CO4.1	H	H	H	H	H	H
	CO4.2	H	H	H	H	H	H
	CO4.3	H	H	H	H	H	H
	CO4.4	H	H	H	M	M	M

Open to other students: Elective courses offered by the Department of EHE

Fundamentals of Occupational Health **(GE030T)**	CO	PO1	PO2	PO3	PO4	PO5	PO6
	CO30.1	H	H	H	H	H	H
	CO30.2	H	H	H	M	M	M
	CO30.3	H	H	H	H	H	H
	CO30.4	H	H	H	M	M	M

Biomedical Waste Management **(GE031T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO31.1	M	H	H	H	H	H
	CO31.2	H	H	H	H	H	H
	CO31.3	H	H	H	M	M	M
	CO31.4	H	H	H	H	H	H

Basic quantitative research tools for clinical and public health research Sciences**(SL010P)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO10.1	H	H	H	H	H	H
	CO10.2	H	H	H	H	H	H
	CO10.3	H	H	H	H	H	H
	CO10.4	H	H	H	M	M	M

Health Science Data Analysis using R-Statistical Software **(SL011P)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO11.1	H	H	H	H	M	H
	CO11.2	H	H	H	H	M	H
	CO11.3	H	H	H	H	M	H
	CO11.4	H	H	H	H	M	H

Occupational Health Services **(SE012T)**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	CO12.1	M	H	H	M	M	L
	CO12.2	H	H	M	H	M	M
	CO12.3	M	H	H	M	M	L
	CO12.4	M	H	M	M	M	L

FACULTY OF PUBLIC HEALTH

M.SC. (INDUSTRIAL HYGIENE AND SAFETY) PART-TIME COURSE (3 YEARS)

PROGRAM OUTCOMES – COURSE OBJECTIVES

MAPPING

PROGRAMME OUTCOMES (PO)

Upon completion of the **Master of Industrial Hygiene and Safety (MSc-IH&S) Part-time Degree Program (3-year)**, the candidate should be able to:

PO1: **Demonstrate an understanding of Chemical hazards and dust, properties and behavior of various chemical agents at workplaces, the exposure limits, available risk assessment and the role of an Industrial Hygienist.**

PO2: **Demonstrate skills in recognizing, evaluating & controlling hazards, sampling, storage and analysis of the chemicals. Understand the health effects of the exposures and control banding approaches to assess workplace exposures.**

PO3: **Understand in-depth knowledge in the methods of controlling workplace chemical hazards via chemical communication, housekeeping, ventilation, various types of Personal Protective equipment and appropriate selection method for the PPEs.**

PO4: Demonstrated knowledge to investigate and report accidents, identify methods to resolve the safety related issues through applying appropriate management techniques and help to comply with the regulatory requirements.

PO5: **In-depth understanding of safety hazards viz., Fire, construction, electrical and associated legal implications, incidence metrics, fire load calculations and perform chemical risk assessments**

PO6: **Describe in detail behavioral safety its management and control in workplaces, legal implications and ethical issues.**

PO7: **Demonstrate skill in industrial hygiene measurements and safety audits.**

COURSE OBJECTIVES (CO)

YEAR I

SEMESTER I

Introduction to Occupational and Environmental Health (IHS-101)

Upon completion of the unit the student shall be able to:

CO101.1: **Describe the basics of occupational, environmental health, health hazards, overview of diseases and their role as a Professional.**

CO101.2: **Describe the elements of industrial hygiene and identify the hazards to overcome the risks at workplaces to perform a better role of an industrial hygienist.**

CO101.3. **Explain the elements of industrial safety and how to identify hazards by conducting risk assessment at workplaces to perform a better role of an industrial safety professionl.**

CO101.4: **Implement OSH management systems Policy and strategic planning and also train the employees for emergency and disaster.**

Fundamentals of Physiology and Industrial Toxicology (IHS-103)

Upon completion of the unit the student shall be able to:

CO103.1: **Understand basic anatomy & Physiology of respiratory tract, skin, ear, eye and the occupational health diseases occurs.**

CO103.2: **Describe the Principles & Experimental studies of toxicology to conduct the Toxic Releases Risk-Hazard assessment to identify the Organic Pollutants and contamitants.**

Legislations: Environment, Health and Safety (IHS-105)

Upon completion of the unit the student shall be able to:

CO105.1: **Understand the legal framework for OSH in India as a part of Environment, Health & Safety Legislations to act as a OSH professionals with the help of Factories Act and Rules 1948.**

CO105.2: **Gain knowledge on the Environmental Protection Act 1986 and Rules.**

CO105.3: **Apply the Industrial hygiene Rules, Regulations & acts amended.**

CO105.4: **Follow the Standards and Codes of Practices.**

Professional Skills Development (IHS-107)

Upon completion of the unit the student shall be able to:

CO107.1: **Build improved communication skills for effective OSH communication**.

CO107.2: **Demonstrate the oral presentations with interesting Audio-visual aids to establish a effective relationship with the audience.**

CO107.3: **Apply the writing skills for proposal and scientific paper publications.**

CO107.4: **Demonstrate leadership skills by taking decisions to solve the problems efficiently.**

SEMESTER II

Industrial safety (IHS-102)

Upon completion of the units the student shall be able to:

CO102.1: **Demonstrated knowledge of accident prevention and investigation, societal and economic benefits, legal requirements, root cause analysis and accident investigation methodologies.**

CO102.2: **Describe in detail the safety of electrical hazards that includes dangers of electricity, legal implications, industrial fires and hazardous area classification as per Indian standards.**

CO102.3: **Demonstrate competence in construction safety, identifying the hazards, associated safe features, PPEs and waste disposal.**

CO102.4: **Describe in factors contributing to fire and explosion, building design, precautionary measures, properties of chemicals, explosion, fire fighting and control**

CO102.5**: Demonstrated in-depth knowledge in behavioral safety, psychological aspects of safety, individual differences, management's role and ethical issues.**

Introduction to Chemical hazards and dust (IHS-104)

Upon completion of the units the student shall be able to:

CO104.1**: Demonstrate an understanding of Chemical hazards and dust, properties and behavior of various chemical agents at workplaces, the exposure limits, available risk assessment and the role of an Industrial Hygienist.**

CO104.2**: Demonstrate skills in recognizing, evaluating & controlling hazards, sampling, storage and analysis of the chemicals. Understand the health effects of the exposures and control banding approaches to assess workplace exposures.**

CO104.3: **Understand and have in-depth knowledge in the methods of controlling workplace chemical hazards via chemical communication, housekeeping, ventilation, various types of Personal Protective equipment and appropriate selection method for the PPEs.**

Industrial Safety –Practical (IHS-152)

Upon completion of the units the student shall be able to:

CO152.1: **Conduct table top exercises on accident investigation**

CO152.2: **Perform chemical, electrical, mechanical and construction safety audits.**

CO152.3: **Identify and understand of safety symbols**

CO152.4: **Conduct fire load calculations and reporting**

Industrial Hygiene Lab (IHS154)

Upon completion of the units the student shall be able to:

CO154.1: **Conduct industrial hygiene monitoring and measurements for chemical agents**

CO154.2: **Compare with international and national hygiene standards**

CO154.3: **Demonstrate industrial hygiene report writing skills and communication.**

CO154.4: **Develop competence in report writing and communication.**

YEAR II

SEMESTER III

Industrial Hygiene (II) – Physical Hazards (IHS-201)

Upon completion of the unit the student shall be able to:

CO201.1: **Understand the basics of physical hazards and their exposure limits**

CO201.2: **Have in-depth knowledge on various noise hazards, control measures through industrial hygiene principles and protection devices**

CO201.3: **Explain the health effects of vibration on human and structures, assessment techniques and control measures**

CO201.4: **Define fundamentals of non-ionizing radiation, their measurement and control strategies** CO201.5: **Demonstrate skills in assessment of illumination hazards and in-depth understanding of its health effects and control measures**

CO201.6: **Explain heat stress, health effects of heat exposures, assessment techniques, control measures**

Industrial Hygiene (II): Physical Hazards – Practical (IHS-251)

Upon completion of the unit the student shall be able to:

CO251.1: **Demonstrated skill in evaluation of Noise with standard equipments & Interpretation and report results comparing with national and international standards.**

CO251.2: **Demonstrated skill in evaluation the heat stress using WBGT index and Interpretation & report results comparing with national and international standards.**

CO251.3: **Demonstated skill in illumination assessment, calculation of uniformity and diversity of lighting and Interpret results.**

CO251.4: **Understand the principles of vibration assessment using whole body and hand arm vibration monitor Interpretat the results.**

CO251.5: **Understand the principles of measuring ionizing and non-ionizing radiation and compare results with national and international standards**

Biostatistics for Occupational Safety and Health (IHS-203)

Upon completion of the unit the student shall be able to:

CO203.1: **Understand the basic concepts and methods of statistics and the need for statistics in industrial health.**

CO203.2: **Describe methods of exploring, organizing and presenting data and different measures of average with measures of spread and shape.**

CO203.3: **Understanding the concept of probability and their laws and probability distribution.**

CO203.4: **Explain various sampling techniques and sampling distribution and central limit theory.**

CO203.5: **Analyse inferential statistics using Point estimation, Confidence interval estimation and testing of hypothesis.**

CO203.6: **Skills in measurement of association Using Correlation, Regression, Relative Risk, Odds Ratio, Multivariate Regression Analysis and Logistic Regression.**

Epidemiology for Occupational Safety and Health (IHS-205)

Upon completion of the unit the student shall be able to:

CO205.1: **Explain the various concepts in epidemiology for measuring health and causation and various study design with examples**

CO205.2: **Identify errors in epidemiological research including occupational and environmental epidemiology and screening and surveillance of occupational diseases**

Epidemiology and Biostatistics Lab (IHS-253)

Upon completion of the unit the student shall be able to:

CO253.1: **Demonstrated skills in evaluation of health using incidence and prevalence, calculating relative risk and odds ratio in various study designs**

CO253.2: **Conduct independenly descriptive statistics, probability, Inferential statistics using statistical computer software**

SEMESTER IV

Industrial Hygiene (III) – Biological Hazards (IHS-202)

Upon completion of the unit the student shall be able to:

CO202.1: **Explain the various types and source of biological hazards with their mechanism of action, health effects and their exposure limits**

CO202.2: **Evaluation of Microbiological risk assessment and their sources of information, Analytical methods of airborne microorganisms, Interpretation and limitations of assessment processes**

CO202.3: **Enumerate the control measures of biological hazard control and welfare measures with respect to Indian Factories Act**

Industrial Hygiene (II) – Biological Hazards – Practical (IHS-252)

Upon completion of the unit the student shall be able to:

CO252.1: **Evaluation of Biological Hazards in the workplaces using culture techniques and Microscopic techniques.**

CO252.2: **Demonstrate skills in interpretation of the results, report writing skills and communication of the hazards effectively.**

Safety Engineering (IHS-204)

Upon completion of the unit the student shall be able to:

CO204.1: **Explain the purpose, concept and principles of safety through improving workplace design, maintenance and result of good housekeeping through proper inspections**

CO204.2: **Discuss the hazards in specific machinery and process and safe guarding measures and safe work rule and practices**

CO204.3: **Elaborate on the causes of tool accidents and their control measures and Portable power tools and their selection, inspection, maintenance, repair and safe use**

CO204.4: **Understand various guidelines and techniques for safe handling of materials and its importance.**

CO204.5: **Perform hazard analysis using various techniques viz., Job safety analysis, Job hazard analysis, HAZAN, HAZOP, Safety audit, survey, Check List Method, Chemical Properties MSDS**

Safety Engineering-Practical (IHS-254)

Upon completion of the unit the student shall be able to:

CO254.1: **Recognise and evaluate the hazards in workplace and JSA analysis and**

CO254.2: **Measure safety performance and incidence matrix with inspection methodology**

Project I (IHS-256)

Upon completion of the unit the student shall be able to:

CO256.1**: Demonstrate skills in applying the learnt techniques in carrying out the project work in either of the fields namely, Industrial Hygiene, Industrial Safety, Industrial Health and Risk Management.**

Year III

SEMESTER V

Advanced Industrial Safety (IHS-301)

Upon completion of the unit the student shall be able to:

CO301.1: **Demonstrate in-depth understanding of safe handling of materials and industrial waste**

CO301.2: **Demonstrated knowledge in the principles, process and safe Management of chemicals in Industries**

CO301.3: **Describe risk assessment, quantification, Risk Reduction in industries and preparation of risk analysis report.**

CO301.4: **Discuss safety in industrial process design, process selection, product safety and liability CNC, specific and finishing operations, reliability engineering and also in emerging issues lie robotic safety.**

CO301.5: **Demonstated skills in Identification, assessment and implementation of Emergency planning, preparing risk assent reports.**

Ergonomics (IHS-303)

Upon completion of the unit the student shall be able to:

CO303.1: **Discuss on the basic anatomical terminologies, anthropometry, biomechanics and work physiology and understand the on hazards from poor workstation design in compliance with standard**

CO303.2: **Explain various factors influenceing ergonomics and MSK and understand the modern principles of work organisation**

CO303.3: **Describe various ergonomic assement tools and method and evaluate the risk factors associated with MSD, back disorders and injuries**

CO303.4: **Implement strategies for ergonomic control methods for office workstations and discuss on Medical/Rehabilitation measures**

Occupational Safety and Health management (IHS-305)

Upon completion of the unit the student shall be able to:

CO305.1: **Elaborate on the history of Safety Movement, the need for safety, legal, humanitarian, economic and social considerations, OSHAS-18001 and discuss management's role in Industrial Safety.**

CO305.2: **Understand and describe the safety policy, the roles and responsibility of safety committee and explain linking business and OHS goals and economics of safety and health**

CO305.3: **Discuss** e**mployee participation in safety and integration of SHE in Collective Bargaining.** CO305.4: **Explain various types of OSH training programmes and discuss on Integrating safety into operating procedures.**

CO305.5: **Elaborate on the fundamentals of communication process, mode and tools for communication, use of modem methods of programming, storing and retrieval of MIS for SHE and use of IT Tools in managing SHE systems.**

CO305.6: **Describe the methods of ensuring contractor safety (Approaches, Permit system, LOTO, OHS briefing, checks/training, enforcement, accountability).**

SEMESTER VI

Advanced Industrial Safety: Practical (IHS-351)

Upon completion of the unit the student shall be able to:

CO351.1: **Describes the importance of Industrial Equipment, colour coding, design parameters,risk assessment using softwasre and understanding of Model HAZOP Study.**

Ergonomic laboratory (IHS-353)

Upon completion of the unit the student shall be able to:

CO353.1: **Conduct musculoskeletal discomfort surveys, RULA, REBA, NIOSH lifting equation and perform checklist evaluation for to evaluate office workstations and material handling**

HYG-Industrial hazards and controls (IHS – 302)

Upon completion of the unit the student shall be able to:

CO302.1: **Understand the basics of industrial hazard and its impact on Psycho social health of employees, discuss the standard regulations and controls of specific hazard in the workplace**

HYG-Workplace exposure assessment (IHS – 304)

Upon completion of the unit the student shall be able to:

CO304.1: **Explain hazard ranking and banding strategies to workplace, describe the Qualitative & semi quantitative methods in occupational exposure, evaluate ventilation and respiratory protection program.**

HYG-Bio-markers for chemical exposure (IHS – 306)

Upon completion of the unit the student shall be able to:

CO306.1: **Understand the scientific basis for biological monitoring, reliability of biomarker measurements and the application of bio monitoring data as an exposure assessment tool, and interpret the data and discuss the advantages and limitations of biological markers.**

SFT-Safety audit (IHS – 308)

Upon completion of the unit the student shall be able to:

CO308.1: **Describe the importance of safety audit, planning and conduct of Safety Audits, understand the components of a successful audit program, auditor training and calibration and prepare audit report .**

SFT-Construction safety (IHS – 310)

Upon completion of the unit the student shall be able to:

CO310.1: **Describe the planning and administration of construction safety programs, construction law and management, vehicle movement hazard, musculoskeletal disorders and the use of PPEs.**

SFT-Process safety management (IHS – 312)

Upon completion of the unit the student shall be able to:

CO312.1: **Explain OSHA's process hazard analysis and Process Safety Management (PSM) , Incident investigation, training and management, safety audits and corrective actions**

HLT-Corporate Social Responsibility (IHS – 314)

Upon completion of the unit the student shall be able to:

CO314.1: **Discuss on CSR & approaches to implementing CSR, importance of stakeholders' engagements and code of conducts**

CO314.2: **Describe national and international standards/guidelines and methods of assessing and reporting .**

HLT-Occupational Health Centre for Industries (IHS – 316)

Upon completion of the unit the student shall be able to:

CO316.1**: Discuss the requirement for occupational Health Centre; Medical officer and qualification, equipments and infrastructure required for Occupational Health Centre, documentation of health records and the OSHA Standards for Occupational Health Services**

HLT-Health surveillance programme (IHS – 318)

Upon completion of the unit the student shall be able to:

CO318.1: **Describe the fundamentals of occupational health surveillance, exposure assessment and their health indicators.**

CO318.2: **Discuss exposure assessment, fatalities, health registries; workplace disease and injury reporting.**

CO318.3: **Describe the risk communication, health clinic network and health surveillance library**

ENV-Ambient and Indoor Air quality (IHS – 320)

Upon completion of the unit the student shall be able to:

CO320.1: **Describe the ambient and indoor air quality issues – Key hazards, Morbidities and mortalities**

CO320.2**: Demonstrated skills in assessment methods for ambient & indoor air quality and discuss control measures**

CO320.3: **Describe the sick-building syndrome, Specific & non specific building related illnesses**

ENV-Solid waste management (IHS – 322)

Upon completion of the unit the student shall be able to:

CO322.1: **Discuss the principles of Hazardous waste management, environmental policies, legislation and their good practices at national & international level**

CO322.2: **Describe the sustainable techniques used in municipal solid waste management & urban waste services.**

ENV-International Conventions (IHS – 324)

Upon completion of the unit the student shall be able to:

CO324.1: **Discuss the convention on protection of the ozone layer, biological diversity, long-range transboundary air pollution, control of transboundary movements of hazardous wastes, protection of the marine environment and the coastal region, assistance in the case of a nuclear accident or radiological emergency.**

Project II & Viva voce (IHS-352)

Upon completion of the unit the student shall be able to:

CO352.1: **Conduct independently dissertation work using all the knowledge and principles learnt during the course in either of the fields namely, Industrial Hygiene, Safety Engineering and Occupational Health on a topic that is different from one selected in project I .**

FACULTY OF PUBLIC HEALTH

M.SC. (INDUSTRIAL HYGIENE AND SAFETY) PART-TIME COURSE (3 YEARS)

PROGRAM OUTCOMES – COURSE OBJECTIVES

MAPPING

YEAR - I

SEMESTER – I

(H- High; M- Medium; L- Low)

Introduction to Occupational and Environmental Health IHS-101	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO101.1	**M**	**M**	**M**	**M**	**M**	**M**	**M**
	CO101.2	**M**	**M**	**M**	**M**	**M**	**M**	**M**
	CO101.3	**M**	**M**	**M**	**M**	**M**	**M**	**M**
	CO101.4	**L**	**L**	**L**	**L**	**L**	**L**	**L**

Fundamentals of Physiology and Industrial Toxicology	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO103.1	**L**	**M**	**M**	**M**	**M**	**H**	**M**
	CO103.2	**M**	**M**	**H**	**M**	**H**	**M**	**M**

Legislations: Environment, Health and Safety IHS-105	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO105.1	**M**	**M**	**H**	**M**	**H**	**M**	**M**
	CO105.2	**M**	**M**	**H**	**M**	**H**	**M**	**M**
	CO105.3	**M**	**M**	**H**	**M**	**H**	**M**	**M**
	CO105.4	**M**	**M**	**H**	**M**	**H**	**M**	**M**

Professional Skills Development (IHS-107)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO107.1	**M**	**M**	**M**	**M**	**M**	**M**	**M**
	CO107.2	**M**	**M**	**H**	**M**	**M**	**M**	**M**
	CO107.3	**H**	**H**	**M**	**H**	**H**	**H**	**H**
	CO107.4	**M**	**H**	**H**	**H**	**H**	**M**	**H**

SEMESTER-II

Industrial safety (IHS-102)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO102.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO102.2	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO102.3	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO102.4	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO102.5	**H**	**H**	**H**	**H**	**H**	**H**	**H**

Industrial Safety – Practical (IHS-152)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO152.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**

Industrial Hygiene (I) Chemical hazards and Dust (IHS-104)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO104.1	**H**	**M**	**M**	**M**	**M**	**H**	**H**
	CO104.2	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO104.3	**M**	**H**	**H**	**H**	**M**	**M**	**H**

	CO104.4	**H**	**H**	**H**	**H**	**H**	**H**	**H**

Industrial Hygiene (I) – Chemical hazards and Dust – Practical IHS-154	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO154.1	**H**	**H**	**M**	**H**	**H**	**M**	**M**
	CO154.2	**H**	**H**	**H**	**M**	**H**	**H**	**H**

YEAR – II

SEMESTER - III

Industrial Hygiene (II) – Physical hazards (IHS-201)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO201.1	**M**	**M**	**M**	**M**	**M**	**M**	**M**
	CO201.2	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO201.3	**H**	**H**	**M**	**H**	**H**	**M**	**H**
	CO201.4	**H**	**H**	**H**	**H**	**M**	**H**	**M**
	CO201.5	**H**	**H**	**M**	**H**	**H**	**H**	**M**
	CO201.6	**M**	**H**	**H**	**M**	**H**	**M**	**H**
	CO201.7	**M**	**H**	**M**	**H**	**H**	**H**	**M**

Industrial Hygiene (II) – Physical hazards - Practical (IHS-251)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO251.1	**M**	**M**	**M**	**M**	**M**	**M**	**M**
	CO251.2	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO251.3	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO251.4	**M**	**M**	**L**	**L**	**M**	**M**	**L**
	CO251.5	**M**	**M**	**M**	**L**	**M**	**M**	**M**
	CO251.6	**H**	**H**	**H**	**H**	**M**	**H**	**H**
	CO251.7	H	H	H	H	H	H	H

pation al Safety and Healt	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7

	CO203.1	**L**	**M**	**L**	**M**	**L**	**L**	**M**
	CO203.2	**L**	**M**	**L**	**M**	**M**	**M**	**M**
	CO203.3	**L**	**M**	**M**	**M**	**M**	**M**	**M**
	CO203.4	**L**	**M**	**M**	**M**	**H**	**M**	**M**
	CO203.5	**M**	**M**	**M**	**M**	**H**	**M**	**H**
	CO203.6	**M**	**M**	**M**	**M**	**H**	**M**	**H**
	CO203.7	**M**	**M**	**M**	**M**	**H**	**M**	**H**

Epidemiology for occupational safety and Health (IHS-205)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO205.1	**M**	**L**	**L**	**L**	**L**	**L**	**L**
	CO205.2	**L**	**L**	**L**	**H**	**L**	**L**	**L**

Epidemiology & Biostatistics IHS-253	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO253.1	**M**	**M**	**L**	**L**	**L**	**L**	**H**
	CO253.2	**L**	**H**	**L**	**M**	**M**	**L**	**M**

SEMESTER - IV

Industrial Hygiene (II) – Biological hazards (IHS-202)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO202.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO202.2	**H**	**H**	**H**	**H**	**H**	**H**	**H**

	CO202.3	**H**	**H**	**H**	**H**	**H**	**H**	**H**

Industrial Hygiene (III) – Biological hazards - Practical IHS-252	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO252.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**

Safety Engineering (IHS-204)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO204.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO204.2	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO204.3	**H**	**H**	**H**	**H**	**M**	**M**	**M**
	CO204.4	**H**	**H**	**H**	**H**	**M**	**M**	**M**
	CO204.5	**H**	**H**	**H**	**H**	**M**	**M**	**M**

Safety Engineering – Practical IHS-254	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO254.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO254.2	**H**	**H**	**H**	**H**	**M**	**M**	**M**

Project I IHS-256	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO256.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**

YEAR III

SEMESTER-V

Advanced Industrial safety IHS-301	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO301.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO301.2	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO301.3	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO301.4	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO301.5	**H**	**H**	**H**	**H**	**H**	**H**	**H**

Ergonomics (IHS-303)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO303.1	**L**	**H**	**L**	**M**	**L**	**H**	**H**
	CO303.2	**L**	**H**	**L**	**M**	**L**	**H**	**H**
	CO303.3	**L**	**H**	**L**	**M**	**L**	**H**	**H**
	CO303.4	**L**	**H**	**L**	**M**	**L**	**H**	**H**

Ergonomics – Practical (IHS-353)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO353.1	**L**	**H**	**M**	**M**	**L**	**M**	**H**

Safety and Health Management	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7

	CO305.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO305.2	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO305.3	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO305.4	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO305.5	**H**	**H**	**H**	**H**	**M**	**M**	**M**
	CO305.6	**H**	**H**	**H**	**H**	**M**	**M**	**M**

SEMESTER-VI

HYG-Industrial hazards and controls (IHS – 302)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO302.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**

HYG-Workplace exposure assessment (IHS – 304)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO304.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**

chemical exposure (IHS – 306)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO306.1	**M**	**M**	**M**	**M**	**M**	**M**	**M**

SFT-Safety audit (IHS – 308)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO308.1	**H**	**H**	**H**	**H**	**M**	**H**	**H**

SFT-Construction safety (IHS – 310)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO310.1	**H**	**H**	**H**	**H**	**M**	**H**	**H**

SFT-Process safety management (IHS – 312)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO312.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**

l HLT-Corporate social responsibilities (IHS – 314)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO314.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO314.7	**H**	**H**	**H**	**H**	**H**	**H**	**H**

health centre for industries (IHS – 316)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO316.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**

ce program me	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7

	CO254.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**
	CO254.2	**H**	**H**	**H**	**M**	**H**	**H**	**H**
	CO254.3	**H**	**H**	**H**	**M**	**H**	**H**	**M**

ENV-Ambient & Indoor air quality (IHS - 320)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO320.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**

ENV-Solid waste management (IHS – 322)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO322.1	**H**	**H**	**H**	**H**	**H**	**H**	**H**

ENV-Internal conventions (IHS – 324)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO324.1	**M**	**M**	**M**	**M**	**M**	**M**	**M**

Project II and Viva – Voce (IHS-352)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO352.1	**H**	**H**	**H**	**H**	**M**	**M**	**M**

FACULTY OF PUBLIC HEALTH

B.Sc. (Hons.) Environmental Health Sciences

PROGRAM OUTCOMES – COURSE OUTCOMES

MAPPING

PROGRAMME OUTCOMES (PO)

Upon completion of the B. Sc. (Hons) Environmental Health Sciences Degree Program, the candidate should be able to:

PO1: Gain knowledge about the physical and biological environment interactions and its role in sustenance of human life

PO2: Acquire familiarity in various life sciences courses, comprehend how each course is linked to human health and apply the theoretical and practical aspects to improve life on this planet.

PO3: Recognize the sources, pathways and assess the risk factors with respect to environmental and food quality

PO4: Develop competency in conducting risk assessments for environmental pollutants

PO5: Apply epidemiology and biostatistics concepts in research and health surveillance of population

PO6: Gain hands-on practical training in using technologies for testing environmental and food parameters through diverse learning process

PO7: Develop environment and health mitigation management plan in relation to the regulatory requirements and guidelines

COURSE OUTCOMES (CO)

Year I

SEMESTER I

First Year, Semester I

Environmental Health (UEH101)

Upon completion of this course, the students shall be able to:

CO101.1: Understand the structure of ecosystem and its relationship with environmental health

CO101.2: Describe the association between population growth and environmental pollutants

CO101.3: Identify chemical, physical, and biological agents that originate in the environment and their impact human health.

CO101.4: Describe policies and systems that have been developed to manage health risks associated with environmental hazards

Ecology (EH103T)

After the completion of this course, students should be able to:

CO103.1: Identify the types of living and non living components in the environment

CO103.2: Understand how human interfaces with the environment

CO103.3: Learn the threats to the environment

CO103.4: Understand the essentials and need for planning and management of natural resources on this planet

General Chemistry (EH105T)

After the completion of this course, students should be able to:

CO105.1: Learn the fundamentals of general chemistry related to atomic structure, chemical bonding, periodicity etc.

CO105.2: Understand the different kinds of chemical interaction related to inorganic, physical, organic and industrial chemistry

CO105.3: Acquire knowledge in general chemistry required to understand chemical interactions in environmental health issues and consequences

CO105.4: Transfer their knowledge into their next tier of academic or professional activities in terms of understanding and implementing issues related to Environmental Health Sciences

Elementary Physics (EH107T)

After the completion of this course, students should be able to:

CO107.1: Gain proficiency on the differences in basic operations of light, sound, magnetism and electricity

CO107.2: Apply the concepts and principles of light, sound, magnetism and electricity to practical situations in the various fields of environmental health Sciences

CO107.3: Acquire competency with respect to the use of a few instrumentation analysis related to environmental health sciences

CO107.4: Enhance their ability to explain the choices of instruments and their application in environmental health sciences

English (EHAE109T)

After the completion of this course, students should be able to:

CO109.1: Speak and write grammatically correct sentences in English

CO109.2: Develop their effective writing skills

CO109.3: Build fluency in English

Laboratory Safety (EHAE111T)

After the completion of this course, students should be able to:

CO111.1: Identify the safety risks in chemical or physical laboratory

CO111.2: Acquire knowledge on lab safety procedures

CO111.3: Gain knowledge on laboratory management

CO111.4: Follow lab safety culture

General Chemistry (Practicals) (EH151L)

After the completion of this course, students should be able to:

CO151.1: Acquire knowledge in preparing solutions of different strengths

CO151.2: Learn the basic analytical methods and understand what is involved in an analysis

CO151.3: Learn gravimetric analysis required for quantifying environmental samples

CO151.4: Operate essential equipments routinely used in environmental sample analysis

First Year, Semester II

Biodiversity (EH102T)

After the completion of this course, students should be able to:

CO102.1: Understand biodiversity, its ecological, economic and social meaning

CO102.2: Develop ability to choose the most appropriate approach aimed to protect biodiversity in a given ecological, economic and social context

CO102.3: Understand immunity to myths and manipulations related to biodiversity

CO102.4: Apply the biodiversity concepts in environmental impact assessment and learn the documentation process

Anatomy and Physiology (EH104T)

After the completion of this course, students should be able to:

CO104.1: Gain knowledge basic human anatomy and physiology

CO104.2: Know the structures and understand the functions of human body

CO104.3: Understand the integration between structural and functional concepts of human systems

CO104.4: Describe the influence of environmental risk factors on physiological functions

Biochemistry (EH106T)

After the completion of this course, students should be able to:

CO106.1: Understand the basic concepts and theories of chemistry as relevant to a biological systems

CO106.2: Understand the properties of biomolecules and their nature of existence in the living system

CO106.3: Apply the relevance of learning biomolecules in environmental health sciences

CO106.4: Recognize how biomolecules are influenced by environmental risk factors

Microbiology (EH108T)

After the completion of this course, students should be able to:

CO108.1: Understand the pathogenic microorganisms, host defenses and immune response

CO108.2: Be familiar with the epidemic of infectious diseases and control methods

CO108.3: Recognize & develop the control strategies for the major infectious diseases

CO108.4: Apply the various techniques used in assessment of microbial organisms

Atmospheric Chemistry (EHDE110T)

After the completion of this course, students should be able to:

CO110.1: Understand and explore the physical, chemical and dynamical processes of the atmosphere

CO110.2: Be able to understand the influence of meteorology on chemical changes in the atmosphere

CO110.3: Discuss how changes in atmospheric science influence the climate and associated issues

CO110.4: Understand the interrelationship between atmosphere, its chemistry, meteorology and climate change

Biochemistry Practical (EH152L)

After the completion of this course, students should be able to:

CO152.1: Understand the relevance and basic concepts of experimental biochemistry

CO152.2: Understand the commonly used types of biochemical experiments

CO152.3: Gain competency in experimental biochemistry

Microbiology Practical (EH154L)

After the completion of this course, students should be able to:

CO154.1: Develop analytic skills in microbiology

CO154.2: Apply the knowledge on microbial structure to identify microorganisms.

CO154.3: Perform basic microbiological assessment techniques

Second Year, Semester III

Environmental Chemistry (EH201T)

After the completion of this course, students should be able to:

CO201.1: Learn several components of the environment and it's mechanism

CO201.2: Understand various pollution aspects of the environment, its sources and prevention process

CO201.3: Learn sampling techniques and statistical method involved, and processing of environmental samples

CO201.4: Know analytical techniques of pollution in different matrices

Environmental Pollution (EH203T)

After the completion of this course, students should be able to:

CO203.1: Understand the types of environmental pollutants affecting the ecosystem

CO203.2: Recognize the factors that contribute pollution

CO203.3: Understand the ways in which ecosystems can be protected from such pollutants

Environmental Law and Management Systems (EH205T)

After the completion of this course, students should be able to:

CO205.1: Acquaint with the environmental issues, global and national initiatives to deal with it

CO205.2: Be familiarized with legislative measures taken for protecting environment, human and wildlife

CO205.3: Understand the process of legislations through international convention and treaties

Psychology & Social Science (EH207T)

After the completion of this course, students should be able to:

CO207.1: To understand the human behavior and mental processes

CO207.2: Be familiar with theories and principles in psychology and physiological basis

CO207.3: Understand the linkages between human development and health

CO207.4: Develop skills on health communication for advocacy in Public Health

Immunology (EHDE209T)

After the completion of this course, students should be able to:

CO209.1: Describe the basic concepts, theories and functions of the human immune system

CO209.2: Understand the mechanisms of immune system functioning in human

CO209.3: Utilize the knowledge gained and apply the relevance of immunology in human health impact assessments, experimental and research work

Municipal Waste Management (EHDE211T)

After the completion of this course, students should be able to:

CO211.1: An understanding of the nature and characteristics of municipal solid wastes

CO211.2: Be familiar with the regulatory requirements regarding municipal solid waste management

CO211.3: Develop ability to plan waste minimization strategies, design storage, collection, transport, processing and disposal of municipal solid waste

Environmental Pollution Practical (EH251L)

After the completion of this course, students should be able to:

CO251.1: Learn analytical methods used in the determination of specific pollutants (e.g. heavy metals, Particulate mate, Persistent Organics etc.) in environmental media

CO251.2: Develop skills in using monitoring techniques for selected air, water and soil pollutants

CO251.3: Develop skills to interpret environmental assessment reports in comparison to regulatory requirements and prepare short reports

Second Year, Semester IV

Toxicology (EH202T)

After the completion of this course, students should be able to:

CO202.1: Understand the various disciplines of toxicology and their application

CO202.2: Gain knowledgeable on the types and classes of toxicants and their effects on human

CO202.3: Understand the ways how toxic effects are manifested

CO202.4: Understand the basic methods used in testing the toxicity and risk assessment process

Fundamentals of Molecular Biology (EH204T)

After the completion of this course, students should be able to:

CO204.1: Understand the basic concepts and theories of nucleic acids as genetic material

CO204.2: Understand the significance of genes, their structure and their functions

CO204.3: Gain knowledge on the relevance of genetic material in environmental health

Public Health (EH206T)

After the completion of this course, students should be able to:

CO206.1: Discuss the basic scientific concepts, methodological perspectives, and factors that govern public health

CO206.2: Discuss the local and global public health issues

CO206.3: Understand the present public health systems and management & be familiar with basic occupational health services framework

CO206.4: Apply basic public health concepts to manage public health problems, including disease prevention, health promotion, health economics and policy, as well as critically compare opposing viewpoints in these fields

Water Quality and Management (EH208T)

After the completion of this course, students should be able to:

CO208.1: Understand the available water resources and its characteristics

CO208.2: Be familiar with water management practices

CO208.3: Discuss various methods and processes used in the treatment of potable water

CO208.4: Suggest suitable treatment technology and disposal methods of wastewater

Endocrinology (EHDE210T)

After the completion of this course, students should be able to:

CO210.1: Understand the relevance and basic concepts regarding the endocrine system

CO210.2: Describe the mechanism of hormone actions

CO210.3: Utilize the knowledge gained and apply the relevance of endocrinology in human health impact assessments, experimental and research work

Hazardous waste management (EH212T)

After the completion of this course, students should be able to:

CO212.1: Understand the types of hazardous wastes and sources

CO212.2: Gain knowledge and skills in the collection, storage, transport, treatment, disposal and recycling options for Hazardous wastes

CO212.3: Understand the engineering principles, design criteria, methods and equipments in hazardous waste management

Toxicology Practical (EH252L)

After the completion of this course, students should be able to:

CO252.1: Perform basic toxicological screening tests

CO252.2: Understand the relevance of applying toxicological principles in human health risk assessment

CO252.3: Apply the significance of these tests in hazard recognition process

Third Year, Semester V

Environmental Biotechnology (EH301T)

After the completion of this course, students should be able to:

CO301.1: Understand the application of biotechnological principles in tackling environmental problems

CO301.2: Develop skills in microbial degradation techniques and demonstrate solid waste management using the biotechnology principles

CO301.3: Apply techniques and process for ecological restoration and remediation

CO301.4: Identify environmentally safe products

Environmental Engineering (EH303T)

After the completion of this course, students should be able to:

CO303.1: Understand the engineering concepts in pollution abatement

CO303.2: Perform simple sampling and analytical protocols to assess concentrations/exposures for specific pollutants

CO303.3: Assess the nature and magnitude of pollution exposures with relation to sources and emissions

CO303.4 Understand the national and international standards/guidelines pertinent to pollution abatement

Air Quality & Exposure Assessment (EH305T)

After the completion of this course, students should be able to:

CO305.1: Understand the range of exposure assessment measures applicable for specific environmental, occupational and dietary exposure situations

CO305.2: Recommend an optimal choice of exposure assessment methods for specific exposure situations

CO305.3: Interpret results and recommend strategies for control based on integrated exposure assessments across environmental media

CO305.4: Demonstrate knowledge of policies, laws, regulations and guidelines that are relevant to selected environmental health issues

Food Safety and Quality Control (EH307T)

After the completion of this course, students should be able to:

CO307.1: Understand the concept of the food safety and develop skills to apply in food safety methods for health and disease states

CO307.2: Build skills on food quality assessment and hygiene practices

CO307.3: Recognize the linkages between food hazards and illnesses for health promotion

CO307.4: Understand the food safety regulations and management

Human Genetics (EHDE309T)

After the completion of this course, students should be able to:

CO309.1: Understand the basis of inheritance of traits in human

CO309.2: Relate the basis to understand the genetics of disease/disorders

CO309.3: learn tests and methods to identify the genetic disorders

CO309.4: Describe the chromosomal basis of inheritance and disorders with genetic basis

Air quality & Exposure Assessment Practical (EH351L)

After the completion of this course, students should be able to:

CO351.1: Gain knowledge on laboratory and field protocols used for exposure monitoring

CO351.2: Develop skills in performing sampling and analyses for specific pollutants in air, water and food

CO351.3: Develop skills in evaluation of exposure assessment reports and recommend follow up actions on the basis of regulatory requirements

Food Safety and Quality Control Practical (EH353L)

After the completion of this course, students should be able to:

CO353.1: Learn about food adulteration

CO353.2: Acquire the knowledge on detection of food adulteration

CO353.3: Measure common microbiological parameter in food

Third Year, Semester VI

Environmental Impact and Health risk assessment (EH302T)

After the completion of this course, students should be able to:

CO302.1: Discuss the need, methodology, documentation and usefulness of environmental impact assessment

CO302.2: Develop the skill to prepare environmental management plan.

CO302.3: Gain knowledge related to Environmental Risk Assessment for predicting and managing human health and environmental risks

CO302.4: Know about the legal requirements of Environmental and Risk Assessment for projects

Health Education and Communication (EH304T)

After the completion of this course, students should be able to:

CO304.1: Summarize the components of the health communication process

CO304.2: Develop skills for effectively educating the public about environmental public health issues

CO304.3: Explain strategies that are important for marketing the value of environmental public health activities to clients and the public

CO304.4: Gain communication expertise through research sources and practice to ensure that health recommendations and messages reach the target audience

Epidemiology (EH306T)

After the completion of this course, students should be able to:

CO306.1: Quantify disease measures, including measures of frequency, measures of association and measures of effect

CO306.2: Demonstrate skills in the application of causal inference criteria in assessing causation from previously conducted epidemiological studies

CO306.3: Design basic epidemiological studies independently

Biostatistics (EH308T)

After the completion of this course, students should be able to:

CO308.1: Understand basic concepts on probability and probability distributions for both continuous and discrete variables.

CO308.2: Understand methods used to generate and interpret numerical summaries for quantitative and qualitative data (including the use of graphical methods)

CO308.3: Learn about statistical hypothesis testing including methods for statistical inference of given data set.

Basic Bioinformatics (EH310T)

After the completion of this course, students should be able to:

CO310.1: Have an overview of the expanse of biological data

CO310.2: Understand software tools for biological sequence analysis

CO310.3: Learn the concepts associated to genomics and proteomics and apply the same in various fields

Epidemiology & Biostatistics Practical (EH352L)

After the completion of this course, students should be able to:

CO352.1: Develop skills on identifying the appropriate study designs together with strengths and limitations of alternative study designs through detailed analysis of case studies

CO352.2: Learn techniques for organization of data, in preparation for data analyses

CO352.3: To develop familiarity with basic programs in 'R' to generate tabular descriptive and graphical presentation to summarize the data

Fourth Year, Semester VII

Internship (EHIN451)

After the completion of this course, students should be able to:

CO451.1: To understand the range of exposure assessment methods applicable for specific environmental, occupational and dietary exposures

CO451.2: To have hands-on experience in assessing selected air, water & food quality parameters in environmental samples.

CO451.3: Understand population level health data collection, management, and reporting

CO451.4: gain Knowledge on national and international regulations for compliance

Fourth Year, Semester VIII

Project (EHRP452)

After the completion of this course, students should be able to:

CO452.1: Develop a research hypothesis, plan a study design, develop study tools and methods, learn data collection process, data management, apply basis statistical test, generate tables and figures, generate a report and summarize the finding

SEMESTER I

First Year, Semester I

Environmental Health (UEH101)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO101.1	H	H	H	L	L	L	M
	CO101.2	H	H	M	L	L	L	M
	CO101.3	H	H	H	M	L	L	M
	CO101.4	M	H	M	M	L	L	M

Ecology (EH103T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO103.1	H	M	M	L	L	L	M
	CO103.2	H	M	M	L	L	L	M
	CO103.3	H	H	M	L	L	L	M
	CO103.4	H	H	H	L	L	L	M

General Chemistry (EH105T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO105.1	H	H	L	L	L	L	M
	CO105.2	H	L	L	M	M	M	M
	CO105.3	H	M	M	M	L	H	H
	CO105.4	L	M	M	M	H	H	H

Elementary Physics (EH107T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO107.1	H	H	M	M	L	M	H
	CO107.2	M	M	M	M	L	M	H
	CO107.3	M	M	M	M	L	M	H
	CO107.4	M	M	M	M	L	L	H

English (EHAE109T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO109.1	M	M	L	L	L	L	M
	CO109.2	L	L	L	L	L	L	M
	CO109.3	H	H	L	L	M	L	M

Laboratory Safety (EHAE111T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO111.1	M	L	L	L	L	L	M
	CO111.2	H	L	L	L	L	L	M
	CO111.3	M	L	L	L	L	L	M
	CO111.4	M	L	L	L	L	L	M

General Chemistry (Practical) (EH151L)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO151.1	M	M	L	H	L	M	H
	CO151.2	H	M	M	H	L	M	H
	CO151.3	M	M	M	H	L	H	H
	CO151.4	M	M	M	H	L	H	H

First Year, Semester II

Biodiversity (EH102T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO102.1	H	H	M	H	L	L	H
	CO102.2	H	M	M	M	L	L	H
	CO102.3	M	M	M	M	L	L	M
	CO102.4	M	M	M	M	L	M	H

Anatomy and Physiology (EH104T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO104.1	H	H	M	L	L	L	L
	CO104.2	H	H	M	L	L	L	L
	CO104.3	H	H	M	L	L	L	M
	CO104.4	H	H	H	M	M	L	M

Biochemistry (EH106T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO106.1	M	M	M	M	L	M	M
	CO106.2	H	H	M	M	L	M	M
	CO106.3	M	H	M	M	L	M	H
	CO106.4	H	H	M	M	L	M	H

Microbiology (EH108T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO108.1	M	H	M	M	L	M	M
	CO108.2	H	H	M	H	L	M	H
	CO108.3	M	M	M	H	L	M	H
	CO108.4	M	M	H	M	L	M	H

Atmospheric Chemistry (EHDE110T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO110.1	H	M	M	M	L	L	M
	CO110.2	M	M	M	M	L	L	M
	CO110.3	M	H	M	M	L	L	H
	CO110.4	H	H	M	M	L	L	H

Biochemistry Practic	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7

	CO152.1	M	M	M	H	L	M	M
	CO152.2	M	M	M	H	L	M	M
	CO152.3	M	M	M	H	L	M	M

Microbiology Practical (EH154L)	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
	CO154.1	M	M	M	H	L	H	M
	CO154.2	M	M	M	M	L	M	M
	CO154.3	M	M	M	M	L	H	M

Second Year, Semester III

Environmental Chemistry (EH201T)	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
	CO201.1	H	H	M	M	L	M	H
	CO201.2	M	M	M	M	L	M	H
	CO201.3	M	M	M	M	H	H	H
	CO201.4	M	M	M	M	L	H	H

Environmental Pollution (EH203T)	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
	CO203.1	H	H	H	M	M	M	H
	CO203.2	M	M	H	H	M	M	H
	CO203.3	H	H	H	H	M	H	H
	CO203.4	H	H	M	M	L	M	H

Environmental Law &	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**

	CO205.1	H	H	H	M	M	M	L
	CO205.2	H	H	M	M	M	M	M
	CO205.3	H	M	M	M	M	M	M

Psychology & Social Science (EH207T)	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
	CO207.1	M	H	M	L	L	L	M
	CO207.2	L	M	L	L	L	L	M
	CO207.3	M	H	L	L	L	L	M
	CO207.4	L	M	L	L	L	L	M

Immunology (EHDE209T)	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
	CO209.1	M	H	M	M	L	L	M
	CO209.2	M	M	M	M	L	L	M
	CO209.3	H	H	M	M	L	L	M

Municipal Waste Management (EH211T)	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
	CO211.1	L	M	H	H	H	H	H
	CO211.2	L	L	L	M	M	L	L
	CO211.3	M	M	H	H	H	H	H

Environmental Pollution Practical (EH251L)	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
	CO251.1	M	M	M	H	H	H	H
	CO251.2	M	M	M	H	M	H	H
	CO251.3	M	M	M	M	M	M	H

Second Year, Semester IV

Toxicology (EH202T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO202.1	H	M	M	M	M	M	M
	CO202.2	H	H	M	M	M	M	M
	CO202.3	M	H	M	H	M	M	M
	CO202.4	M	M	H	M	M	H	M

Fundamentals of Molecular Biology (EH204T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO204.1	M	H	M	M	L	L	M
	CO204.2	M	M	M	M	L	L	M
	CO204.3	H	H	M	M	L	L	M

Public Health (EH206T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO206.1	L	H	M	M	M	L	M
	CO206.2	M	H	M	M	M	L	M
	CO206.3	M	H	M	L	M	M	M
	CO206.4	M	H	M	M	M	M	M

Water Quality and Management (EH208T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO208.1	M	H	M	H	M	H	M
	CO208.2	M	H	M	M	L	M	M
	CO208.3	M	H	M	M	L	H	M
	CO208.4	M	M	M	M	L	H	M

Endocrinology (EHDE210T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO210.1	M	H	M	M	L	L	M
	CO210.2	M	M	M	M	L	L	M
	CO210.3	M	M	M	M	L	L	H

Hazardous Waste Management (EH212T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO212.1	H	L	H	M	M	M	M
	CO212.2	H	L	H	M	M	M	M
	CO212.3	H	L	H	M	M	M	M
	CO212.4	H	L	H	M	M	M	M

Toxicology Practical (EH252L)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO252.1	M	M	H	M	M	M	M
	CO252.2	H	M	M	M	M	M	M
	CO252.3	M	H	M	M	M	M	M

Third Year, Semester V

Environmental Biotechnology (EH301T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO301.1	H	H	M	M	L	L	H
	CO301.2	M	M	M	M	L	M	H
	CO301.3	M	M	M	M	L	M	H
	CO301.4	M	M	M	M	L	M	H

Environmental Engineering (EH303T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO303.1	M	H	M	M	L	M	M
	CO303.2	M	H	M	H	M	M	M
	CO303.3	M	H	H	H	L	M	H
	CO303.4	M	H	M	M	L	L	H

Air Quality & Exposure Assessment (EH305T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO305.1	M	H	H	H	M	M	M
	CO305.2	M	M	H	H	M	M	M
	CO305.3	M	H	M	M	M	M	M
	CO305.4	H	M	M	H	M	M	M

Food Safety and Quality Control (EH307T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO307.1	M	H	H	H	M	H	M
	CO307.2	M	H	H	H	L	H	M
	CO307.3	M	H	H	H	M	H	H
	CO307.4	M	H	M	M	L	H	M

Human Genetics (EHDE309T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO309.1	M	M	H	H	L	M	M
	CO309.2	M	M	H	M	L	M	H
	CO309.3	M	M	M	M	L	M	H
	CO309.4							H

Air quality & Exposure Assessment Practical (EH351L)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO351.1	H	M	M	H	M	M	M
	CO351.2	M	M	H	H	H	M	H
	CO351.3	H	M	H	M	M	H	M

Food Safety and Quality (Control Practical (EH353L)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO353.1	M	H	H	H	L	H	L
	CO353.2	M	H	H	M	L	H	L
	CO353.3	M	H	H	M	L	H	M

Third Year, Semester VI

Environmental Impact and Health risk assessment (EH302T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO302.1	M	H	M	H	H	M	H
	CO302.2	H	H	M	H	H	H	H
	CO302.3	M	M	H	H	H	M	H
	CO302.4:	M	M	H	H	L	M	H

Health Education and Communication (EH304T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO304.1	H	L	H	M	M	H	M
	CO304.2	H	H	H	M	H	M	M
	CO304.3	M	L	H	L	M	M	M
	CO304.4	H	L	H	M	M	M	M

Epidemiology (EH306T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO306.1	L	M	L	M	H	L	L
	CO306.2	L	M	H	H	L	L	L
	CO306.3	L	L	M	H	H	L	L

Biostatistics (EH308T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO308.1	L	L	M	M	H	L	L
	CO308.2	L	L	M	H	H	L	L
	CO308.3	L	L	L	M	H	L	L

Basic Bioinformatics (EH310T)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO310.1	M	H	H	M	H	L	M
	CO310.2	H	H	M	M	M	L	M
	CO310.3	M	M	M	M	L	L	M

Epidemiology & Biostatistics Practical (EH352L)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO352.1	L	L	L	L	H	L	L
	CO352.2	L	L	L	M	H	L	L
	CO352.3	L	L	L	L	H	L	L

Fourth Year, Semester VII

Internship (EHIN451)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO451.1	M	M	M	M	M	H	H
	CO451.2	M	M	M	M	L	H	H
	CO451.3	M	M	M	M	H	M	H
	CO451.4	M	M	M	M	M	M	H

Fourth Year, Semester VIII

Project (EHRP452)	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
	CO452.1	M	M	M	M	H	M	H