

Subject: Environmental and Occupational Health

Part A: Environmental and Occupational Health

1. Objectives

By the end of the course, the learners will be able to:

1. understand the theory/concept of environment and health and interactive relationships between environment and human activities
2. state the key emerging environmental issues in national, regional and global context
3. analyze the causes of environment deterioration in local, national, regional and global context
4. assess the existing policy measures and acts and conventions for sustainable environmental development
5. evaluate environmental impacts on human health
6. describe the environment and its relationship to health and disease
7. describe the methods of improving the environment and promoting community health preventing from diseases
8. determine the attributable factors of environmental burden of disease
9. identify the opportunities for health education in environmental health
10. understand the concept of occupational health and conduct monitoring of occupational health
11. analyze the gaps of policy, planning, and implementation stage with respect to environmental health
12. assess the compensation procedure and its legal aspects in occupational health
13. list out the hazards arising out of physical, chemical, mechanical, biological, psychosocial and ergonomic conditions in various occupations

2. Course contents

Unit 1: Environment and health 10 hrs

- a. Theories/concepts of Environment and Health
- b. Ecosystem concept of health
- c. Medical and social factors related to environment and health
- d. Concepts of Environmental Health and Sustainable Environmental Development
- e. Key environmental components
- f. Environmental risk assessment
- g. Environmental impact assessment
- h. Burden of environmental diseases

Unit 2: Water and health 15 hrs

- a. Theories/concepts of water quality, guidelines, standard and indicator parameters, national and trans-boundary levels, types and status of water sources
- b. Drinking water quality monitoring (spatial and temporal)
- c. Types of water purification and disinfection system in Nepal
- d. Water quality and quantity situation in Nepal
- e. Drinking water quality surveillance in Nepal
- f. Water safety plan of Nepal
- g. Importance of water quality map
- h. Theories/concept of water sanitation and hygiene (WASH)
- i. Water related diseases and preventive strategies
- j. Arsenic contamination, impact and mitigation measures in the context of Nepal.
- k. Overall scenario of water sanitation and hygiene at local, national and global level
- l. Water and sanitation policies and acts/treaties undertaken in Nepal
- m. Disease burden and contributing fraction of WASH related diseases

Unit 3: Waste management 12 hrs

- a. Theories/concepts of waste management
- b. Solid waste generation, sources, composition of wastes and existing status in Nepal
- c. Health impacts and management of solid waste in rural and urban areas
- d. Concept of waste water, types, composition and its health effects
- e. Liquid waste treatment and management practices in Nepal
- f. Type of hazardous wastes and their management
- g. Health care waste (solid and liquid) generation in the different levels of health organizations and their types
- h. Healthcare waste management practice and health impacts
- i. Different local/national efforts to treat healthcare wastes in Nepal

Unit 4: Air pollution and its impact 8 hrs

- a. Theories/concept of air pollution
- b. Status of air pollution in indoor and ambient in rural, urban and peri-urban levels and trans-boundary
- c. Major sources of air pollution and its consequences
- d. Types of pollutants and types of fuel energy used in Nepal.
- e. Indicator parameter, guideline, standards for measuring air pollutants
- f. Policy measures to prevent and control air pollution
- g. Estimating disease burden related to indoor and ambient air pollution

Unit 5: Food and Environment 6 hrs

- a. Concept of food security, food balance and nutrition supply
- b. Food quality situation of Nepal
- c. Food quality assurance
- d. Food borne illnesses and diseases in the community and their prevention
- e. Policy measures and international treaties/conventional related to food security

Unit 6: Climate change and health impacts 12 hrs

- a. Climate, Climate Variability, Climate Change and Human Health
- b. Immerging climate sensitive communicable and non-communicable diseases and their prevention
- c. Vulnerability people and assessment methods due to weather variability
- d. Existing adaptation and mitigation measures practiced in health sectors to address vulnerability
- e. Government responses to address climate change and its health impacts

Unit 7: Other environmental issues 6 hrs

- a. Pesticides and health hazard.
- b. Forest, biodiversity and livelihood
- c. Noise pollution and its consequences in Nepal
- d. Urban and rural Environment with especial reference to the settlements
- e. Environment health in emergencies

Unit 8: Fate of our pathogens 15 hrs

- a. Classification of human parasites, bacteria, fungus and viruses of public health importance
- b. Vector borne and medically important parasitic diseases and their control measures
- c. Importance of insecticide in vector control and its consequences from public health perspective
- d. Concept of integrated vector control strategies and implementation in Nepal
- e. Emerging zoonosis and other zoonotic diseases
- f. Policies of vector borne and parasitic disease in Nepal

Unit 9: Introduction: Basic concepts of occupation health and its components 16 hrs

- a. Historical development of occupational health and Safety
- b. Occupational health problems:
 - Physical
 - Chemical
 - Biological
 - Mechanical

- Psychosocial
- c. Specific occupational health problems
 - Big industries
 - Small industries
 - Agriculture
 - Healthcare
- d. Occupational health problem in relation to
 - Women
 - Children
 - Aging population

Unit 10: Ergonomics and workers compensation 10 hrs

- a. Ergonomics and public health
- b. Risks factors, identification and management
- c. Engineering, administrative control methods
- d. Workers' compensation

Unit 11: Occupational safety and health situation in Nepal 10 hrs

- a. Environment at work: Physical environment, Socio-physiological environment protection against accidents.
- b. Occupation diseases/hazards: Classification and prevention of occupational diseases/hazard and their prevention.
- c. Occupational health, hygiene and safety in National and Global context
- d. Occupational Health Services
- e. Role of health education and promotion in occupational health
- f. Policy provisions in relation to occupation health and safety
- g. First aid for occupational emergencies
- h. Techniques of stress management

Part B: Research Methods

1. Objectives

At the end of the course, the students will be able to:

- a. Explain the concepts, process and steps involved in conducting health research
- b. Select suitable approaches to quantitative and qualitative data analysis
- c. Design quantitative and qualitative research
- d. Apply mixed methods in different research activities
- e. Demonstrate a critical understanding of various research methods.
- f. Reflect critically on evidence-based practice in public health issues
- g. Demonstrate knowledge and understanding of the assumptions of the research approaches that are commonly used in public health and other relevant areas.
- h. Demonstrate skills in processing, interpretation and use of data
- i. Develop a research proposal on a selected health problem

2. Course contents

Unit 1: Theoretical orientation on research methodology 20hrs

- a. Research paradigm and knowledge generation
- b. Research problems
- c. Research objectives
- d. Research framework
- e. Research design
- f. Rationale of research
- g. Literature review
- h. Ethics and research

Unit 2: Process of research 10 hrs

- a. Identifying research problems
- b. Setting research objectives
- c. Deciding research design
- d. Literature search and review
- e. Data collection – Techniques, tools and process
- f. Data analysis – management and analysis process
- g. Validity and reliability

Unit 3: Qualitative research Method 15hrs

- a. Qualitative research designs
- b. Selection of participants

- c. Instruments of qualitative study
- d. Qualitative data collection methods
- e. Qualitative data analysis
- f. Trustworthiness of Qualitative data

Unit 4: Mixed method in health research 5hrs

- a. Introduction to Mixed Methods (MM) study
- b. Theory of mixed methods
- c. Variations on the MM Designs
- d. Characteristics of MM Studies

Unit 5: Development of research proposal 10hrs

- a. Proposal of a research project - concept of proposal, components of a research proposal, research development process, obtaining ethical approval.

Unit 6: Writing Research Report

- a. Concept of research report
- b. Components of research report
- c. Organizing results
- d. Discussions of the results
- e. Limitations of research
- f. Conclusion and recommendation

Unit 7: Research report dissemination

- a. Oral presentation
- b. Poster presentation
- c. Publication

Part C: Pedagogical methods

1. Objectives

At the end of the course, the learners will be able to:

1. Discuss the objectives and philosophies of pedagogy
2. Explain the required qualities for teaching in higher education
3. Discuss various pedagogical approaches used in education
4. Describe the relationship between curriculum and pedagogy
5. Describe the methods of student evaluation and assessment

2. Contents

- a. Objectives and philosophies of pedagogy
- b. Required qualities for teaching in higher education: individual, social and occupational/professional
- c. Pedagogical approaches (teaching methods and media) in education
- d. Curriculum and Pedagogy
- e. Balanced model of curriculum
- f. Methods of student evaluation and assessment: formative, summative and diagnostic