Semester: II

Core Course

6. Course Code & Title: MPC 52 02 & Environmental and Occupational Health

Credits: 3

Course description:

The course aims to orient the students how environment and related problems affect our health. It also intends to enable the students to conduct scientific research on important environmental issues and their impact on health. In addition, the course deals with occupational health hazards and research.

Learning objectives

After completion of the course, the students will be able to

1. Describe how environmental health problems impact our lives

2. Identify potential causes of environmental degradation

3. Define environmental epidemiology and identify the types of association found between environmental hazards and health outcomes.

4. Understand environmental toxicology, risk assessment and management.

5. Describe environmental pollution, health hazards and management.

6. Identify major occupational health hazards and management.

7. Illustrate the global implications of environmental and occupational health.

8. Conduct environmental and health impact assessments of policies and programmes.

9. Transfer the knowledge into action to protect health and the environment as public health professionals.

Days	**Lesson**	**Teaching and learning activity**	**Readings**
1	Introduction to environmental and occupational health: definitions, evolution, importance and scope.	Lecture and discussion	Levy BS, Wegman DH, Baron SL, Sokas RK. Occupational and environmental health: Recognizing and preventing disease and injury. 6th Edition. Oxford University Press, 2011.
2	Introduction to environmental epidemiology: epidemiological triad, research designs.	Lecture and discussion Develop a questionnaire and conduct a survey to assess the Environment issues prevailing in the local community.	Baker D, Nieuwenhuijsen MJ (Eds) Environmental Epidemiology: Study methods and application. Oxford University Press, 2009. Dade W. Moeller. Environmental health. Harvard University Press Cambridge, Massachusetts London, England, 2005. Morgenstern, H., 1995. Ecologic studies in epidemiology: concepts, principles, and methods. *Annual review of public health*, *16*(1), pp.61-81.
3	Introduction to environmental toxicology: hazard identification, risk assessment, dose-response relationship, source receptor model	Lecture and discussion	Walter, S.D., 1991. The ecologic method in the study of environmental health. II. Methodologic issues and feasibility. *Environmental health perspectives*, *94*, p.67.

4	Environmental pollution and management: air, water, noise, food contamination, radiation (ionizing and nonionizing), temperature, pressure etc. Waste management: hazardous waste (chemicals – heavy metals)	Student presentations	Government of India. National Air quality index. Central Pollution Control Board. Government of India. "National Hazardous Waste Management Strategy". CPCB. Epidemiological Study on Effect of Air Pollution on Human Health (Adults) in Delhi: Environmental Health Management Series; 2012. WHO. Health Advisory on Air Pollution 9 November 2017. http://www.searo.who.int/india/topics/air_pollution/en/;http://www.who.int/topics/air_pollution/en/; http://cpcb.nic.in/AQI_new.php Babu, B.V. and Ramakrishna, V., 2012. Hazardous waste management in India. *Birla Institute of Technology and Science Pilani–333*, *31*. Järup, L., 2003. Hazards of heavy metal contamination. *British medical bulletin*, *68*(1), pp.167-182. *NPTEL IIT Kharagpur Web Courses.* Module 10: Classification Of Water Pollutants And Effects On Environment.

			Akpor, O.B., Ohiobor, G.O. and Olaolu, T.D., 2014. Heavy metal pollutants in wastewater effluents: sources, effects and remediation. *Advances in Bioscience and Bioengineering*, *2*(4), pp.37-43.
5	Introduction to occupational health: major health hazards at the work place and their outcomes	Lecture and discussion	Levy BS, Wegman DH, Baron SL, Sokas RK. Occupational and environmental health: Recognizing and preventing disease and injury. 6th Edition. Oxford University Press, 2011. WHO. Occupational Health: A manual for primary health care workers. World Health Organization; 2001. http://www.iaohindia.com/home http://ilo.org/global/standards/subjects-covered-by-international-labour-standards/occupational-safety-and-health/lang--en/index.htm http://ilo.org/safework/info/standards-and-instruments/codes/lang--en/index.htm

6	Environmental health in the global arena: climate change, ozone depletion, global warming, biodiversity, international conventions and agreements-Stockholm convention, Kyoto Protocol, Global Earth Summit, Paris Agreement, Basel Convention, Bamako Convention, Rio declaration etc.	Lecture and discussion Individual presentations	
7	Emerging environmental issues: E-wastes, built environment and health issues	Lecture and discussion based on case studies	Bhutta, M.K.S., Omar, A. and Yang, X., 2011. Electronic waste: a growing concern in today's environment. *Economics Research International*, *2011*.
8	Environmental Management and promotion of health: Environmental engineering, Conducting health and environmental impact assessment- basic principles, objectives, steps	Discussion based on case studies	World Health Organization, 2013. Health and environment: communicating the risks. Principles of Environmental Impact Assessment: Best practice. International association for impact assessment *In cooperation with* Institute of Environmental Assessment, UK. National Research Council. Improving health in the United States: The role of health impact assessment. The National Academic Press, Washington DC.

9	Knowledge into action: Sustainable Development Goals, work of international and national organizations such as UNEP, Central Pollution Control Board	Lecture and discussion	World Health Organization, 2013. Health and environment: communicating the risks.
10	Summing up	Discussion	

Evaluation*:*

Internal continuous assessment: 40% (community survey/task, internal examination)

End semester continuous assessment: 60%

Additional readings

1. UNEP. GCO (Global Chemicals Outlook): towards sound management of chemicals. Synthesis report for Decision makers. United Nations Environment Programme, 2012. ISBN: 978-92-807-3275-7
2. OECD Directorate for Science, Technology and Innovation (2014). What is impact assessment. Assessing the Impact of State Interventions in Research – Techniques, Issues and Solutions". unpublished manuscript.
3. Senéca P, Goldsmit B et al. Principles of Environmental Impact assessment: Best practice. IAIA, IEA.
4. Pacifica F, Ogola A. Environmental Impact Assessment General Procedures. UNU-GTP and KenGen, at Lake Naivasha, Kenya, 2-17 November,2007.

Websites:

http://www.cpcb.nic.in ,

http://www.who.int/heli/risks/en/

http://www.ym.fi/en-US/International_cooperation/International_environmental_agreements

http://www.searo.who.int/india/topics/air_pollution/en/