

**Description of some of the courses / modules addressing environment sustainability,
including water conservation, in the Curricula**

See following pages for extracts of courses addressing crosscutting issues

For Programs- B.Sc. (Medical Imaging Technology), B.Sc. (Anaesthesia & Operation Theatre Technology), B.Sc. (Medical Laboratory Technology), PharmD, B.Sc. (Nursing) and Bachelor of Architecture

Subject: HUMAN RIGHTS, GENDER EQUITY AND ENVIRONMENTAL STUDIES

Theory: 30 Hours

COURSE OUTCOMES

At the end of the course students will be able to...

CO1: Understand the very fact human rights system.

CO2: Understand the gender equity.

CO3: Understand the human rights advocacy.

CO4: Understand the concepts of women's status in India

CO5: Explain about, what is environmental studies.

CO6: Know the values of natural resources.

CO7: Participate in conservation and preservation of environment discussion and contributing to the country by protecting.

SYLLABUS

Unit 1

Human rights

10 hours

1. Human Rights – Meaning; Universal Declaration of Human Rights 6 hours
2. Human Rights Advocacy: Global Advocacy of Human Rights; Amnesty International and other organization ; People's Union for Civil Liberty (PUCL); Human Rights Commission in India; Minority Commission in India; Remedies against violation of Human Rights in India 10 hours

3. United Nations and Human Rights: Civil and Political Rights: Economic, Social and Cultural Rights 4 hours

Unit-3**Environmental studies****10hours**

1. Environment: Components of Environment Concepts of Ecology; Ecological factors: Soil, air, water; Eco System – Pond and Forest as Ecosystem; Human Population Growth
2. Environmental Pollutions: Types of Pollution – a) soil, air, water b) noise and radioactive pollution; Sources of Pollution and their effects; Control measures: Legal and administrative
3. Conservation and Preservation of Environment: Natural resources and their conservation – water, soil and forest; Agencies involved in environmental protection in India; Environmental Movements in India ; Legal and administrative measures for environmental protection

Examination:

There shall be an examination for 100 marks at the end of the academic year, which will be conducted by the college

Recommended Books:**A. Human Rights**

1. S. Davidson: Human Rights, Buckingham, Open University,
2. Nirmal Chiranjivi: Human Rights in India, New Delhi, Oxford University Press

B. Environmental Studies

1. N.K. Chakravathy: Environmental Protection and Law, Ashis Publishing House, New Delhi
2. Kumar N: Air Pollution and Environmental Protection, Mittal Publication, New Delhi
3. Erach Baruch: Text Book For Environmental Studies, UGC, New Delhi and Bharati Vidyapeeth Institute Environment Education and Research, Pune
4. Jadhav H & Bhosale, VM: Environmental Protection and Laws, Himalaya Publishing House, New Delhi

For B.Sc. (Biomedical Sciences) Program
Course AECC2: Environmental Studies

	Theory marks	Practical marks
SEE	70	-
CIE	30	-

***Preamble:** This paper is to create awareness regarding a variety of environmental concerns. It attempts to create a pro-environmental attitude and a behavioral pattern in society that is based on creating sustainable lifestyles. Conservation is best brought about through creating a love for nature. It is to expose every college student to the wonders of the Indian wilderness to create new ethics towards conservation.*

At the end of the semester the student will have acquired:

A) Knowledge:

- Basic concepts of ecosystems and sustainable development.
- Types of natural resources, challenges in conservation of the same.
- Environmental pollution, analysis of causative and measures for remedies.
- National policies regarding environment in global and Indian context.
- Social and national concerns regarding climate change.

B) Skill:

- Assessment of complex processes in environment.
- Assessment of diversity of various habitats.
- Study of pollution, qualitative and quantitative methods to measure levels.

C) Attitude:

- Comprehension of environmental balance.
- Judicious use of natural resources.
- Awareness on global and Indian Government policies.
- Co-relation between socio-economic aspects with environmental issues.

COURSE OUTCOMES

At the end of the course students will be able to...

CO1: Evaluate events of Climate change, global warming, ozone layer depletion, acid rain and its impacts on human communities and agriculture on the basis of case studies

CO2: Compare various ecosystems such as forest, grassland, desert and aquatic case

studies

CO3: Integrate and analyse the various natural and manmade factors that affect forests, environment and tribal populations

CO4: Propose alternative sources of energy to meet the growing energy needs of our population

THOERY

Total Lectures: 32

UNIT I: Introduction to Environmental Studies (2 Lectures)

- Multidisciplinary nature of environmental studies;
- Scope and importance; Concept of sustainability and sustainable development.

UNIT II: Ecosystems (4 Lectures)

What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystem:

- a) Forest ecosystem
- b) Grassland ecosystem
- c) Desert ecosystem
- d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT III: Natural Resources: Renewable and Non-renewable Resources (5 Lectures)

- Land resources and land use change: Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).
- Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

UNIT IV: Biodiversity and Conservation (5 Lectures)

- Levels of biological diversity: genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots.
- India as a mega-biodiversity nation: Endangered and endemic species of India.
- Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions: Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

UNIT V: Environmental Pollution (6 Lectures)

- Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste.
- Pollution case studies.

UNIT VI : Environmental Policies and Practices (4 Lectures)

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.

UNIT VII : Human Communities and the Environment (3 Lectures)

- Human population growth: Impacts on environment, human health and welfare.
- Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management: floods, earthquake, cyclones and landslides.
- Environmental movements: Chipko, Silent valley, Bishnois of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

UNIT VIII: Field Work (Equal to 3 Lectures)

- Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc.
- Visit to a local polluted sites -Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystems-pond, river, Delhi Ridge, etc.

SUGGESTED READINGS

1. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R. 1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. *Global Ethics and Environment*, London, Routledge.
4. Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. *Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science*, 339: 36-37.
7. McCully, P. 1996. *Rivers no more: the environmental effects of dams* (pp.29-64). Zed Books.
8. McNeill, John R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth Century*.
9. Odum, E.P., Odum, H.T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. *Environmental and Pollution Science*. Academic Press.
11. Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. *Environment*. 8th edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M. L. 2001. *Environmental law and policy in India*. Tripathi 1992.
14. Sengupta, R. 2003. *Ecology and economics: An approach to sustainable development*. OUP.
15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology: Voices from the Tropics*. John Wiley & Sons.
17. Thapar, V. 1998. *Land of the Tiger: A Natural History of the Indian Subcontinent*.
18. Warren, C. E. 1971. *Biology and Water Pollution Control*. WB Saunders.
19. Wilson, E. O. 2006. *The Creation: An appeal to save life on earth* . New York: Norton.
20. World Commission on Environment and Development. 1987. *Our Common Future*. Oxford University Press.

For Programs- MD Anaesthesiology, MD Anatomy, MD Biochemistry, MD Community Medicine, MD Dermatology, MS ENT, MD Forensic Medicine, MD General Medicine, MD Microbiology, MS OBG, MS Ophthalmology, MS Orthopedics, MD Pediatrics, MD Pathology, MD Pharmacology, MD Physiology, MD Psychiatry, MD Radiodiagnosis, MS General Surgery, M.Sc. Nursing, PB B.Sc. Nursing

Module on Human Health and Environment

Specific learning outcomes:

At the end of each unit students will be able to

1. Describe the principles of environmental science
2. Define the structure, function and features of ecosystem.
3. Summarize the importance of healthy air, water and soil.
4. Identify the types of pollution, sources, causes and impact on human health.
5. List common aeroallergens and pollution related diseases
6. Describe biological, chemical and physical hazards as determinants of health and disease in human

SYLLABUS (10 hours):

- **Introduction:** Health and Environmental, atmosphere, hydrosphere, lithosphere and biosphere.
- **Ecosystem:** Structure, functions and its features. Weather and climate change: Global warming and greenhouse effect.
- **Pollution:** Classification of pollution, its sources, cause and their impacts. Types of pollutants and its fate: Eutrophication. Water and soil- types and sources; sewage and waste water treatment and recycling; Noise pollution and its impact on human health.
- **Environmental hazards:** Biological, chemical and physical hazard. Toxic chemicals in the environment: air, water and soil
- **Clean air:** Pesticides and carcinogens in the air, Micro flora of atmosphere, Identification of aeroallergens, Air pollution related diseases and allergies.
- **Environmental Ethics and Global imperatives:** Legal/environmental policy and different control measures.

Suggested Teaching-Learning methods

- Lectures / group discussions
- Self-directed learning and Assignments

SUGGESTED READINGS

1. A Text Book of Environmental Chemistry & Pollution Control, 5th edition (2014), S. S. Dara and C. D. Mishra; S. Chand and Company Ltd, ISBN: 9788121908832.
2. Environmental Pollution: Health and Toxicology, 2nd edition (2013), S. V. S. Rana; Narosa Publishing House, ISBN: 9788173199141.
3. Environmental Chemistry: Pollution and Remedial Perspective, 2nd edition (2017), A. V. Salker; Narosa Publishing House, ISBN: 9788184875935.
4. Wastewater treatment: Concepts and Design Approach, 2nd edition (2013), G. L. Karia, and R.A. Christian; PHI Learning Pvt. Ltd, ISBN: 9788120347359.
5. Pollutants, Human Health and the Environment: A Risk Based Approach, (2011), J. A. Plant, N. Voulvoulis, K. V. Ragnarsdottir; Wiley-Blackwell, ISBN: 978-0-470- 74261-7.
6. Environmental Science: A Global Concern, 13th edition (2015), P. C. William and A. C. Mary; McGraw Hill Education, USA, ISBN: 978-9339221263.
7. Pollution: Causes, Effects and Control, 4th edition (2001), R. M. Harrison; Royal Society of Chemistry, UK, ISBN: 0854046216

For MBBS Program**SYLLABUS****Phase I****60 hours****I Introduction****03 hours**

Introduction to the subject – birds eye view; Introduction to biostatistics; Introduction to all other topics

II Man, Medicine and History of Medicine**06 hours**

Primitive medicine; Dawn of Scientific medicine; Modern Medicine; Health care revolution; Village India and its health part I*; Village India and its health part II*

III Environment and Health**10 hours**

Sanitation of water; Air pollution and prevention; Hazards of noise pollution and control; Measurements of light, Natural and artificial light; Hazards of lighting and control*; Radiation and its hazards; Control of radiation hazards*; Housing standards and health; Liquid and solid waste disposal; Insecticides and disinfectants

IV Humanities General Ethics**15 hours**

Introduction to ethics in health care professionals – Indian Scenario; Professional development; Self awareness & basics of empathy; Effective communication & interpersonal relationship; Anger management; Stress management; Mind map; Emotional Intelligence; Bio-Psycho-Social model

V Sociology**16 hours**

Community; Societal structure; Culture part I; Culture part II; Acculturation; Family system, cycle, types and functions; Family in health and disease; Social process; Social Pathology; Management and Prevention of Social Pathology; Socio-economic status; Social research; Operational research; Ethics in health practice; Doctor patient relationship*; Ideal doctor*

Note: *Tutorials shall be conducted on these topics

Practicals – 6 Hrs

Visit to Hospital- OPD of medicine, Peadiatrics and OBG 2 hours

Visit to Primary Health Center (PHC) 2 hours

Visit to Community (community orientation) 2 hours

Recommended Texts and Reference Books (Latest Editions)

1. Indian Constitution: Government Publication
2. D.D. Basu, Introduction to the Constitution of India
3. S. Davidson, Human Rights, Buckingham, Open University
4. Usha Sharma (Ed) Gender Mainstreaming and Women's Rights
5. Parvathy Appaiah, The Constitution of India, Jai Bharath Prakashana, Mangalore
