



**National Institute of Technology Meghalaya**  
An Institute of National Importance

**CURRICULUM**

Programme	<b>Bachelor of Technology (All branches)</b>	Year of Regulation	<b>2018</b>
Department	<b>Chemistry</b>	Semester	<b>II</b>

Course Code	Course Name	Credit Structure				Marks Distribution			
		L	T	P	C	INT	MID	END	Total

<b>CY 102</b>	<b>Environmental Science</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>50</b>	<b>50</b>	<b>100</b>	<b>200</b>
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Course Objectives	Course Outcomes	CO1		CO2		CO3		CO4	
		To provide the basic knowledge about the environment and its related socio-economic problems by motivating various stakeholders to participate in environment protection and environment improvement programmes.	Able to develop the knowledge of various types of natural resources, their proper utilizations and conservations for maintaining ecological balance.	To The supply the knowledges of chemistry of elements and compounds in the atmosphere, water and soil, and to give special emphasis on the different processes that define the linkages between individual segments of environment.	Able to determine the features of renewable energy resources, their establishment and proper functioning at large scale, further they may find ways for sustainable development.	To give student the awareness of the fundamental chemical processes those are significant to environmental problems.	Able to understand the resources and impacts of various types of pollutions on environment, further they will get the ideas of probable solutions based on current sciences and technologies methods	To nurture the knowledge of protection for the natural resources based on sustainable development and uses for the living beings.	Able to distinguish the interrelation of multiple factors in environmental challenges

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	0	0	0	0	0	0	2	0	0	0	0	0			
2	CO2	0	0	0	0	0	0	2	0	0	0	0	0			
3	CO3	0	0	0	0	0	0	2	0	0	0	0	0			
4	CO4	0	0	0	0	0	0	2	0	0	0	0	0			
5	CO5	0	0	0	0	0	0	0	0	0	0	0	0			

**SYLLABUS**

No.	Content	Hours	COs
I	<b>Introduction and natural resources</b> Multidisciplinary nature of environmental studies, scope and importance, concept of sustainability and sustainable development. Land resources: 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, population growth and associated problems. Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs and case studies.	<b>06</b>	<b>CO1 CO2</b>
II	<b>Ecology</b> Elements of ecology, definition of ecosystem, biotic and abiotic components. Ecological balance and consequence of change: Effect of abiotic factor on population, flow chart of different cycles with only elementary reaction (oxygen, nitrogen, phosphate, sulphur) and food chain.	<b>02</b>	
III	<b>Air pollution</b> Source and effect of pollutants, primary and secondary pollutants, control measures. Acid rain: Impacts on human communities and agriculture. Green-house effects: Definition, impact of greenhouse gases on the global climate and consequently on sea water level, agriculture and marine food. Depletion of ozone layer: CFC, destruction of ozone layer by CFC, impact of other greenhouse gases, effect of ozone modification.	<b>03</b>	<b>CO3 CO4</b>
IV	<b>Water pollution</b> Natural water; pollutants: their origin and effects: oxygen demanding wastes, pathogens, nutrients, salts, thermal application, heavy metals, pesticides, volatile organic compounds. River/ lake/ ground water pollution: River water –BOD, COD and TOC, oil, Grease, pH. Lake water: Eutrophication, Ground water: Aquifers, hydraulic gradient, and ground water flow.	<b>03</b>	<b>CO3 CO4</b>
V	<b>Land pollution</b> Lithosphere composition. Pollutants: Municipal, industrial, commercial, agricultural, hazardous solid wastes; recovery and conversion method waste and waste management land filling, incineration, composting.	<b>03</b>	<b>CO3 CO4</b>
VI	<b>Noise pollution</b> Definition of noise, effect of noise pollution, noise classification, transport noise, occupational noise, neighbourhood noise, definition of noise intensity, noise threshold limit value.	<b>03</b>	<b>CO3 CO4</b>
VII	<b>Human communities and the environment</b> Human health and welfare, resettlement and rehabilitation of affected persons, case studies, disaster management: flood, earthquake, cyclones and landslides. Environmental movements – Chipko, Silent valley and Bishnois of Rajasthan. Environmental ethics: Role of Indian and other nations and cultures in environmental conservations, public awareness. Environmental protection Acts.	<b>04</b>	<b>CO1 CO2</b>
<b>Total Hours</b>		<b>24</b>	

**Essential Readings**

1. A. Basak, "Environmental Studies", Pearson, 1<sup>st</sup> Edition, 2009.
2. D. Dave and S.S. Katewa, "Text Book of Environmental Studies", Cengage Learning, 2<sup>nd</sup> Edition, 2012.

**Supplementary Readings**

1. R. Daniels and J. Krishnaswamy, "Environmental Studies", Wiley, 1<sup>st</sup> Edition, 2009.
2. S. Somvanshi and R. Dhupper, "Fundamentals of Environmental Studies", S. K. Kataria & Sons, 1<sup>st</sup> Edition 2011.