

## Yeshwantrao Chavan College of Engineering, Nagpur

Name of the Department: Civil Engineering

Name of the UG Programme: MTech Environmental Engineering

### Course Outcomes (CO)

#### First Year: Semester I:

<b>Course Name: Environmental Chemistry and Microbiology</b>		<b>Course Code: CV3961</b>
<b>CO1</b>	An ability to understand the concepts Environmental chemistry & to learn how the concepts of environmental chemistry can be put to practical applications	
<b>CO2</b>	An ability to explain microbial technology in environmental engineering practices	

<b>Course Name: Lab Environmental Chemistry and Microbiology</b>		<b>Course Code: CV3962</b>
<b>CO1</b>	An ability to understand importance of water quality standards	
<b>CO2</b>	An ability to perform various physical and chemical tests on water sample	
<b>CO3</b>	An ability to understand various biological tests performed on water sample and to perform a few biological tests on water	

<b>Course Name: Water Supply and Waste Water Collection System</b>		<b>Course Code: CV3963</b>
<b>CO1</b>	An Ability to understand fundamental of design of the pipe in water distribution system and wastewater collection system	
<b>CO2</b>	An Ability to understand different methods of analysis of pipe network for water distribution.	
<b>CO3</b>	Ability to design of water distribution system and sewerage system	

<b>Course Name: Lab Water Supply and Waste Water Collection System</b>		<b>Course Code: CV3964</b>
<b>CO1</b>	An Ability to understand fundamental of design of the pipe in water	

	distribution system and wastewater collection system
<b>CO2</b>	An Ability to understand different methods of analysis of pipe network for water distribution.
<b>CO3</b>	Ability to design of water distribution system and sewerage system

<b>Course Name: Municipal Water Treatment</b>		<b>Course Code: CV3965</b>
<b>CO1</b>	An ability to understand the fundamentals related to water treatment	
<b>CO2</b>	An Ability to design different water treatment Units	

<b>Course Name: Municipal Solid Waste Management</b>		<b>Course Code: CV3966</b>
<b>CO1</b>	An ability to understand different characteristic of solid waste.	
<b>CO2</b>	An ability to understand different methods of collection, transfer and transport of solid waste.	
<b>CO3</b>	An ability to understand different Processing and disposal methods for solid waste.	

<b>Course Name: Municipal Waste water Treatment</b>		<b>Course Code: CV3966</b>
<b>CO1</b>	An ability to understand basics of different wastewater treatment processes	
<b>CO2</b>	An ability to understand working of different sewage treatment units	
<b>CO3</b>	An ability to design different sewage treatment units.	
<b>CO4</b>	An ability to understand different methods of treatment and disposal of bio-solids	

**First Year: Semester II:**

<b>Course Name: Industrial Wastewater Treatment and Reuse</b>		<b>Course Code: CV 3975</b>
<b>CO1</b>	An ability to understand importance of industrial wastewater treatment.	
<b>CO2</b>	An ability to understand the fundamentals of various treatment processes.	
<b>CO3</b>	An ability to understand treatment methodologies for various industrial wastewaters.	
<b>CO4</b>	An ability to design various treatment units for Industrial wastewater	

<b>Course Name: Environmental Management</b>		<b>Course Code: CV 3976</b>
<b>CO1</b>	An ability to grasp the fundamentals and identify the tools used for Environmental Management	
<b>CO2</b>	An ability to understand environmental impact assessment (EIA) as an environmental management tool	
<b>CO3</b>	An ability to understand the evolution of environmental policies and laws and implications of international policies and laws for India.	

<b>Course Name: Air Quality Management</b>		<b>Course Code: CV 3977</b>
<b>CO1</b>	An ability to understand air pollution and its control	
<b>CO2</b>	An ability to understand various meteorological factors and its influence on air pollution.	
<b>CO3</b>	An ability to understand the basic principles, equipment, and methods used to control particulate matter, gaseous emission and automobile emission	
<b>CO4</b>	An ability to understand basics of urban air pollution, odour and noise pollution	

<b>Course Name: Rural Water Supply and Sanitation</b>		<b>Course Code: CV 3978</b>
<b>CO1</b>	An Ability to understand the knowledge regarding rural water supply and sanitation scheme.	
<b>CO2</b>	An Ability to understand different compact units of rural water treatment and supply.	
<b>CO3</b>	An Ability to tell simple wastewater treatment for rural water supply	

<b>Course Name: PE-I : Hazardous Waste Management</b>		<b>Course Code: CV 3979</b>
<b>CO1</b>	An ability to understand principle of methods given to hazardous waste.	
<b>CO2</b>	An ability to understand the common functional elements of waste management system	
<b>CO3</b>	An ability to suggest suitable waste processing technologies and disposal methods.	

<b>Course Name: PE-I : Water Resources Management</b>		<b>Course Code: CV 3980</b>
<b>CO1</b>	An ability to understand water resources planning	
<b>CO2</b>	An ability to understand water policies and application of remote-sensing.	
<b>CO3</b>	An ability to understand different methods of conservation and recharging of water resources	
<b>CO4</b>	An ability to Understand inter-basin transfer and EIA of water Resource development projects	

<b>Course Name: PE-I : Environmental Biotechnology</b>		<b>Course Code: CV 3981</b>
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<b>CO1</b>	An Ability to understand the fundamental concept of microbial biochemistry and biotechnology
<b>CO2</b>	An Ability to understand the Relationship between cell signalling and gene transcription.

<b>Course Name: PE-I : Advanced Water Treatment</b>		<b>Course Code: CV 3982</b>
<b>CO1</b>	An ability to understand the fundamental, scientific basis governing the design and performance of the treatment technologies.	
<b>CO2</b>	An ability to understand the role of each unit operation	
<b>CO3</b>	Process within typical treatment process trains and their interaction	

<b>Course Name: PE-II : Energy Conversion and Environment</b>		<b>Course Code: CV 3983</b>
<b>CO1</b>	An Ability to Understand and apply basic concept of waste to energy technology and environmental protection.	
<b>CO2</b>	An Ability to understand the concept of environmental appraisal, energy audit and assessment of energy potential of energy sources	

<b>Course Name: PE-II : Applied Structure</b>		<b>Course Code: CV 3984</b>
<b>CO1</b>	1. An Ability to design various pipes and associated structures.	
<b>CO2</b>	2. An ability to analysis different loads conditions applicable for different environmental structures	
<b>CO3</b>	3. An ability to design water tanks	
<b>CO4</b>	An ability to understand importance of durability of water supply structures	

<b>Course Name: PE-II : Water Reuse and Recycling</b>		<b>Course Code: CV 3985</b>
<b>CO1</b>	An Ability to understand the concept of sustainable water resources management as a foundation for water reclamation and reuse	
<b>CO2</b>	An Ability to understand the various technologies and systems available for reclaimed water	
<b>CO3</b>	An Ability to understand the Water reuse applications including agricultural uses, landscape irrigation, industrial uses, environmental and recreational uses, groundwater recharge	

<b>Course Name: Seminar</b>		<b>Course Code: CV 3986</b>
<b>CO1</b>	An Ability to understand various aspects of presentation skills	
<b>CO2</b>	An ability to carry out literature survey, compilation of literature data	
<b>CO3</b>	An ability to understand effective technical paper writing	

**Second Year: Semester III:**

<b>Course Name: Project Phase-I</b>		<b>Course Code: CV 3989</b>
<b>CO1</b>	An ability to understand the advances in Environmental engineering.	
<b>CO2</b>	An ability to understand the use of modern tools.	
<b>CO3</b>	An ability to work independently and in a team for effective communication	
<b>CO4</b>	An ability to understand the importance of lifelong learning	

**Second Year: Semester IV:**

<b>Course Name: Project Phase-II</b>		<b>Course Code: CV 3990</b>
<b>CO1</b>	An ability to understand the advances in Environmental engineering.	
<b>CO2</b>	An ability to solve real world Environmental engineering problems	
<b>CO3</b>	An ability to understand the importance of lifelong learning and the use of modern tools.	
<b>CO4</b>	An ability to work independently and in a team for effective communication.	