

**!! अंतरी पेटवू ज्ञानज्योत !!**



(NAAC Re-Accredited)

**NORTH MAHARASHTRA UNIVERSITY,  
JALGAON**

**Syllabus for**

**F.Y.B.Sc.**

**Semester I & II**

**ENVIRONMENTAL SCIENCE**

**w.e.f. June 2015**

**North Maharashtra University, Jalgaon**  
**Syllabus F. Y. B. Sc. Environmental Science**  
**[June 2015]**

- 1. Each theory course is divided into 4 units and to be completed in 45 lectures of 50 min duration in each semester.**
- 2. Practical examination of laboratory course shall be conducted per semester.**
- 3. Each Theory/Practical course will be of 100 marks (40 marks internal and 60 marks- external examination)**

**Theory Courses**

**Semester – I**

Envi: 111 - INTRODUCTION TO ENVIRONMENT-I
Envi: 112 - NATURAL RESOURCES-I

**Semester – II**

Envi: 121 - INTRODUCTION TO ENVIRONMENT-II
Envi: 122 - NATURAL RESOURCES-II

**Practical Courses**

Envi: 113 – LABORATORY COURSE BASED ON THEORY PAPERS – I
Envi: 123 – LABORATORY COURSE BASED ON THEORY PAPERS – II

**COURSE STRUCTURE**

Course code	Title of course	Semester	Lectures	Marks	
				External	Internal
Envi: 111	Introduction to Environment	I	45	60	40
Envi: 112	Natural Resources	I	45	60	40
Envi: 113	Laboratory Course Based on Theory Papers	I	48	60	40
Envi: 121	Introduction to Environment	II	45	60	40
Envi: 122	Natural Resources	II	45	60	40
Envi: 123	Laboratory Course Based on Theory Papers	II	48	60	40

**NORTH MAHARSHTRA UNIVERSITY, JALGAON**

**Semester I**

**Envi: 111 - INTRODUCTION TO ENVIRONMENT-I  
w.e.f. from – June 2015**

**45 Periods**

<b>Unit No.</b>	<b>Topic</b>	<b>Sub topics</b>	<b>Periods</b>
I	Introduction to Environment	i) Meaning of Environment ii) Structure and Types of Environment iii) Global Environmental Problems iv) Environmental Conferences (Stockholm Conference, Earth Summit, Earth Summit 2002, United Nations Climate Change Conference)	10
II	Evolution	i) Introduction ii) Evolution of universe, evolution of elements iii) Origin of life and evolution of life forms: fossils iv) Origin of life : Chemical basis, evolution of life forms through ages	13
III	Environmental Components	i) Introduction ii) Biosphere iii) Atmosphere iv) Hydrosphere v) Lithosphere	10
IV	Social Environment	i) Man and Environment Interaction ii) Environmental Ethics iii) Earth's Carrying Capacity iv) Environmental Crisis	12

**NORTH MAHARSHTRA UNIVERSITY, JALGAON****Semester I****Envi:112– NATURAL RESOURCES-I  
w.e.f. from – June 2015****45 Periods**

<b>Unit No.</b>	<b>Topic</b>	<b>Sub topics</b>	<b>Periods</b>
I	Natural Resources	i) Introduction & concept ii) Classification of Natural Resources iii) Renewable resources iv) Non-renewable resources	7
II	Mineral Resources and Biogeochemical cycles	i) Use and exploitation ii) Environmental effects of extracting and using mineral resources iii) Case studies iv) Definition and concept of biogeochemical cycles v) Carbon cycle, Nitrogen cycle, Sulphur cycle, Phosphorous cycle, Hydrogen cycle	12
III	Oxygen and Carbon dioxide	i) Introduction & Definition ii) Chemical activity of oxygen iii) Oxygen cycle iv) Carbon dioxide v) Photosynthesis vi) Sources of CO <sub>2</sub> and forest denudation vii) Green House Gases viii) Ozone Layer	12
IV	Soil and Food Energy Flow	i) Introduction ii) Composition of Soil, Soil Formation iii) Soil type in India iv) Soil profile v) Soil Conservation vi) Food chain and its types vii) Food webs & Energy pyramids viii) Types of animals based on food habits ix) Productivity in an ecosystem x) First & Second law of thermodynamics	14

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**Semester II**

**Envi: 121 - INTRODUCTION TO ENVIRONMENT - II**  
**w.e.f. from – June 2015**

**45 Periods**

<b>Unit No.</b>	<b>Topic</b>	<b>Sub topics</b>	<b>Periods</b>
I	Earth Processes	i) Classification of rocks ii) Formation of rocks- Igneous, Sedimentary and Metamorphic rocks, weathering, erosion. iii) Transportation & deposition of earth materials by running water & glaciers iv) Plate tectonics, Sea floor spreading, mountain building and rock deformation	12
II	Environmental Pollution	i) Introduction and Concepts ii) Sources, Nature and Types of Pollutants iii) Pollution Monitoring iv) Types of Environmental Pollution	11
III	Current Environmental Issues	i) Introduction to Global Climate Changes ii) Green House Effect, Acid Rain iii) Deforestation & Desertification iv) Global Warming & Sea Level rise, Ozone Depletion	10
IV	Environmental Education & Awareness	i) Introduction ii) Need of Environmental Education & Awareness iii) Objectives & Principles of E.E. at various levels iv) E.E. in India, Role of NGO's in Environmental awareness	12

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**Semester II**

**Envi: 122–NATURAL RESOURCES - II**  
**w.e.f. from – June 2015**

**45 Periods**

<b>Unit No.</b>	<b>Topic</b>	<b>Sub topics</b>	<b>Periods</b>
I	Water Resources	i) Use and over utilization of surface and ground water ii) Floods and droughts iii) Conflict over water iv) Benefits and problems related to water v) SardarSarovar Dam – Case Study	11
II	Land Resources	i) Land as resource ii) Land Degradation iii) Man induced landslide iv) Soil Erosion v) Desertification	08
III	Forest Resources	i) Use & over exploitation ii) Deforestation iii) Chipko Movement – Case Study iv) Timber extraction and mining v) Dams & their effects on forest & tribal people vi) Role of an individual in conservation of natural resources vii) Equitable use of natural resources for sustainable lifestyles	12
IV	Energy Resources	i) Growing energy needs ii) Renewable and non-renewable energy resources iii) Natural resources and associated problems iv) Use of alternate energy sources - Solar energy, Wind Energy, Hydro energy, Tidal Energy, Geothermal Energy, Biomass energy, Biogas and Biofuels	14

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**Practical Course (Semester – I)**

**Envi: 113 – LABORATORY COURSE BASED ON THEORY PAPERS - I  
w.e.f. from – June 2015**

<b>Sr. No.</b>	<b>Title of the Practical</b>
1	Collection of Water Sample
2	Preservation of Water Sample
3	To study the physical properties of water sample.
4	Study of Water Quality Standards
5	Methods of Sterilization
6	To determine pH of water sample
7	To determine the pH of soil sample
8	To determine the electrical conductivity of water sample
9	To determine the electrical conductivity of soil sample
10	To determine the total solids from water sample
11	To determine the total dissolved solids from water sample
12	Estimation of dissolved oxygen present in water sample by Winkler's method

**\* Each practical course consists of 04 periods**

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**Practical Course (Semester – II)**

**Envi: 123 – LABORATORY COURSE BASED ON THEORY PAPERS - II**  
**w.e.f. from – June 2015**

<b>Sr. No.</b>	<b>Title of the Practical</b>
1	To determine the acidity of given water sample
2	To determine the alkalinity of given water sample
3	Determination of Total Hardness of given sample
4	To determine the turbidity by Secchi disc method
5	To determine soil temperature by soil thermometer
6	To determine organic matter from soil (Ignition method)
7	To determine the water holding capacity of the soil sample.
8	Study of Microscope
9	Study of phytoplankton
10	Study of Zooplanktons
11	To examine the organisms present in the water sample by hanging Drop technique
12	Classification of Rocks

**\* Each practical course consists of 04 periods**



## Reference Books for Semester I & II

### Introduction to environment-I& II

1. P.D.Sharma (2006) : Ecology and Environment – Rastogi Publications, Meerut
2. S.T.Ingle et al. (2005) Environment Studies – Prashant Publication House, Pune
3. P.S.Verma and V.K.Agrawal (1998) Environmental Biology (Principles of ecology),  
S. Chand and company ltd, New Delhi
4. H.V.Jadhav (1994): Principles of Environment Science, Himalaya Publishing House
5. Savindra Singh (2002): Environmental Geography, PrayagPustakBhavan, Allahabad
6. ErachBharucha(2005): Textbook of Environmental Studies for Undergraduate  
Courses, Universities Press, Hyderabad.

### Natural Resources – I & II

1. P.D.Sharma (2006) : Ecology and Environment – Rastogi Publications, Meerut
2. S.T.Ingle et al. (2005) Environment Studies – Prashant Publication House, Pune
3. P.S.Verma and V.K.Agrawal (1998) Environmental Biology (Principles of ecology),  
S. Chand and company ltd, New Delhi
4. H.V.Jadhav (1994): Principles of Environment Science, Himalaya Publishing House
5. Dr. A. M. Deshmukh (1996): Outlines of Microbiology, Krishnai Publication, Karad
6. P.C. Dubey, D.K. Maheshwari (1993): A Textbook of biotechnology, S.Chand and  
Co.Ltd, New Delhi
7. S.C.Santra (2001) : Environment Science, New Central Book Agency (P) Ltd,  
Kolkata