

CENTRAL UNIVERSITY OF SOUTH BIHAR



M.Sc. Environmental Science Syllabus based on Choice Based Credit System (CBCS) (Effective from Academic Session 2018-19 onwards)

**Centre for Environmental Sciences
School of Earth, Biological and Environmental Sciences**

Central University of South Bihar
Centre for Environmental Sciences

M.Sc. Environmental Science

Centre for Environmental Sciences, started in 2010 under the aegis of School of Earth, Biological and Environmental Sciences. The Centre is presently offering master program in Environmental Science which seeks to understand the integrated study of the earth, atmospheric, biological and chemical processes and their linkages with developmental perspectives for attaining a more sustainable environment. Students in the centre develop a holistic approach encompassing the processes, links, interactions and feedback mechanisms that operate within different environments.

The Centre of Environmental Sciences seeks to understand the integrated behaviour of the soil-plant-atmosphere; sediment-benthos- phytoplankton- zooplankton systems as it affects the flow and partitioning of resources including carbon and water. We are a highly interdisciplinary team interested in how the complex interactions between the different components of the system impact on food security and associated ecosystem services in the immediate and long-term.

We are a highly interdisciplinary team interested in how the complex interactions between the different components of the system (between and beyond disciplinary boundaries) impact on food security and associated ecosystem services in the immediate and long-term. Our approach is to underpin our research with a strong theoretical framework that is firmly imbedded in leading edge experimentation and extension program. This helps facilitate the pipeline from world-leading basic science through to application to real-world problems. The programme is designed in a way to provide necessary knowledge and skills to postgraduate students, so that they can be well-equipped to fast-track in to research leadership role and industrial application.

After successful completion of the course, the students are expected to develop the capacity to study, analyse and seek solution to environmental problems. They will also learn to analyse and asses environmental systems and problems; be able to propose sustainable solutions to environmental problems; and contribute to the development of policies and strategies for environmental planning. The major thrusts of the programme are:

1. To study issues related to exploitation of natural resources, the impacts of human activities thereon and the implications of environmental degradation on human development.
2. Natural Processes in the Environment, which focus on the natural processes such as the hydrological, atmospheric, chemical, micro-biological and ecological processes.
3. The Human Dimension of Environmental Change: to understand the determinants of the growth of populations and economies, and how this growth results in demand for natural resources, leading to scarcity, pollution and risks for human health.
4. Analytical Tools in Environmental Science: basic tools for analysing environmental problems, such as data collection and analysis and modelling of air, water, soil and biological systems.

M.Sc. Environmental Science Semester Wise Course Distribution

(Based on Choice Based Credit System (CBCS))

(Total 96 Credit, Core Course - 56 Cr., Elective Course - 40 Cr.)

Sl. No.	Course Code	Course Title	Total Credit	Theory (Cr.)	Practical/ Project/ Hands in Experience (Cr.)
Semester –I (Total credit-24)					
Core Course (Credit-20)					
1.	MSESC1001C04	Environmental Biology	4	3	1
2.	MSESC1002C04	Water Pollution: Causes, Consequences and Control	4	3	1
3.	MSESC1003C04	Environmental Chemistry	4	3	1
4.	MSESC1004C04	Environmental Geosciences	4	3	1
5.	MSESC1005C04	Field Work (Visit of Industry, Nature reserves/interpretation Centre/National Park, Protected Areas)	4	4	0
6.	----	Basic Biology*	Non credit		
7.	----	Basic Mathematics*	Non credit		
Elective Course (Credit-04)					
8.	MSESC1006E04	Introduction to Environmental Sciences	4	4	0
9.	MSESC1007E04	Social and Developmental Perspectives	4	3	1
Semester –II (Total credit-24)					
Core Course (Credit-20)					
10.	MSESC2001C04	Environmental Impact Assessment	4	3	1
11.	MSESC2002C04	Energy and Environment	4	3	1
12.	MSESC2003C04	Natural Resources and their Management	4	3	1
13.	MSESC2004C04	Air Pollution: Causes, Consequences and Control	4	3	1
14.	MSESC2005C04	Atmospheric Science & Climate Change	4	3	1
Elective Course (Credit-04)					
15.	MSESC2006E04	Analytical Methods	4	3	1
16.	MSESC2007E04	Disaster Management	4	3	1

Semester –III (Total credit-24)					
Core Course (Credit-08)					
17.	MSESC3001C04	Research Methodology	4	3	1
18.	MSESC3002C04	Dissertation	4	4	0
Elective Course (Credit-16)					
19.	MSESC3003E04	Restoration Ecology	4	3	1
20.	MSESC3004E04	The Science and Practice of Sustainable Development	4	3	1
21.	MSESC3005E04	Environmental Policies, Laws and Ethics	4	3	1
22.	MSESC3006E04	Solid Waste Management	4	3	1
23.	MSESC3007E04	Environmental Economics	4	4	0
24.	MSESC3008E04	Bio-geo chemical cycles	4	3	1
25.	MSESC3009E04	Eco-toxicology and Environmental Health	4	3	1
26.	MSESC3010E04	Environmental Modeling	4	3	1
Semester –IV (Total credit-24)					
Core Course (Credit-08)					
27.	MSESC4001C08	Dissertation	8	8	0
Elective Course (Credit-16)					
28.	MSESC4002E04	Environmental Biotechnology	4	3	1
29.	MSESC4003E04	Biodiversity and Conservation Biology	4	3	1
30.	MSESC4004E04	Microbial Ecology	4	3	1
31.	MSESC4005E04	Industrial Environment Management	4	3	1
32.	MSESC4006E04	Environmental Entrepreneurship	4	3	1
33.	MSESC4007E04	Soil Science	4	3	1
34.	MSESC4008E04	Statistical Methods and Computer Applications	4	3	1
35.	MSESC4009E04	Remote Sensing and GIS	4	3	1

**List of Core courses & Elective courses of M.Sc. Environmental Science open for
University Level (CUSB)**

Sl. No.	Course Code	Course Title	Total Credit
Core Course			
1.	MSESC1001C04	Environmental Biology	4
2.	MSESC3001C04	Research Methodology	4
3.	MSESC1002C04	Water Pollution: Causes, Consequences and Control	4
4.	MSESC2001C04	Environmental Impact Assessment	4
5.	MSESC1003C04	Environmental Chemistry	4
6.	MSESC2003C04	Natural Resources and their Management	4
7.	MSESC2004C04	Air Pollution: Causes, Consequences and Control	4
8.	MSESC1004C04	Environmental Geosciences	4
9.	MSESC2005C04	Atmospheric Science & Climate Change	4
Elective Course			
10.	MSESC4002E04	Environmental Biotechnology	4
11.	MSESC4003E04	Biodiversity and Conservation Biology	4
12.	MSESC3003E04	Restoration Ecology	4
13.	MSESC3004E04	The Science and Practice of Sustainable Development	4
14.	MSESC4004E04	Microbial Ecology	4
15.	MSESC3005E04	Environmental Policies, Laws and Ethics	4
16.	MSESC3006E04	Solid Waste Management	4
17.	MSESC4006E04	Environmental Entrepreneurship	4
18.	MSESC3007E04	Environmental Economics	4
19.	MSESC3008E04	Bio-geo chemical cycles	4
20.	MSESC4007E04	Soil Science	4
21.	MSESC1006E04	Introduction to Environmental Sciences	4
22.	MSESC1007E04	Social and Developmental Perspectives	4
23.	MSESC3009E04	Eco-toxicology and Environmental Health	4
24.	MSESC4008E04	Statistical Methods and Computer Applications	4
25.	MSESC4009E04	Remote Sensing and GIS	4
26.	MSESC3010E04	Environmental Modelling	4
27.	MSESC2007E04	Disaster Management	4

List of Skill based courses of M.Sc. Environmental Science

Sl. No.	Course Code	Course title	Total Credit
1.	MSESC1002C04	Water Pollution: Causes, Consequences and Control	4
2.	MSESC3004E04	The Science and Practice of Sustainable Development	4
3.	MSESC3006E04	Solid Waste Management	4
4.	MSESC4005E04	Industrial Environment Management	4
5.	MSESC4006E04	Environmental Entrepreneurship	4
6.	MSESC4009E04	Remote Sensing and GIS	4

*Basic Biology / Basic Mathematics are non credit bridge courses, this will be offered to those who wish to refresh the basics of Mathematics/ Biology to cope up with the requirements of M.Sc. Environmental Sciences.

SWAYAM

20% of the total credits (96) can be earned from outside centres i.e. either SWAYAM or courses being offered within University (CUSB). These earned courses shall be booked under elective courses. The core courses are compulsory for all students admitted in M.Sc. Environmental Science programme.

The list of SWAYAM courses will be announced in the beginning of 2nd & 3rd Semester. Students may earn required credits from the prescribed list. The Centre Committee (CC) may approve, other courses also brought by students from the SWAYAM platform as the case may be.

Eligibility for open course:-

1. The student shall be enrolled in PG /masters programmes of CUSB.
2. Only for students having Bachelor of Science degree.