Dr. Rafiq Zakaria Campus
Maulana Azad Educational Trust
Y.B. Chavan College of Pharmacy
An ISO 9001:2008 Certified Institute
(B. Pharm., M. Pharm & Research Center)

COURSE MODULE

Program Title	B. Pharmacy
Department	Pharmaceutics
Course Title	Environmental Science

1. **NAME OF INSTITUTION** : Y. B. CHAVAN COLLEGE OF PHARMACY, AURANGABAD

2. **AFFILIATED UNIVERSITY** : DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD

3. **DEPARTMENT** : Pharmaceutics

4. **PROGRAM TITLE** : B. PHARM

4.1.Program Outcomes (PO):

PO 01:Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.

PO 02:Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.

PO03:Problem analysis: Utilize the principles of scientific enquiry, thinking analytically, clearly andcritically, while solving problems and making decisions during daily practice. Find, analyze,evaluate and apply information systematically and shall make defensible decisions.

PO 04:Modern tool usage: Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.

PO 05:Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.

PO 06: Professional Identity: Understand, analyze and communicate the value of their professionalroles in society (e.g. health care professionals, promoters of health, educators, managers,employers, employees).

PO 07:Pharmaceutical Ethics: Honour personal values and apply ethical principles in professionaland social contexts. Demonstrate behavior that recognizes cultural and personal variability invalues, communication and lifestyles. Use ethical frameworks; apply ethical principles whilemaking decisions and take responsibility for the outcomes associated with the decisions.

PO 08:Communication: Communicate effectively with the pharmacy community and with society atlarge, such as, being able to comprehend and write effective reports, make effectivepresentations and documentation, and give and receive clear instructions.

PO 09:The Pharmacist and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.

PO 10:Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 11:Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assessand use feedback effectively from others to identify learning needs and to satisfy theseneeds on an ongoing basis.

5. COURSE SPECIFICATION :

5.1.Course Identification and General Information

a. Course Title:	**Environmental Science**		
b. Course Number/Code	BP 206 T		
c. Credit Hours	**Theory**	**Practical**	**Total**
	30	**00**	**30**
d. Study level/semester at which this course is offered	**Second semester**		
e. Pre-requisite	**Environmental studies at junior college level**		
f. Co-requisite	**Current environment related issues.**		
g. Language of teaching the course	**English**		
h. Prepared by	Mr. Shaikh Shoaib		
i. Approved by	Dr. S. R.Lahoti		

5.2.Course Description:

Environmental science deals with the study of importance of environmental science and environmental studies. It includes study of Multidisciplinary nature of environmental studies, Natural Resources,Ecosystems, Biodiversity and its conservation, Environmental Pollution, Social Issues and the Environment, Human Population and the Environment.

5.3.Course Objectives:

- To know the importance of key to the future of mankind.
- To study the current problems of pollution, deforestation, solid waste disposal, degradation of environment, issues like economic productivity and national security.

- Study of global warming, depletion of ozone layer, loss of biodiversity and its impact on environmental issues.

6.0.Course Outcomes (COs):

(e.g. CO101.1 (CO - course code, 101 subject code as per syllabus, & .1 is first CO)

Code	Course outcome
CO 206.01	Application of safe and proper use of chemicals, instruments and proper disposal of waste materials used during practice
CO 206.02	Appropriate utilization of electricity and other energy resources
CO 206.03	Discuss issues and aids towards public health care
CO 206.04	Use of safety measures and GLP, GMP in Extraction, isolation, synthesis, purification, identification, and/or standardization.
CO 206.05	Awareness about the role of individual in conservation of natural resources, biodiversity, prevention of pollution, public awareness in health care and human rights

6.1.Knowledge and Understanding

(Alignment of POs to Cos): (PO: Program Outcome; CO: Course Outcome)

Course code (CO)	**Program Outcome (PO)**										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO206.01	**-**	**-**	**M**	**-**	**S**	**S**	**-**	**-**	**-**	**H**	**H**
CO 206.02	**-**	**-**	**M**	**-**	**S**	**-**	**-**	**-**	**-**	**H**	**H**
CO 206.03	**-**	**-**	**M**	**-**	**S**	**S**	**H**	**-**	**-**	**H**	**H**
CO 206.04	**-**	**-**	**M**	**-**	**S**	**-**	**-**	**-**	**-**	**H**	**H**
CO 206.05	**-**	**-**	**M**	**-**	**S**	**S**	**-**	**-**	**H**	**H**	**H**

Correlation levels H, M or S as defined below:
H: High; M: Moderate (Medium); S: Slight (Low); If there is no correlation, put '-'

6.2Teaching and Assessment Methods for achieving learning outcome:

Teaching Strategies(methods)/Tools used	Methods of Assessment
Lectures (Constructivist learning) **Collaborative learning (Discussion)** **Project based Learning** **Blended learning** **Inquiry based learning** **Flash cards** **Video** **Equipment models**	**Formative Assessment** **Case study** **Class test** **Multiple choice questions** **Assignments** **Seminar** **Viva Voce** **Synopsis** **Tutorials** **Summative Assessment**

6.3. Tools for the Teaching and learning

Theory subjects	Practical Subjects
• **PowerPoints presentation** • **Videos** • **Flash Card** • **Models** • **Software** • **Charts** • **Smart Boards** • **White boards** • **Online Platform**	• **White boards** • **Glassware** • **Chemicals** • **Instruments** • **Equipment** • **Software** • **Models** • **Plants/Crude Drugs** • **Animal**

6. COURSE CONTENTS:

6.1. Theoretical Aspect:

Order	Topic list/units	Subtopics list	Number of Weeks	Contact Hours
1	**Multidisciplinary nature of environmental studies** **Renewable and non-renewable resources**	Definition, scope and importance. Need for public awareness	**10**	**3**
2	**NaturalResources**	1) Forest resources: Use and over-exploitation, deforestation, case studies. 2) Timber extraction, mining, dams and their effects on forest and tribal people. 3) Water resources : Use and over-utilization of surface and ground water, 4) Floods, drought, conflicts over water, dams-benefits and problems. 5) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. 6) Food resources: World food problems, changes caused by agriculture and Overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. 7) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy		

		sources. Case studies. 8) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. a. Role of an individual in conservation of natural resources. b. Equitable use of resources for sustainable lifestyles		
3	**Ecosystems**	Concept of an ecosystem. 1. Structure and function of an ecosystem. 2. Producers, consumers and decomposers 3. Energy flow in the ecosystem. 4. Ecological succession. 5. Food chains, food webs and ecological pyramids. 6. Introduction, types, characteristic features, structure and function of the following ecosystems:- a. Forest ecosystem. b. Grassland ecosystem. c. Desert ecosystem. d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).	**10**	**3**
5	**Environmental Pollution**	Definition 1. Causes, effects and control measures of : a. Air pollution. b. Water pollution. c. Soil pollution. d. Marine pollution. e. Noise pollution. f. Thermal pollution & Nuclear hazards. 2. Solid waste management:- Causes, effects and control measures of urban and Industrial wastes. 3. Role of an individual in prevention of pollution. Case studies. 4. Disaster management:- Floods, earthquakes, cyclones and landslides	**10**	**3**

6.2. Practical Aspect NA

6.3.Assignments/Tutorials:

a) **Tutorials based on Topic/Units are scheduled periodically.**
b) **Questions are assigned to students for practice after every lecture.**

7. SCHEDULE OF ASSESSMENT TASKSDURING THE SEMESTER:

Sr. No.	Assessment Method	Week due	Marks	Proportion of Final Assessment
01	Assignments, Exercises &tutorials		NA	NA
02	Sessional (Internal Theory exam)		10	20%
03	Continuous Practical Assessment (Sessional Practical exam)	Weekly during practical	NA	NA
04	Final exam (theory)	As per University at end of course	40	80%
05	Final exam(practical)		NA	NA
Total			50	100%

8. STUDENT SUPPORT:

Office Hours/Week	Other Procedures
Two hours minimum	Shaikhshoaib58@gmail.com

9. TEACHER'S AVAILABILITY FOR STUDENT SUPPORT:

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Time	12:00-1:00	12:00-1:00	12:00-1:00	12:00-1:00	12:00-1:00	12:00-1:00

10. LEARNING RESOURCES:

Sr.No.	Title of Learning Material	Details
01	Text books	AnubhaKaushik, C. P. Kaushik; "Perspectives in Environmental Studies"; 3rd edition 2008; New Age Publication.
02	Essential references (as per syllabus)	• Gleick H.P, Water in crisis, Pacific Institute., for Studies in Dev., Environment & Security. Stockholm Env.Institute, Oxford Univ. Press • HawkinsR.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bomba • Heywood V.H &Waston R. T., Global Biodiversity Assessment., Cambridge Univ. Press • OdumE.P., Fundamentals of Ecology, W.B. Saunders Co.USA,
03	Reference material	Text books in college library
04	E-materials and websites	Youtube videos

11. FACILITIES REQUIRED:

Sr.No.	Particular of Facility Required
1	Lecture Rooms (capacity for 60 students)
3	Computing resources: P-IV-PCs with recent hardware/ utilization of open source and licensed application software

12. COURSE IMPROVEMENT PROCESSES:

12.1. Strategies for obtaining student feedback on effectiveness of teaching:

Course delivery evaluation by students using: Questionnaire forms and online questionnaires

12.2. Other strategies for evaluation of teaching by the instructor or by the department:

Periodic review by Academic Planning & Monitoring Committee and departmental review committee, Observations and assistance of colleagues, External assessments by advisors/ examiners and auditors.

12.3. Process for improvement of teaching:

Use of ICT tools, teaching aids, Simultaneous practical orientation and theory classes (SPOT), Adoption of reflective teaching.

12.4. Describe the planning procedures for periodically reviewing of course effectiveness And planning for improvement:

Periodic review by departmental review committee, Review of course delivery and outcome through assessment and feedback from all stake holders.

12.5. Course development plans:

Provide inputs for course improvement and update to University Course development Committees (Board of Studies)

13. INFORMATION ABOUT FACULTY MEMBER RESPONSIBLE FOR THE COURSE:

Name	**Shaikh M. shoaib**
Location	Y B Chavan College of Pharmacy.
Contact Detail (e-mail &Cell No.)	9665332321, shaikhshoaib58@gmail.com
Office Hours	10.00am to 5.00pm