

**COURSE HANDOUT**  
**ENVIRONMENTAL SCIENCES (THEORY)**  
**COURSE CODE: BP206T**

**VISION**

*Train the minds to think logically and become a success*

**MISSION**

*To Develop inventive, pioneering research & high-quality technical education*

**PROGRAMME EDUCATIONAL OBJECTIVES**

- PEO 1:** To produce graduates with sound theoretical knowledge and technical skills required for career opportunities in various domains.
- PEO 2:** To incite the students towards research and to address the challenges with their innovative Contributions for the benefit of mankind.
- PEO 3:** To bring forth a quality professional equipped with technological advances to adapt easily to changes in the ever-evolving pharma and allied industry, hospital and clinical pharmacy setup, pharma retailing and distribution, and governmental and health agencies.
- PEO 4:** To engage graduates in professional ethical practices in a multidisciplinary environment, while contributing to organization through leadership and building team spirit.
- PEO 5:** Pharmacists can become lifelong learners, absorb new technologies, and then offer leadership roles in society.

<b>Programme Name</b>	Bachelor of Pharmacy (B. Pharmacy)
<b>Course Name</b>	Environmental Sciences (Theory)
<b>Course Code</b>	BP206T
<b>Session</b>	
<b>Semester</b>	II
<b>Lecture/Tutorial (Per Week)</b>	3 (3-0-3)
<b>Course Credit</b>	3
<b>Course Coordinator Name</b>	

**1. Scope of the Course:**

This subject is the scientific study of the environmental system and the status of its inherent or induced changes on organisms. It includes not only the study of physical and biological characters of the environment but also the social and cultural factors and the impact of man on environment.

**2. Course Outcomes (COs):**

- C206.1** Acquire in-depth knowledge of natural resources and renewable/nonrenewable resources and their associated problems.
- C206.2** Enumerate the various natural resources and the role of an individual in the conservation of natural resources.
- C206.3** Demonstrate the characteristics feature, structure, and function of ecosystems and their importance in our life.
- C206.4** Promote awareness about problems of different environmental pollutions, identifying and solving these problems.
- C206.5** Develop an attitude in prevention, protection, and improvement of the environment.

**3. Text Books:**

- TB.1 Y.K. Sing, Environmental Science, New Age International Pvt, Publishers, Bangalore.
- TB.2 Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
- TB.3 Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad, India.
- TB.4 Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p.

**4. Reference Books:**

- RB.1 Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. Environmental Encyclopedia, Jaico Publ. House, Mumbai, 2001.

## 5. Other Readings & Relevant Websites:

Sr. No.	Link of Journals, Magazines, Websites and Research Papers
1	<a href="https://www.slideshare.net/">https://www.slideshare.net/</a>
2	<a href="https://www.springer.com/">https://www.springer.com/</a>
3	<a href="https://www.sciencedirect.com/journal/journal-of-environmental-sciences/">https://www.sciencedirect.com/journal/journal-of-environmental-sciences/</a>

## 6. Course Plan:

Subject: Environmental Sciences (Theory)		Subject Code: BP206T
Sr. No.	Topics	No. of Lect.
1	<b>Unit III:</b> Environmental Pollution: Air pollution; Water pollution; Soil pollution	10
2	<b>UNIT -II:</b> Ecosystems, Concept of an ecosystem, Structure and function of an ecosystem	5
<b>ST-I (Syllabus Covered from Lecture 01 to 14)</b>		
3	<b>UNIT - II:</b> Introduction, types, characteristic features, structure and function of the ecosystems: Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	5
4	<b>UNIT-I:</b> The Multidisciplinary nature of environmental studies Natural Resources Renewable and non-renewable resources: Natural resources and associated problems a) Forest resources; b) Water resources; c) Mineral resources; d) Food resources; e) Energy resources; f) Land resources: Role of an individual in conservation of natural resources.	10
<b>ST- II (Syllabus Covered from Lecture 15 to 30)</b>		

## 7. Lecture Plan:

Lect. No.	Topics	Tentative Date		CO
		Section-A	Section-B	
01	Introduction to the environmental pollution	24.07.24	22.07.24	206.4
02	Different types of pollution	24.07.24	25.07.24	206.4
03	Classification of pollution	25.07.24	29.07.24	206.4
04	Introduction to the air pollution	31.07.24	01.08.24	206.4
05	Types of air pollution	31.07.24	05.08.24	206.4
06	Introduction of water pollution	01.08.24	08.08.24	206.4
07	Types of water pollution	07.08.24	12.08.24	206.4
08	Introduction of soil pollution	07.08.24	19.08.24	206.4
09	Classification of soil pollution	08.08.24	22.08.24	206.4
10	Prevention concept of pollution	14.08.24	26.08.24	206.5
11	Introduction about ecosystem	14.08.24	29.08.24	206.3
12	Types of ecosystem	21.08.24	02.09.24	206.3
13	Concept of an ecosystem	21.08.24	05.09.24	206.3
14	Structure of an ecosystem	22.08.24	23.09.24	206.3
15	Function of an ecosystem	28.08.24	26.09.24	206.3
16	Introduction, types, characteristic features, structure and function of the Forest ecosystem	28.08.24	30.09.24	206.3
17	Introduction, types of Grassland ecosystem	29.08.24	03.10.24	206.3
18	Characteristic features, structure and function of the Grassland ecosystem	04.09.24	07.10.24	206.3
19	Introduction, types, characteristic features of the desert ecosystem	04.09.24	11.10.24	206.3
20	Structure and function of the desert ecosystem	05.09.24	14.10.24	206.3
21	Introduction of the Multidisciplinary nature of environmental studies	25.09.24	17.10.24	206.1
22	Natural Resources renewable resources	25.09.24	21.10.24	206.1

23	Natural Resources non-renewable resources	26.09.24	24.10.24	206.1
24	Natural resources and associated problem in forest resources	03.10.24	26.10.24	206.1
25	Natural resources and associated problem in mineral resources	09.10.24	28.10.24	206.1
26	Introduction of mineral resources	09.10.24	31.10.24	206.1
27	Concept of food resources	10.10.24	02.11.24	206.1
28	Concept of energy resources	16.10.24	04.11.24	206.1
29	Introduction of land resources	16.10.24	07.11.24	206.1
30	Role of an individual in conservation of natural resources.	17.10.24	09.11.24	206.2

#### 8. Assignments Plan:

Sr. No.	Type of Assignment	Assignment	Marks	CO	PO	Tentative Date	
						Section-A	Section-B
1	Problem-solving	Types of environmental pollutions: Identifying and solving these problems.	10	206.4	PO 1-9, PO11	01.08.24	08.08.24
2	Subjective	Conservation of natural resources	10	206.2	PO 1-2, PO5, PO 8, PO11	21.08.24	26.08.24
3	Mind map	Diagrammatically representation of different resources system	10	206.1	PO 1-9, PO11	29.08.24	03.10.24
4	Case report	Prevention, protection and improvement of environment	10	206.5	PO 1-9, PO11	09.10.24	21.10.24
5	Subjective	Structure and function of ecosystem	10	206.3	PO 1-9	17.10.24	04.11.24

#### 9. Class Tests Plan:

Sr. No.	Test of Type	Topics	Marks	CO	PO	Tentative Date	
						Section-A	Section-B
1	Reflective writing	Concept of different resources system	10	205.1	PO1-9, PO11	01.08.24	08.08.24
2	Oral presentation	Conservation of natural resources	10	205.2	PO1,PO2,PO5,PO8, PO 11	21.08.24	26.08.24
3	Reflective writing	Structure and function of the ecosystem	10	205.3	PO1-9, PO 11	29.08.24	03.10.24
4	Oral presentation	Types of environmental pollution	10	205.4	PO 1-9,PO 11	09.10.24	21.10.24
5	Reflective writing	Structure and function of the ecosystem	10	205.5	PO 1-11	17.10.24	04.11.24

#### 10. Content Beyond Syllabus (CBS):

Sr. No.	Topics	PO to be Achieved
1	Utilization of Biochemical Degradation of Pollutants	PO3, PO4, PO10, PO11

#### 11. Proposed Activity:

Sr. No.	Type of Activity	Topics	Tentative Date	
			Section-A	Section-B
1	Guest Lecture	Plastic detox : reduce the use of plastic	05.11.24	05.11.24

#### 12. Evaluation Scheme:

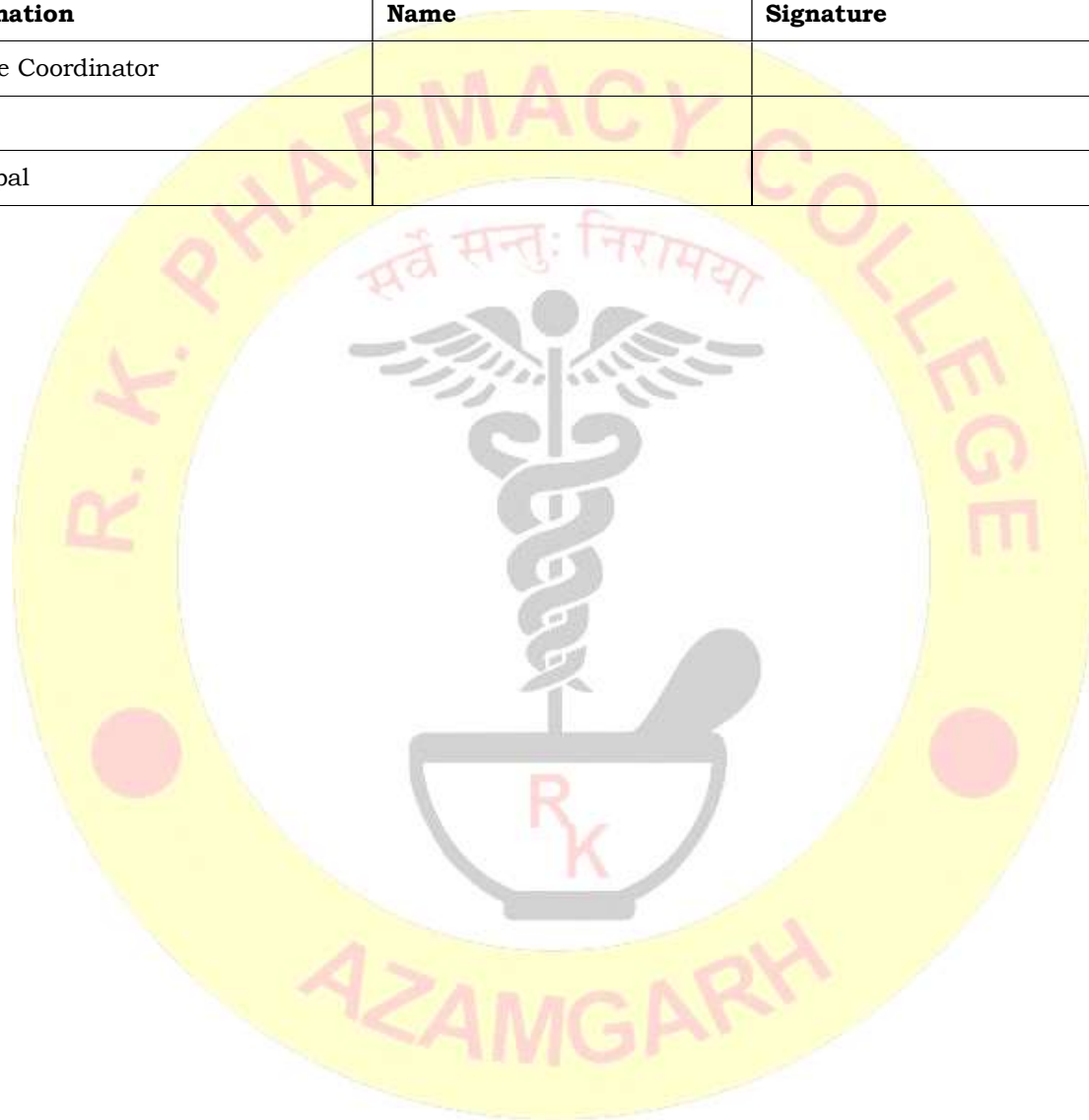
The marks allocated for continuous mode of internal assessment shall be awarded for attendance, academic activities and student-teacher interaction. Two sessional exams shall be conducted during mid of the semester. The average marks of two sessional exams shall be computed for internal assessment. Sessional exam shall be conducted for 30 marks and shall be computed for 15 marks. Weightage for various evaluation components is as below:

Sr. No.	Evaluation Component	Weightage
1	Internal Assessment 1. Continuous Mode 2. Sessional Exams	10 15
2	End Semester Exam	50
	<b>Total</b>	<b>75</b>

As per PCI and University guidelines minimum 75% attendance is required to become eligible for appearing in the End Semester Examination.

**This document is approved by:**

Designation	Name	Signature
Course Coordinator		
HOD		
Principal		



## **ANNEXURE I: PROGRAM OUTCOMES**

1. **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.
2. **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.
3. **Problem analysis:** Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
4. **Modern tool usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
5. **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.
6. **Professional identity:** Understand, analyze and communicate the value of their professional roles in society (e.g., health care professionals, promoters of health, educators, managers, employers, employees).
7. **Pharmaceutical ethics:** Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
8. **Communication:** Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
9. **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.
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.
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-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.