



**Gyanmanjari**  
Innovative University

**Course Syllabus**  
**Gyanmanjari Pharmacy College**  
**Semester-2(M.Pharm.)**

**Subject:** Hazards and Safety Management (MPHQA12507)

**Type of course:** Major

**Prerequisite:** B. Pharmacy

**Rationale:** This course is designed to convey the knowledge necessary to understand issues related to different kinds of hazard and their management. Basic theoretical and practical discussions integrate the proficiency to handle the emergency situation in the pharmaceutical product development process and provides the principle based approach to solve the complex tribulations.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P	C	Theory Marks		Practical Marks		CA	
				ESE	MSE	V	P	ALA	
4	-	-	4	75	25	-	-	50	150

Legends: CI-ClassRoom Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

**COURSE CONTENT:**

Chapter No.	Course content	Hrs	% Weightage
1.	<b>Multidisciplinary nature of environmental studies: Natural Resources, Renewable and non-renewable resources, Natural resources and associated problems</b> a) Forest resources; b) Water resources; c) Mineral resources; d) Energy resources; e) Land resources Ecosystems: Concept of an ecosystem and Structure and Function of an ecosystem. Environmental hazards: Hazards based on Air, Water, Soil and Radioisotopes.	10	25
2.	<b>Air based hazards:</b> Sources, Types of Hazards Air circulation maintenance industry for sterile area and non sterile area,	10	20



	<p>Step 4: Creating a Presentation or Report</p> <ul style="list-style-type: none"> <li>Groups compile their findings in a PowerPoint presentation (PPT), Word document, or infographic.</li> </ul> <p>Step 5: Group Discussion &amp; Debate</p> <ul style="list-style-type: none"> <li>Each group presents its findings.</li> <li>Conduct a debate on topics like "Are current safety regulations effective?"</li> </ul> <p>Step 6: Submission to GMIU Portal</p>	
2.	<p><b>Fire Prevention and Extinguisher Poster presentation</b></p> <p>Step 1: Research and Content Gathering</p> <ol style="list-style-type: none"> <li>Understand Fire Safety Basics – Gather information on fire prevention, extinguisher types, and usage.</li> <li>Collect Visual Elements – Find icons, illustrations, or real images for better representation.</li> </ol> <p>Step 2: Poster Design Creation</p> <ol style="list-style-type: none"> <li>Choose a Design Tool – Use Canva, PowerPoint, Photoshop, or any online poster maker.</li> <li>Set Dimensions – Recommended size: A3 (297 × 420 mm) or A4 (210 × 297 mm).</li> </ol> <p>Step 3: Poster Presentation Preparation</p> <p>Step 4: Uploading on GMIU Web Portal</p>	10
3.	<p><b>Hazard Identification &amp; Risk Assessment Exercise</b></p> <p>Step 1: Define the Scope of Assessment</p> <ul style="list-style-type: none"> <li>Student will identify the workplace, industry, or activity to be assessed (e.g., manufacturing plant, construction site, chemical lab).</li> </ul> <p>Step 2: Identify Potential Hazards</p> <ul style="list-style-type: none"> <li>Student will observe the workplace or process to list all possible hazards.</li> <li>Categorize hazards into: <ul style="list-style-type: none"> <li>Physical Hazards (machinery, noise, heat, radiation).</li> <li>Chemical Hazards (flammable substances, toxic gases).</li> <li>Biological Hazards (bacteria, viruses).</li> <li>Ergonomic Hazards (poor posture, repetitive motion).</li> <li>Psychosocial Hazards (work stress, harassment).</li> </ul> </li> </ul> <p>Step 3: Assess Risk Levels</p> <ul style="list-style-type: none"> <li>Evaluate the likelihood (probability) and severity (impact) of each hazard.</li> </ul> <p>Step 4: Student will make report</p> <p>Step 5: Submission to GMIU Portal</p>	10
4.	<p><b>Hands –on Demonstration of fire safety equipment</b></p> <p>Step 1: Preparation and Safety Measures</p> <p>Step 2: Introduction to Fire Safety Equipment</p> <ol style="list-style-type: none"> <li>Explain Fire Classes – Educate participants about different fire types (A, B, C, D, K) and their corresponding extinguishing agents.</li> <li>Demonstrate Fire Extinguisher Types – Show different types (Water, Foam, CO<sub>2</sub>, Dry Chemical, etc.).</li> </ol>	10





	3. Highlight Fire Blanket Usage – Explain how to use a fire blanket for small fires or clothing fires. 4. Describe Fire Alarm Systems – Demonstrate manual call points and automated alarms. 5. Discuss Fire Hose Reels and Sprinklers – Explain their purpose and how they function. Step 3: Practical Demonstration of Fire Extinguisher Usage Step 4: Fire Blanket Demonstration Step 5: Fire Alarm and Evacuation Drill Step 6: Fire Hose Reel Demonstration Step 7: Conclusion and Q&A	
5.	<b>Create Ecosystem Flowchart Using Canva or BioRender</b> and Submit to GMIU portal	10
Total		50

**Suggested Specification table with Marks (Theory):75**

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weight age	20%	45 %	25%	05%	05%	-

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

**Course Outcome:**

After learning the course, the students should be able to:	
CO1	recognize the interconnections between natural resources, ecosystems, and environmental sustainability.
CO2	evaluate the impact of human activities on forests, water, minerals, energy, and land resources, and propose conservation strategies.
CO3	identify air, water, soil, and chemical-based hazards and apply risk assessment techniques for hazard mitigation.
CO4	understand fire protection systems, types of fire extinguishers, and industrial safety regulations for hazard management.
CO5	utilize industrial safety guidelines, effluent treatment processes, and emergency response mechanisms to ensure workplace and environmental safety.



**Instructional Method:** The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

**Reference Books:(Latest Editions)**

- [1]. Y.K. Sing ,Environmental Science, New Age International Pvt,Publishers, Bangalore
- [2]. "Quantitative Risk Assessment in Chemical Process Industries" AmericanInstituteof Chemical Industries, Centre for Chemical Process safety.
- [3].Bharucha Erach,The Biodiversity of India, Map in Publishing Pvt. Ltd., Ahmedabad-380013,India,
- [4].Hazardous Chemicals: Safety Management and Global Regulations, T.S.S.Dikshith,CRC press