



# AMITY UNIVERSITY

— UTTAR PRADESH —

## FORMAT FOR COURSE CURRICULUM

**Course Title:** Bioresources and Bioprospecting

**Course Code:** BIOT 339

**Credit Units:** 3

L	T	S/P	SW/ FW	TOTAL CREDIT UNITS
3	0	0	0	3

**Course Objectives:** Conservation and understanding of Bioresources is very important for a society. Judicial use of bioresources can save mankind. Hence, the main objective is to impart knowledge of Bioresources, conservation biodiversity and various methods and usefulness of bioprospecting.

**Pre-requisites:** General

**Course Contents/Syllabus:**

	Weightage (%)
<b>Module I Bioresources- Introduction</b>	<b>20</b>
<b>Descriptors/Topics</b> Brief account of overall classification and taxonomy of Bioresources; importance of Biodiversity; components of biodiversity (genetic diversity , population level diversity , species diversity) ; Convention on Biological Diversity (CBD); Causes of threats to Natural Biodiversity ; Endangered , highly threatened, rare species; Conservation strategies for Sustainable Utilization	
<b>Module II Bioresources- Types</b>	<b>20</b>

<b>Descriptors/Topics</b> Bioresources including Botany (each component with three examples): food, fodder, fibres, oil crops, wood and timber, gums, dyes, resins, fruits, vegetables, biofuels, medicines, essential oils; some important microbes for antibiotics; biocatalysis and fermentation.	
<b>Module III Knowledge and Bioprospecting at indigenous level</b>	<b>30</b>
<b>Descriptors/Topics</b> Brief knowledge of operational methodologies of bioprospecting; Techniques of extraction, purification, Isolation and characterization of primary and secondary metabolites; pharmacognosy	
<b>Module IV Case Studies</b>	<b>20</b>
<b>Descriptors/Topics</b> <ul style="list-style-type: none"> <li>• Botanical Medicine industry: Paclitaxel, Taxol; Miltefosine, podophylotoxin and artemesin</li> <li>• Fungal pesticides: <i>Verticillium</i>, <i>Metarhizium</i> and <i>Beauveria</i></li> <li>• Marine organisms producing unsaturated fatty acids</li> <li>• Bioprospecting extremophiles for cellulase production</li> <li>• Bioprospecting for biofuels production</li> </ul>	
<b>Module V large scale production and its challenges</b>	<b>10</b>
<b>Descriptors/Topics</b> Scale up production by Fermentation; Setting up of Pilot Plants and its associated challenges.	

### Student Learning Outcomes:

At the end of this course, the student will be able to

- Identify and classify different components of biodiversity and its role in the sustenance of life
- Describe the importance of modern techniques including analytical ones that can be utilized for exploring the medicinal wealth of India.
- Apply the knowledge for bioprospecting of Indian medicinal wealth in the process of drug discovery and product development.

### Pedagogy for Course Delivery:

- (a) **Lecture Plan/Session Plan :**  
 Lectures: 40  
 Tutorial: -  
 Presentation/ Seminar: -4  
 Class Test: 1  
 Total: 45

(b) **Lab/ Practicals: NA**

**Assessment/ Examination Scheme:**

<b>Theory L/T (%)</b>	<b>Lab/Practical/Studio (%)</b>
<b>100</b>	<b>0</b>

**Theory Assessment (L&T):**

<b>Continuous Assessment/Internal Assessment</b>					<b>End Term Examination</b>
<b>Components (Drop down)</b>	<b>Class test</b>	<b>Seminar</b>	<b>Home assignment</b>	<b>Attendance</b>	
<b>Weightage (%)</b>	10	10	5	5	70

**Lab/ Practical/ Studio Assessment: NA**

<b>Components (Drop down)</b>	<b>Performance</b>	<b>viva</b>	<b>Attendance</b>	<b>End Term Examination</b>
<b>Weightage (%)</b>				

**Text & References:**

- King, A., H. Cleveland and G. Streatfeild. 1980. Bioresources for development: The renewable way of life. Pergamon Press.
  - Ananthkrishnan, T.N. 1989. Bioresources Ecology. Oxford and IBH.
  - Krishnamurthy, K.V. 2009. An Advanced Textbook on Biodiversity Principles and Practice. Oxford and IBH. 49
  - Singh, M.P and S. Dey. 2004. Bioresources and Genepool Conservation. Daya Publishing.
  - Shiva, M.P. 1998. Inventory of Forest Resources for Sustainable Management and Biodiversity Conservation. Indus.
  - Biotechnology explorations: Applying the fundamentals, Judith A. Scheppler, Patricia E. Cassin and Rosa M. Gambier. 2000.
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