DEPARTMENT OF BIORESOURCES
SCHOOL OF BIOLOGICAL SCIENCES
UNIVERSITY OF KASHMIR, SRINAGAR

SCHEME AND COURSE STRUCTURE OF UNDERGRADUATE SYLLABI FOR BIORESOURCES BASED ON CHOICE BASED CREDIT SYSTEM (CBCS) TO BE IMPLEMENTED FROM ACADEMIC SESSION 2021 AND ONWARDS

Approved syllabi for Bioresources as per the Choice Based Credit System (CBCS) Scheme adopted for implementation at Undergraduate Level in Colleges of J & K from the academic session 2021 and onwards is as under:

Discipline Specific Course (DSC)/Core Courses: There 4 Core Courses, one course per semester, from semester 1st to semester 4th. Each Core course is of 6 Credits **(theory 4 +practical 2).**

Discipline Specific Elective (DSE): There are 4 DSE Courses, each of 6 credits **(theory 4 +practical 2)**, 02 in semester 5th and 02 in semester 6th. A student has opt for 01 DSE course in semester 5th and 01 DSE course in semester 6th.

The Core Courses and DCE Courses are exclusively meant for the students who opt for Bioresources as one of the subjects in their UG programme.

Skill Enhancement Courses (SEC): There are 6 SEC Courses, each course having 4 credits **(theory 2 +practical 2)**.

The Course Structure and credit break up has been given in tabulated form.

Abbreviations

L	**Lecture**
T	**Tutorial**
P	**Practical**
DSC	**Discipline Specific Course**
DSE	**Discipline Specific Elective**
SEC	**Skill Enhancement Course**

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DESCIPLINE SPECIFIC COURSES (DSC) and DESCIPLINE SPECIFIC ELECTIVES DSE Courses								
Semester	**Course Code**	**Subject**	**Course Name**	**Paper Category**	**Credit Breakup**			**Credits**
					L	**T**	**P**	
I	**BRS121C**	**BIORESOURCES**	Fundamentals of Bioresources	DSC-1	4	0	2	6
II	**BRS221C**	**BIORESOURCES**	Plant Resources	DSC-2	4	0	2	6
III	**BRS321C**	**BIORESOURCES**	Animal Resources	DSC-3	4	0	2	6
IV	**BRS421C**	**BIORESOURCES**	Microbial Resources	DSC-4	4	0	2	6
V	**BRS521D1A**	**BIORESOURCES**	Bioindustries	DSE	4	0	2	6
	BRS521D1B	**BIORESOURCES**	Biomedicine and Biocosmetics	DSE	4	0	2	6
VI	**BRS621D1A**	**BIORESOURCES**	Biostatistics and Biotechniques	DSE	4	0	2	6
	BRS621D1B	**BIORESOURCES**	Bioresource Technology	DSE	4	0	2	6

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BACHELOR OF SCIENCE
1st SEMESTER
DISCIPLINE SPECIFIC COURSE – 1 (CORE - 1)
BRS121C: BIORESOURCES: FUNDAMENTALS OF BIORESOURCES

CREDITS: THEORY: 4; PRACTICAL: 2
MAX MARKS: THEORY: 60; PRACTICAL: 30
MIN MARKS: THEORY: 24; PRACTICAL: 12

THEORY (Lectures: 60)

Unit: I **(15 Lectures)**

Bioresources: Bioresources— Plant, animal and microbial diversity (brief concept); Concept and levels of Biodiversity; Mega-biodiversity countries; Biodiversity hotspots (concept and distribution); Biodiversity and climate change— concerns and challenges; Valuing biodiversity— direct- and indirect use values.

Unit: II **(16 Lectures)**

Biodiversity conservation: Species extinction, ultimate and proximate causes of Biodiversity loss; IUCN threat categories; Red data Book; Biodiversity surrogates; *In situ* conservation strategies— National parks, Wildlife sanctuaries and Biosphere reserves; *Ex situ* conservation strategies— Botanical gardens, Zoos, Aquaria, Cryo-banks.

Unit: III **(14 Lectures)**

Bioresources and Livelihood: Livelihood and its relation with bioresources management; Threats to traditional livelihood, food insecurity; Impact of globalization and urbanization on livelihood; Sustainable development; Energy crisis and need for green energy; Concept of green Building, vertical gardens; Green washing, eco-labelling (concept and examples).

Unit: IV **(15 Lectures)**

Bioresources Management policies: Indian Bioresources Information Network— organisation and role; Convention on Biological Diversity (CBD)- Aims and objectives; Ramsar Convention; Biological Diversity Act (2002); Environment Impact Assessment (EIA)- Concept and stages of EIA; Biodiversity conservation and public participation.

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Practical Work: 2 Crdits

- Collection, description and herbarium preparation of various types of leaves, inflorescences and fruits.
- Determination of minimum size and number of quadrats for phytosociological studies.
- Computation of frequency, density and abundance of constituent species of different communities.
- Field demonstration of Global Positioning System (GPS) and its utility in biodiversity studies.
- Constituents of aquarium and construction of aquarium.
- Role of Herbarium and its significance in biodiversity studies.
- Prepare well labelled herbarium sheets of economically important plants.
- Prepare an inventory of important threatened wild animal species of Kashmir Himalayas with special reference to the causes of their population decline.
- Field study of various threatened endemic plants of Kashmir Himalaya.
- Prepare a list of in-situ conservation sites of Kashmir Himalayas.

Suggested Readings:

- An Advanced Textbook On Biodiversity: Principles And Practice, 2004, Krishnamurthy, Oxford and IBH Publishing ISBN, 8120416066, 9788120416062
- Principles of conservation biology, Gary K. Meffe
- Conservation Biology for All,2010, Navjot S. Sodhi and Paul R. Ehrlich, ISBN: 9780199554249
- Essentials of Conservation Biology 6th Edition, Richard B. Primack, SBN-13: 978-1605352893, ISBN-10: 1605352896
- Biodiversity: An Introduction, Kevin J. Gaston, John I. Spicer,
- Biodiversity, E.O. Wilson, National Academies Press, ISBN, 030956736X, 9780309567367