Syllabus of FYUGP in Botany

Department of Life Sciences

Dibrugarh University

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DIBRUGARH UNIVERSITY

Dibrugarh, Assam

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FOUR YEAR UNDER-GRADUATE PROGRAMME (FYUGP) IN BOTANY, DIBRUGARH UNIVERSITY

1. The Preamble:

Present-day plant science is a fusion of the traditional components with the modern aspects of biochemistry, molecular biology and biotechnology. Over the years, plant science (Botany) has shown enormous gain in information and applications owing to tremendous inputs from research in all its aspects. With the global need for conservation, field plant biologists have contributed significantly in assessing and exploring newer dimensions for plant diversity. New insights have been gained in functional and structural aspects of plant development by utilizing modern tools and techniques for botanical research. Challenging areas of teaching and research have emerged in ecology and reproductive biology. Concern for ever-increasing pollution and climate change is at its highest than ever before. Keeping the above-mentioned advancements and rich plant resources in North East India in view, a revised curriculum is offered by Dibrugarh University at the undergraduate level as per the National Education Policy-2020 so that the undergraduate Botany students of Dibrugarh University shall have the benefit of a balanced, carefully-crafted course structure taking care of different aspects of plant science, namely plant diversity, physiology, biochemistry, molecular biology, reproduction, anatomy, taxonomy, ecology, economic botany and the impact of environment on the growth and development of plants. All these aspects have been given due weightage over the eight semesters. It is essential for the undergraduate students to acquaint themselves with various tools and techniques for exploring the world of plants up to the sub- cellular level. Keeping view of employment entrepreneurship, applied courses have also been introduced. These courses shall provide the botany students hands on experience and professional inputs. On the whole, the curriculum is a source of lot of information and is supported by rich resource materials. It is hoped that a student graduating in Botany with the new curriculum will be able to explore the rich plant diversity of North East India.

2. Introduction:

Dibrugarh University UG syllabus of Botany is designed as per the guidelines of National Education Policy-2020. This Four Year Under Graduate Programme (FYUGP) in Botany consists of Major (Core) disciplines, Minor disciplines, Multi Disciplinary Generic Elective Courses (GE), Ability Enhancement Courses (AEC), Value Added Courses (VAC), Skill Enhancement Courses (SEC), Environmental Education (EE), YOGA, Community Engagement like NCC/NSS, Digital and Technological solutions, Internship, Field Studies, Research Ethics, Research Projects and Discipline Specific electives (DSE) to acquaint the

students with balanced knowledge on the plant resources, environment, contemporary issues and entrepreneurship.

The Bachelor of Science in Botany of Dibrugarh University under NEP-2020 is a programme with multiple exit options. UG certificate, UG Diploma, UG Degree and UG Degree (Honours with Research) in Botany will be awarded to students after successful completion of one, two, three and four years respectively. It is expected that, on successful completion of this four yearprogramme students will be skilled in multidisciplinary aspects for exploration and sustainable utilization of plant/natural resources of NE region of India.

3. Aims of Four Year Under-Graduate Programme (FYUGP) in Botany:

1. To introduce the students with the rich biodiversity of North east India.

2. To enable the students to explore the potential of plant resources for human welfare and their use in a sustainable way.

3. To develop capabilities of students for critical evaluation of contemporary issues related to environment and nature.

4. To generate skilled human resource for biological entrepreneurship.

4. Graduate Attributes of the FYUGP in Botany:

Disciplinary Knowledge

The graduates should have the ability to demonstrate comprehensive knowledge and understanding of both the theoreticaland applied components of plant science and allied areas of study in a multidisciplinary context.

Students should have the ability to connect relevant disciplines, and recent trends in biological and contemporary issues.

Communication Skills

The graduates in Botany should have the ability to present and express information, thoughts, experiments and results clearly and concisely for effective communication of any issues related to plant and nature.

Moral and Ethical Awareness/Reasoning

Ability to recognise ethical issues that are pertinent to one's work and pledge not to engage in unethicalbehaviour such as plagiarism, copyright and infringement of intellectual property rights; ability toappreciate recent developments in various fields and one's research with honesty and integrity in all aspects.

Multicultural Competence

Ability to correlate and compare recent developments in various branches of plant science worldwide; ability to collaborate research in various fields of biology with other researchers from allied organisations; acquisition of knowledge on traditional practices of different ethnic communities.

Information/Digital Literacy

The graduates of Botany should have the ability to utilize Information and Communications Technology (ICT) tools, biological databases and computer and softwares in solving biological problems.

Reflective Thinking and Problem Solving:

After completion of graduation in Botany the students will be able to understand the value of plant resources, need for conservation of plant resources, bio-prospecting and sustainable utilization of plant resources for human welfare.

Critical Thinking

The graduates of Botany should be competent for critical analysis of problems related to plant and nature, sustainable uses of biological resources and their conservation strategies.

5. Programme Educational Objectives (PEOs)

1) Formulate strategies to achieve sustainable development in harnessing biological resources.
2) Evaluate environmental problems and design innovative solutions.
3) Demonstrate an attitude to employ multidisciplinary approaches for problem solving.

6. Programme Outcomes (POs)

1) Develop ideas to assess and inventorize existing biological resources of this region
2) Formulate innovative strategies for conservation of biogenetic resources for human welfare

3) To explore and validate ethnobiological knowledge of Northeast India

4) To provide solutions for existing societal problems using biological knowledge

5) Develop research skills to solve complex biological issues and achieving SDGs

6) Execute good communication skills for disseminating knowledge of biological sciences

7) To promote the attitude to work as a team appreciating ethical values

7. Programme Specific Outcomes (PSOs)

1) Evaluate the diversity and evolution of organisms

2) Analyze the fundamentals of life-sustaining processes

3) Design strategies for issues concerning public health and human welfare

4) Critically analyze the environmental issues and develop strategies to address them

5) Formulate measures to mitigate climate change effects

COURSE STRUCTURE FYUGP IN BOTANY

Year	Sem.	Code	Nature of course	Title of the course	Credit
I	I	BOT-C-01	Core-I	Algae, Fungi, Bryophyte &Pteridophyte	4
		BOT-MIN-01	Minor-I	Algae, Fungi, Bryophyte &Pteridophyte	4
		BOT-GEC-01	GEC-I	Natural resource management	3
			AEC-I	Modern Indian Language	4
		BOT-SEC-01-A/B	SEC-I	Tea plantation and management/Mushroom Culture technology	3
			VAC-I	Understanding India	2
				Total credit	**20**
	II	BOT-C-02	Core-II	Morphology and Reproduction of Spermatophytes	4
		BOT-MIN-02	Minor-II	Morphology and Reproduction of Spermatophytes	4
		BOT-GEC-02	GEC-II	Plant Diversity and Human Welfare	3
			AEC-II	English Language and Communication Skills	4
		BOT-SEC-02-A/B	SEC-II	Biofertilizers/Conservation and Cultivation of Orchids	3
			VAC-II	Environmental Science	2
				Total credit	**20**
				UG CERTIFICATE	
II	III	BOT-C-03	Core-III	Cell biology	4
		BOT-C-04	Core-IV	Plant Biochemistry & Molecular Biology	4
		BOT-MIN-03	Minor-III	Angiosperm systematics	4
		BOT-GEC-03	GEC-III	Ethnobotany	3
		BOT-SEC-03-A/B	SEC-III	Nursery and Gardening/Medicinal Botany	3
			VAC-III	Digital and Technological Solutions / Digital Fluency	2
				Total credit	**20**
	IV	BOT-C-05	Core-V	Plant Ecology & Phytogeography	4
		BOT-C-06	C ore-VI	Angiosperm systematics	4
		BOT-C-07	Core-VII	Plant anatomy & Embryology	4
		BOT-C-08	Core-VIII	Genetics & Evolution	4
		BOT-MIN-04	Minor-IV	Plant physiology and metabolism	4
				Total Credit	**20**
				UG DIPLOMA	
		BOT-C-09	Core-IX	Plant physiology & Metabolism	4
		BOT-C-10	Core-X	Plant breeding and crop improvement	4

III	V	BOT-C-11	Core-XI	Microbiology and immunology	4
		BOT-MIN-05	Minor-V	Economic botany	4
		BOT-INT/CE	Internship/Com. engagement	(Internship+ Com. Engagement) /Internship/ Community engagement	4
				Total credit	**20**
	VI	BOT-C-12	Core-XII	Plant pathology and crop protection	4
		BOT-C-13	Core-XIII	Economic Botany	4
		BOT-C-14	Core-XIV	Plant biotechnology, Bioinformatics & Biostatistics	4
		BOT-C-15	Core-XV	Analytical techniques in plant Sc.	4
		BOT-MIN-06	Minor-VI	Microbiology & Immunology	4
				Total credit	**20**
				UG DEGREE	
	VII	BOT-C-16	Core-XVI	Environmental Biology	4
		BOT-C-17	Core-XVII	Advanced cell biology & genetics	4
		BOT-C-18	Core-XVIII	Advanced molecular biology	4
		Research Methodology	RM	Research Methodology & Research Ethics	4
		BOT-MIN-07	Minor-VII	Advanced analytical techniques	4
					20
	VIII	BOT-C-19	Core-XIX	Intermediary metabolism	4
		BOT-C-20	CORE-XX	Biodiversity & Bioprospecting	4
		BOT-MIN-08	MIN-VIII	Biosafety, Bioethics and IPR	4
		Dissertation		Dissertation	8
		Or			
		DSE		Climate change & Biological Adaptations	4
		DSE		Computational biology	4
					20
Honours with Research degree					