

<b>Semester</b>	<b>: I</b>		
<b>Course No.</b>	<b>: BIO-111**</b>	<b>Credit Hrs.</b>	<b>: 1(1+0)      Need-based; NG</b>
<b>Course Title</b>	<b>: Basic Biology</b>		
<b>**Need-based, Non-Gratual Common Course across 5 UG Degrees:</b> <b>B.Sc. (Hons.) Agri. / B.Sc. (Hons.) Horti. / B.Sc. (Hons.) Forestry / B.F.Sc. (Hons.) / B.Sc. (Hons.) C.S.</b>			

## SYLLABUS

### Objectives:

- To impart foundational knowledge of biological principles including diversity, genetics, evolution of living organisms,
- To impart basic knowledge about flowering plants and animals with a focus on their application in Agriculture.

### THEORY

Introduction to the living world, Diversity and characteristics of life. Origin of life, Evolution and Eugenics. Genetics and Basics concepts. Binomial nomenclature and Classification. Cell and cell division. Morphology of flowering plants. Seed and Seed germination. Plant systematics- viz., Brassicaceae, Fabaceae and Poaceae. Role of animals in agriculture.

## TEACHING SCHEDULE

### THEORY

Lecture No.	Topic	Sub-topics/ Key Points	Weightage (%)
1	Introduction to Living World	Definition of Biology; Composition and Biological Classification of living world.	5
2	Diversity and Characteristics of Life	Definitions: Diversity, Biodiversity; Characteristics of life; Building blocks of life and relationship between different organisms.	5

<b>3</b>	Origin of Life	Theories of Origin of Life; Oparin - Haldane Theory of Chemical origin.	5
<b>4</b>	Evolution and Eugenics	Evidences of Organic Evolution, Theories of Evolution; Eugenics: Definition.	5

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<b>5</b>	Genetics and Basics Concepts	Genetics and Mendel's Experiments (Basic Concepts)	5
<b>6</b>	Binomial Nomenclature	Binomial nomenclature and classification; Overview of taxonomic hierarchy/ ranks.	10
<b>7</b>	Cell: Structure and Function	Cell structure, Composition and Cell organelles and their functions.	5
<b>8-9</b>	Cell Division	Definition, Types: Mitosis and Meiosis, their Significance, Stages.	10
<b>10-12</b>	Morphology of Flowering plants	Morphology, Structure and Functions: Roots, Stems, Leaves, Flowers and Fruits.	25
<b>13</b>	Seed and Seed Germination	Definitions, Types of seed (Monocot and Dicot seed), Types of seed germination and factors affecting it.	5
<b>14-15</b>	Plant Systematics – Study of Families	Key features, Economic importance and Examples of - A) Brassicaceae B) Fabaceae C) Poaceae	15
<b>16</b>	Role of Animals in Agriculture	Livestock in farming systems: Nutritional and economic contributions; Role of pollinators in crop production; Biological pest control (Predatory use); Sustainable integration of animals in agroecosystems.	5
<b>Total =</b>			<b>100</b>

### **Suggested Readings [BIO-111]:**

1. Cell Biology, Genetics, Molecular Biology and Evolution by P.S. Verma, V.K. Agrwal. Publisher- S. Chand and Company Ltd., Ram Nagar, New Delhi. India.

2. Evolution of Vertebrates by Edwin H. Colbert, Publisher- A Wiley, Inter Science Publication, John Wiley and Sons, New York. US.
3. A Class-book of Botany by A.C. Dutta, Publisher- Oxford University Press, YMCA Library Building, Jai Singh Road, New Delhi - 110001, India.
4. Fundamentals of Genetics by B.D. Singh, Publisher- Kalyani Publ. B-I/1292, Rajinder Nagar, Ludhiana.
5. A Textbook of Practical Botany-2 by Ashok M. Bendre, Ashok Kumar, Publisher- Rastogi Publications, Shivaji Road, Meerut, India.
6. Botany-An Introduction to Plant Biology by James D. Mauseth, Publisher- Continental Prakashan, 1962, Pune.
7. Anatomy of Seed Plants by A.C. Datta, Singh V., Pande P.G., Publisher- Sai Print Opack, New Delhi, Rastogi Publication, Meerut, India.
8. Handbook of Animal Husbandry by ICAR, New Delhi Publication, Publisher- Directorate of Knowledge Management in Agriculture, Krishi Anusandhan Bhavan, Pusa, New Delhi - 110012, India.

