UNIVERSITY DEPARTMENT OF BOTANY
KOLHAN UNIVERSITY, CHAIBASA
PROPOSED SYLLABUS FOR FYUGP, NEP-2020
U.G BOTANY

IRC-1(introductory Regular Courses)-1 [Course-I]

[Credit---03]

- **Chapter-1**: Biological Classification Five kingdom classification; Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids.
- **Chapter-2:** Plant Kingdom Salient features and classification of plants into majorgroups - Algae, Bryophyta, Pteridophyta and Gymnospermae. (salient and distinguishing feature and a few examples of each category)
- **Chapter-3**: Morphology of Flowering Plants Morphology of inflorescence and flower, Description of some families:- Apocynaceae, Asclepiadaceae, Solanaceae, Poaceae etc.
- **Chapter-4**: Cell-The Unit of Life Cell theory and cell as the basic unit of life, structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; cell organelles - structure and function; endomembrane system, endoplasmic reticulum, golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.
- **Chapter-5:** Biomolecules Chemical constituents of living cells: biomolecules, structure and function of proteins, Carbohydrates, lipids, nucleic acids; Enzymes-types, properties, enzyme action
- **Chapter-6**: Cell Cycle and Cell Division Cell cycle, mitosis, meiosis and their significance
- **Chapter-7**: Photosynthesis in Higher Plants Photosynthesis as a means of auto-trophic nutrition; site of photosynthesis, pigments involved in photosynthesis
- **Chapter-8**: Respiration in Plants Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient.
- **Chapter-9**: Plant - Growth and Development Growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA.
- **Chapter-10:-** Principles of Inheritance and Variation Heredity and variation: Mendelian inheritance; deviations from Mendelism , Chromosomes and genes; Sex determination, DNA fingerprinting.

- **Chapter-11:- Environmental Ethics-** Pollution (Air, Water, Soil, Thermal & Nuclear Pollution), Climate Change, Global Warming, Acid Rain, Ozone Layer Depletion, Environmental Protection Acts & Forest Conservation Acts.
- **Chapter-12**: Biodiversity and its Conservation Biodiversity - Concept, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites.

B. Sc. (Semester-I) Paper-1:- Microbiology, Bacteria, Virus & Algae

Programme: Certificate Class:- B. Sc.	Year:- First	Semester-I

MJ-I CREDIT-06 [THEORY-04+PRACTICAL-02]

Unit 1 Introduction to microbial world.

Unit 2 Viruses (7 lectures): Discovery, physiochemical and biological characteristics; classification, General structure with special reference to viroids and prions, General account of replication, DNA virus (T-phage), lytic and lysogenic cycle; RNA virus (TMV). Viral diseases

Unit 3 Bacteria (8 lectures): Discovery, general characteristics, types-archaebacteria, eubacteria, wallless forms (mycoplasma and spheroplasts), Cell structure, nutritional types, Reproductionvegetative, asexual and recombination (conjugation, transformation and transduction), Bacterial diseases, Economic importance of bacteria with reference to their role in agriculture and industry (fermentation and medicine).

Unit 4 Algae (7 lectures): General characteristics; Ecology and distribution; range of thallus organization; Cell structure and components; cell wall, pigment system, reserve food (of only groups represented in the syllabus), flagella; Methods of reproduction, classification; Criteria, system of Fritsch, and evolutionary classification (F.E. Fritsch, G.M. Smith).

Unit 5 Cyanophyta (6 lectures): Ecology and occurrence range of thallus organization, cell structure, heterocyst, reproduction. Economic importance; role in biotechnology. Morphology and life-cycle of Nostoc.

Unit 6 Chlorophyta (5 lectures): General characteristics, occurrence, and range of thallus organization, cell structure and reproduction.Morphology and life-cycles of *Chlamydomonas, Volvox, Oedogonium, Coleochaete*.