

NRBMRI

(Syllabus)

**Course Name: - Forestry and Farm
Management.**

Duration: - 1 Year.

Semester 1

Paper 1

- Forest Ecology: - Relationship of forest ecology to other branches of ecology, Community diversity and complexity, Energy flux, Death and regeneration and Ecological potential of forestall species.
- Tree seed technology: - molecular mechanisms of seed and development of technologies for best exploitation of seed's potential, biological systems of seedlings.

- Principles of forest soil sciences: - Introduction to forest soil sciences, physical environment, soil formation, climate etc.
- Microbial communities: - Role of Microbial communities in the development of soil, microbial factors, microbial processes, decomposition and its effects on soil.
- Environmental studies: - All the necessary ecological factors contained in chemistry, geology and biology, different aspects of ecosystem and ecology.

Paper 2

- Basic Biology: - All the important biological factors necessary for the development of forest and farm culture such as the classification of organisms, their nomenclature etc.
- Basic Chemistry: - All the important aspects of Organic, Inorganic and physical chemistry required for cultivating the correct sense of application of chemicals and instruments used in the process of learning forestry and farm management.

- Basic mathematics: - various topics which are essential for the systematic development and distribution of farms and forests such as statistics, probability and mensuration etc.
- Dendrology: - The systematic study of trees i.e. their types, classification, nomenclature, habit, habitat etc.

Paper 3

- Ecotourism: - Systematic methods of conducting tourism without disturbing the respective habitat or the surrounding environment. It is a form of tourism involving visiting fragile, pristine, and relatively undisturbed natural areas, intended as a low-impact and often small scale alternative to standard commercial mass tourism.
- Bioenergy: - Introduction, solid biomass, sewage biomass, electricity generation from biomass, systematic use and applications of bioenergy.

- Soil water management: - Introduction, understanding the concepts of soil water, available soil water, field capacity, wilting point, unavailable water, water holding capacity, minimum allowable balance, gravitational water, soil water potential etc.
- Environmental impact assessment: - The thorough study of assessment of environmental consequences of a plan, policy, program or actual projects prior to the decision to move forward with the proposed action

Paper 4

- Fruit production: - Introduction, methods of food fruit production using specialized techniques, brief idea of related concepts like thinning, alar, pomology, vineyard, orchard etc.
- Forest entomology: - introduction, definition, evaluation of present and potential insect pest

problems related to forests, biological control, and development of suitable methods or procedures to reduce the economic loss caused by the pests.

- Silviculture of Indian trees: - Introduction, listing commercially important Indian trees, classification of high forest system, even aged forestry, un-even aged forestry, forest tree nurseries, regeneration, artificial regeneration etc.
 - Forest policy legislation: - introduction, different policies related to Indian forests, legal aspects of farms and forest management etc.
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SEMESTER 2

Paper 1

- Principles of Crop Production: - definition and scope of Agronomy, Classification of Crops on Different basis, General principles of Crop production : Climate, soil and its preparation, seed and seed sowing, post-sowing tillage, water management, nutrition, plant protection measures, harvesting, threshing and storage, Crop sequences and systems with emphasis on mixed cropping and inter cropping, etc.
- Fundamentals of Soil Science: - Definition of Soil, Components of Soil and their role in agriculture, Soil forming rocks and minerals, Development of Soil profile, Soil formation, factors affecting soil formation, soil forming processes, Soil reaction and its measurements and significance, Physical properties of soil, and their significance, Chemical properties of soil,

cation and anion exchange phenomenon and their importance in agriculture, etc.

- Agricultural Meteorology: - Different meteorological variables related to agriculture, Rainfall- Hydrologic cycle and its components, Types and forms of precipitation, Humidity, definition, wind vane, Anemo-meter, Indian Agro Climatic Zones Elementary idea of weather forecasting, etc.
- Introductory Plant Physiology: - Definition and importance of plant pathology, Causes of plant diseases, Classification of plant diseases according to cause and occurrence, Plant Pathogens, Different types of spores, Levels of parasitism, etc.

Paper 2

- General Microbiology: - Introduction, basic concepts of microbiology relevant to agriculture and forestry, brief idea of lab techniques and

methods as well as procedures used for the development of agricultural products using microbiology.

- General Biochemistry: - Introduction, basic concepts of biochemistry relevant to agriculture and forestry, brief idea of lab techniques and methods as well as procedures used for the development of agricultural products using biochemistry.
- Basic Biotechnology: - Introduction, basic concepts of biotechnology relevant to agriculture and forestry, brief idea of lab techniques and methods as well as procedures used for the development of agricultural products using biotechnology.

Paper 3

- Plant Tissue Culture: - Introduction, Basic Idea of Plant tissue culture, brief idea about seed

culture, embryo culture, callus culture, organ culture etc.

- Biophysical techniques: - Introduction, different applications of biophysical techniques to study the structure, properties, dynamics or functions of biomolecules at an atomic or molecular level.
- Plant Breeding- Definition and objective, Pure line selection, Hybridization (emasculation, bagging, crossing, labelling), Colonial selection, Heterosis (Definition and scope)
- Photoperiodism: physiology of flowering, photoperiodism and vernalization, role of florigen Senescence and abscission Seed dormancy: Causes and role, methods to break seed dormancy Plant defence: Definition: Hypersensitive response and Systemic acquired resistance; Role of secondary metabolites (Terpenes and phenolic compounds).

Paper 4

- Carbon Credit: - Introduction, Definitions, types, background, how buying carbon credits propose to reduce emissions, creating carbon credits, scope and applications of carbon crediting etc.
 - Introduction to agricultural machinery: - basic information about the requirement and usage of different tools and equipment required for conducting agricultural activities.
 - Introduction to forest machinery: - basic information about the requirement and usage of different tools and equipment required for conducting maintenance and developmental activities of forestry.
 - Training about developing a market place: - Introduction, developing a perspective in students to analyze the beneficial aspects of agriculture and forestry.
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