Course Code: CAFRI 001 Course Title: Agroforestry R&D Methodologies (4 credits: 1 Theory+1 Tutorial+2 Practice)

Unit 1 (3 working days)

- 1. Introduction to agroforestry: Definition, Global Perspectives and National Priorities
- 2. Agroforestry Systems: Typology, Ecology, Biodiversity, Livelihood and Environmental perspectives; Industrial agroforestry
- 3. Agroforestry Policy: National Agroforestry Policy 2014; Institutional Arrangements and Strategies for agroforestry extension, and upscaling; Impact assessment

Unit 2 (7 working days)

- 1. Research Methodology: Introduction to research ethics; Objective and motivations in research.
- 2. Defining the research problems: what is Research Problem, selecting the Problem, Necessity of and Techniques in defining the problem.
- 3. Types, approaches and significance of research. Research methods and procedure-historical, philosophical, descriptive, experimental, ex-post facto. Research and Scientific Methods, Research Process, Criteria of Good Research.
- 4. Literature collection and scientific writing: Search engine introduction; database accessing and retrieving research paper from back volumes/archives; reference management; Ethics and Plagiarism; Common error in Language; Abstract/Editorial/Book Review writing; Introduction to review articles, oral and poster presentations.
- 5. Publication ethics and introduction to scientific journals Importance of publishing research papers: (a) Preliminaries, Format, Choosing Journal, (b) Title, Running Title (c) Authors: Single and Multi-authorship (d) Writing Abstract (e) Introduction section (f) Materials and Methods Section (g) Results and discussion (h) Figures: Design Principles, Legends, Table components, Graphs: Types, Style, Tables v/s Graphs (i) Acknowledgements (j) References: Different Styles (k) Selecting Keywords (I) Communication with the Editor, Handling Referees' Comments, Galley Proofs.
- 6. Fundamental statistics and experimental design

Analysis of data: qualitative and quantitative methods, statistics related parametric and nonparametric techniques. General or basic principles of design of experiment

Various of experimental design. Basic designs-completely randomized design, randomized block design and Latin square design

7. Science Communication: Questionnaire survey, PowerPoint presentation and role of audio-video

Unit 3 (5 working days)

- 1. Field Tour (half-a-day)
- 2. Introduction to Nursery Management: Identify and select proper site and quality planting materials; forest nursery and nursery beds: Introduction to farm tools and machinery, design layout, undertake fencing, prepare nursery beds as per the plant requirements, ensure sterilization of nursery beds etc.
- 3. Seed collection, sowing and raising seedlings
- 4. Nursery management practices: timely irrigation, manure and fertilizer application, weed management, pest & disease management, safe handling and transportation of nursery plants etc.
- 5. Hands-on training and skilling in nursery management