1. **Forestry Research in General**
   1.1 Concepts, Principles and Practices of research methods applicable to forestry and natural resources
   1.2 Types of research (Basic and applied, on station/on farm and laboratory, biological and social, participatory, out-reach and action research)
   1.3 Preparation of research / survey protocols
   1.4 Field implementation of forestry research and survey activities
   1.5 Dissemination of research results/survey information using various means such as training, extension, publication and result demonstration
   1.6 Current issues in forestry research in Nepal and around the SAARC countries

2. **Statistical methods and Experimental designs**
   2.1 Theories and principles of experimental design
   2.2 Application of experimental design in forestry research
      2.2.1 Structure and function of blocking, randomization and replications
      2.2.2 Treatment structure, contrast and function, main effect and interactions, experimental unit, plot shape, size, and field layout
   2.3 Designs used in forestry experimentation
      - Randomized block design
      - Latin square design
      - Split plot design
      - Factorial experiments
   2.4 Statistical methods used in forestry research
      2.4.1 Concept and use of statistical parameters (Variance, covariance, coefficient of variation, standard error, correlation coefficient, normality and transformation, confidence interval)
      2.4.2 Statistical tests (t-test, f-test, Scheffe's test, chi-square, Bartlett' test)
      2.4.3 Analysis of variance and covariance analysis
      2.4.4 Linear and multiple regression and correlation
      2.4.5 Linear and non-linear models
      2.4.6 Estimation and analysis of proportion
      2.4.7 Models and distribution of frequency data
      2.4.8 Repeated measurements and bivariate analysis
   2.5 Social and Environmental research methods in forestry
      2.5.1 Socio-economic surveys methods (PRA, RRA, D&D, action research, participant observation)
      2.5.2 Environmental Impact Assessment of Forestry Programmes (Scoping and TOR, Impact Assessment, Environmental Monitoring and Auditing)
   2.6 Statistical analysis using various computer software (e.g, SPSS, EXCEL, Genstat, Minitab, Instat, Mstat, Statgraphics)
   2.7 Interpretation of research results and scientific paper writing
3. Forestry Research Survey, Inventory and Mapping
   3.1 Principles and practices of Forest Resource Survey, Inventory and Mapping
   3.2 Application of different tools and techniques in forest Survey, Inventory and Mapping and photogrammetry, cartography and digital mapping
   3.3 Design and use of various Sampling Procedures
      - Simple random sampling
      - Stratified random sampling
      - Systematic sampling
      - Double sampling
      - Cluster sampling
      - Two-stage sampling
      - Sampling unequal size units
      - Size and shape of sample unit
   3.4 Forest menstruation and biometrics
      Measuring forest and trees
      Preparation of growth, volume, yield and biomass tables
   3.5 Methods of socio-economic and marketing surveys applicable in forestry
   3.6 Inventory of NTFP and on farm tree resources census of wildlife population

4. Remote Sensing, GIS and Space Technology
   4.1 Concepts, Principles and practices of Remote Sensing, GIS and Space Technology
   4.2 Application of modern tools and techniques for Remote Sensing, GIS and Space Technology
   4.3 Visual Interpretation of RS Imageries
   4.4 Vegetation Classification from Satellite Imagery
   4.5 Detection and Monitoring of land use/land cover change using RS and GIS

5. Silviculture and Forest Management
   5.1 Principles and practices of Silviculture and Management of natural and plantation forest
   5.2 Designing, Implementing and reporting of research activities related to natural forest silviculture and management
      5.2.1 Silvicultural systems, natural regeneration, forest growth and yield, thinning, pruning, timber stand improvement
      5.2.2 Reduced impact logging, processing, marketing and industrial utilisation
      5.2.3 Tree physiology, wood anatomy and properties, seasoning techniques
   5.3 Generation, verification and dissemination of technologies related to plantation silviculture and management
      5.3.1 Forest seed biology and seed testing establishment of seed stands/orchards
      5.3.2 Propagation techniques of forest trees (via seed, vegetative methods and micro-propagation)
      5.3.3 Techniques of plantation establishment in different sites
      5.3.4 Progeny and provenance testing
   5.4 Research methods related to tree and forest health and its management
      5.4.1 Forest ecology
      5.4.2 Forest fire management
      5.4.3 Principles of forest disease/insect management
      5.4.4 Integrated insect/pest management strategies
      5.4.5 Insect/pest of major forest types of Nepal
5.5 Forest genetics and Tree Improvement
5.5.1 Concepts, Principles and Practices of Forest Genetics and Tree Improvement and its application in forestry
5.5.2 Production, management and supply of forest seeds via establishment of seed stands/orchards and through international seed networks
5.5.3 Assessment of genetic traits (qualitative and quantitative gains)
5.5.4 Designing implementation and reporting genetic experiments (tree breeding, hybridization, molecular technology)

6. Non-timber forest products (NTFPs)
6.1 Concepts, Principles and Practices of Agroforestry
6.2 Major Agroforestry systems of Nepal and the SAARC countries
6.3 Major Non Timber Forest products of Socio-economic Importance in Nepal (bamboo and rattan, medicinal and aromatic plants, wild fruits, wild animals and their products, resin, taxol)
6.4 Developing and disseminating appropriate technologies for cultivation management, value added processing and marketing of agroforestry trees/MPTS and high value NTFPs
6.5 Role of research in Indigenous knowledge, Agroforestry and NTFPs in sustainable agriculture/forest
6.6 Appropriate technologies available for the domestication, commercialisation and marketing of major agroforestry trees and high value NTFPs in Nepal
6.7 Application of appropriate research methods in, wild flora and fauna

7. Soil plant and water relation
7.1 Forest soils, properties and classification systems
7.2 Cil-plant-water relationship
7.3 Designing and implementing experiments on
7.3.1 Tree-crop interaction
7.3.2 Soil and plant nutrients, site quality, soil fertility and fertilization
7.3.3 Bioengineering
7.3.4 Soil loss monitoring
7.4 Application of modern tools and techniques for analyzing soil and plant nutrients and running soil and plant analytical facilities
7.5 Appropriate Soil Conservation and Watershed Management techniques and practices applicable for Nepal

8. Forest Biodiversity, Socio-economic and Environmental Research
8.1 Concepts, principles and practices of Forest Biodiversity conservation, management and utilization in Nepal
8.2 Various approaches adopted in the management of National parks and conservation areas, Buffer Zones, Wild Flora and Fauna in Nepal
8.3. Ecotourism
8.4. Forest Certification
8.5. Social survey methods related to forestry (PRA, RRA, D&D, Action Research, Participant Observation etc)
8.6. Socio-economic and Environmental Impact Assessment of Forestry programmes
8.6.1 Scoping and TOR
8.6.2 Impact Assessment
8.6.3 Environmental Monitoring
8.6.4 Environmental Auditing