

Third Year (2nd Semester)/Semester VI

FMS 451: Forest Extension and Communication

Course Number	Course Title	Credit (Th + Pr.)
FMS 451	Forest Extension and Communication	3 (3 + 0)

SCOPE

This course covers concept and principles of forest extension education and communication. Students will understand motivational theory and its importance in a developmental works. The course includes teaching methods and teaching aids and different types of communication. Teaching style of this course will include both classroom learning and field excursion.

OBJECTIVES

- Understand the concept and principles of forest extension
- Know the theory of motivation and adaptation
- Develop skills to communicate with local people and work with them effectively
- Design and evaluate specific program for rural setting
- Gain skills to apply participatory tools
- Plan and produce simple extension materials

EXPECTED OUTCOMES

Upon the completion of the course, students will be able to develop and design a development project collaboratively and implement it accordingly. Moreover, they will be able to develop trust between local people and development agency and implement the project effectively.

COURSE DESCRIPTION

UNIT 1. EXTENSION EDUCATION (7)

- 1.1 Concept and definition of extension education
- 1.2 Objectives of extension education and its philosophy
- 1.3 Basic principles of extension education
- 1.4 Elements of extension education
- 1.5 Forestry extension and its need and scope in Nepal
- 1.6 Forestry extension workers and their roles, and qualities
- 1.7 User groups and their roles in extension education

UNIT 2. COMMUNICATION IN EXTENSION EDUCATION (7)

- 2.1 Basic concept and definition of communication
- 2.2 Principles of communication
- 2.3 Importance of communication in forestry
- 2.4 Elements of communication
- 2.5 Types of communication
- 2.6 One-way and two-way communication



- 2.7 Barrier to effective communication with forest user groups
- 2.8 Solution to communication barriers

UNIT 3. MOTIVATION AND ADOPTATION (9)

- 3.1 Motivation: definition, process, types, and features
- 3.2 Importance of motivation and ways to improve motivation
- 3.3 Maslow's hierarchy of human needs
- 3.4 Theory of motivation
 - 3.4.1 McGregor's theory X and Y
 - 3.4.2 Contingency theory (Z)
 - 3.4.3 Hygiene maintenance theory of Herzberg
- 3.5 Adoption and process or stage of adoption
- 3.6 Categories of adoption

UNIT 4. EXTENSION METHODS (9)

- 4.1 Teaching and learning process
- 4.2 Teaching and factor contributing to effective teaching
- 4.3 Steps in extension teaching
- 4.4 Principles of learning and learning situation
- 4.5 Teaching materials and session plan preparation
- 4.6 Teaching methods (individual contact method, Group contact method, and mass contact method including ICT-based communication such as mass SMS and Messenger)
- 4.7 Specific methods for teaching (lecture and discussion, workshop, buzz group, brainstorming, and role plays), farmer field school approach and its importance, and field day)

UNIT 5. FOREST EXTENSION AND TEACHING AIDS (6)

- 5.1 Definition and importance of teaching aids
- 5.2 Types and uses of teaching aids (audio, visual, audio-visual, written, and printed materials)
- 5.3 Preparation of smart extension and communication materials
- 5.4 Demonstration plots, its types and roles of demonstration plots

UNIT 6. EXTENSION PROGRAM PLANNING AND EVALUATION (7)

- 6.1 Concept and principles of extension program planning
- 6.2 Extension program planning cycle
- 6.3 Evaluation of extension program and its importance
- 6.4 Elements and types of extension program evaluation
- 6.5 Steps for evaluating extension program
- 6.6 Case study of implemented extension program

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- 4 FAO. 1985. Guide to Extension Training. FAO, Rome
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WPM 452: Nature Based Tourism and Recreation Management

Course Number	Course Title	Credit (Th + Pr.)
WPM 452	Nature Based Tourism and Recreation Management	3 (3 + 0)

SCOPE

This course will expose students with the various dimensions, framework, theories, planning, and policies. It examines the interaction of the tourism and recreation industry with the natural environment as well as their impacts on the environment and societies and also strategies to balance tourism needs and environment conservation for its sustainability. The teaching style of this course will include both classroom learning and field study.

OBJECTIVES

- Understand basic concepts, scope and evolution of nature-based tourism and recreation
- Develop an understanding of an appreciation for the complexities involved with natural-based tourism and recreation
- Identify social, economic, and environmental impacts associated with nature-based tourism and recreation
- Understand basic frameworks and management practices of natural based tourism and recreation based upon domestic and international case studies
- Identify national and international public and private delivery systems for providing nature-based tourism and recreation services

EXPECTED OUTCOMES

Upon the completion of the course, students will be able to gain in-depth knowledge on nature-based tourism and recreation and apply the knowledge into practice. They will be able to manage nature-based tourism in a sustainable way.

COURSE DESCRIPTION

UNIT 1. INTRODUCTION (4)

- 1.1 Introduction to Tourism and Recreation Systems
- 1.2 Concepts and evolutions of tourism and recreation globally and in the Nepali context
- 1.3 Various forms of Tourism

UNIT 2. UNDERSTANDING TOURISM DEMAND (8)

- 2.1 Tourist psychology/motivations
- 2.2 Tourist behavior
- 2.3 National and global trends
- 2.4 Tourism marketing

UNIT 3. UNDERSTANDING THE SUPPLY ASPECTS (8)

- 3.1 Protected areas and communities - linkages
- 3.2 Recreation and tourism amenities
- 3.3 Tourism impacts (environmental, social, economic)
- 3.4 Nature-based tourism vulnerability and climate change

UNIT 4. TOURISM GOVERNANCE (8)

- 4.1 Nepal's tourism policies and master plan

- 4.2 Federal, Provincial and Local-level policies and responsibilities
- 4.3 Tourism related global and national-level institutions and their roles (such as UNWTO, WTTC, MoTCA, NTB, and DNPWC)
- 4.4 Tourism providers associations in Nepal (TAAN, NATA, HAAN, NMA, and others)

UNIT 5. INTERPRETATION, ETHICS, AND QUALITY CONTROL (8)

- 5.1 Outdoor and environmental ethics, Leave-No-Trace
- 5.2 Environmental/parks interpretation
- 5.3 Quality control tools

UNIT 6. NATURE-BASED TOURISM AND RECREATION PLANNING (9)

- 6.1 Planning frameworks, such as Recreation Opportunity Spectrum (ROS), Limit of Acceptable Change (LAC), Visitor Management tools, SWOT analysis (tied with the fieldwork).
- 6.2 Strategic Planning (developing vision, mission, goals and objectives)

REFERENCES

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WEM 453: Remote Sensing and GIS

Course Number	Course Title	Credit (Th + Pr.)
WEM 453	Remote Sensing and GIS	3 (2 + 1)

SCOPE

The course introduces the emerging scope and application of geo-information in the different sectors of natural resource management. It focuses on the essential concepts and principles of remote sensing and GIS techniques to understand, interpret and infer about geographic phenomena for making informed planning and management decisions. The course is delivered through mini-project and laboratory exercises.

OBJECTIVES

- provide theoretical knowledge and practical skills of RS and GIS applicable in natural resource management,
- augment the capacity and confidence to acquire and apply RS data and GIS techniques for spatial decisions, and
- encourage to further explore and apply RS and GIS skills to the relevant to the field of application

EXPECTED OUTCOMES

Student will be able to understand the basic concepts and components of RS/GIS and acquire, create, manage and integrate geospatial data for analysis. In addition, they will gain knowledge about the fundamental concepts of digital image processing to generate relevant information and perform geospatial techniques for spatial decision.

COURSE DESCRIPTION

UNIT 1: INTRODUCTION AND CONCEPTS OF REMOTE SENSING (4)

- 1.1 Definition, scope and basic components of remote sensing
- 1.2 Principles of Electromagnetic Radiation (EMR) and its interaction with atmosphere and earth surface
- 1.3 understanding and interpretation of spectral response curve and of vegetation, soil and water

2. REMOTE SENSING SYSTEM AND IMAGE ACQUISITION (4)

- 2.1. Different types pf platform and their characteristics (revisit, period, inclination, altitudes, sun-synchronous, geostationary)
- 2.3. Multispectral scanning system (Along-track and across-track scanning systems)
- 2.4. Sensors and their types (active, passive, optical, microwave, thermal, hyperspectral sensors, resolution system)
- 2.5 Understanding the characteristics of image data (radiometric, spatial, spectral and temporal resolutions, size)

3. DIGITAL IMAGE PROCESSING AND CLASSIFICATION (8)

- 3.1. Atmospheric, radiometric and geometric correction
- 3.2. Image enhancement (linear stretching, histogram equalization, filtering)

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- 3.3. Feature extraction- Normalized Difference Vegetation Index-NDVI, Normalized Difference Soil Index-NDSI, Normalized Difference Water Index-NDWI
- 3.4. Supervised and unsupervised approach of satellite image classification and their relative advantages/disadvantages
- 3.5. Post classification operation (reference data, accuracy assessment)
- 3.6. Temporal change detection and analysis of land cover

4. OVERVIEW OF GEOGRAPHIC INFORMATION SYSTEM (GIS) (6)

- 4.1. Definition, components and functions of GIS
- 4.2. Geographic phenomena and their computer representation (Vector, Raster)
- 4.3. Types of geospatial data and their sources
- 4.4. Geospatial data creation and input (scanning, georeferencing and digitization of spatial features)
- 4.5. Data quality issues, sources of error and editing
- 4.6. Attribute data integration in GIS
- 4.7. Global positioning system (GPS) for data spatial data collection
- 4.8. Geographic Coordinate system and projection
- 4.9. Spatial data management system (Relational Database management system-RDBMS)

5. GEOSPATIAL ANALYSIS AND VISUALIZATION (6)

- 5.1. Introduction and function of geospatial analysis (single and multi-layer operations)
- 5.2. Proximity analysis (buffering, distance)
- 5.3. Geoprocessing operations (vector and raster): select, clip, merge, dissolve, append, overlay operations
- 5.4. Surface analysis with digital elevation model (elevation, slope, aspect, hillshade, viewshed)
- 5.5. Map composition, cartography/symbology

6. APPLICATION OF REMOTE SENSING AND GIS IN FOREST AND NATURAL RESOURCE MANAGEMENT (CASE STUDIES) (4)

- 6.1. Forest management and inventory planning
- 6.2. Wildlife habitat suitability analysis
- 6.3. Forest fire risk assessment and management
- 6.4. Temporal change analysis of land cover

PRACTICAL

Practical 1.

- Overview of software used in Remote sensing and GIS: ArcGIS, QGIS, ERDAS
- Download satellite images from web archives and multiband visualization (true-false colour composites)

Practical 2.

- Derivation of spectral reflectance curve of vegetation, soil and water
- Image enhancement- Linear stretching, histogram equalization, filtering (Low and High pass)
- Derivation of NDVI, NDWI, NDBI and NDSI from satellite image

Practical 3.

- Unsupervised and supervised image classification and accuracy assessment
- Temporal change detection and analysis

Practical 4.

- Scanning and georeferencing and projection definition of scanned images

- Digitization of spatial features (creation of point, line and polygon features), labelling and geometry/field calculation
- Data conversion (from vector to raster or vice versa)

Practical 5.

- GPS setting, boundary survey and mapping
- Geospatial analysis: select, clip, merge, dissolve and append operations
- Derivation of slope, aspect, contours, viewshed and hillshade from Digital Elevation Model (DEM)

Practical 6.

- Classification and reclassification in raster data (slope class, elevation class, aspect class)
- Map composition with their elements and export
- Group project work: groups assignment to create, integrate, analyze spatial data and presentation.

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FPU 454: Herbal Products Processing and Marketing

Course number	Course title	Credit hours
FPU 454	Herbal Products Processing and Marketing	3 (2+1)

SCOPE

The course covers the historical developments of the value chains. Students will understand the definitions, key terminologies, national to international practices, features, and importance of the herbal products value chain— from production to processing to marketing. The generic step of the value chain, along with factors that determine the increase in value at each level is covered. The course also includes the power of actors that determines the value. Likewise, this course gives insights into different levels of herbal processing, discusses the issues, and describes the new technological advancements in processing. A brief insight into green enterprises for environmental sustainability is also covered.

OBJECTIVE

- Understand the concept the of value chain
- Demonstrate and describe the national and international practices of the value chain
- Understand the key steps of processing herbal products
- Prepare a linear marketing plan for herbal products
- Familiarize with the recent advancement in processing technologies

EXPECTED OUTCOMES

Students are expected to understand and conduct a linear value chain analysis upon the completion of the course; why and how the value is increased in each levels of value chain. Likewise, students can prepare the marketing strategy and describe levels of processing and recent processing technologies.

COURSE DESCRIPTION

Unit 1 Value chain of herbal products (7)

- 1.1 Concept and definition of the value chain
- 1.2 Terminologies of the value chain
- 1.3 Importance of value chain (identifying the weak links, areas of interventions)
- 1.4 Simple and extended value chains
- 1.5 Temporal development in the value chain
 - *Filiere* to Porters' value chain model
 - Supply chain (concept definition)
 - Global commodity chain and global value (Origin, concept)

Unit 2 Value chain analysis (of one NTFPs) (6)

- 2.1 Preparing a comprehensive value chain map
- 2.2 Role and function of actors and enablers
- 2.3 Identifying the interventions
- 2.4 Value chain upgrading
 - Product upgrading
 - Process upgrading
 - Functional upgrading
 - Chain upgrading

Unit 3 Processing of herbal products (8)

- 3.1 Definition and importance (benefits) of processing
 - Different levels (steps) of processing (Primary, secondary, and product development)
- 3.2 Identifying the key issues in processing in herbal sector
- 3.3 Quality issues: internal and external factors
- 3.4 Processing technologies
 - Different types of processing technologies
 - Recent innovations in herbal processing technologies
- 3.5 Green enterprises
 - Introducing green enterprises (Sustainability, economic development, environmental quality, social welfare)

Unit 4 Marketing of herbal products (5)

- 4.1 Concept and definition of marketing
- 4.2 Features of herbal products marketing
- 4.3 Importance of marketing
- 4.4 Global trade scenario of herbal products
- 4.5 Issues with herbal marketing (Key issues with herbal marketing (Adulteration, Inadequate supply, competitive price)

Unit 5 Marketing strategy (4)

- 5.1 Legal aspects in herbal marketing
- 5.2 Introduction/concepts to marketing strategy
- 5.3 Designing a marketing strategy
- 5.4 Recent developments (online marketing)


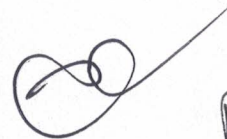
PRACTICAL

1. Conduct value chain analysis of an herb/NTFPs
2. Field visit to the nearest marketing/collection center (district headquarter, road heads, Tarai markets)
3. Using the desk review exercise, prepare a progress report on primary and secondary processing OR prepare a report that describes any two of recent innovations in herbal processing
4. Prepare a brief report that describes key marketing issues of herbal products
5. Based on the value chain map, prepare a practical marketing strategy

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FMS 455: Community Based Forestry

Course number	Course title	Credit hours
FMS 455	Community Based Forestry	3 (3+0)

SCOPE

This course covers the concept and principles of community-based forestry including the national and international perspectives justifying the need of it to adopt as one of the forest management regimes. In addition, it deals with an opportunity and challenges of community-based forestry focusing to people's participation and conflicts in resource management and its potentiality to contribute to rural development. The course uses different approaches in teaching with a combination of classroom learning, group discussions, field excursion, and role-playing.

OBJECTIVES

- Understand the concept and principles of community-based forestry
- Explain different types of community-based forest management in Nepal
- Develop understanding of group dynamics in community-based forest management
- Gain knowledge and skills to resolve conflict in resource management
- Understand the basic planning process and framework of community forestry
- Gain knowledge and skills to design and implement community-based forestry project

EXPECTED OUTCOMES

Upon completion of the course, students will be able to understand in-depth knowledge on community-based forestry and able to apply their knowledge into practice. In addition, they will be able to demonstrate implementing community-based forestry.

COURSE DESCRIPTION

UNIT 1. INTRODUCTION OF COMMUNITY-BASED FORESTRY (6)

- 1.1 Introduction and concept of community-based forestry
- 1.2 Principles and definition of community-based forestry
- 1.3 People dependency on forests (fuelwood, fodder, and timber)
- 1.4 Evolution of community-based forestry in practice
- 1.5 Terminology for community-based forestry
 - 1.5.1 Social forestry
 - 1.5.2 Community forestry
 - 1.5.3 Joint forest management
 - 1.5.4 Participatory forestry
 - 1.5.5 Village forestry

UNIT 2. EMERGENCE OF COMMUNITY-BASED FORESTRY IN NEPAL (7)

- 2.1 Nationalization: Forests under the Shah Monarchy (1950s – 1970s)
- 2.2 Eco-doom scenario (1970s – 1980s)
- 2.3 Concept and initiation of community-based forestry and its objectives
- 2.4 Different community-based forest management systems
 - 2.4.1 Community forestry and handover process
 - 2.4.2 Leasehold forestry and handover process

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- 2.4.3 Collaborative forest management and handover process
- 2.4.4 Religious forestry and handover process
- 2.4.5 Buffer zone community forestry and handover process

UNIT 3. COMPONENTS OF COMMUNITY FORESTRY DEVELOPMENT GUIDELINES IN NEPAL (8)

- 3.1 Investigation (objectives, importance and what to investigate)
- 3.2 Negotiation (objectives, whom and what to negotiate)
- 3.3 Forest operational plan preparation and implementation
- 3.4 Review and revision (what to review and revise?)
- 3.5 Approving authority national forest as community forest
- 3.6 Community-based natural resource management practices in different sectors
 - 3.3.1 Forestry (community forestry, leasehold forestry and collaborative forest management)
 - 3.3.2 Wildlife and conservation areas (buffer zone management and conservation area management)
 - 3.3.3 Watershed management (participatory integrated watershed management)

UNIT 4. DYNAMICS OF PARTICIPATION IN COMMUNITY FORESTRY (8)

- 4.1 Participation
- 4.2 Typology of participation
- 4.3 Group dynamics in community forestry
- 4.4 Gender in community forest management practices (gender disparity, gender equity and social inclusion)
- 4.5 Constraints on women's effective participation
- 4.6 Practice and process of access to resources and benefit sharing
- 4.7 Decision making in community forestry (CFUG, CFUGC, and GA)
- 4.8 Product sharing system within and outside the group in community forestry
- 4.9 Forest product pricing and fund mobilization in community forestry

UNIT 5. CONFLICTS IN COMMUNITY-BASED FORESTRY WITH REFERENCE TO COMMUNITY FORESTRY (8)

- 5.1 Defining of conflict
- 5.2 Nature and causes of natural resource conflicts
- 5.3 Types of natural resource conflicts
- 5.4 Root causes of natural resource conflicts
- 5.5 Conflict prevention in natural resource management
- 5.6 Conflict management and resolution in natural resource management
- 5.7 Conflict in community forestry
 - 5.7.1 Benefit sharing and use rights
 - 5.7.2 Socio-cultural context
 - 5.7.3 Mechanism for resolving conflict

UNIT 6. COMMUNITY-BASED FORESTRY FOR RURAL DEVELOPMENT (8)

- 6.1 Defining rural development
- 6.2 Characteristics of rural economic system
- 6.3 Resource dependence and rural development
- 6.4 Entrepreneurship
- 6.5 Rural development attributes of tourism
- 6.6 Contribution of community forestry
 - 6.6.1 Natural capitals
 - 6.6.2 Social and human capitals

- 6.6.3 Physical capital Changes in financial capital (Livelihoods)
- 6.6.4 Financial capital
- 6.7 Income generating through community forestry
 - 6.7.1 Vegetable farming
 - 6.7.2 Goat farming
 - 6.7.3 Entrepreneurship development

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WPM 456: Field Study: Wildlife and PA Management

Course number	Course title	Credit hours
WPM 456	Field Study V: Wildlife and PA Management	1(0+1)

SCOPE

This field study course is designed to expose students with the opportunity to observe and interact with the real field situation. The field study offers in-depth understanding of wildlife conservation, protected area management categories and tourism enterprises being managed by the government, local institutions and entrepreneurs. The class exercise is limited to critical observations, de-briefing, and field report.

OBJECTIVES

- Understand the concept of wildlife, protected area and tourism management
- Compare and contrast the management models of protected area categories
- In-depth understanding of the human-wildlife (park-people) conflict and its mitigation measures by interacting with the different stakeholders
- Develop skills in data collection and analysis related to wildlife censuses, diseases, tourism and park-people conflict
- Gain knowledge and skills to develop and design integrated protected area and tourism management planning

EXPECTED OUTCOMES

Understanding the context and complexity of managing wildlife in harmony with the local people. In addition, they translate skill in developing management practices for a particular protected area, tourism enterprise and human-wildlife conflict.

COURSE DESCRIPTION

Students shall interact with the stakeholders to identify issues and challenges as well as the opportunities while managing protected area and tourism resources. The field study course is designed to look closely into the following wildlife and PA management including tourism.

1. Wildlife and habitat management

- Population monitoring using transect survey and pellet group counts and demonstration of camera trapping
- Visit grids and sample plots to study the effect and impact of habitat management
- Wildlife damage assessment and evaluation
- Familiarization of wildlife disease: symptoms and treatments

2. Protected area and tourism management

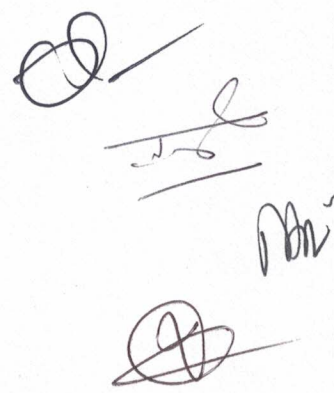
- Visit Mountain/Mid-hills/Terai PA to study the management modality and human-wildlife conflict scenarios
- Evaluation of Park management with SWOT, ZOPP and APPA exercises
- Survey of PA management personnel, protection unit staff, local people, tourism operators, and tourists .

- By the end of the field study, students (before their departure back) are required to prepare and submit a protected area and nature based tourism management plan (approximately 10 to 15 pages).

Note: Field schedule should be arranged as per convenience.

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