

5. Khanna, L.S. and Chaturvedi, A.N. 2015. Forest Mensuration and Biometry. International book distributors, Dehradun, India (Please check this publisher).

Third Year (1st Semester)/Semester V

FMS 401: Forest & Wildlife Law and Policy

Course Number	Course Title	Credit (Th + Pr.)
FMS 401	Forest & Wildlife Law and Policy	3 (3 + 0)

SCOPE

The course is designed to make students aware on policy, acts and legislation formulation process in Nepal. It will update on forests and wildlife related major policies prevailing in the country. The course will also provide information on major biodiversity and environment related conventions where Nepal is a signatory. The teaching style of the course will include classroom learning and field excursions.

OBJECTIVES

- Gain knowledge on the principles and practices of public policy formulation
- Understand public policy formulation process with specific references to forestry
- Demonstrate knowledge on existing forestry knowledge on existing forestry related policy, acts and regulations in Nepal
- Aware with major forestry and environment related international conventions applicable to Nepal

EXPECTED OUTCOMES

Upon the completion of the course, students will be able to understand the concept and process of public policy formulation in Nepal. They will be able to explain key forestry related policy, acts, and regulations of government of Nepal.

COURSE DESCRIPTION

UNIT 1. BASIC CONCEPTS (5)

- 1.1 Terms and definition – policy, acts and regulations
- 1.2 Key features of policy, act and regulations
- 1.3 Policy, act and regulations formation, amendment and dismissal
- 1.4 Understanding on federal, provincial and local level forestry policies

UNIT 2. FOREST AND WILDLIFE POLICY (8)

- 2.1 Annex 5, 6, 7, 8 and 9 of constitution of Nepal
- 2.2 National Forest Policy 2075
- 2.3 Periodic plan (forest and environment sector)
- 2.4 Climate change policy 2076
- 2.5 National wetland policy 2069
- 2.6 REDD Strategy

UNIT 3. FOREST AND WILDLIFE ACTS (17)

- 3.1 National parks and wildlife Conservation

- 3.1.1 Terms and definition
- 3.1.2 Declaration of protected areas, concepts of Buffer Zone
- 3.1.3 Wildlife research, breeding and farming
- 3.1.4 Zoo, rescue center and hospital
- 3.1.5 Protected wildlife species
- 3.1.6 Park management and wildlife corridor
- 3.1.7 Prohibited activities
- 3.2 Forest act 2075
 - 3.2.1 Terms and definition
 - 3.2.2 National forest management, wetland management, and forest conservation areas
 - 3.2.3 Community forest, collaborative forest, leasehold forest, religious forest, and private forest
 - 3.2.4 Forest land use changes for priority projects
 - 3.2.5 Agroforestry, plantation, and seed orchards
 - 3.2.6 Coordination mechanism with provinces
- 3.3 Environmental protection act 2076
 - 3.3.1 Terms and definition
 - 3.3.2 Brief environmental assessment, initial environmental assessment, environmental impact assessment and strategic analysis
 - 3.3.3 National heritage and environmental conservation area
 - 3.3.4 Environmental conservation and climate change council
 - 3.3.5 Climate change, adaptation and mitigation
 - 3.3.6 Pollution control and prevention
- 3.4 Private forest nationalization act 2013
 - 3.4.1 Terms and definition
 - 3.4.2 Nationalization of private forest
- 3.5 CITES act 2073
 - 3.5.1 Terms and definition
 - 3.5.2 CITES appendixes
 - 3.5.3 management and scientific authorities
 - 3.5.4 Prohibited activities and punishment

UNIT 4. FOREST AND WILDLIFE REGULATIONS (10)

- 4.1 National park and wildlife conservation regulation (2030)
 - 4.1.1 Provisions related to services and management plan in National park and reserves
 - 4.1.2 Provisions related to wildlife farming and breeding
 - 4.1.3 Provisions related to research and education
 - 4.1.4 Provisions related to zoo, rescue center and hospital
 - 4.1.5 Provisions related to wildlife damages compensation
- 4.2 Forest regulation 2078
 - 4.2.1 Provisions related to national forest management, wetland management, and forest conservation areas
 - 4.2.2 Provisions related to community forest, collaborative forest, leasehold forest, religious forest, and private forest
 - 4.2.3 Provisions related to forest land use changes for priority projects
- 4.3 Buffer zone management regulation 2052
 - 4.3.1 Terms and definition

- 4.3.2 Buffer zone mechanism of buffer zone
- 4.3.3 Institutional mechanism of buffer zone
- 4.4 Environment conservation regulation 2077
 - 4.4.1 Provisions related to brief environmental assessment, initial environmental assessment, environmental impact assessment and strategic environmental analysis
 - 4.4.2 Provisions related to national heritage and environmental conservation area
 - 4.4.3 Provisions related to environmental conservation and climate change council
 - 4.4.4 Provisions related to climate change, adaptation and mitigation
 - 4.4.5 Provisions related to pollution control and prevention

UNIT 5. FORESTS AND ENVIRONMENT RELATED INTERNATIONAL CONVENTIONS (5)

- 5.1 Convention on international trades in endangered species (CITES)
- 5.2 Convention on Biological Diversity 1992
- 5.3 RAMSAR convention
- 5.4 United Nations Framework Convention on climate change
- 5.5. United Nations Convention to combat desertification

REFERENCES

1. National Forest Policy 2075
2. Climate Change Policy
3. Wetlands Policy 2069
4. REDD policy
5. National Park and Wildlife Conservation Act 2029
6. Forest Act 2075
7. CITES Act 2073
8. Environment Conservation Act 2076
9. National Park and Wildlife Conservation Regulation 2030
10. Buffer Zone Regulation 2052
11. Forest Regulation 2079
12. Environment Conservation Regulation 2078
13. Website of Concerned Convention
14. www.lawcommission.gov.np -g]kfnsf] ;Dk"0f{ sfg"gx?sf] nflu_

FPU 402: Principle and Practices of Herbal Cultivation

Course Number	Course Title	Credit (Th + Pr.)
FPU 402	Principle and Practices of Herbal Cultivation	3(2 + 1)

SCOPE

The course covers important herbal resources of Nepal, their cultivation, processing, value addition and marketing. Similarly, it focuses the Good Agricultural Practices (GAPs) of major herbal resources (as identified by the DPR and business sector) of Nepal for quality herbal products. It will enable students to enhance their knowledge and skills to cultivate major Herbal plants in the farmland. The teaching style of this course will include combination of classroom learning and field excursion.

OBJECTIVES

- Learn about important herbal resources of Nepal, status and trend of collection, cultivation, trading and processing in Nepal.
- Understand basic principles and practices of growing commercially important MAPs/NTFPs (at different agro-ecological zones);
- Acquire improved techniques and skills on farming practices
- Understand principles and practices of value chain analysis, quality control and product certification
- Acquire knowledge to develop herbal production strategies and prepare action plans

EXPECTED OUTCOMES

Upon the completion of this course, students will be able to develop skills on cultivation, processing as well as marketing the Herbal plants. **Candidates are also expected to** be able to contribute in developing and implementing provincial and local government level herbal plans and programs.

COURSE DESCRIPTION

UNIT 1. INTRODUCTION TO THE HERBAL CULTIVATION AND ITS IMPORTANT (4)

- 1.1 Introduction to herbal resources of Nepal; importance, diversity, status and traditional knowledge, ethno botany, on herbal resources
- 1.2 Status and trend of wild collection, cultivation, processing and trading /marketing, Major herbal processing and product development companies in Nepal.
- 1.3 Global and national Trends in export/trade of herbal resources- major species exported from Nepal, recipient countries, trade volume, value and revenue generation.

UNIT. 2. POLICY AND LEGAL PROVISIONS FOR HERBAL RESOURCES (4)

- 2.1. Introduction to the relevant provisions in the Forest Policy and NTFP policy of Nepal, NBSAP and ABSSAP (draft) Nepal.
- 2.2. Introduction to Nagoya Protocol provisions for sustainable use and equitable benefit of genetic resources.
- 2.3. Concept of IPR and related Act and provisions, transboundary trade of NTFPa/MAPs.

UNIT.3. PRINCIPLES AND PRACTICES OF MAPs/NTFPs CULTIVATION (10)

- 3.1. General principles of cultivation of herbal plants
- 3.2. Cultivation practices under different production systems in community forest/leased forest/farm lands, largescale/commercial cultivation
- 3.3. Seed management, nursery techniques and plant production
- 3.4. Land preparation and cultivation: Plantation, manuring, intercultural operation, Irrigation, insect pest management, and harvesting.
- 3.5. Harvesting, post harvesting and phytosanitary techniques; primary processing technologies

Unit 4. Principles of Good Agricultural Practices (GAPs) (6)

- 4.1. GAP for medicinal plants - propagation material, agronomic practices, post harvest processing, storage, packaging, labeling, transportation, phytosanitary requirements, quality control, ethical and legal considerations.
- 4.2. Species specific cultivation practices of selected herbal plants: Major species of high value and high volume in trade. (eg. Mentha, Citronella, Kurilo, Tejpatta, Sarpagandha, Nishodh, Trifala).

UNIT 5. PROCESSING, TRADING AND MARKETING (6)

- 5.1. Primary and final processing of herbal resources, product formulation and marketing strategy
- 5.2. Concept and practices of value chain analysis, quality control and product certification
- 5.3. Intellectual Property Right over genetic resources and TK
- 5.4. Global market phenomena and trade policies related to herbal business .

UNIT 6. BUSINESS DEVELOPMENT AND EXTENSION ON HERBAL RESOURCES (4)

- 6.1. Problem and potential identification, strategization and preparation of herbal based business plans
- 6.2. Learn techniques on creating awareness, educate and capacitate relevant stakeholders on herbal cultivation

Practical/ Field

1. Visit herbal farms, herbarium center, botanical gardens
2. Visit MAPs and NTFPs processing companies as appropriate.
3. Students are assigned to develop herbal based business plans for communities/entrepreneurs

References

1. Annual Reports of Department of Forest and Soil Conservation, DPR, Provincial Forest Directorates and DFOs.
2. Forest Act and Regulation; CITES Act and Regulation; NTFP Policy, DPR; IPR policy Nepal (Ministry of Industries),; ABS SAP (draft, MoFE); NBSAP; CBD Nagoya Protocol;
3. GAP of herbal plants, Publications of Department of Plant Resources.
4. GAP- requirement for the production of quality herbal medicines. Chapter 22, in Natural products and drug discovery by Supradip Saha, Abhisekh Mandal, Anirban Dutta, Elsevier, 2018.

WPM 403: Wildlife and Biodiversity Conservation and Management

Course Number	Course Title	Credit (Th + Pr.)
WPM 403	Wildlife & Biodiversity Conservation and Management	3 (3 + 0)

SCOPE

This course offers wider implication in terms of theory and practice at the global, national, and local levels. It focuses on the general concept, in-depth wildlife population and habitat management techniques, census techniques, management of present issues of wildlife disease and future research needs in the context of Nepal. Apart from the theoretical coverage, this course is supplemented during several field exercises offered during excursions and a long field tour that will enhance the practical knowledge and skills.

OBJECTIVES

- Demonstrate understanding of the basic concepts of biodiversity, wildlife and habitat management
- Enhance the knowledge on different wildlife monitoring and census techniques
- Demonstrate the skills in management of wildlife disease and its control
- Impart the knowledge on ongoing research and monitoring of biodiversity and wildlife on Nepal

EXPECTED OUTCOMES

At the end of the course students will develop knowledge and skills in biodiversity conservation, population management using modern tools and techniques, habitat management techniques, management of wildlife diseases and research needs and priorities in context of Nepal.

COURSE DESCRIPTION

UNIT 1. INTRODUCTION (4)

- 1.1 Concept of biodiversity, wildlife conservation and management
- 1.2 Existing practices of wildlife conservation at global and national level
- 1.3 Issues and challenges of wildlife conservation and management in Nepal
- 1.4 Efforts and approaches for wildlife conservation and management in Nepal

UNIT 2. BIODIVERSITY AND WILDLIFE POPULATION MANAGEMENT (10)

- 2.1 Biodiversity importance and types
 - 2.1.1 Species diversity
 - 2.1.2 Genetic diversity
 - 2.1.3 Ecosystem diversity
- 2.2 Loss of biodiversity (causes, consequences) at global, regional and national levels
- 2.3 Methods of wildlife capturing and handling (reptiles, birds and mammals)
- 2.4 Technologies in wildlife monitoring
 - 2.4.1 Camera trapping
 - 2.4.2 Radio telemetry
 - 2.4.3 Range finder and GPS

- 2.4.4 CC TV/Smart Eye
- 2.5 Orphan and problematic animal management
- 2.6 Wildlife breeding and release programs
- 2.7 Wildlife patrolling

UNIT 3: WILDLIFE HABITAT MANAGEMENT (10)

- 3.1 Introduction to different wildlife habitat types
- 3.2 Wildlife habitats importance and problems for sustainable management
- 3.3 Management techniques
 - 3.3.1 Food production
 - 3.3.2 Water hole improvement
 - 3.3.3 Wetland improvement
 - 3.3.4 Cover management
 - 3.3.5 Grassland management
 - 3.3.6 Cliffs, snags, and bushes
 - 3.3.7 Fire management
- 3.4 Habitat evaluation methods (habitat suitability index, carrying capacity, Simpson's Diversity Index, Shannon-Weiner Index)

UNIT 4: WILDLIFE CENSUS TECHNIQUES (8)

- 4.1 Introduction and importance wildlife census techniques
- 4.2 Direct census techniques
 - 4.2.1 Line transect survey
 - 4.2.2 Mark and re-capture
 - 4.2.3 Change in ratio method
 - 4.2.4 Sweeping method
 - 4.2.5 Roadside and waterhole counts
- 4.3 Indirect census techniques
 - 4.3.1 Pellet group counts
 - 4.3.2 Patch occupancy survey
 - 4.3.3 Genetic survey
 - 4.3.4 Scent station survey
- 4.4 Concept of life table and survivorship curves

UNIT 5. WILDLIFE HEALTH AND ITS MANAGEMENT (7)

- 5.1 Types of wildlife diseases and their vectors in Nepal (bacterial, fungal, viral and parasitic)
- 5.2 Wildlife health monitoring and evaluation (problems and solutions)
- 5.3 Ecology of diseases, maintenance of infection and disease control operation
- 5.4 Infectious and non-infectious diseases of wild animals
- 5.5 Specimen collection and preservation
- 5.6 Rehabilitation of infected and injured wildlife

UNIT 6: WILDLIFE RESEARCH AND MONITORING IN NEPAL (6)

- 6.1 History of wildlife research and monitoring in Nepal
- 6.2 Current trends and issues in wildlife research and monitoring
- 6.3 Needs and priorities of wildlife research in Nepal and transboundary
- 6.4 Use of modern and scientific tools in wildlife research
- 6.5 Potential topics and themes for wildlife research

REFERENCES

1. Jeffries, M.J. 2005. Biodiversity and Conservation. Second Edition. ISBN 9780415343008. Published by Routledge.

WEM 404: Soil Conservation and Disaster Management

Course Number	Course Title	Credit (Th + Pr.)
WEM 404	Soil Conservation and Disaster Management	3 (3 + 0)

SCOPE

This course introduces the process of soil degradation and its causes and effects. It covers the mechanism of erosion and landslide and their types as well as stabilization techniques for soil conservation. It deals the fundamentals of disasters and its management techniques. The teaching style of this course will include both classroom learning and field excursions.

OBJECTIVES

- Increased knowledge and understanding of the soil degradation and its types, phenomenon, and causes
- Provide the basic conceptual understanding of soil related disasters and their management
- Understand the methods of soil conservation and disaster management
- Improve skill and ability for planning, designing and implementation of soil stabilization techniques e.g., vegetative, and civil engineering structures

EXPECTED OUTCOMES

After completion of this course, students will be able to understand the importance of soil conservation and factors leading to soil degradation. Moreover, they will be able to apply different soil conservation measures to minimize soil degradation and soil loss.

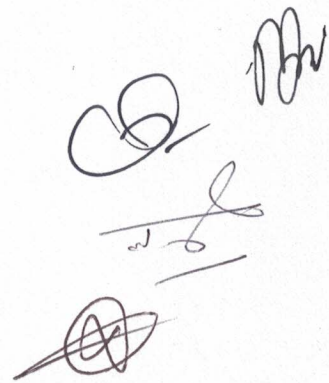
COURSE DESCRIPTION

UNIT 1: INTRODUCTION TO SOIL DEGRADATION (4)

- 1.1 Definition of soil degradation and scenario of soil erosion in Nepal.
- 1.2 Causes, reasons and effects of soil degradation
- 1.3 Process of soil degradation
- 1.4 Factors affecting soil degradation
- 1.5 Universal soil loss equation (USLE)
- 1.6 Scope of soil conservation

UNIT 2: EROSION AND LANDSLIDE (9)

- 2.1 Introduction to erosion and landslide
- 2.2 Mechanism of erosion and landslide
- 2.3 Types of soil erosion
 - 2.3.1 Sheet erosion
 - 2.3.2 Rill erosion
 - 2.3.3 Gully erosion
 - 2.3.4 Wind erosion
 - 2.3.5 Stream bank erosion
- 2.4 Mass movements and its classification
- 2.5 Types of land slide



- 2.5.1 Rotational slides
- 2.5.2 Translational slides

2.6 Land slide mapping

UNIT 3: VEGETATIVE STABILIZATION TECHNIQUES FOR SOIL CONSERVATIONS (9)

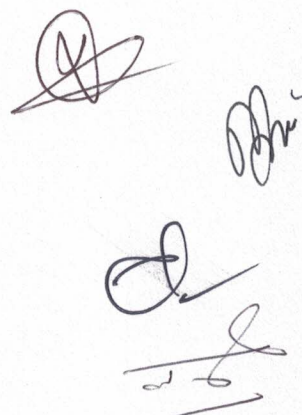
- 3.1 Plant types, plant form and structures
- 3.2 Basic requirements of plants
- 3.3 Engineering functions of vegetation
- 3.4 Plant community
- 3.5 Criteria for plant species selection
- 3.6 Vegetative stabilization techniques
 - 3.6.1 Grass planting
 - 3.6.2 Grass seeding
 - 3.6.3 Turfing
 - 3.6.4 Shrub and tree planting
 - 3.6.5 Bamboo planting
 - 3.6.6 Brush layering
 - 3.6.7 Palisades
 - 3.6.8 Fascines
 - 3.6.9 Wattle fences
 - 3.6.10 Live check dam
 - 3.6.11 Jute netting
 - 3.6.12 Vegetated stone pitching

UNIT 4: SMALL SCALE CIVIL ENGINEERING STRUCTURES FOR SOIL CONSERVATIONS (10)

- 4.1 Retaining Wall
 - 4.1.1 Types of retaining wall
 - 4.1.2 Design criteria
 - 4.1.3 Stability analysis
- 4.2 Revetment wall
- 4.3 Gabion wall
- 4.4 Prop wall
- 4.5 Cylindrical wire bolster
- 4.6 Crib wall
- 4.7 Stone pitching
- 4.8 Spurs
- 4.9 Embankment
- 4.10 Lunching apron
- 4.11 Check dam
 - 4.11.1 Types of check dam
 - 4.11.2 Design of check dam
 - 4.11.3 Stability analysis
 - 4.11.4 Layout and construction procedure
- 4.12 Surface and sub-surface drainage system
- 4.13 Interaction of vegetative and civil engineering system

UNIT 5: FUNDAMENTALS OF DISASTERS (5)

- 5.1 Definition of hazard and disasters
- 5.2 Risk and vulnerability in disasters

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5.3 Types of disaster

5.3.1 Natural disasters

5.3.2 Man-made disasters

5.4 Role of climate change for disasters

5.5 Landslide and flooding

UNIT 6: MANAGEMENT TECHNIQUES OF DISASTERS (8)

6.1 Basic principles of disasters management

6.2 Disaster cycle

6.3 Early warning system

6.4 Disasters risk reduction policy in Nepal

6.5 Disasters management policy

6.6 Public awareness for disasters management

6.7 Mitigation measures from the water induced disaster

6.8 Uses of GIS and Remote Sensing in disasters management

References:

1. CFEDMHA, 2020. Disaster Management Reference Handbook – Nepal, Center for Excellence in Disaster Management and Humanitarian Assistance, Nepal
2. Dahal, R. K. 2006. Geology for Technical Students, Bhrikuti Academic Publications
3. Gupta, A. K., Nair, S. S., Bemmerlein-Lux, F. and Chatterji, S. 2013. Disaster Management and Risk Reduction: Role of Environmental Knowledge, Norasa Publishing House, Delhi
4. HMG and NARMSAP, 2004. Soil Conservation and Watershed Management Measures and Low-Cost Techniques, Soil Conservation and Watershed Management Component of Department of Soil Conservation and Watershed Management, Kathmandu, Nepal
5. HMG, 1996. National Action Plan on Disaster Management in Nepal, His Majesty's Government Ministry of Home Affairs, Kathmandu, Nepal
6. HMG, 2002. Roadside Bioengineering: Site Handbook, Department of Roads, His Majesty's Government of Nepal
7. Morgan, R. P. C. and Rickson, R. J. (eds) 1994. Slope Stabilization and Erosion Control: A Bioengineering Approach, E and FN SPON, Madras
8. Ojha, R. B. and Pandey, D. (eds) 2021. The Soils of Nepal, Springer International Publishing



WEM 405: Watershed Management and Ecosystem Services

Course Number	Course Title	Credit (Th + Pr.)
WEM 405	Watershed Management and Ecosystem Services	3 (2 + 1)

SCOPE

The course is designed to give students the competency to comprehend the integrated watershed management such as land management, soil management and hydrological parameters as well as to select appropriate soil and water conservation measures. Additionally, course will cover watershed management and role in ecosystem service available. The course is intended to strengthen the students' competence to conduct research or complete professional assignments in the fields of watershed management planning and implementation which are important for sustainable mountain development.

OBJECTIVES

- Address watershed resources problems.
- Characterizations of the watershed
- Delineate a watershed boundary using GIS tool.
- Develop and implement a watershed management plan
- Understand the ecosystem services at the watershed level

EXPECTED OUTCOMES

Students will acquire the knowledge on problems and management practices at the watershed level. Students will able to prepare watershed management plan.

COURSE DESCRIPTION

UNIT 1. INTRODUCTION AND CONCEPT OF WATERSHED (3)

- 1.1 Definition and Concept of watershed, sub-watershed and basin
- 1.2 Integrated/watershed management
- 1.3 Watershed as a Planning and Management Unit

UNIT 2. WATERSHED INVENTORY (4)

- 2.1. Bio-physical characteristics
- 2.2. Socio-economic characteristics
- 2.3. Geomorphological characteristics
- 2.4. Delineation of watershed boundary

UNIT 3 WATERSHED HYDROLOGY (8)

- 3.1. Hydrology and hydrologic cycle
- 3.2 Atmospheric and topographical factors influencing precipitation types
- 3.3 Measurement of precipitation data (rainfall and snowfall) instruments and their use.
- 3.4 Methods of computing equivalent uniform depth of precipitation over a watershed
- 3.5. Different uses of water
- 3.6 Man's influence on the hydrologic cycle
- 3.7 Importance of hydrologic knowledge in natural resource planning

UNIT 4 WATERSHED MANAGEMENT PLANNING (6)

- 4.1. Sub watershed/ micro watershed prioritization

- 4.2. Data needs for watershed Management plan
- 4.3. Watershed management planning practices in Nepal

UNIT 5. OPPORTUNITIES AND CHALLENGES (4)

- 5.1. Integrated river basin management
- 5.2. Ecosystem services and Upstream-downstream linkage
- 5.3 Water induced disaster: landslide and flood
- 5.4. Disaster mitigation measure: Physical, and bioengineering techniques
- 5.5. Watershed management in the face of climate change and federal system of the country
- 5.6. GESI in watershed management
- 5.7 Churia conservation activities and programme

UNIT 6. WATERSHED ECOSYSTEM SERVICES (5)

- 6.1 Understanding linkages between Ecosystems and Human Well-being
- 6.2. Ecosystem patterns and processes
- 6.3The Importance of ecosystem services to society
- 6.4 Society and water related ecosystem services

PRACTICAL/FIELD WORK/EXCURSIONS

- Delineation of watershed boundary
- Sub-watershed prioritization exercise using Remote sensing and GIS
- Preparation of the sub-watershed planning
- Stream flow measurement technique
- Demonstration of soil and water conservation activities by Department of Forest and Soil Conservation and other related organizations.

REFERENCES

1. Brooks, K.N., Folliott, P.F., Magner, J.A.2013. Hydrology and the management of watershed. Fourth edition. John Wiley & Sons
2. FAO. 2007. Why invest in watershed management? Rome, Italy
3. Gregersen, H.M., Folliott, P.F., Brooks, K.N.2007.Integrated Watershed Management Connecting People to Their Land and Water. CABI International
4. Integrated Watershed Management in the Global Ecosystem. 2000. CRC Press, Boca Raton London New York Washington, D.C.
5. Neotropics Jefferson S. H, Vanessa Kirn, E., Fernández Y. 2015. Managing Watersheds for Ecosystem Services In the Steep land. Smithsonian Tropical Research Institute Panama City, Panama Published Inter-American Development Bank.
6. Singh, W.R., Barman, S., & Tirkey, G. 2021.Morphometric analysis and watershed prioritization in relation to soil erosion in Dudhnai Watershed. Applied Water Science, 11:151



WEM 406: Field Study: Watershed and Disaster Management

Course Number	Course Title	Credit (Th + Pr.)
WEM 406	Field Study IV: Watershed and Disaster Management	1 (0 + 1)

SCOPE

Students will learn different soil and water conservation practices both engineering and green structure. They will gain practical skills in real field situation in watershed management treatment as well as degraded land management. Theoretical and Field study knowledge and skills learned from the course will be used to prepare integrated watershed and disaster management plan.

OBJECTIVES

- To monitor erosion in various land uses and effects of intervention measures
- To visit the different soil and water conservation/land slide control/river training measures (engineering and nature-based solution)
- Analyze the conservation measures and its impact on land improvement and ecosystem services

EXPECTED OUTCOMES

Upon completion of the field work, students will be able to prepare integrated watershed management plan. In addition, they will understand cause and consequences of land degradation and disaster management.

COURSE DESCRIPTION

Field work will be planned for one-weeks to study field situation and conservation practices. Field exercise will be managed from Terai to Mountain region. The field exercise will be covered in the following activities: Students will be allowed to familiarize, analysis and impact of the different conservation measure.

Preventive Measures: Seedlings production, conservation plantation and seedlings distribution, user groups, conservation ponds, water source conservation and gravity water supply, terrace improvement, and on farm conservation.

Rehabilitative Measures: Landslide stabilization, gully control, river training road slope stabilization, irrigation improvement, degraded land management.

Disaster Management: Early warning system, Preventative as well as Post disaster Management

Community mobilization: (e.g. rehabilitation of degraded land, agro-forestry, on-farm conservation, bamboo planting), women program, user group and conservation committees, school program, extension materials, energy saving cooking systems.)

Livelihood improvement program: Institutions, Capacity enhancement, Income generating activities.

Finally, Four to Five groups will prepare the report to prepare integrated watershed management plan and disaster management

Note: Field schedule should be arranged as per the convenience

REFERENCES

1. Dhyani, S. K., Sharda, V. N., Juyal, G. P. (2007). Training manual: soil conservation and watershed management volume 3 - conservation forestry and watershed management. Published: Central Soil and Water Conservation Research and Training Institute, Deharadun India.
2. FAO. (2014). Training manual disaster risk mitigation and management in cropping systems in dominica soil conservation and soil fertility improvement. Food and Agriculture Organization Of The United Nations Rome,
3. Mohan, S. C., Samra, J. S., Srivastava, A. K., Sharda, V. N. (2007). Training manual: soil conservation and watershed management volume 1 - soil, agronomy and socio-economic aspects. Published: Central Soil and Water Conservation Research and Training Institute, Deharadun, India.

