

BOS- Soil Conservation

An online meeting of Board of Studies of C.S.J.M. University, Kanpur was held on 14th May 2021 from 05:30 pm to 06:15 pm to discuss the syllabus of Soil Conservation as per National Education Policy (NEP-2020) for the degree course of B.Sc. (Hons) Agriculture and meeting was coordinated by Prof. Nand Lal, CSJM, University, Kanpur. Representative present in the meeting apart from the following honorable members.

1. Dr. M.P. Yadav (Convener and Dean Agriculture)
2. Dr. R.P. Singh (Prof. and HOD- Soil Conservation & Water Management, CSAUA & Tech., Kanpur)
3. Dr. Munish Kumar (Prof. Soil & Water Management, CSAUA & Tech., Kanpur.)
4. Dr. P.K. Sharma Professor (BHU, Varanasi)
5. Dr. R.R. Singh (Associate Prof. Soil Science, NDUAT, Faizabad)
6. Dr. Ved Prakash Gupta (Assistant Prof. Soil Conservation, Govt. PG College, Jakhani, Varanasi)
7. Dr. Pramod Kumar Rajput (Dept. of Soil Conservation, Janta College Bakewar, Etawah)
8. Dr. Yogesh Kumar (Dept. of Soil Conservation, Janta Mahavidhyalaya, Azitmal)

The following suggestions/ recommendation were offered by Honorable members in the online video conference meeting.

1. There is difference in credit distribution shown in department summary table Page No.48. Fundamental of soil and water conservation 2(1+1) credit while in syllabus page no. 52 it shown as 3 (2+1) credit. This should be corrected as 2 (1+1) credit.
2. In course Title -Environmental Studies and Disaster Management (Ag-308) with too much and lengthy syllabus which seems to be not possible to complete syllabus in any one semester because of less credit hours. Honorable members suggested to cut down or minimize syllabus from those portion which is not much relevance at present situation or increase the credit hours 2(1+1) to 3(2+1) credit. Prof. Nand Lal advice the honorable members to send recommendation to state governing body to minimize syllabus or increase credit hours.
3. B.Sc. Ag IV Semester course No. Ag- 405 is missing. Hence, re-coding of IV semester is required.
4. Introduction to Forestry (Ag-106), syllabus is good and relevant to course title and doesn't require any modification.
5. Introductory Agro- Meteorology & Climate Change (Ag-409) syllabus is also relevant to the current curriculum.
6. Watershed and Wasteland Management (Ag-607) course combined with Rainfed and Dry Land Farming and Watershed Management. But recently, this course was breakdown into two courses such as Rainfed and dry land farming in the Agronomy Department and Watershed and Wasteland Management in the Dept. of Soil Conservation. These courses basically come under Department of Soil Conservation.
7. If possible, course Title Fundamental of Soil and Water Conservation (Ag-310) can be transferred to 2nd Semester because of two courses in the same semester (i.e., 3rd Sem.)
8. All the members present in the meeting are in opinion that no changes should be made in the syllabus except course no. Ag-308.

Therefore, I'm sending this file for your kind approval after including valuable suggestions/recommendation offered by all committee members. Kindly approve the same.

Dr. Pramod Kumar Rajput
(Convener/ Dept. of Soil Conservation)
Janta College, Bakewar, Etawah


Dr. M.P. Yadav
(Dean Agriculture)
CSJM University, Kanpur

DEPARTMENT OF SOIL CONSERVATION

Course Code	Course Title	Credit Hours
AG-106	Introduction to Forestry	2(1+1)
AG-308	Environmental Studies and Disaster Management	2(1+1)
AG-310	Fundamental of Soil and Water Conservation	2(1+1)
AG-409	Introductory Agro-meteorology & Climate Change	2(1+1)
AG-607	Watershed and Wasteland Management	2(1+1)

Elective Course

AGE- 64	System Simulation and Agro advisory	3 (2+1)
---------	-------------------------------------	---------



SOIL CONSERVATION

1. Introduction to Forestry (New)

2(1+1) AG-106

Theory

Introduction - definitions of basic terms related to forestry, objectives of silviculture, forest classification, salient features of Indian Forest Policies. Forest regeneration, Natural regeneration - natural regeneration from seed and vegetative parts, coppicing, root suckers; Artificial regeneration - objectives. choice between natural and artificial regeneration. essential preliminary considerations. Crown classification. Tending operations - weeding, cleaning. thinning - mechanical, ordinary, crown and advance thinning. Forest mensuration - objectives, diameter measurement, instruments used in diameter measurement; measurement of volume of felled and standing trees, age determination of trees. Agroforestry - definitions. importance, criteria of selection of trees in agroforestry, different agroforestry systems prevalent in the country, shifting cultivation, taungya, alley cropping, wind breaks and shelter belts, home gardens. Cultivation practices of two important fast growing tree species of the region.

Practical

Identification of tree-species. Diameter measurements using calipers and tape. Volume measurement of logs using various formulae. Nursery lay out, seed sowing, vegetative propagation techniques. Forest plantations and their management. Visits of nearby forest based industries.

Related Books

- 1-Introduction to Forestry By S.S. Sagwal , Kalyani Publishers Noida
- 2-Fundamental of Forestry By Pranay Kumar Roy Barman , Kalyani Publishers Noida
- 3- Principal and Practices of Silviculture By L. S. Khanna , Khanna Bandu Dehradun
- 4--Introduction to Forestry (bilingual) By S.G. rajput and P.K. Rajput , Kalyani Publishers Noida
- 5-Introduction to Forestry By S.R. Reddy and C. Nagamani, Kalyani Publishers Noida
- 6- Introduction to forestry and Agro-forestry By K.T. Parthiban, N.Krishna Kumar and M. Karthick, Scientific Publisher Jodhpur

e courses

- <https://ecourses.icar.gov.in>
 - <http://heecontent.upsdc.gov.in/home.aspx> Uttar Pradesh Higher Education Digital Library Search
- Dr Yogesh kumar



Multidisciplinary nature of environmental studies Definition, scope and importance.

Natural Resources: Renewable and non-renewable resources. Natural resources and associated problems. a) **Forest resources:** Use and over-exploitation, deforestation. case studies. Timber extraction, mining. dams and their effects on forest and tribal people. b) **Water resources:** Use and over-utilization of surface and ground water. floods. drought. conflicts over water, dams- benefits and problems. c) **Mineral resources:** Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) **Food resources:** World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture. fertilizer- pesticide problems, water logging, salinity, case studies.

e) **Energy resources:** Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources. Case studies. f) **Land resources:** Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem. Producers, consumers and decomposers, Energy flow in the ecosystem. Ecological succession, Food chains. food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries),

Biodiversity and its conservation: - Introduction, definition, genetic, species & ecosystem diversity and biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global. National and local levels. India as a mega-diversity nation. Hot- spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity. **Environmental Pollution:** definition, cause, effects and control measures of: a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution 1. Thermal pollution g. Nuclear hazards. **Solid Waste Management:** causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution.

Social Issues and the Environment: Water conservation, rain water harvesting, watershed



management. Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, desert, Wasteland reclamation, Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. . Public awareness. Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme

. **Environment and human health:** Human Rights, Value Education. HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health.

Disaster Management

Natural Disasters- Meaning and nature of natural disasters, their types and effects. Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves, Climatic change: global warming, ozone depletion. Man Made Disasters- Nuclear disasters, chemical disasters, biological disasters. building fire, coal fire, forest fire, oil fire, air pollution, water pollution, deforestation, industrial waste, water pollution. Disaster Management- Effect to migrate natural disaster at national and global levels. International strategy for disaster reduction. Concept of disaster management, national disaster management framework; financial arrangements; role of N(it)s, community - based organizations and media. Central, state, district and local administration.

Practical

Pollution case studies. Case Studies- Field work: Visit to a local area to document environmental assets river/ forest.' grassland/ hill/ mountain, visit to a local polluted site- Urban/Rural/Industrial/Agricultural, study of common plants, insects, birds and study of simple ecosystems-pond, river, hill slopes, etc.

Related Books

- 1- Environment Education And Disaster Management By S.K. Pandey CBS Publishers and Distributors
- 2-Environment Engineering and Disaster Management By R.C Gaur New Age International(p) LTd. Publication

e courses

- <https://ecourses.icar.gov.in>
- <http://heecontent.upsc.gov.in/home.aspx> Uttar Pradesh Higher Education Digital Library



3-Fundamental of Soil and Water Conservation

2(1+1) AG-310

Theory

Introduction to Soil and Water Conservation. causes of soil erosion. Definition and agents of soil erosion. water erosion: Forms of water erosion. Gully classification and control measures. Soil loss estimation by universal Loss Soil Equation. Soil loss measurement techniques. Principles of erosion control: Introduction to contouring. strip cropping. Contour bund. Graded bund and bench terracing. Grassed water ways and their design. Water harvesting and its techniques. Wind erosion: mechanics of wind erosion, types of soil movement. Principles of wind erosion control and its control measures.

Practical

General status of soil conservation in India. Calculation of erosion index. Estimation of soil loss. Measurement of soil loss. Preparation of contour maps. Design of grassed water ways. Design of contour bunds. Design of graded hunds. Design of bench terracing system. Problems.

Related Books

- 1- Soil and Water Conservation Engineering By R. Suresh Standard Publishers Distributer, New Delhi
- 2- Basic Fundamental of Soil and water Conservation By Om Prakash , Rama Publication House, merrut.
- 3- A T ext Book of soil and Water Conservation By G.S. Saini , Aman Publication House Merrut.
- 4- A New Approach to Soil and Water Conservation By Vishwanath Mishra , Bharti Bhandar Merrut
- 5- Concept of Soil and Water Conservation By S.G. Rajput And Yogesh Kumar, Kalyani Publishers Noida

e courses

- <https://ecourses.icar.gov.in>
- <http://heecontent.upsdc.gov.in/home.aspx> Uttar Pradesh Higher Education Digital Library Search Dr Yogesh kumar



5- **Introductory Agro-meteorology & Climate Change 2(1+1) AG-409**

Theory

Meaning and scope of agricultural meteorology; Earth atmosphere- its composition, extent and structure; Atmospheric weather variables; Atmospheric pressure, its variation with height; Wind, types of wind, daily and seasonal variation of wind speed, cyclone, anticyclone, land breeze and sea breeze; Nature and properties of solar radiation. solar constant, depletion of solar radiation, short wave. longwave and thermal radiation, net radiation, albedo: Atmospheric temperature, temperature inversion, lapse rate, daily and seasonal variations of temperature, vertical profile of temperature, Energy balance of earth; Atmospheric humidity, concept of saturation, vapor pressure, process of condensation, formation of dew, fog, mist, frost, cloud; Precipitation. process of precipitation. types of precipitation such as rain, snow, sleet, and hail, cloud formation and classification: Artificial rainmaking. Monsoon-mechanism and importance in Indian agriculture, Weather hazards - drought, floods, frost, tropical cyclones and extreme weather conditions such as heat-wave and cold-wave. Agriculture and weather relations; Modifications of crop microclimate, climatic normals for crop and livestock production. Weather forecasting- types of weather forecast and their uses. Climate change. climatic variability, global warming, causes of climate change and its impact on regional and national Agriculture.

Practical

Visit of Agrometeorological Observatory, site selection of observatory, exposure of instruments and weather data recording. Measurement of total, shortwave and longwave radiation, and its estimation using Planck's intensity law. Measurement of albedo and sunshine duration, computation of Radiation Intensity using ASS. Measurement of maximum and minimum air temperatures. its tabulation, trend and variation analysis. Measurement of soil temperature and computation of soil heat flux. Determination of vapor pressure and relative humidity. Determination of dew point temperature. Measurement of atmospheric pressure and analysis of atmospheric conditions. Measurement of wind speed and wind direction, preparation of windrose. Measurement. tabulation and analysis of rain. Measurement of open pan evaporation and evapotranspiration. Computation of PET and AET.

Related Books

1-Agriculture Meteorology By P.S. Tiwari , Shree Khashna Publishers, Agra



2-Fundamental of Agricultural Meteorology By Vishwnath Mishra and Ashok kumar, Bharti
Bhandar Merrut

e courses

- <https://ecourses.icar.gov.in>
- <http://heecontent.upsdc.gov.in/home.aspx> Uttar Pradesh Higher Education Digital Library

5- Watershed and wasteland Management

2(1+1) AG-607

Theory

Watershed management - Concept need, principles & components of watershed management integrated watershed management. Factors effecting watershed management runoff& soil loss management in a watershed socio-economic concept of watershed. Peoples participation in watershed management. Policy approaches & management plan, problems of watershed management. Wasteland management - Definition, concept & types of degraded &

wasteland. Distribution & extent of watershed in India & Uttar Pradesh. factors responsible for land degradation, characteristics of different types of degradation & wasteland. Problems of degraded land in Uttar Pradesh. Appropriate techniques for management of different types of degraded & wasteland.

Practical

Characterization and delineation of model watershed. Field demonstration on soil & moisture conservation measures. Field demonstration on construction of water harvesting structures. Visit to rainfed research station/watershed.

Related Books

- 1-Rainfed Agriculture and Watershed Management By S.R. Reddy and G.Prabhakar Reddy, Kalyani Publishers Noida
- 2- Watershed Planning and Management By R. Suresh Standard Publication and Distributers, New Delhi

e courses

- <https://ecourses.icar.gov.in>
 - <http://heecontent.upsdc.gov.in/home.aspx> Uttar Pradesh Higher Education Digital Library Search
- Dr Yogesh kumar



6- System Simulation and Agro advisory

3(2+1) AGE-64

Theory

System Approach for representing soil-plant-atmospheric continuum, system boundaries, Crop models, concepts & techniques, types of crop models, data requirements. relational diagrams.

Evaluation of crop responses to weather elements; Elementary crop growth models; calibration, validation, verification and sensitivity analysis. Potential and achievable crop production- concept and modelling techniques for their estimation. Crop production in moisture and nutrients limited conditions; components of soil water and nutrients balance. Weather forecasting, types, methods, tools & techniques, forecast verification: Value added weather forecast, ITK for weather forecast and its validity; Crop-Weather Calendars; Preparation of agro-advisory bulletin based on weather forecast. Use of crop simulation model for preparation of Agro-advisory and its effective dissemination.

Practical

Preparation of crop weather calendars. Preparation of agro-advisories based on weather forecast using various approaches and synoptic charts. Working with statistical and simulation models for crop growth. Potential & achievable production: yield forecasting, insect & disease forecasting models. Simulation with. limitations of water and nutrient management options. Sensitivity analysis of varying weather and crop management practices. Use of statistical approaches in data analysis and preparation of historical, past and present meteorological data for medium range weather forecast. Feedback from farmers about the agro advisory.

Related Books

- 1- Principals of Agronomy By S.R . Reddy Kalyani Publishers Noida

e courses

- <https://ecourses.icar.gov.in>

