**Course Name: Forest Management**

**Number of credits: 4 ECTS**

**Period: Autumn semester**

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| Coordinator | **Dr Akhlaq Amin Wani** |
| Credits | 4 (3+1) |
| Lecturers | **Dr. Akhlaq Amin Wani, Dr. Aasif Ali Gatoo, Dr. Shah Murtaza Mushtaq** |
| Level | Bachelors |
| Host institution | Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K) |
| Course duration | 18 Weeks |

**Summary**

This is a 4 ECTS course which is provided as compulsory course to B.Sc. (Hons) Forestry students during their 4 year degree program. The course prepares students for careers as leaders in understanding managing forest resources for protection, environment, recreation and social aspects. It enables student to innovate existing working and management plans.

**Target student audiences**

Bachelor of Science Forestry (Hons.) students during their 4 year degree program.

**Prerequisites**

Basic knowledge in Forestry in the previous semesters.

**Aims and objectives**

The course prepares students for careers as leaders in understanding sustainable forest management, rotation, normality and forest models based on age, I exposes students to modern tools and applications in forest management. It further guides into planning green spaces, climate change and urban forest management plans.

**General learning outcomes:**

On completion of this course, the students would:

* Gain a wider understanding of managing forests for protection, environment, recreation and social aspects.
* It will enable the students to innovate existing forest working and management plans.

The students will enhance abilities and skills to plan green spaces in urban areas applying modern tools of management.

**Overview of sessions and teaching methods**

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| **Unit** | **Syllabus** |
| **Unit 1:**  | Definition, scope, objective and principles of forest management, organization of state forests-sustained yield-definition, principles and limitations. Sustainable forest management-criteria and indicators-Increasing and progressive yields- |
| **Unit 2:**  | Rotation -definitions-various types of rotations-length of rotations-choice of type and kind of rotation.  |
| **Unit 3:**  | Normal forest-definitions basic factors of normality. Factors governing the yield and growth of forest stands- |
| **Unit 4:**  | Working plan-preparations-objectives and uses-forest maps and their uses. Joint forest management-concept and principles-  |
| **Unit 5:**  | Modern tools in forest management. Even-aged and un-even aged models. Estimation of growing stock, density, quantity and increment.  |
| **Unit 6:** | Green space planning and design, Recreation and well-being, Climate change and sustainability viz-a-viz Urban forest management, Urban forest management plan. |
| **Practical** | Visit to different forest divisions to study the various stand management aspects including thinning, felling and sale of timber. Study forest organizational set up and forest range administration including booking of offences. Visit to forest plantation- Field Exercise for the estimation of actual growing stock volume. Study the different field exercises for data collection for working plan. Visit to urban parks, Green belts and Urban green spaces, Urban tree cover assessment, Case studies.  |
| **Individual Assignment** | Case studies with brief report and presentation regarding: * Report on silvicultural systems and management in natural/urban forests.
* SWOT analysis for Working plan effectiveness in managing natural/urban forests.
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| **Group Assignment** | Group survey in nearby forest/Urban Forest areas and presentation regarding * Growing stock estimation in natural/urban forest area/protected area.
* Preparing a demonstrative working plan.
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| **Self-Study** | Understanding the basic and modelling of geoinformatics on provided teaching materials and related literature.Preparation/processing of geographical data to be used in class activities |

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| **Learning methods** | * In class lecture
* Online tutorials
* Lab/Field exercises
* Project-Based Learning
* Assignments
* Presentations
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**Course outline**

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|  | **UNIT 1** |
| **Week1** | Definition, scope, objective and principles of forest management,  |
| **Week2** | organization of state forests-  |
|  | **Practical:** Visit to different forest divisions to study the various stand management aspects including thinning, felling and sale of timber.  |
| **Week3** | sustained yield-definition, principles and limitations.  |
|  | **Practical:** Study forest organizational set up and forest range administration including booking of offences.  |
| **Week4** | Sustainable forest management-criteria and indicators-Increasing and progressive yields- |
|  | **UNIT 2** |
| **Week5** | Rotation -definitions-various types of rotations-length of rotations  |
|  | choice of type and kind of rotation. |
|  | **UNIT 3** |
| **Week6** | Normal forest-definitions basic factors of normality. |
|  | **Practical:** Visit to forest plantation- Field Exercise for the estimation of actual growing stock volume.  |
| **Week7** | Factors governing the yield and growth of forest stands- |
| **Week8** | **Mid Term Exam** |
|  | **UNIT 4** |
| **Week9** | Working plan-preparations-  |
| **Week10** | objectives and uses-forest maps and their uses.  |
| **Week11** | Joint forest management-concept and principles- |
|  | **Practical:** Study the different field exercises for data collection for working plan.  |
|  | **UNIT 5** |
| **Week12** | Modern tools in forest management.  |
| **Week13** | Even-aged and un-even aged models.  |
| **Week14** | Estimation of growing stock, density, quantity and increment. |
|  | **UNIT 6** |
| **Week15** | Green space planning and design,  |
|  | **Practical:** Visit to urban parks, Green belts and Urban green spaces |
| **Week16** | Recreation and well-being,  |
|  | **Practical:** Urban tree cover assessment, Case studies. |
| **Week17** | Climate change and sustainability viz-a-viz Urban forest management, Urban forest management plan. |
| **Week18** | **Practical Exam/Assignment submission/Presentation** |
|  | **End Tem Exam** |

**Literature**

**Compulsory**

Balakathiresan, S (1986). Essentials of Forest Management, Nataraj Publishers, Dehradun.

Desai, V. (1991). Forest Management in India–Issues and Problems. Himalaya Pub. House, Bombay.

Edmunds, D and Wollenberg, E (2003).Essentials of Forest Management, Natraj Publishers, DehraDun.

-Innes, J. L., & Tikina Anna V. (2017). Sustainable forest management: from principles to practice. Abingdon, Oxon Routledge.

**Recommended**

Jerome L Clutter et al. (1983). Timber Management: A Quantitative Approach. John Wiley and Sons.

National Working Plan Code (2014). MoEF, New Delhi.

Ram Prakash, (1986). Forest Management, IBD, Dehradun.

Gupta, A. K., S S Singh, S A Wajih, N. Mani and A.K. Singh, 2017. Urban Resilience and Sustainability Through Peri-urban Ecosystems. GEAG, ACCRN & Rockefeller Foundation.

-Pravat Kumar Shit, Hamid Reza Pourghasemi, Partha Pratim Adhikary, Gouri Sankar Bhunia, & Vishwambhar Prasad Sati. (2021). Forest resources resilience and conflicts. Amsterdam: Elsevier

**Course workload**

The table below summarizes course workload distribution:

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| --- | --- | --- | --- |
| **Activities** | **Learning outcomes** | **Assessment** | **Estimated workload (hours)** |
| **In-class activities (32 hours)** |
| Lectures  | Understanding theories, concepts, methodology and tools | Class participation | 16 |
| Moderated in-class discussions | Understanding various policy and management contexts and common problems in communication in Forest Management.  | Class participation and preparedness for discussions | 05 |
| Reading and discussion of assigned papers for seminars and preparation for lectures | Familiarity with and ability to critically and creatively discuss key concepts, tools and methods as presented in the literature | Class participation, creative and active contribution to the discussion | 05 |
| Group presentation | Ability to interpret data, to analyze the audience, and use the concepts, tools to understand Forest Management.  | Quality of group assignments and individual presentations | 06 |
| **Practical (Lab and Field) (32 hours)** |
| Practical | Ability to perform lab experiments and use field based equipment after demonstration of tools and procedures by the instructor.  | Class/Field participation for data generation and preparedness for field project works | 32 |
| **Independent work (51 hours)** |
| Self-Study | Familiarity with and ability to critically and creatively discuss key concepts, tools and methods as presented in the literature |  | 25 |
| Individual Assignment/Presentation | Ability to individually interpret data, analyze the audience, and use the concepts, and tools, to understand Forest Management |  | 10 |
| Group Assignment/Presentation | Ability to interpret data, analyze the audience, and use the concepts, and tools, to understand Forest Management.  | Quality of group assignments and individual presentations | 16 |
| ***Total*** |  |  | ***115 Hours*** |

**Grading**

The students’ performance will be based on the following:

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| --- | --- |
| **Mode of assessment** | **% of marks** |
| Mid Term (Objective and Written) | 30 |
| Practical/Assignments (Discussion) | 20 |
| End Term (Objective and Written) | 50 |
| **Total** | **100** |

**Evaluation**

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| **% secured** | **Grade** |
| <50% | Fail |
| 50% and above | Pass |