

Course :	FRST 121	Credit:	2(1+1)	Semester-II
Course title:	Introduction to Forestry			

Syllabus

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, pollarding, 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; Non instrumental methods of height measurement - shadow and single pole method; Instrumental methods of height measurement - geometric and trigonometric principles, instruments used in height measurement; tree stem form, form factor, form quotient, 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, diameter measurements of forked, buttressed, fluted and leaning trees. Height measurement of standing trees by shadow method, single pole method and hypsometer. 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.

Lesson Plan

Lecture	Topic	Weightage (%)
1 & 2	Definitions of basic terms related to forestry, Definition of Silviculture, objectives of silviculture, forest classification- 16 Major types of forest with species composition	5
3	Salient features of Indian Forest Policies	5

Lecture	Topic	Weightage (%)
4	Natural regeneration - natural regeneration from seed and vegetative parts, coppicing, pollarding, root suckers with examples	10
5	Artificial regeneration – objectives, choice between natural and artificial regeneration, essential preliminary considerations for AR	10
6	Crown classification of trees	5
7	Tending operations – weeding, cleaning, thinning – mechanical, ordinary, crown and advance thinning	5
8	Forest mensuration – objectives, diameter measurement, instruments used in diameter measurement	5
9	Non instrumental methods of height measurement - shadow and single pole method; Instrumental methods of height measurement - geometric and trigonometric principles, instruments used in height measurement	5
10	Tree stem form, form factor, form quotient	5
11	measurement of volume of felled and standing trees, age determination of trees.	5
12 & 13	Agroforestry – definitions, importance, Classification of Agroforestry systems, criteria of selection of trees in agroforestry	10
14	different agroforestry systems prevalent in the country,	5
15	shifting cultivation, taungya, alley cropping, wind breaks and shelter belts, home gardens with regional examples	10
16 & 17	Cultivation practices of two important fast growing tree species of the region.	5

Practical

Experiment	Topic
1	Identification of tree-species of the Campus and its classification according to uses and preparation of herbarium
2	Measurements of diameter-girth and basal area of trees using Calipers, Tape, Ruler, Pentaprism Tree Caliper etc
3	Measurement of height using non instrumental method and Instrumental methods like Hypsometer, Ravi Multimeter, Abney level
4	Volme estimation of logs and standing trees using Quarter girth formula

Experiment	Topic
5	Study of Natural regeneration in forest area and mode of regeneration
6	Planning and layout of forest plantations, Choice of species, methods of planting and after care
7	Exercise on tree nursery practice- seed collection, seed pre-treatment, bed preparation and sowing
8	Field exercise on various tending operations in forest/plantations like thinning, pruning, climber removal etc.
9	Study of Traditional agroforestry systems in the region and visits to some of the local agroforestry systems and recording its components.
10	Study of Tree Architecture, structure and growth of trees, crown and root architecture
11	Identification of trees suitable for Windbreaks & Shelterbelts, Fodder etc.
12	Visit to forest plantation and study of its growth and general condition of plantation.

Suggested readings

Dwivedi.A.P. 1993.Textbook of Silviculture. International Book Distributors.

Khanna,L.S.1989. Principles and Practice of Silviculture. Khanna Bandhu, 7 Tilak Marg, DehraDun

Kumar, B. and Nair, P.K.R. (eds). 2006. *Tropical Homegardens: A Time-Tested Example of Sustainable Agroforestry*. Volume 3 in the Book Series “Advances in Agroforestry”. Springer Science, the Netherlands

Chaturvedi, A.N and L.S. Khanna. 2011. *Forest Mensuration and Biometry* (5th edition). KhannaBandhu. Dehra Dun. 364 pp.

Husch, B., Beers, T.W. and Kershaw, J. J.A. 2002.*Forest Mensuration* (4th edition).John Wiley & Sons, Nature.456 pp.

Khanna, L.S. 1989. Principles and Practice of Silviculture. Khanna Bandhu, New Delhi, 473p.

Nair, P.K.R. 1993. *An Introduction to Agroforestry*. Kluwer Academic Publishers, Dordrecht, The Netherlands.

Pathak P.S. and Ram Newaj (eds.) 2003. *Agroforestry: Potentials and Opportunities*. Agrobios, Jodhpur.

Chundawat B S and S K Gautam. *Text Book of Agroforestry*, Oxford and IBH Publishing New Delhi.

Dwivedi A P . *Principles and Practices of Agroforestry*.

