TEACHING PLAN: Introduction to Forestry

<table>
<tr><td colspan="2">SCHOOL: (SOAS) SCHOOL OF AGRICULTURAL SCIENCES</td><td>ACADEMIC SESSION: 2023-24</td><td>FOR STUDENTS' BATCH: 2023-2027</td></tr>
<tr><td>1</td><td>Course No.</td><td colspan="2">AES-T-101</td></tr>
<tr><td>2</td><td>Course Title</td><td colspan="2">Introduction to Forestry</td></tr>
<tr><td>3</td><td>Credits</td><td colspan="2">1</td></tr>
<tr><td>4</td><td>Learning Hours</td><td colspan="2"><table><tr><td>Contact Hours</td><td>54</td></tr><tr><td>Assessment</td><td>20</td></tr><tr><td>Guided Study</td><td>26</td></tr><tr><td>Total hours</td><td>100</td></tr></table></td></tr>
<tr><td>5</td><td>Course Objective</td><td colspan="2">1. Educate about the importance of trees in agriculture, forest regeneration, forest mensuration, agro-forest; factors affecting standing trees in forest and plantations
2. Eucacate about salient features of Indian Forest Policies, forest management, forest resources and produce, forest cover in India and in different states, social life and environmental issues, etc.
3. Develop the understanding of methods used in forest regeneration, land recreation, nursery and forest management, silvicultural practices, collecting of non-timber forest products, etc.
4. Develop the skills in nursery preparation of forest trees, tending operations, forest mensuration, selection of trees in agro-forestry, etc.
5. Develop the ability to measure plant and tree growth, volume of felled and standing trees, age of trees, natural and artificial regeneration, basal cover of forests, etc.</td></tr>
<tr><td>6</td><td>Course Outcomes</td><td colspan="2">1. Students will understand recognize various harvesting, transportation, and processing systems used in the management of forest resources and production of forest products
2. Students will understand develop and evaluate management plans with multiple objectives and constraints
3. Students will learn how to develop and apply silvicultural prescriptions appropriate to management objectives
4. Students will understand analyze forest inventory information and project future forest, stand, and tree conditions
5. Student will understand nursery preparation of forest trees, tending operations, forest mensuration, selection of trees in agro-forestry, etc.</td></tr>
<tr><td>7</td><td colspan="3">Outline syllabus:</td></tr>
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7.01	Paper Code	Unit	Introduction	Page Numbers [1]	Lectures
7.02	AES-T-101	Unit I	Unit-1: Introduction – definitions of basic terms related to forestry, objectives of silviculture, forest classification Unit-2: Salient features of Indian Forest Policies. Forest regeneration Unit-3: Natural regeneration from seed and vegetative parts, coppicing, pollarding, root suckers Units-4: Artificial regeneration – objectives, choice between natural and artificial regeneration, essential preliminary considerations	3-26	1 to 4
7.03		Unit II	Unit-1: Crown classification. Tending operations – weeding, cleaning, thinning –mechanical, ordinary, crown and advance thinning Unit-2: Forest mensuration – objectives, diameter measurement, instruments used in diameter measurement Unit-3: Non instrumental methods of height measurement Unit-4: Shadow and single pole method	27-39	4 to 8
7.04		Unit III	Unit-1: Instrumental methods of height measurement Unit-2: Geometric and trigonometric principles, instruments used in height measurement Unit-3: Geometric and trigonometric principles, instruments used in tree stem form, form factor, form quotient, measurement of volume of felled and standing trees Unit-4: Geometric and trigonometric principles, instruments used in age determination of trees	40-52	8 to 11
			Unit-1: Agroforestry – definitions, importance, criteria of selection of trees in agroforestry Unit-2: Different agroforestry systems prevalent in the country Unit-3: Shifting cultivation, taungya, alley cropping, wind breaks and shelter belts, home gardens		

7.05		Unit IV	Unit-4: Cultivation practices of two important fast growing tree species of the region	53-85	11 to 14

8	Course Evaluation	
8.1	CA: 10%	
8.11	Attendance	25%
8.12	Homework	2 Assignments, 50%
8.13	Quizzes	2 Quizzes, 25%
8.14	Projects	
8.15	Presentation	
8.16	Any other	Practical examination-30%
8.2	MTE	10%
8.3	End-term examination: 50%	
9	Text Books & References	
9.1	Text book	1. Introduction to forestry by Mr. S.B Kale 2. Introduction to forestry by Dr A.S Chavan
9.2	References	1. Khanna,L.S.1989. Principles and Practice of Silviculture. Khanna Bandhu, 7 Tilak Marg, DehraDun 2. Chaturvedi, A.N and L.S. Khanna. 2011. Forest Mensuration and Biometry (5th edition). KhannaBandhu. Dehra Dun. 364 pp 3. Nair, P.K.R. 1993. An Introduction to Agroforestry. Kluwer Academic Publishers, Dordrecht, The Netherlands
9.3	Video references	1. https://youtu.be/Ji0G1pWzMz8 2. https://youtu.be/PEorr_XmeoQ 3. https://youtu.be/tALFvymvBgA 4. https://youtu.be/JBg-eAaSiSQ 5. https://youtu.be/KDE5IN7c6Ic 6. https://youtu.be/dnSgGL1KFH4 7. https://youtu.be/r1FRPte8PfE 8. https://youtu.be/Wm1rWY0j9yU

Mapping of Outcomes v. Topics

Outcome no. → Syllabus topic↓	1	2	3	4	5
Paper Code.Unit I (1)		✓	✓		
Paper Code. Unit I (2)	✓				
Paper Code. Unit I (3)					✓
Paper Code. Unit I (4)					✓
Paper Code.Unit II (1)		✓			✓
Paper Code. Unit II(2)	✓			✓	
Paper Code. Unit II(3)	✓			✓	
Paper Code. Unit II(4)				✓	
Paper Code.Unit III (1)		✓	✓	✓	
Paper Code. Unit III(2)			✓	✓	
Paper Code. Unit III(3)			✓	✓	
Paper Code. Unit III(4)			✓	✓	
Paper Code.Unit IV (1)			✓		✓
Paper Code. Unit IV(2)			✓		✓
Paper Code. Unit IV(3)			✓		✓
Paper Code. Unit IV(4)			✓		✓

Question Bank **Unit-I**

A) Chose the correct answer:

1). This is a process in which the branch of a plant is cut off in order to produce a flush of new shoots
   i) Pollarding
   ii) Looping
   iii) Prunning
   iv)Thinning

2). Government of India has enacted the Forest Conservation Act
   i) 1980
   ii) 1981
   iii) 1982
   iv) 1983

3). The second National Forest Policy was enunciated (decided) in
   i) 1952
   ii) 1961
   iii) 1966
   iv) 1967

4). When certain plants or seedling are cut from near ground level is known as
   i) Weeding
   ii) Looping
   iii) Cooping
   iv) Thinning

5). Total geographical area of India is
   i) 328.8m ha
   ii) 321.8m ha

iii) 326.9m ha
iv) 323.8m ha

B) Define the following term

1) Mixed forestry
2) Recreation Forestry
3) Stripe plantation
4) Farm forestry
5) Pure forest

C) Explain in brief

1) Explain what do understand by Silviculture and silvics
2) Classify the objectives of silviculture
3) What are the characteristics of montane forest?
4) Write down the features of evergreen and deciduous forest
5) Differentiate between forest policy and laws with examples

D) Descriptive question

1) Explain Forest, Forestry and its concept.
2) Explain the salient features of Indian forest policies
3) Discuss the cultivation practices of any one short rotation tree species of your region
4) Explained the objective of silviculture
5) Discuss in detailed the classification of forest on the basis of age

Unit-II

A) Chose the correct answer:

1). Forest composed of trees of two or more species intermingled in the same canopy
i) Mixed forest
ii) Pure forest
iii) Social forest
iv) Protected forest

2) Forests where the produce is utilized by neighboring society
i) Reserve forest
ii) Pure forest
iii) Social forest
iv) Community forest

3). Forest is an area with complete protection
i) Reserve forest
ii) Protected forest
iii) Social forest
iv) Village forest

4). Pure forests are composed almost entirely of one species, usually to the extent of not less than
i) 50%
ii) 60%
iii) 70%
iv) 75%

5). When forest regeneration is obtained from seed
i) High forest
ii) Coppice forest
iii) Natural forest
iv) Man made forest

A) Define the following terms:
a) Pollarding
b).Coppicing
c). Grafting
d). Root Suckers
e). Crown

C) Explain in brief:

1. Describe forest regeneration with examples
2. Explain the factors affecting the choice between natural and artificial regeneration.
3. Differentiate between coppice and pollarding
4. Explain dominant trees with suitable example
5. Explain crown classification in trees

D) Explained in details:

1. Explain the different methods of natural regeneration
2. Discuss the methods used in artificial regeneration
3. Explain grafting and budding with suitable diagram
4. Summarize the essential preliminary consideration of forest regeneration
5. Discuss the site preparation for regeneration of forest

Unit-III

A) Chose the correct answer:

1). Weeds may be controlled by how many methods
   i) 3 Method
   ii) 4 Method
   iii) 5 Method
   iv) 6 Method

2). Cleaning is carried out in a crop which has not crossed
   i) Sapling stage
   ii) Seedling Stage
   iii) Germination stage
   iv) Rooting Stage

3). Thinning is defined as a felling made in an
   i) Immature Stand
   ii) Mature stand
   iii) Sapling stage
   iv) Germination stage

4). Thinning applied in young crops or young plantations before the crown differentiation
   i) Mechanical Thinning
   ii) Ordinary Thinning
   iii) Free Thinning
   iv) Crown Thinning

5). which thinning method is more flexible method than ordinary thinning
   i) Crown thinning
   ii) Extremely Heavy Thinning
   iii) Free Thinning
   iv) Very Heavy Thinning

B) Define the following terms:

a). Weeding
b). Cleaning
c). Thinning
d). Pruning
e). Weeding

C) Explained in brief:

1. Classify the different methods practiced to control weed
2. Describe mechanical thinning
3. Illustrate the single pole method with proper diagram
4. Explain the tending operations used in plantation forestry
5. Discuss the method used to determine the age of the tree

D) Explained in detail:

1. Define weeds. What are characteristics of weeds
2. Describe forest mensuration and its importance in forestry
3. Differentiate between geometric and trigonometric principles
4. Illustrate the Instrumental methods of height measurement
5. Explain the methods for measuring the volume of felled and standing trees

Unit-IV

A) Chose the correct answer:

1). The common name of Acacia catechuis
   i) Khair
   ii) Babhul
   iii) Neem
   iv) Rose Wood
2). The common name of Aegle marmelos
   i) Bel
   ii) Kala sires
   iii) Arjun
   iv) Jack fruit
3). The common name of Ziziphus jujuba
   i) Ber
   ii) Mahua
   iii) Amla
   iv) Kadam
4). The term taungya is derived from which word
   i) Mexico
   ii) Burma
   iii) Russia
   iv) Indonesia
5). common name of Mangifera indica
   i) Imli
   ii) Jamun
   iii) Mulberry
   iv) Mango

B) Define the following terms:

a). Agro forestry
b). Shifting cultivation
c). Shelter belt
d). Wind break
e). Alley cropping

C) Explained in brief:

1. Explain Agroforestry and its importance in sustainable agriculture
2. Define taungya cultivation and also classify its types
3. Explain the concept of alley cropping with diagram
4. Describe Homegarden practices in south India with proper layout.
5. Describe the classification of agroforestry according to Nair (1987)

D) Explained in detail:

1. What is the method of age determination of trees?
2. Explain the importance of Agroforestry.
3. Explain shifting cultivation with is different types
4. Differentiate between wind break and shelterbelt with well labelled diagrams
5. Explain whether shifting cultivation is boon or bane to forestry in present scenario.
6. Discuss the cultivation practices adopted for growing short rotation trees in Rajasthan