



**List of Courses Focus on Employability/ Entrepreneurship/  
Skill Development**

**Department : Rural Technology and Social Development**

**Programme Name : B.Sc. Rural Technology**

**Academic Year : 2019-20**

**List of Courses Focus on Employability/ Entrepreneurship/Skill Development**

Sr. No.	Course Code	Name of the Course
1.	NR/RT/C-101L	Organic Manure Production Techniques
2.	NR /RT/C-101P	Practical based on theory
3.	NR /RT/C-102L	Elementary Biology
4.	NR /RT/C-P-102P	Practicals based on theory
5.	NR /RT/GE-101/LS	Soil and Fertilizers
6.	NR /RT/GE-P-101/LS	Practicals based on theory
7.	NR /RT/C-203	Microbial Technology
8.	NR /RT/CP-203	Practicals based on theory
9.	NR /RT/C-204	Dairy Management and Products
10.	NR /RT/CP-204	Practicals based on theory
11.	NR /RT/GE-202/LS	Plant Propagation and Nursery Management
12.	NR /RT/GE-P-202/LS	Practicals based on theory
13.	NR/RT/C-301L	Sericulture
14.	NR /RT/C-301P	Practicals based on theory
15.	NR /RT/C-302L	Mushroom Production Techniques
16.	NR /RT/C-P-302P	Practicals based on theory
17.	NR /RT/GE-301/LS	Aquaculture
18.	NR /RT/GE-P-301/LS	Practicals based on theory
19.	NR /RT/SEC-1- 101P	Horticulture and Landscaping
20.	NR/RT/C-401L	Rural Social Structure and Planning
21.	NR /RT/C-401P	Practicals based on theory
22.	NR /RT/C-402L	Poultry Production Techniques
23.	NR /RT/C-P-402P	Practicals based on theory
24.	NR /RT/SEC-2-401P	Herbal Production Techniques
25.	NR/RT/C-501L	Land, Surveying, Leveling and Drawing
26.	NR /RT/C-501P	Practicals based on theory
27.	NR /RT/C-502L	Building Construction Material and Rural Infrastructure



28.	NR /RT/C-P-502P	Practicals based on theory
29.	NS/RT/DSE-1-501L	A: B: Rural Entrepreneurship and Management
30.	NS/RT/DSE-1-501P	Practicals based on theory
31.	NS/RT/DSE-2-502L	A: Natural Product Management B: Agricultural Equipments and Crop Production
32.	NS/RT/DSE-2-502P	Practicals based on theory
33.		



## Scheme and Syllabus

### School of Sciences: Natural Resources, Department of Rural Technology

#### B.Sc. Hon's (Syllabus Scheme) 2019-20

Semester	Course Opted	Course Code	Name of the course	Credit	Hour / week
I	Core-1	NR/RT/C-101L	Organic Manure Production Techniques	4	4
	Core -1 Practical	NR /RT/C-101P	Practicals based on theory	2	4
	Core -2	NR /RT/C-102L	Elementary Biology	4	4
	Core -2 Practical	NR /RT/C-P-102P	Practicals based on theory	2	4
	Generic Elective -1 (GE- 1A)	NR /RT/GE-101/LS	Soil and Fertilizers	4	4
	Generic Elective - Practical	NR /RT/GE-P-101/LS	Practicals based on theory	2	4
	Ability Enhancement Compulsory Course (AECC)	NR /RT/AE-101/EC	English Communication / MIL (Hindi Communication)	4*	4
	ECA		ECA-Extra-curricular activity/ Tour, Field visit/ Industrial training/ NSS/ Swachhhta/ Vocational Training/ Sports/ others	2	(2)
		TOTAL	24	28	
II	Core-3	NR /RT/C-203	Microbial Technology	4	4
	Core -3 Practical	NR /RT/CP-203	Practicals based on theory	2	4
	Core -4	NR /RT/C-204	Dairy Management and Products	4	4
	Core -4 Practical	NR /RT/CP-204	Practicals based on theory	2	4
	Generic Elective -2 (GE-IB)	NR /RT/GE-202/LS	Plant Propagation and Nursery Management	4	4
	Generic Elective - Practical	NR /RT/GE-P-202/LS	Practicals based on theory	2	4
	Ability Enhancement Compulsory Course (AECC)	NR /RT/AE-201/ES	Environmental Science	4*	4
	ECA		ECA-Extracurricular activity/ Tour, Field visit/ Industrial training/ NSS/ Swachhhta / vocational Training/ Sports/ others	2	(2)
		TOTAL	24	28	
	SUMMER Internship: 15 days		Swayam Swachhhta / NSS / Industrial/ others	2	100



Semester	Course Opted	Course Code	Name of the course	Credit	Hour / week
III	Core-5	NR/RT/C-301L	Sericulture	4	4
	Core -5 Practical	NR /RT/C-301P	Practicals based on theory	2	4
	Core -6	NR /RT/C-302L	Mushroom Production Techniques	4	4
	Core -6 Practical	NR /RT/C-P-302P	Practicals based on theory	2	4
	Core - 7	NR /RT/GE-301/LS	Aquaculture	4	4
	Core – 7 Practical	NR /RT/GE-P-301/LS	Practicals based on theory	2	4
	Generic Elective -3 (GEII-A)	NR /RT/GE-II A-301/EC	Integrated Pest Management	4	4
	Generic Elective - Practical	NR/RT/GE-301L	Practicals based on theory	2	4
	Skill Enhancement Course (SEC - 1)	NR /RT/SEC-1- 101P	Horticulture and Landscaping	4*	2 (4)
		TOTAL	28	34	
IV	Core-8	NR/RT/C-401L	Rural Social Structure and Planning	4	4
	Core -8 Practical	NR /RT/C-401P	Practicals based on theory	2	4
	Core -9	NR /RT/C-402L	Poultry Production Techniques	4	4
	Core -9 Practical	NR /RT/C-P-402P	Practicals based on theory	2	4
	Core - 10	NR /RT/GE-401/LS	Plant Morphology and Reproduction	4	4
	Core -10 Practical	NR /RT/GE-P-401/LS	Practicals based on theory	2	4
	Generic Elective -4 (GEII-B)	NR /RT/GE-II B-401/EC	Economic Botany	4	4
	Generic Elective - Practical	NR/RT/GE-401L	Practicals based on theory	4	4
	Skill Enhancement Course (SEC -2)	NR /RT/SEC-2-401P	Herbal Production Techniques	4*	2 (4)
		TOTAL	28	34	
SUMMER Internship: 15 days			Swayam/ Swachchhta / NSS / Industrial/ others	2	100



Department of Rural Technology & Social Development  
Guru Ghasidas Vishwavidyalaya, Koni-Bilaspur (CG)  
Semester-wise syllabus for UG Course 2019-20

SYLLABUS as per CBCS B.Sc. I SEMESTER		
Course Title: <b>ORGANIC MANURE PRODUCTION TECHNIQUES</b>		
Course Code: NR/RT/C-101L	Credit: 04	Marks: 100

**General Objective-** Provide Knowledge about organic manures, their types and production process.

**Specific Objective-** To Develop awareness regarding the harmful effect of chemical fertilizers and learned the production methods of organic manures.

**Outcome-** It is Useful in the development of skill regulating production and sale of organic manure. A skill based course make student's self-dependent.

**Organic manure-** Types of manures, methods for preparation of manures, farm yard manure, vermicompost, chemical composition of manures, precaution needed for compost preparation.

**Composting Methods-** Indore method, trench method, heap method, strip method, vegetable wood box method, analysis of quality of compost and its chemical composition.

**Nadep compost-** Preparation of Nadep compost, construction and design of nadep compost tank, traditional design and low cost compost pit, chemical composition of nadep compost.

**Organic Farming-** Introduction, concept, principle and importance of organic farming, green manuring, recycling of organic residues, application of manures.

**Reference Books:**

- Dr. N. L. Sharma & Dr. T. B. Singh- Mrida Vigyan Ayum Khad Urvark-
- S.S. Reddy- Principles of Agronomy
- Joseph C. Gilman- A manual of soil fungi-
- Dilip Kumar Das- Introductory Soil Science-
- Dr. N. L. Sharma & Dr. T. B. Singh- Mrida Vigyan Ayum Khad Urvark-
- S.S. Reddy- Principles of Agronomy
- A manual of soil fungi- Joseph C. Gilman

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- Dr. N. L. Sharma & Dr. T. B. Singh- Mrida Vigyan Ayum Khad Urvark-
- S.S. Reddy- Principles of Agronomy
- A manual of soil fungi- Joseph C. Gilman
- Dushyant Malhotra- Jav Urvarak
- Arun K. Sharma- Jaivik Kheti
- Das- Manures and fertilizers
- Basak- Fertilizers A Text Book
- Gustafson- Handbook of fertilizers

Course Title: <b>Laboratory Course</b>		
Course Code NR/RT/C-P-101/P	Credit: 02	Marks: 100

1. Identification of various organic manures.
2. Preparation of nadep-compost
3. Preparation of FYM.
4. Preparation of vermicompost.
5. Demonstration of various types composting models.
6. Application of manures.



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SYLLABUS as per CBCS		
B.Sc. II SEMESTER		
Course Title: MICROBIAL TECHNOLOGY		
Course Code: NR/RT/C-203L	Credit:04	Marks:100

**General Objective-** To provide basic knowledge of prokaryotes and eukaryotes.

**Specific Objective-** Knowledge obtained about the microorganism and their usefulness and also their harmful effects.

**Outcome-** Students are able to make difference between useful and economically important microorganisms and their functioning. This skill based course make student's self-dependent.

History of microbiology, Scope of microbiology, Viruses- general characters, Bacteria- general characters, Staining – types of staining, Gram staining technique, Economic importance of bacteria.

Mycoplasma- general characters. Actinomycetes – General characters, Cyanobacteria- general characters, Structure of heterocyst.

Introduction to fermentation technology- Definition of fermentation, fermenter configuration, general aspects of enzymes production, Production of Streptomycin, Citric acid, Ethyl alcohol and vitamin B<sub>12</sub> by microbial fermentation.

Yeast and its uses, Uses of yeast and Yeast products, Microbiology of milk, production of yoghurt, butter milk, chees, spoilage of food and techniques of food preservation.

Organic matter decomposition: composition of litter, microorganisms associated with organic matter decomposition, Organic compost, Factors affecting the composting- microorganisms.



general aspects of enzymes production, Production of Streptomycin, Citric acid, Ethyl alcohol and vitamin B<sub>12</sub> by microbial fermentation.

Yeast and its uses, Uses of yeast and Yeast products, Microbiology of milk, production of yoghurt, butter milk, chees, spoilage of food and techniques of food preservation.

Organic matter decomposition: composition of litter, microorganisms associated with organic matter decomposition, Organic compost, Factors affecting the composting- microorganisms.

**Reference Books:**

1. A text book of microbiology- R.C. Dubey and D.K. Maheshwari
2. Industrial Microbiology- A.H. Patel
3. Microbiology Fundamentals and Application- S.S. Purohit
4. General Microbiology- Powar and Daghinawala
5. Microbiology A System Approach- M.K. Cowan
6. Microbiology- L.M. Prescott

Course Title: Laboratory Course		
Course Code: NR/RT/C-203P	Credit:02	Marks:100

**Laboratory course-**

1. Study of basic instruments used in microbial techniques- Laminar air flow, oven, Incubator, Autoclave.
2. Gram staining technique for the identification of Gram +ve and Gram -ve bacteria.
3. Identification of Nostoc, Anabaena, Rhizopus, Yeast
4. Detection of adulteration in food items.
5. Study of various food preservative methods.

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Department of Rural Technology & Social Development  
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Semester-wise syllabus for UG Course 2019-20

<b>Course Title: DAIRY MANAGEMENT AND PRODUCTS</b>		
<b>Course Code: NR/RT/C-204L</b>	<b>Credit: 4</b>	<b>Marks: 100</b>

**General Objective** - The animals which are important in milk production (their food-fodder, Disease, Vaccination and product management).

**Specific Objective**- To Provide skill for the establishment of Dairy.

**Outcome**- This is skill based course and it will make student's self-dependent.

Introduction of important breeds of cows, buffaloes and goats, Government schemes / programs related to Dairy Industry.

Dairy farm management: Location of different farm buildings, Design and structure of sheds/shelters materials used for shed/shelters, essential appliances and hygiene, types of barns, housing systems.

General caring practices: Caring of goats, disbudding and dehorning, castration, exercise, hoof trimming, care of bucks. Care of dry and milch cows and maintenance of different dairy cattle registers.

Fodder: Classification, hay preparation, types, qualities, principles and calculation of ration. Animal Breeding Methods: Mating seasons, inbreeding and out breeding, their advantages and disadvantages, Artificial Insemination- its methods, importance, limitations.

Animal Diseases: Foot and mouth disease, Anthrax, Black Quarter, Rinderpest, Mastitis and Haemorrhagic septicemia -their diagnosis, treatment, precautions, vaccination schedule. Health management in goats

Dairy Products: Processing of milk, pasteurization of milk, method of preparation of butter, cheese, khoa, paneer, yoghurt, cream, and shrikhand.



... paneer, yogurt, cream, and shrikhand.

**Reference Books:**

- Amlendu Chakerbarti Handbook of Animal Husbandary"
- Jagdish Prasad: Poultry Production and Management"
- R.A. Singh: Poultry production"
- Jagdish Prasad: Principle and practice of Dairy Farm Management"
- B. Panda & B.R. Reddy: Feeding of poultry
- Eiri Board of Consultant & Engineers: Hand Book of Dairy Farming
- D. Ramaswamy :Dairy Technology Hand Book
- P.N. Bhatt and B.U. Khan: Goat Production

<b>Course Title: Laboratory Course</b>		
<b>Course Code: NR/RT/C-P-204P</b>	<b>Credit:02</b>	<b>Marks:100</b>

1. Visit to cow, buffalo, and goat farms and report preparation.
2. Study of system of housing for cattle and goats.
3. Visit to dairy plant and report submission.
4. Calculation of ration for cow, buffalo, and goat.
5. Preparation of various dairy products paneer, shrikhand, khoa etc.
6. Various adulterations and their tests in milk.

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**Semester-wise syllabus for UG Course 2019-20**

<b>Course Title: PLANT PROPAGATION AND NURSERY MANAGEMENT</b>		
<b>Course Code: NR/RT/GE-202/LS</b>	<b>Credit: 04</b>	<b>Marks:100</b>

**General Objective** - To study the propagation techniques of ornamental plants and their management.

**Specific Objective**- To provide skill on propagation techniques among students. To calculate the recommended dose of pesticide and fertilizers in orchard. To enhance the knowledge about field Management, nutrients, soil and water management.

**Outcome**- Student will start propagation of different plants to sellout. This course will promote entrepreneurship.

Concept of Nursery, Importance of nursery, Types of nursery system, Physical and financial resources for nursery, Capital components of nursery, Nursery expenditure, Cost and profit analysis.

Plant propagation material, integrated nutrient management, irrigation system, Plant propagation method- Sexual and Asexual propagation, Vegetative propagation- Budding, Layering and Grafting, Micro-propagation and hardening. Packing and transport of nursery plants.

Plant propagation structures in plant nursery-Quonset, Gutter connected, Glass House, plastic film Green House, Rigid Panel Greenhouses and Greenhouse with Double-Layer Covering.

Plantation techniques: Site selection, preparation and management, soil analysis, species selection, pit formation, distance between plant to plant and row to row, pit filling.

Planting time and planting method- entire plant planting and stump planting, clonal plantation, irrigation, management of planted plant, pre and post activity in plantation.



**Reference Books:**

Plantation Forestry : R.K. Luna  
Nursery Technology: S.S. Negi  
Plant Propagation and Nursery Husbandry: J.S. Yadav  
Introductory Horticulture: E.P. Christopher

Course Title: Laboratory Course		
Course Code: NR/RT/GE-P-202/LS	Credit:02	Marks:100

- 1.Preparation of various types of soil mixture for nursery bags.
- 2.Mass propagation of plants.
- 3.Propagation of plants through underground part, aerial part and through seeds.
- 4.Propagation of plant through cutting, grafting and budding.
- 5.Establishment of nursery stock of ornamental plants.

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Semester-wise syllabus for UG Course 2019-20

B.Sc. III SEMESTER		
Course Code: Core 5	Credit:04	Marks: 100
Course Title: SERICULTURE		

**General Objective:** To learn the scientific method of rearing and cultivating of silkworm, there and management of host plants.

**Specific Objective:** Students get to learn about the quality of various things seed cocoon, commercial cocoon and silk fiber so that can get maximum return when actually practiced. They get knowledge of diseases and pests of host plant of silk worm.

**Outcomes:** This course gives employment and job opportunities in the public, private and government sector. Students get to learn about the various skills that are necessary for self employment in this field.

**Introduction to Sericulture:** Definition, history and importance of sericulture, sericulture industry in India, prospects and problems, Government schemes / programs related to sericulture.

**Biology of silk moth:** Study of mulberry and non-mulberry silk worms- Tasar, Eri and Munga including classification, geographical distribution, hosts plants and silk characteristics produced, anatomy of mulberry silk worm- Digestive system including mouth parts.

**Reproductive system, life cycle** including moulting and metamorphosis, silk glands, spinning of silk threads, factors influencing silk worm growth and silk production, diseases and pests of mulberry silk worm.

**Host plant cultivation:** Types of host plants for sericulture and their propagation, effects of agro-climatic conditions on the growth of host plants with special reference to mulberry, mulberry cultivation and its management, diseases, pests & predators of mulberry plant.

**Rearing techniques:** Ideal rearing house and its types, advantages and disadvantages, various rearing appliances, Young age (chawki rearing) and late age rearing, mountages and mounting, harvesting of cocoons.



B.Sc. III SEMESTER		
Course Code: Core- 5 Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

1. Study of host plants of silk worms.
2. Plantation techniques (pit and row) of host plants.
3. Study of propagation techniques of host plants.
4. Study of morphological characters of silk worm.
5. Identification of pests and predators of silk worm.
6. Dissection of alimentary canal and silk gland and study of their various parts.
7. Visit to nearest silk worm rearing centers.
8. Visit to rearing centers to observe the silk worm diseases and collection of diseased worms.
9. Comparative study of good and defective cocoons.

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Semester-wise syllabus for UG Course 2019-20

**Reference Books:**

- Sericulture introduction - Ganga, G.
- Seri Manual - FAO Manual
- Appropriate Sericulture - Jolly, M.S.
- Sericulture in India- Vol. I to IV, H.O. Agrawal and M.K. Seth.
- An introduction to Sericulture -G.J. Sulochana
- Principle of temperate Sericulture - Dr. A.S. Kamal, Kamayani Publisher
- Silk reeling and testing manual- Youngwoolee (Daya Pub. House).

B.Sc. III SEMESTER		
Course Code: Core - 6	Credit:04	Marks: 100
Course Title: MUSHROOM PRODUCTION TECHNIQUES		

**General Objective** -To study the mushroom production techniques and their management

**Specific Objective**- Identification of edible and non-edible mushroom. To disseminate the knowledge about mushroom production technology. To build up the efficiency of mushroom production and management among the students. Create the marketing techniques among the students

**Outcome** - Students will start the mushroom production. Students will start the managerial activities on this field. It is skill based course and it will make student's self-dependent.

**Introduction**- Distribution, History and scope of Mushrooms, Characteristic features of Basidiomycotina fungi.

Identification of commonly grown mushroom species, Edible mushroom and their characteristics, Nutritional value of Mushrooms, Features of poisonous mushrooms, Medicinal mushrooms and their properties.

**Spawn production technique**- Equipments, mother culture preparation technique and their management.

**Production Techniques** of Oyster Mushroom, Paddy Straw Mushroom, White Button Mushroom and White Milky Mushroom.



Identification of commonly grown mushroom species, Edible mushroom and their characteristics, Nutritional value of Mushrooms, Features of poisonous mushrooms, Medicinal mushrooms and their properties.

Spawn production technique- Equipments, mother culture preparation technique and their management.

Production Techniques of Oyster Mushroom, Paddy Straw Mushroom, White Button Mushroom and White Milkey Mushroom.

Post-harvest handling of mushrooms, Problems related to mushroom production. Management of pests and diseases.

B.Sc. III SEMESTER		
Course Code: Core- 6 Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

1. Identification of different mushroom species.
2. Equipment's used in mushroom production.
3. Culture preparation and Spawn preparation.
4. Different types of mushroom production.
5. Different types of Mushroom bed preparation.
6. Mushroom hut management.
7. Study of different types of pests and diseases of mushroom.

**Reference Books:**

The Mushroom Identifier- David Pegler & B. Sproner  
Mushroom Cultivation- B.Tripathi & H.P.Shukla  
Mushroom Growing- S.C.Day  
A handbook of Mushroom- Neeta Bhale

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B.Sc. III SEMESTER		
Course Code: Core- 7	Credit:04	Marks: 100
Course Title: AQUACULTURE		

**General Objective** -To study the Fish production techniques and their management.

**Specific Objective**- To identify the deferent types of fish and their management.

**Outcome** – Student can establish entrepreneurship in this field.

Ichthyology and its scope, types of carp fishes and their characteristic features, common major and minor carps found in Chhattisgarh, larvivorous fishes, ornamental fishes.

Exoskeleton: scales, coloration, Lateral line system, Food, feeding behavior and digestion in fish, respiratory organs: aquatic and air breathing, swim bladder, breeding of fish, fish seed resources and their transportation; Common disease of fish and their cure.

Chemical composition of fish; economic value of fish; fish preservation and processing; preparation and maintenance of aquarium, planktons and their importance.

Fisheries and its various classification: Overview of Inland, Estuarine and Marine fisheries; Fish culture in ponds and pond management; Composite fish farming, cage culture and use of sewage for fish culture; Integrated fish farming; fishing crafts and gears; Government schemes / programs related to fish culture.

Prawn culture and processing; Pearl culture: technical and economic aspects.

B.Sc. III SEMESTER		
Course Code: Core- 7 Practical	Credit: 02	Marks: 100
Course Title: Laboratory Course		



respiratory organs: aquatic and air breathing, swim bladder, breeding of fish, fish seed resources and their transportation; Common disease of fish and their cure.

Chemical composition of fish; economic value of fish; fish preservation and processing; preparation and maintenance of aquarium, planktons and their importance.

Fisheries and its various classification: Overview of Inland, Estuarine and Marine fisheries; Fish culture in ponds and pond management; Composite fish farming, cage culture and use of sewage for fish culture; Integrated fish farming; fishing crafts and gears; Government schemes / programs related to fish culture.

Prawn culture and processing; Pearl culture: technical and economic aspects.

B.Sc. III SEMESTER		
Course Code: Core- 7 Practical	Credit: 02	Marks: 100
Course Title: Laboratory Course		

1. Identification and morphological studies of different fish types.
2. Study and mounting of fish scales.
3. Identification of diseased fishes.
4. Morphological study of cultivable crustaceans and Pearl oysters.
5. Studies of fishing gears/ crafts.
6. Visit to fish pond/ reservoir/ fish processing unit and report writing

B.Sc. III SEMESTER		
Course Code: SEC-1	Credit:04	Marks: 100
Course Title: HORTICULTURE AND LANDSCAPING		

**General Objective:** To develop the knowledge about horticulture plant and its importance.

**Specific Objective:** To motivate the students for adopting horticulture for dissemination of knowledge among the farmers.

**Outcomes:** Adopting horticulture as entrepreneurship and create employability.

**Horticulture:** Definition, concept, economic importance and classification of horticultural crops, area and production, exports and imports, fruit and vegetable zones of India, Government schemes / programs related to horticulture.

**Establishment of orchard:** principles, planning, layout and digging of pits for fruit plants, planting systems, training and pruning of orchard trees, fertilizer and irrigation management of orchards, tools and implements, Production and practices of major fruit crops-Amla, Jack Fruit, Ber, Guava and Mango.

**Fundamental of Floriculture:** Scope and importance of floriculture in India, Importance and production technology of cut flowers and loose flowers. Production techniques of ornamental plants like rose, marigold, chrysanthemum, gladiolus, jasmine, dahlia, tuberosa and gerbera.

**Landscaping:** Principles and components, landscape designs, Styles of garden: formal, informal and free style gardens; special types of gardens. Urban landscaping, bio-aesthetic planning, eco-tourism, theme parks, indoor gardening.

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Plant component for landscaping: Lawns-Establishment and maintenance, Plants- herbs, annuals, hedges, climbers and creepers, cacti and succulents, flower borders and beds, ground covers, carpet beds, bamboo groves.

B.Sc. III SEMESTER		
Course Code: Core- DSE-1 Practical	Credit: 02	Marks: 100
Course Title: Laboratory Course		

1. Identification of equipments / machineries required for gardening and landscaping.
2. Preparation of Garden
3. Propagation and maintenance of annuals and perennials.
4. Training and Pruning of plants
5. Cutting of scion, budding and grafting practice in different plant.
6. Identification of different weeds.
7. Culture of Bonsai, Terrarium culture.

**Reference Books:**

Commercial Floriculture - V.H. Ries and A. Lasrice  
Floriculture and Land Scaping - Desh Raj  
Cultivation of Minor Fruit - B.C.Das and S.N.Das  
Plant Propagation and Nursery Husbandary - J.S.Yadav  
Fruit Production- K. N. Dubey  
Modern Oleri and Floriculture - G.S.Sainey

B.Sc. IV SEMESTER		
Course Code: Core-8	Credit:04	Marks: 100
Course Title: RURAL SOCIAL STRUCTURE AND PLANNING		

**General Objective:** To develop the knowledge about rural social structure and its benefits.

**Specific Objective:** It creates the knowledge and understanding in student about culture, norms and living patterns of society.

**Outcomes:** It helps the student during their village jobs.

Basic concept and principles of rural sociology and its application in day to day life, social institutions, social stratification, social process, culture and personality, groups and community, social relations and social organizations in rural areas.

Rural settlement: types of settlement pattern. Rural social structure- family, marriage, religion, caste system etc.

Panchayati Raj system, Rural credit and banking- Nationalize bank, Cooperative bank, Non-institutional credit agencies, their types and working.

Historical review of Pre-independence development programme - Shantiniketan, Gandhian concept, Nilokheri project and Gurgaon project.

Post independence development programmes - CD, CADP, IRDP, RLEGP, TRYSEM, DWCRA, CAPART, MGNREGA, WDP, NRLM, BRGF. Rural health care programme - NRHM, ASHA. Rural sanitation programmes.

B.Sc. III SEMESTER		
Course Code: Core- 8 Practical	Credit: 02	Marks: 100
Course Title: Laboratory Course		

1. To study the social stratification.

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2. Study of banking system.
3. To study the rural social and economical structure.
4. Preparation of visit report.

**Reference Book:**

1. Indias Developing Villages – G. R. Madan
2. Rural Development – G. R. Madan
3. Rural Sociology – A. R. Desai
4. Panchayati Raj institution – G. S. Bal
5. India 2011 (Section – Rural Development)

<b>B.Sc. IV SEMESTER</b>		
Course Code: Core-9	Credit:04	Marks: 100
<b>Course Title: POULTRY PRODUCTION TECHNIQUES</b>		

**General Objective** -To study the Poultry production techniques and their management.

**Specific Objective**- To identify the deferent types of layer chickens and their management.

**Outcome** – Student can establish entrepreneurship in this field.

**Breeds and Nutrition:** Identification and characteristics of important Indian and Exotic poultry breeds. Poultry nutrition- nutrients and their function, energy sources, vegetable and animal protein sources.

**Poultry farm Management:** Farm system, provisions for good housing, commercial layer and broiler management, chick, grower and layer management.

**Breeding and products technology:** Principles of breeding, breeding system, development of layer and broiler varieties. Assessment of egg quality, nutritive value of eggs, grading of eggs, processing and preservation of poultry products, egg and meat products.

**Poultry health management:** Symptoms, treatment/control and vaccination strategies of- Viral disease (New castle disease, fowl pox, avian influenza, polyneuritis), Bacterial disease (Pullorum, fowl typhoid, fowl cholera, chronic respiratory disease), Parasitic disease (Coccidiosis) and Fungal disease (mycotic pneumonia).

**Other poultry species and marketing strategies:** elementary knowledge of other poultry species- duck, quail, turkey, emu, geese and pigeon. Egg and meat marketing, distribution channel, exports.

**Other poultry species and marketing strategies:** elementary knowledge of other poultry species- duck, quail, turkey, emu, geese and pigeon. Egg and meat marketing, distribution channel, exports.

<b>B.Sc. III SEMESTER</b>		
Course Code: Core-9 Practical	Credit:02	Marks: 100
<b>Course: Practical based on theory</b>		

1. Identification and morphological study of poultry breeds.
2. Assessment of quality of egg.
3. Study of housing system for poultry.
4. Study of feed and feeding equipments.
5. Study of various types of poultry diseases and treatment.
6. Visit to poultry farms and report preparation.

**Reference Books:**

- Amlendu Chakerbarti Handbook of Animal Husbandary"  
Jagdish Prasad: Poultry Production and Management"  
R.A. Singh: Poultry production"  
B. Panda & B.R. Reddy: Feeding of poultry

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<b>B.Sc. IV SEMESTER</b>		
Course Code: SEC-2	Credit:04	Marks: 100
<b>Course Title: HERBAL PRODUCTION TECHNIQUES</b>		

**General Objective:** To know the technique of cultivation practices of plant which are commercially important.

**Specific Objective:** To find out the valuable plants and improve the production along with their protection technique.

**Outcomes:** It helps in entrepreneurship development those who have their own cultivation land and involved in traditional crop production.

**Herbal Medicine:** History, Scope, medicinal system based on Herbal products. Medicinal use of different plant parts.

**Ayurvedic dosage form** – Classification, Extraction- Kwatha, Pachana, Avaleha, Bhawwan, Patapka, Fermentation- Asava & Arista, Arka, Guggulu, Ghrita, Churna, Lepa, Vati and Gutikabhasma, Lauha.

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Appartus-Dolyantram, Svedaniyantram, Dhupyantram, Patanayantram, Adhaspatanyantram, Tirgakapatanyantram, Vidhyadharyantram, Putas, Mhaputa, Musha, Hamspakayantram.  
Utilisation and development of drugs from plants- Analgesic drugs, anti-inflammatory drugs, hypotensive drugs, antimalarial drugs, anti-cancer drugs, cardiovascular drugs, bronchodilatory drugs.  
Herbal Preparations- Triphala churna, sitopaladi churna, Preparation of Avleha-Chyawanprash, Preparation of Asawas- Drakshasava, Preparation of Tooth powder, Preparation of beauty products.

B.Sc. IV SEMESTER		
Course Code: SEC-2 Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

1. Study of equipments used in preparation of ayurvedic formulations.
2. Preparation of Triphala/Sitopaladi/Lawanbhaskar churna
3. Preparation of tooth powder.
4. Preparation of Hair oil/pain killer oil.
5. Preparation of herbal products.
6. Preparation of Awaleha.

**Reference Books:**

Professional Pharmacy: N.K. Jian  
Medicinal Plants: Coservation, Cultivation and Utilization Chopra, Khanna, Prasad, Malik, Bhutiani Daya Publication, NewDelhi  
Ayurvedic Pharmacology: C.K. Kokate, A. P. Purohit and S. B. Gokhale

B.Sc. V SEMESTER		
Course: Core -11	Credit:04	Marks: 100
Course Title: LAND, SURVEYING, LEVELING AND DRAWING		

**General Objective:** To Learn about the Land surveying methods and drawing.

**Specific Objective:** Students get to learn about basic concept of land survey drawing and

B.Sc. V SEMESTER		
Course: Core -11	Credit:04	Marks: 100
Course Title: LAND, SURVEYING, LEVELING AND DRAWING		

**General Objective:** To Learn about the Land surveying methods and drawing.

**Specific Objective:** Students get to learn about basic concept of land survey drawing and design..

**Outcomes:** Students get to know about the various constructions related skills that are necessary for self employment and job opportunity.

Concept of surveying for rural development, objectives, types, units of measurement, instruments used for surveying.

Chain surveying introduction, principle and purpose, accessories for chaining, methods, running survey lines, Types of ranging survey, Errors in chaining, Testing and adjustment of chain.

Plane table survey introduction, principle and purpose, various equipments used in plane table survey, Method of plane tabling, Errors in plane table survey and precautions to use.

Concept of contour, characteristics of contour, Methods of contouring, various contour map application, Concept of leveling, level surface, Differential Global Positioning System (DGPS) and Global Positioning System (GPS).

Introduction to various drawing techniques, instruments and accessories used for drawing, Sizes of drawing sheets and their layouts, Lettering techniques and printing.

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B.Sc. V SEMESTER		
Course Code: Core 11 Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

1. To study about the instruments used in chain survey.
2. To study about the conventional signs and symbol used in chain survey.
3. Calculation of area by using chain survey.
4. To study about the field book.
5. Calculation of area by using plane table survey by radiation method.
6. Numericals related to the error in measurement.
7. Chain survey for the measurement of the area.
8. Instrument related to the plane table survey (theodolite)

B.Sc. V SEMESTER		
Course: Core -12	Credit:04	Marks: 100
Course Title: BUILDING CONSTRUCTION MATERIAL AND RURAL INFRASTRUCTURE		

**General Objective:** To Learn about the construction process of building and other important infrastructure.

**Specific Objective:** Students get to learn about basic concept of construction engineering.

**Outcomes:** Students get to know about the various constructions related skills that are necessary for self employment and job opportunity.

Building construction- introduction and site selection, Foundation, choice of soil for foundation, anti-termite treatment for building foundation, causes of foundation failure, concept of green building.

Building construction materials, stone, lime, bricks, properties of bricks, manufacturing of bricks, sand, properties of good sand- components and specification.



bricks, sand, properties of good sand- components and specification.

Cement, Manufacturing of cement, types of cement, mortar, functions of mortar, Concrete, Reinforced cement concrete (RCC), Flooring material Concept of plastering.

Type of Rural Housing: Brief study about rural housing and design of RCC, pattern of bamboo house, mud house, wooden house, and other low cost housing structure. Govt. schemes for rural housing.

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Rural Road - Type of rural road, condition of rural roads, manufacturing process of rural road, Practices adopted for construction of rural roads.

**Reference Books:**

- Gurcharan Singh, Building Materials, Standard Publishers Distributors, Delhi.
- Rangwala S.C., Engineering Materials, Charotar Publishing House Pvt. Ltd., Adand.
- Mittal D.C., Engineering Materials
- S. Kulkarni G.J., Engineering Materials

B.Sc. V SEMESTER		
Course Code: Core 12 Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

**Course Title: Laboratory Course**

1. Study of Building materials.
2. Study of various types of bricks and cement.
3. Calculation techniques of bricks for building
4. Calculation techniques of bar for building.
5. Calculation techniques of cement and sand for building.
6. Visit to some under construction sites of urban and rural areas.
7. Geotagging of construction site.

B.Sc. V SEMESTER		
Course: DSE-I A	Credit:04	Marks: 100
Course Title: GOAT AND PIG PRODUCTION TECHNIQUES		

**General Objective:** To Learn about the different breeds of goats and pigs and understanding of their feeding management.

**Specific Objective:** Students get to learn about basic concept of construction engineering.

**Outcomes:** Students get to know about the various housing and health management of of different breed of goats and pigs. On completion of this course, the students will be able to establish self employment and job opportunity.

Breeds, Breeding and Feeding of goats: Characteristics of important Indian breeds of goat of different regions. Modern techniques in reproduction. Feed, forage, nutrition and rationing.

Housing and health management in goats: Sheds/shelters and their orientation, ventilation, height and roofing material, floor type and space, shelter surroundings, essential appliances and hygiene. Health management in goats.

General caring practices of goat: determination of age, identification, disbudding and dehorning, castration, exercise, hoof trimming, care of bucks, mating seasons, care of kids, does. Techniques of milking and its collection.

Breeds, Breeding and Feeding of pigs: Characteristics of important breeds of pigs. Breeding systems, feeding and rationing.



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Housing and health management in pigs: Housing strategies for different members in pig, wallows, essential appliances and hygiene. Marketing and transport of pigs. Pig disease (tuberculosis, mycoplasma pneumonia, Colibacillosis, Brucellosis, Swine fever, foot and mouth disease, swine pox, ascariasis).

**Reference Books:**

- Amlendu Chakerbarti Handbook of Animal Husbandary"  
Jagdish Prasad: Principle and practice of Dairy Farm Management"  
Eiri Board of Consultant & Engineers: Hand Book of Dairy Farming  
P.N. Bhatt, N.H. Mohan and Such Deo: Pig Production  
P.N. Bhatt and B.U. Khan: Goat Production

B.Sc. V SEMESTER		
Course Code: DSE-1 A Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

1. Identification of important breeds of goats and pigs.
2. Visit to goat /pig farms and report preparation.
3. Study of housing system for goats and pigs.
4. Calculation of ration for goat and pig.
5. Pathological conditions of diseases

B.Sc. V SEMESTER		
Course: DSE-1 B	Credit:04	Marks: 100
Course Title: RURAL ENTREPRENEURSHIP AND MANAGEMENT		

**General Objective:** To learn about entrepreneurship and qualities of an entrepreneur.

**Specific Objective:** To know how to start SSI/ cottage industries along with the various sources of financial support.

**Specific outcomes:** To promote entrepreneurship and least dependency upon government jobs.

**Skill based course** make student's self-dependent.

Entrepreneur definition, characters, function, types, issues and problems of entrepreneurs. Entrepreneurship- meaning, definition, environment for entrepreneurship, behaviour and theories.

Micro, small and medium enterprises (MSME), preparation of project report, characteristics and scope of MSME, classification of MSME, importance of small business in India.

Project Management of Small Business- characteristics, needs and Classification of a project, phases of project management, roles and responsibilities of project manager.

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Establishment procedure of Small Business: Identifying entrepreneurial opportunity, Preparation of Plan of Action, Location of Business, Arrangement of Resources, Legal formalities.

Government Policy towards Small Business, Industrial and commercial policy of Chhattisgarh. Institutional Support to Small Business: NSIC, SIDDCs, NABARD, KVIC, SISIS, SIDBI.

**Reference Books:**

- S.S. Kanka: Entrepreneurial Development  
Prasanna Chandra: Project Planning, Analysis, Selection, Implementation and Review Tata McGraw Hill.  
Vasantha Desai: Dynamics of Entrepreneurial Development  
C.B. Gupta & N.P. Sreenivasan: Entrepreneurial Development  
Dr. Anupam Tiwari: Grain Management: To Ensure Food Security, Marks Books, New Delhi  
Nirmal K. Gupta: Small Industry - Challenges and Perspectives

B.Sc. IV SEMESTER		
Course Code: DSE-1 B Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

1. Industrial visit and preparation of report.
2. Preparation of project proposal.
3. Behavioral study of entrepreneur.
4. To study the process of registration for MSME/ Udyog Aadhaar/Udyam/ Aakanksha.



B.Sc. V SEMESTER		
Course: DSE-2 A	Credit:04	Marks: 100
Course Title: NATURAL PRODUCT MANAGEMENT		

**General Objective:** On completion of this course, the students will be able to understand non timber forest products and their importance.

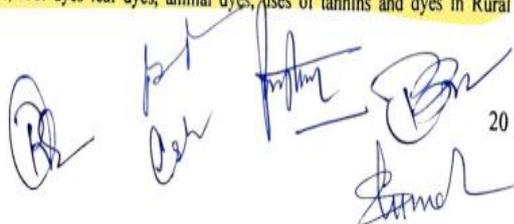
**Specific Objective:** On completion of this course, the students will be able to understand economic importance of non timber forest products and and their processing techniques.

**Specific outcomes:** Identify the common natural products of plant origin and its production and processing and will get ability to establish their own production unit.

Definition, contribution of natural products for National Economy, important non timber products of forest area, and their role in rural economy and livelihood,

Classification and use of grasses, bamboos and canes. Economic importance of grasses, bamboos and canes. Essential oils. Importance of oils and waxes in rural economy.

Tannes and it uses - Wood tannes, bark tannes, fruit tannes and leaf tannes, Dyes- wood, bark, flower and fruit dyes, root dyes leaf dyes, animal dyes, uses of tannins and dyes in Rural industries,





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Gums and Resins- true gumes, hard resins, oleo resins, utilizations of gums and resins, gum and resin tapping. Manufacturing of turpentine, katha, catch and charcoal.

Management of Natural Products- collection, storage, utilization pattern of non timber products and their marketing.

**Reference Books**

Non - Timber Forest Product - S. Negi.

Forest Non - Wood Resources - A.P. Dewadi.

Indian Forest Utilization Vol.- II, FRI Edition

B.Sc. V SEMESTER		
Course Code: DSE-2 A Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

1. Study of local Non timber forest products (NTFPs).
2. Preparation of dyes.
3. To study the source of Tannes, gum and resins.

B.Sc. V SEMESTER		
Course: DSE-2 B	Credit:04	Marks: 100
Course Title: AGRICULTURAL EQUIPMENTS AND CROP PRODUCTION		

**General Objective:** On completion of this course, the students will be able to obtain basic knowledge about agriculture equipments, implements and farm machinery for crop production and their management.

**Specific Objective:** On completion of this course, the students will be able to learn about cropping system and cropping pattern, Enhance their knowledge and skills related to package and practices of crop production.

**Specific outcomes:** Calculate the recommended dose of fertilizers and pesticides.

Equipments required for cultivation- Plough, Share, Cultivator, Hoe, harrow and tractor. Sowing equipment. Plant protection equipments. Crop harvesting and threshing implement.

Definition of Agronomy, classification of crops, cropping systems- mixed cropping, intensive cropping, crop rotation, mono-cropping, sole-cropping, alley cropping, contour cropping, jhum and shifting cultivation - intensity and crop diversification.

Major Cereal Crops Production Technique of - Paddy, Wheat, Maize, Barley, Sorghum.

Cultivation Technique of Groundnut, Pigeon pea, Green and Black Gram, Chickpea, Sunflower, Soybean, Mustard, Sugarcane and Cotton.

Water management, irrigation and drainage system, concepts of water use efficiency.



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Weeds- Definition, Identification, classification and spread of different weeds, integrated weed management (IWM).

**Reference Books:**

Principle of Agronomy – Om Prakash Ahalawat  
Handbook of Agriculture - ICAR publication  
Handbook of Agriculture -S.S. Singh

B.Sc. V SEMESTER		
Course Code: DSE-2 B Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

1. Identification of agricultural equipments.
2. Identification of weeds.
3. Identification of important crop varieties.
4. Visit to agricultural farms.
5. Calculation of recommended dosage of fertilizers and pesticides.

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B.Sc. VI SEMESTER		
Course: Core 13	Credit:04	Marks: 100
Course Title: INTRODUCTION TO REMOTE SENSING		

**General Objective:** On completion of this course, the students will be able to: obtain fundamental knowledge of remote sensing and gain basic experience in hands on application of remote sensing.

**Specific Objective:** On completion of this course, the students will be able to aware with the prospect and potential of remote sensing and its application in the field of rural development.

**Specific outcomes:** Understand the software of remote sensing and GIS application in the field of rural development. Students will get job opportunities.

Introduction & Definition of Remote Sensing, Kinds of Remote Sensing, History and development of Remote Sensing in world. Advantages of remote sensing. Real and Ideal Remote Sensing

Energy Sources, Electromagnetic Energy, Electromagnetic Spectrum & Radiation, Scattering, Absorption and Reflectance in Remote Sensing. Spectral reflectance response of different earth surface features.

History of Aerial Remote Sensing, type of Aerial photograph, Photographic scale, introduction to Photogrammetry, application of photogrammetry in vertical aerial photograph, difference between satellite image and aerial photograph, stereoscope and platform.

Platform, Kinds of platforms Introduction to Satellite, Polar orbiting, Geosynchronous and GPS Satellites, their functions and importance

Map, spatial elements in image, classification of maps, Map scale, Spatial referencing system

History of Aerial Remote Sensing, type of Aerial photograph, Photographic scale, introduction to Photogrammetry, application of photogrammetry in vertical aerial photograph, difference between satellite image and aerial photograph, stereoscope and platform.

Platform, Kinds of platforms Introduction to Satellite, Polar orbiting, Geosynchronous and GPS Satellites, their functions and importance

Map, spatial elements in image, classification of maps, Map scale, Spatial referencing system, map projection.

**Reference Books:**

F.F. Sabins : Remote Sensing – Principles & interpretation  
Dr. P. Nag, Dr. M. Kudrat : Digital Remote Sensing, Concept Publishing company 1998  
P.J. Curran : Principles of Remote Sensing, Longman.  
J.A. Richards : Digital Image Processing in Remote Sensing, Springer  
F.F. Sabins : Remote Sensing – Principles & interpretation  
Lillesand & Keifer : Remote Sensing & Image interpretation

B.Sc. VI SEMESTER		
Course Code: Core 13 Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

- 1.To study about toposheet and its component.
- 2.To study about the map and calculation of map scale
- 3.To study about different software related to remote sensing
- 4.Geometric correction.
- 5.To study about stereoscope and its function.
- 6.Image classification.

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<b>B.Sc. VI SEMESTER</b>		
Course: Core 14	Credit:04	Marks: 100
<b>Course Title: INTRODUCTION TO MEDICINAL PLANTS</b>		

**General Objective:** On completion of this course, the students will be able to identify medicinal plant and collection of botanical information. Understand cultivation technique of medicinal plants.

**Specific Objective:** On completion of this course, the students will be able to understand various processing of crude drugs.

**Specific outcomes:** Create documentation of medicinal knowledge and conservation. This course will provide skill based job opportunities.

Introduction to different parts of medicinal plants- Stem, Root, Leaf, Flowers, Fruits, Seeds, Woods,

Eargastic substance of plants, organized and unorganized drugs- Gums, Resins, Lattices. Sustainable conservation and development strategies of medicinal plant.

Cultivation Techniques of medicinal plants- Eco friendly farming, Organic farming, Nature farming, Ecological farming systems, Integrated intensive farming system, LEISA, Biodynamic agriculture.

Disease of medicinal plants- plant diseases, plant and pathogen relationship, disease development stages, nature and classification of plant diseases. Diseases of medicinal plant - *Withania* and *Rauwolfia*.

Collection and processing of crude drugs- Harvesting, Drying, Decoction, Garbling, Packing, Storage, Active constituents, Standardization of medicinal plants.

Assessment of herbal Medicine-Traditional medicine programme, Importance of plant derived

Disease of medicinal plants- plant diseases, plant and pathogen relationship, disease development stages, nature and classification of plant diseases. Diseases of medicinal plant - *Withania* and *Rauwolfia*.

Collection and processing of crude drugs- Harvesting, Drying, Decoction, Garbling, Packing, Storage, Active constituents, Standardization of medicinal plants.

Assessment of herbal Medicine-Traditional medicine programme, Importance of plant derived drugs, WHO guidelines for assessment of herbal drugs, objective for improvement, and its strategy.

**Reference Books:**

Pharmacognosy - C.K. Kokate, A.P. Purohit and S.S. Gokhale  
Medicinal Plant Cultivation- Purohit and Vyas  
Agro Techniques of Medicinal Plants- Ravindra Sharma

<b>B.Sc. VI SEMESTER</b>		
Course Code: Core 14 Practical	Credit:02	Marks: 100
<b>Course Title: Laboratory Course</b>		

1. Morphological study of available local medicinal plant.
2. Anatomical study of available local medicinal plants.
3. Processing Practices of collected medicinal plant products.
4. Study of Plant Diseases of medicinal plants.
5. Preparation of herbaria of locally available plants.

  
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B.Sc. VI SEMESTER		
Course: DSE-4B	Credit:04	Marks: 100
Course Title: ORGANIC FRAMING		

**General Objective:** On completion of this course, the students will be able to Understand the concepts of organic farming and disseminate the knowledge about organic farming among the farmers to overcome the threat of excess use of chemical fertilizer and pesticide.

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fertilizers.

Organic crop management through – integrated pest management (IPM), integrated disease management (IDM), integrated nutrient management (INM), integrated water management (IWM), integrated weed management (IWM).

Organic crop production practice in - Rice, Wheat, Pigeon pea Mango and Guava.

Organic farming Certification- Policies and incentive of organic production, Agencies and institution related to organic agriculture, procedures of certification for organic farming.

B.Sc. VI SEMESTER		
Course Code: DSE-4 B Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

1. To study the components of organic farming.
2. To study the production methods of organic manures.
3. To study the methods of application of organic manures.
4. To study the IPM/IDM/IMM and IWM for organic farming.
5. To study the certification process of organic farming.

B.Sc. VI SEMESTER		
Course: DSE-4C	Credit:04	Marks: 100
Course Title: INDIGENOUS ARTS AND CRAFTS		

**General Objective:** On completion of this course, the students will be able to Learn about various arts of our country and also historical background of traditional art of Chhattisgarh.

**Specific Objective:** On completion of this course, the students will be able to Learn about basic pattern and modern styles of Terracotta art, Bamboo art, Ranjwar bhitti art.

**Specific outcomes** Understand the importance of economic aspects of traditional arts and economic status of rural artisan. A Skill based course makes students self dependent.

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Terracotta art - Materials, quality of soils, traditional designs, processes and techniques.

Bamboo art- type of bamboo, materials, processes, techniques, equipments and applications.

Ranjwar Bhitti art- Materials, traditional designs, processes and techniques, innovations.

Wooden art- Materials, quality of wood, traditional designs, processes and techniques.

Innovation in Design and Processes- Mixing of modern art in all above art. Creativity development in traditional art, required improvement in raw materials and equipment.

Economy and marketing- Marketing problems related with rural art, present situation of rural artisans of Chhattisgarh state, role of different government and non-government organization in the development of rural artisans.

**Reference Books**  
Bamboo Research in India: Gaur R.C.  
Timber Bamboo: Soori S.K. and Chauhan R.S.  
Monograph on Bamboo: Tiwari D.N.

B.Sc. VI SEMESTER		
Course Code: DSE-4 C Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

1. Making of soil for Terracotta art.
2. Making of articles from bamboo.
3. Making of articles from wooden art.
4. Making of articles from ranjwar bhitti art
5. Making of soil for Terracotta art.
6. Training or workshop or exposure for Terracotta art and Bamboo art.



**Reference Books**

Bamboo Research in India: Gaur R.C.  
Timber Bamboo: Soori S.K. and Chauhan R.S.  
Monograph on Bamboo: Tiwari D.N.,

B.Sc. VI SEMESTER		
Course Code: DSE-4 C Practical	Credit:02	Marks: 100
Course Title: Laboratory Course		

1. Making of soil for Terracotta art.
2. Making of articles from bamboo.
3. Making of articles from wooden art.
4. Making of articles from rajwar bhitti art
5. Making of soil for Terracotta art.
6. Training or workshop or exposure for Terracotta art and Bamboo art.

B.Sc. VI SEMESTER		
Course: DSE-4 D	Credit:05	Marks: 100
Course Title: PROJECT WORK/DISSERTATION		

B.Sc. VI SEMESTER		
Course Code: DSE-4 D Practical	Credit:02	Marks: 100
Course Title: Presentation of Dissertation		

B.Sc. VI SEMESTER		
Course: DSE-4 D	Credit:05	Marks: 100
Course Title: PROJECT WORK/DISSERTATION		

B.Sc. VI SEMESTER		
Course Code: DSE-4 D Practical	Credit:02	Marks: 100
Course Title: Presentation of Dissertation		

**Overall outcomes**

The overall outcomes of the programme is to promote the entrepreneurship among the students to develop skills

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