Syllabus

B. Sc. (Rural Technology)

2023-2024 onwards

Under NEP-2020

DEPARTMENT OF RURAL TECHNOLOGY AND SOCIAL DEVELOPMENT

GURU GHASIDAS VISHWAVIDYALAYA

(A Central University)

Koni- Bilaspur 495009 Chhattisgarh

Department of Rural Technology & Social Development
Guru Ghasidas Vishwavidyalaya, Koni-Bilaspur (CG)
Semester-wise syllabus for 4 Years UG Program, Session 2023-2024 onwards under NEP-2020 (17 July 2023)
B. Sc. (Rural Technology)

Semester	Courses	Paper Code	Name of the paper	Level	L+P+T	Credits	Total Credits	Int. Marks	Ext. Marks	Total Marks
I	Major	RTUATC1	Emergence of Rural Technology	2	3+0+0	3	20	30	70	100
		RTUALC1	Lab-Emergence of Rural Technology		0+0+1	1		30	70	100
	Minor	RTUATG1	Horticulture and Landscaping	2	3+0+0	3		30	70	100
		RTUALG1	Lab-Horticulture and Landscaping		0+0+1	1		30	70	100
	Multi-disciplinary		Selection from Pool of Papers	1	3+0+0	3		30	70	100
	AEC		Language (Hindi/English)	1	2+0+0	2		30	70	100
	SEC	RTUATL1	Dairy Management and Products	1	2+0+0	2		30	70	100
		RTUALL1	Lab- Dairy Management and Products		0+0+1	1		30	70	100
	VAC1	RTUATV1	Historical Perspective of Indian Education	1	2+0+0	2		30	70	100
	VAC2		Environmental	1	2+0+0	2		30	70	100
							Total	**300**	**700**	**1000**
II	Major	RTUBTC1	Poultry Production Technology	2	3+0+0	3	20	30	70	100
		RTUBLC1	Lab- Poultry Production Technology		0+0+1	1		30	70	100
	Minor	RTUBTG1	Microbial Technology	2	3+0+0	3		30	70	100
		RTUBLG1	Lab- Microbial Technology		0+0+1	1		30	70	100
	Multidisciplinary		Selection from Pool of papers	1	3+0+0	3		30	70	100
	AEC		(Hindi/English)	1	2+0+0	2		30	70	100
	SEC	RTUBTL2	Herbal Production Technology	1	2+0+0	2		30	70	100
		RTUBLL1	Lab-Herbal Production Technology		0+0+1	1		30	70	100
	VAC 1		Selection from Pool of papers	1	2+0+0	2		30	70	100
	VAC 2		Selection from Pool of papers	1	2+0+0	2		30	70	100
							Total	**300**	**700**	**1000**

The student must complete the 4-credit vocational course/Internship during summer term to get UG certificate if he/she wish to exit the program after first 2 semester.

III	Major	RTUCTC1	Sericulture	3	3+0+0	3	20	30	70	100

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		RTUCLC1	Lab- Sericulture		0+0+1	1		30	70	100
	Major	RTUCTC2	Rural Energy Resources	3	3+0+0	3		30	70	100
		RTUCLC2	Lab- Rural Energy Resources		0+0+1	1		30	70	100
	Minor	RTUCTG1	Sericulture	3	3+0+0	3		30	70	100
		RTUCLG1	Lab- Sericulture		0+0+1	1		30	70	100
	Multi-disciplinary		Selection from Pool of papers	1	3+0+0	3		30	70	100
	AEC		(Hindi/English)	1	2+0+0	2		30	70	100
	SEC	RTUCTL1	Basics of Mushroom Production	1	2+0+0	2		30	70	100
		RTUCLL1	Lab- Basics of Mushroom Production		0+0+1	1		30	70	100
							Total	**300**	**700**	**1000**
IV	Major	RTUDTC1	Natural Product Management	3	3+0+0	3	20	30	70	100
		RTUDLC1	Lab- Natural Product Management		0+0+2	2		30	70	100
	Major	RTUDTC2	Goat and Pig Production Techniques	3	3+0+0	3		30	70	100
		RTUDLC2	Lab- Goat and Pig Production Techniques		0+0+2	2		30	70	100
	Major	RTUDTC3	Apiculture and Lac culture	3	3+0+0	3		30	70	100
		RTUDLC3	Lab- Apiculture and Lac culture		0+0+1	1		30	70	100
	Minor	RTUDTG1	Apiculture and Lac culture	3	3+0+0	3		30	70	100
		RTUDLG1	Lab- Apiculture and Lac culture		0+0+1	1		30	70	100
	AEC		(Hindi/English)	1	2+0+0	2		30	70	100
							Total	**270**	**630**	**900**
The student must complete the 4 credits vocational course/Internship either after first year or second year during summer term to get UG Diploma if he wishes to exit the program after 4 semesters.										
V	Major	RTUETC1	Soil and Nutrient Management	4	3+0+0	3	21	30	70	100
		RTUELC1	Lab- Soil and Nutrient Management		0+0+2	2		30	70	100
	Major	RTUETC2	Watershed Management	4	3+0+0	3		30	70	100
		RTUELC2	Lab- Watershed Management		0+0+2	2		30	70	100
	Major	RTUETC3	Organic Farming	4	3+0+0	3		30	70	100
		RTUELC3	Lab- Organic Farming		0+0+2	2		30	70	100
	Minor	RTUETG1	Organic Farming	4	2+0+0	2		30	70	100
		RTUELG1	Lab- Organic Farming		0+0+2	2		30	70	100
	Internship	RTUINT1	-	-		2		30	70	100
							Total	**270**	**630**	**900**
VI	Major	RTUFTC1	Land Surveying, Levelling and Drawing	4	3+0+0	3	19	30	70	100
		RTUFLC1	Lab- Land Surveying, Levelling and Drawing		0+0+2	2		30	70	100

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	Major	RTUFTC2	Rural Social Structure and Planning	4	3+0+0	3		30	70	100
		RTUFLC2	Lab- Rural Social Structure and Planning		0+0+2	2		30	70	100
	Major	RTUFTC3	Rural Health Care	4	3+0+0	3		30	70	100
		RTUFLC3	Lab- Rural Health Care		0+0+2	2		30	70	100
	Minor	RTUFTG1	Nursery Technology	4	2+0+0	2		30	70	100
		RTUFLG1	Lab- Nursery Technology		0+0+2	2		30	70	100
							Total	**270**	**630**	**900**
The students wish to exit after six semester upon securing 120 credits will be awarded UG degree in relevant subject/discipline										
After sixth semester, there will be two steams :(I) UG (Honours with research) and (II) UG (Honours). The students who will secure 75% and above may opt for UG (Honours with research).										
(I) Course structure for UG (Honors with Research)										
VII	Major	RTUGTC1	Introduction to Remote sensing and GIS	5	3+0+0	3	19	30	70	100
		RTUGLC1	Lab- Introduction to Remote sensing and GIS		0+0+2	2		30	70	100
	Major	RTUGTC2	Introduction to Medicinal Plants	5	3+0+0	3		30	70	100
		RTUGLC2	Lab- Introduction to Medicinal Plants		0+0+2	2		30	70	100
	Major	RTUGTC3	Food Preservation Technology	5	3+0+0	3		30	70	100
		RTUGLC3	Lab- Food Preservation Technology		0+0+2	2		30	70	100
	Minor	RTUGTG1	Food Preservation Technology	4	3+0+0	3		30	70	100
		RTUGLG1	Food Preservation Technology		0+0+1	1		30	70	100
							Total	**240**	**560**	**800**
VIII	Major	RTUHTC1	Research Methodology and Ethics	5	3+0+0	3	21	30	70	100
		RTUHLC1	Lab- Research Methodology and Ethics		0+0+2	2		30	70	100
	Minor	RTUHTG1	Herbal Drug Formulation	5	3+0+0	3		30	70	100
		RTUHLG1	Lab- Herbal Drug Formulation		0+0+1	1		30	70	100
	*Research Project/Dissertation	RTUHDC1				12		*300	**100	400
	• Evaluation of thesis (Internal), ** Viva-voce (External),						**Total**	**420**	**380**	**800**
(II) Course structure for UG (Honors)										
VII	Major	RTUGTC1	Introduction to Remote sensing and GIS	5	3+0+0	3	20	30	70	100
		RTUGLC1	Lab- Introduction to Remote sensing and GIS		0+0+2	2		30	70	100

	Major	RTUGTC2	Introduction to Medicinal Plants	5	3+0+0	3		30	70	100
		RTUGLC2	Lab- Introduction to Medicinal Plants		0+0+2	2		30	70	100
	Major	RTUGTC3	Crop Production Technology	5	3+0+0	3		30	70	100
		RTUGLC3	Lab- Crop Production Technology		0+0+2	2		30	70	100
	Minor	RTUGTG1	Introduction to Medicinal Plants	5	3+0+0	3		30	70	100
		RTUGLG1	Lab- Introduction to Medicinal Plants		0+0+1	1		30	70	100
	Seminar	RTUGSA1	-	-		1		30	70	100
							Total	**270**	**630**	**900**
VIII	Major	RTUHTC1	GIS Application and Scope	5	3+0+0	3	20	30	70	100
		RTUHLC1	Lab-GIS Application and Scope		0+0+2	2		30	70	100
	Major	RTUHTC2	Introduction to Traditional Medicine Systems	5	3+0+0	3		30	70	100
		RTUHLC2	Lab- Introduction to Traditional Medicine Systems		0+0+2	2		30	70	100
	Minor	RTUHTG1	Natural Product and Processing Techniques	5	3+0+0	3		30	70	100
		RTUHLG1	Lab- Natural Product and Processing Techniques		0+0+1	1		30	70	100
	Minor	RTUHTG2	Fundamentals of Entrepreneurship	5	3+0+0	3		30	70	100
		RTUHLG2	Tutorial- Fundamentals of Entrepreneurship		0+0+1	1		30	70	100
	Seminar	RTUHSA1	-	-		2		30	70	100
							Total	**270**	**630**	**900**

B. Sc. (Rural Technology)

Program Outcomes (POs) of Undergraduate Program

POs of B.Sc. Rural Technology

PO1. Knowledge and Awareness: Adequate information on basics and advance fields of the core and applied subjects will be provided to enhance knowledge and awareness so that a professionalism may be developed in students.

PO2. Problem solving and Critical Thinking: To enable the students to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO3. Effective Communication and Social Interactions: Speak, read, write and listen clearly individually and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology. Realize and respect of views of others, mediate disagreements and cooperate to reach conclusions in group settings.

PO4. Effective Citizenship and Ethics: To groom the students in such a way that they perform empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO5. Environmental awareness and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO6. Skill Development and Employability: To generate special skill through vocational training, workshops, field visits, entrepreneurial and career development courses so that students may generate employability for themselves and others.

PO7. Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological, socio-economic and socio-cultural improvements.

Program Specific Outcomes

PSOs of B.Sc. Rural Technology

PSO1. Understand nature and basic concept and applied aspects of Organic Manure Production Techniques, Elementary Biology, Soil and Fertilizers, Horticulture and Landscaping, and Organic Farming, Microbial Technology, Dairy Management and Products, Plant Propagation and Nursery Management, Herbal Production Techniques, Sericulture, Basics of Mushroom Production, Aquaculture, Integrated Pest Management, Indigenous Art and Crafts,

PSO2. Understand nature and basic concept and applied aspects of Rural Social Structure and Planning, Poultry Production Techniques, Plant Morphology and Reproduction, Economic Botany, Rural Entrepreneurship and Management, Goat and Pig Production Techniques, Lac and Honey Production, Remote Sensing, Medicinal Plants, and Natural Products Management.

PSO3. Analyse the relationships among animals, plants microbes and use of Engineering and Computer Sciences for socio-economic development in rural areas.

PSO4. Perform procedures as per laboratory standards in the areas of Organic Farming, Dairy, Mushroom, Poultry, and Herbal Production, Sericulture, Aquaculture, Art and Crafts, Plant Propagation and Nursery Management.

PSO5. Understand the applications of biological and computer sciences in Apiculture, Aquaculture, Agriculture, Medicine, Remote Sensing and GIS, Rural Engineering and Rural Planning.

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SYLLABUS as per NEP- 2020 B. Sc. I SEMESTER		
Course Title: EMERGENCE OF RURAL TECHNOLOGY		
Course Code: RTUATC1	**Credit: 04**	**30+70**
MAJOR/Level 2	**L3+P1**	**Marks:100**

Course outcomes

On completion of the course, the students will be able to:

1. Understand basics of evolution of man and agriculture.
2. Understand indigenous technical knowledge.
3. Understand Indian society and rural technology.

Indian Agriculture: Definition, evolution of man and agriculture, beginning of agriculture in Bharat, rich agricultural heritage of Bharat, need and importance for studying agricultural heritage, globally important agricultural heritage systems.

Farmers in *Indus* period, *Vedic* period, pre- & post-independence period, rainbow revolution, plant production and protection through indigenous technical knowledge based on farm implement, pest management, soil and water conservation.

Indian society: tribal rural urban, nature and characteristics, demography, Settlement pattern. Causes of poverty, unemployment, livelihood sources, migration.

Rural Technology: Definition, Innovation in rural areas, entrepreneurship and skill development.

Suggested Readings:

Handbook of agriculture, ICAR
Farmers' handbook on basic agriculture

Course Outcomes and their mapping with Program Outcomes:

COs	POs						PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	2	3	3	-	-	3	1
CO2	3	3	1	-	2	3	3	-	-	3	1
CO3	3	3	1	-	2	3	3	-	-	3	1

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

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Course Title: LAB- EMERGENCE OF RURAL TECHNOLOGY		
Course Code: RTUALC1	Credit: 01	Marks:30+70

1. Exposure visits to Agricultural / Horticultural / Poultry Farm/ Dairy Farm
2. Preparation of different models based on theory course.
3. To study about success story, innovations of the farmers.

SYLLABUS as per NEP- 2020 B. Sc. I SEMESTER		
Course Title: HORTICULTURE AND LANDSCAPING		
Course Code: RTUATG1	Credit: 04	30+70
MINOR /Level 2	L3+P1	Marks:100

Course outcomes

On completion of this course, the students will be able to:

1. Understand the knowledge about horticulture practices and its importance.
2. Learn detail information of orchard establishment and management will able to disseminate this knowledge to the farmers.
3. Adopt horticulture as entrepreneurship.

Course Outcomes and their mapping with Program Outcomes:

COs	POs						PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	2	3	3	-	-	3	1
CO2	3	3	1	-	2	3	3	-	-	3	1
CO3	3	3	1	-	2	3	3	-	-	3	1

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

Horticulture: Concept, scope, definition, economic importance and classification of horticultural crops, fruit and vegetable zones of India, exports and imports opportunities, Government schemes / programs related to horticulture and landscaping.

Establishment of orchard: site selection, principles, planning and layout of orchard, tools and implements. Management of orchard-planting systems, training and pruning, nutrient, water, weeds, and pests management in orchard trees. Cultivation practices of major fruit crops-Citrus fruits, papaya, banana, 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, tuberose and gerbera.

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

Plant components 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.

Course Title: LAB- HORTICULTURE AND LANDSCAPING		
Course Code: RTUALG1	**Credit:01**	**Marks:30+70**

1. Identification of garden equipment required for gardening and landscaping.
2. Preparation and maintenance of garden
3. Propagation and maintenance of annuals and perennials.
4. Training and Pruning of plants
5. Cutting, budding and grafting practices.
6. Identification of common garden weeds.
7. Making of Bonsai, Terrarium culture.

Suggested Readings:

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

SYLLABUS as per NEP- 2020 B. Sc. I SEMESTER		
Course Title: DAIRY MANAGEMENT AND PRODUCTS		
Course Code: RTUATL1	**Credit: 03**	**30+70**
SEC/ Level 1	L2+P1	**Marks:100**

Course outcomes

On completion of this course, the students will be able to:

1. Identify different breeds of cows and buffaloes and their feeding management
2. Understand housing and health management of cows and buffaloes.
3. Understand general caring practices needed for cows and buffaloes.
4. Prepare various dairy products and enhance their skill for establishment of Dairy.

Course Outcomes and their mapping with Program Outcomes:

COs	POs						PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	3	3	3	-	-	3	1
CO2	3	3	1	-	3	3	3	-	-	3	1
CO3	3	3	1	-	3	3	3	-	-	3	1
CO4	3	3	1	-	3	3	3	-	-	3	1

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

Introduction of important breeds of cows and buffaloes, 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. Care of dry and milch cows and maintenance of different dairy cattle registers.

Fodder: Classification, hey 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.

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

Suggested Readings:

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

Course Title: LAB-DAIRY MANAGEMENT AND PRODUCTS		
Course Code: RTUALL1	**Credit:01**	**Marks: 30+70**

Course outcomes

On completion of this course, the students will be able to:

1. Gain in-depth knowledge of dairy production and processing techniques.
2. Gain proficiency in quality control and food safety practices specific to the dairy industry.
3. Gain ability to operate and maintain dairy machinery and equipment.
4. Understand of the economic and environmental aspects of the dairy sector.

Course Outcomes and their mapping with Program Outcomes:

COs	**POs**						**PSOs**				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	3	3	3	-	-	3	1
CO2	3	3	1	-	3	3	3	-	-	3	1
CO3	3	3	1	-	3	3	3	-	-	3	1
CO4	3	3	1	-	3	3	3	-	-	3	1

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

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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SYLLABUS as per NEP- 2020 B. Sc. I SEMESTER		
Course Title: HISTORICAL PERSPECTIVE OF BHARTIYA EDUCATION		
Course Code: RTUATV1	**Credit: 02**	**30+70**
VAC/ Level 1	L2	**Marks:100**

Course outcome:

After completion of the course, the students will be able to

1. Provide basic understanding of Bhartiya education system as a nation based on universal values and civilization.
2. Inculcate the idea of complete knowledge about Bhartiya education and Bhartiya system of examination, degree and Convocation Programme.
3. Discuss and analyze the problems of modern education system and its effect on moral values of students.
4. Understand the Bhartiya way of living as a sustainable model for Bhartiya University system.
5. Realize the Bhartiya way of holistic personality development.

Course Outcomes and their mapping with Program Outcomes:

COs	POs						PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	3	3	3	-	-	3	1
CO2	3	3	1	-	3	3	3	-	-	3	1
CO3	3	3	1	-	3	3	3	-	-	3	1
CO4	3	3	1	-	3	3	3	-	-	3	1
CO5	3	3	1	-	3	3	3	-	-	3	1

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

Ancient Vedic Education System

Introduction, Objectives, Structure and Organization of Education, Meaning of Education, Vocational Education, Examination and Degree, Convocation Programme, Vedic Period Education Centers, Main Characteristics of Vedic Education System, Teaching Methods, Relation of Teacher and Students, Examination and Degree

Anciant Period Budhist Education System

Introduction, Objectives, Main Feature of Bodh education System, Structure and Organization of Education, Aims and Ideals of Education, Education Techniques/Methods, Disciplane, Main Baudh Education Center of Baudh Periods, Comparative Study of Vedice Education System and Baudh education System

Macaulay's Menutes , Bentick's Resolution of 1835

Introduction, Objectives, Macaulay's Menutus 1835, Suggestion of Macvley, Approval of Governor General William Bentinck, Filtration theory of Education,

Woods' Despatch 1854

Introduction, Objectives, organization of education, Education Policy by Woods' Manifesto aims of education, Evaluation of Woods' Declaration, Shortcoming of weakness

India Education Commission 1882

Aims and Field of Hunter Commission, Objectives of the Commission, Terms of Reference of Commission, Suggestion for Primary, secondary and higher Education, Suggestion about Religious Education

References-

1. Lal (Dr.) Raman Bihari The History of Indian Education , Evolution and Problems, Raj Printers, Meerut |
2. J. (Dr.) S. Walia (2009) Development of education system in India, Ahampal Publishers, Meerut |
3. Shukla (Dr.) C.S. (2008) Teachers in the Emerging Indian Society, International Publishing House, Meerut
4. Sharma, Ramnath and, Sharma Rajendrar Kumar (2006) Educational Sociology, Atlantic Publishers and Distributors
5. Dr, Sheelu Mary (2008), Social and Philosophical Perspectives of Education, Rajat Prakashan, New Delhi

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SYLLABUS as per NEP-2020 B.Sc. II SEMESTER		
Course Title: POULTRY PRODUCTION TECHNOLOGY		
Course Code: RTUBTC1	**Credit: 04**	**30+70**
MAJOR/ Level 2	**L3+P1**	**Marks:100**

Course outcomes

On completion of this course, the students will be able to:

1. Study the Poultry production techniques and their management.
2. Identify the different types of Layer chickens and their management.
3. Establish entrepreneurship in this field.

Course Outcomes and their mapping with Program Outcomes:

COs	POs						PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	2	3	-	3	3	3	1
CO2	3	3	1	-	2	3	-	3	3	3	1
CO3	3	3	1	-	2	3	-	3	3	3	1

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

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 chick, grower, broiler 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.

Course Title: LAB- POULTRY PRODUCTION TECHNOLOGY		
Course Code: RTUBLC1	**Credit:01**	**Marks: 30 + 70**

Course outcomes

On completion of this course, the students will be able to:

1. Know the requirements of the main commercial poultry systems and deliver routine husbandry procedures and poultry production performance.
2. Learn about the poultry farming, site selection, and accommodation arrangements, handling of birds, feed and water.
3. Gain skill to maintain the health of birds from diseases, symptoms, culling, vaccination etc.

Course Outcomes and their mapping with Program Outcomes:

COs	POs						PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	2	3	-	3	3	3	1
CO2	3	3	1	-	2	3	-	3	3	3	1
CO3	3	3	1	-	2	3	-	3	3	3	1

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

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.

Suggested Readings:

Amlendu Chakerbarti: Handbook of Animal Husbandary"
Jagdish Prasad: Poultry Production and Management"
R.A. Singh: Poultry production

SYLLABUS as per NEP- 2020 B.Sc. II SEMESTER		
Course Title: MICROBIAL TECHNOLOGY		
Course Code: RTUBTG1	**Credit: 04**	**30+70**
MINOR/ Level 2	**L3+P1**	**Marks:100**

Course outcomes

On completion of this course, the students would be able to

1. Learn historical background of microbiology.
2. Understand about the microorganism and their usefulness and also their harmful effects.
3. Learn economically important microorganisms and their functioning.

Course Outcomes and their mapping with Program Outcomes:

COs	POs						PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	2	3	3	-	-	3	1
CO2	3	3	1	-	2	3	3	-	-	3	1
CO3	3	3	1	-	2	3	3	-	-	3	1

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

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 production of Streptomycin, Amylase, Citric acid, Ethyl alcohol and vitamin B_{12} by microbial fermentation.

Yeast and its uses, Uses of yeast and Yeast products, Microbiology of milk, production of yoghurt, butter milk, cheese, 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.

Suggested Readings:

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: LAB- MICROBIAL TECHNOLOGY		
Course Code: RTUBLG1	**Credit:01**	**Marks:30+70**

Course outcomes

On completion of this course, the students would be able to:

1. Know about the types of microorganisms in and around humans and metabolism and mechanism of microbial life.
2. Learn the important and diversified groups of micro-organisms in nature and their classification, and interactions within the microbial communities and between microorganism and plants and animals.
3. Knowledge about use of microbiological equipment and observations.

Course Outcomes and their mapping with Program Outcomes:

COs	POs						PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	2	3	3	-	-	3	1
CO2	3	3	1	-	2	3	3	-	-	3	1
CO3	3	3	1	-	2	3	3	-	-	3	1

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

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.

Department of Rural Technology & Social Development
Guru Ghasidas Vishwavidyalaya, Koni-Bilaspur (CG)
Semester-wise syllabus for 4 Years UG Program, Session 2023-2024 onwards under NEP-2020
(17 July 2023)

B. Sc. (Rural Technology)

SYLLABUS as per NEP- 2020 B.Sc. II SEMESTER		
Course Title: HERBAL PRODUCTION TECHNOLOGY		
Course Code: RTUBTL1	**Credit: 03**	**30+70**
SEC/ LEVEL-2	**L2+P1**	**Marks:100**

Course outcomes

On completion of this course, the students will be able to:

1. Aware with the vast medicinal flora and their scientific role.
2. Gain technical confidence and skills to develop entrepreneurship.
3. Understand herbal production techniques of various herbal products.

Course Outcomes and their mapping with Program Outcomes:

COs	POs						PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	2	3	-	3	3	3	1
CO2	3	3	1	-	2	3	-	3	3	3	1
CO3	3	3	1	-	2	3	-	3	3	3	1

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

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

Appartus-Dolyantram, Svedaniyantram, Dhupayantram, Patanayantram, Adhaspatanyantram, Tirgakapatanyantram, Vidhyadharyantum, Putas, Mahaputa, Musha, Hamspakayantram.

Utilisation and development of drugs from plants- Analgesic drugs, anti- inflammatory drugs, hypotensive drugs, antimalerial 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.

Course Title: LAB- HERBAL PRODUCTION TECHNOLOGY		
Course Code: RTUBLL1	**Credit:01**	**Marks: 30 + 70**

Course outcomes

On completion of this course, the students will be able to:

1. Gain knowledge about the selection and processing of herbal drugs as raw materials for herbal drug preparation.
2. Learn about principles of traditional medicinal systems with method of preparation and standardization of crude and ayurvedic formulation.

Course Outcomes and their mapping with Program Outcomes:

COs	POs						PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	1	-	2	3	-	3	3	3	1
CO2	3	3	1	-	2	3	-	3	3	3	1

Weightage: 1-Slightly; 2-Moderately; 3-Strongly

1. Study of equipment 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.