



Value Added Courses Offered

Department : Zoology

Academic Year: 2024 - 2025

List of Value-Added Courses

Sr. No.	Course Code	Name of the Course
01.	ZOUAVAT1	Bhartiya Vigyan ka Itihas (VAC-I)
02.	ZOUBVAT1	Food, Nutrition and Health (Health & Wellness) (VAC-2)
03.	ZOUAVAT1	Bhartiya Vigyan ka Itihas (VAC-I)
04.	ZOUBVAT1	Food, Nutrition and Health (Health & Wellness) (VAC-2)


HEAD
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Scheme and Syllabus for UG Courses in Zoology

**Department of Zoology, School of Studies of Life Sciences,
Guru Ghasidas Vishwavidyalaya, Bilaspur**

Semester	Courses	Name of courses	Code	Number of courses	Level	Credits	Total Credits
I	Major	Animal Diversity of Non chordates (Protista to Pseudocoelomate)	ZOUAMJT1	1	2	3	18
		Lab Course	ZOUAMJL1			1	
	Minor	Minor 1 To be offered to the students of other departments	ZOUAMNT1	1	2	3	
		Lab Course	ZOUAMNL1			1	
	Multidisciplinary	Multidisciplinary 1 To be offered to the students of other disciplines (except Natural and Physical Sciences)	ZOUAMDT1	1	1	3	
	SEC	SEC 1 To be offered to students of Zoology/other departments at University level	ZOUASET1	1	1	2	
		Lab Course	ZOUASEL1			1	
	VAC	VAC 1 To be offered to the students of Zoology/other departments at University level	ZOUAVAT1	2	1	2	
	AEC	Language To be offered by Hindi/English Department for student of Zoology		1	1	2	
	II	Major	Animal Diversity of Non chordates (Coelomates)	ZOUBMJT1	1	2	
Lab Course			ZOUBMJL1			1	
Minor		Minor 2 To be offered to the students of other departments	ZOUBMNT1	1	2	3	
		Lab Course	ZOUBMNL1			1	
Vocational		Vocational 1 To be offered to the students of Zoology/other departments at University level	ZOUBVOT1			1	
		Ornamental Fish Culture Lab Course	ZOUBVOL1			3	
Multidisciplinary		Multidisciplinary 2 To be offered to the students of other disciplines (except Natural and Physical Sciences)	ZOUBMDT1	1	1	3	
SEC		SEC 2 To be offered to the students of Zoology/other departments at University level	ZOUBSET1	1	1	2	
		Lab Course	ZOUBSEL1			1	
VAC		VAC 2 To be offered to the students of Zoology/other departments at University level	ZOUBVAT1	2	1	2	
AEC		Language To be offered by Hindi/English Department for student of Zoology		1	1	2	
The student must complete the 4 credits vocational course/Internship during summer term to get UG Certificate if he wishes to exit the program after first 2 semesters.							

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As per NEP-2020, Department of Zoology will offer minor courses, multidisciplinary courses (MDC), ability enhancement courses (AEC), skill enhancement courses (SEC), value added courses (VAC) and vocational courses (VOC) to students of other departments.

Similarly, student of Department of Zoology will study these courses from the courses offered by other departments/ as per University decision.

Pool for minor course, multidisciplinary course, AEC, SEC, VAC and vocational course will be given by University.

Two AEC courses are compulsory in first 2 semesters (One in each semester).

Three SEC courses are compulsory in first 3 semesters (One in each semester).

Three Multidisciplinary courses are compulsory in first 3 semesters (One in each semester).

Four VAC courses are compulsory in first 2 semesters (Two in each semester).

One vocational course for certificate and diploma courses, three vocational courses for 3/4 year degree are compulsory.

List of minor courses, multidisciplinary courses, AEC, SEC, VAC and vocational courses offered by the department of zoology (in University pool) is as follows:

Minor Courses

S. N.	Title	Course Name
1.	Minor 1	Animal Diversity of Non chordates (Protista to Pseudocoelomate)
2.	Minor 2	Animal Diversity of Non chordates (Coelomates)
3.	Minor 3	Diversity of Chordates
4.	Minor 4	Microbiology and Parasitology
5.	Minor 5	Physiology of Basic Life Processes
6.	Minor 6	Physiology of Regulatory Life Process
7.	Minor 7	Immunology
8.	Minor 8	Research Methodology and Biostatistics
9.	Minor 9	Applied Zoology

Multidisciplinary Courses

S. N.	Title	Course Name
1.	Multidisciplinary 1	Introductory Zoology
2.	Multidisciplinary 2	Essentials of Zoology

Skill Enhancement Courses

S. N.	Title	Course Name
1.	SEC 1	Aquaculture
2.	SEC 2	Apiculture
3.	SEC 3	Sericulture

Value Added Courses

S. N.	Title	Course Name
1.	VAC 1	Bhartiya Vigyan Ka Itihas
2.	VAC 2	Food Nutrition and Health (Health & wellness)

Vocational Courses

S. N.	Title	Course Name
1.	VOC 1	Ornamental Fish Culture
2.	VOC 2	Histological Techniques and Light Microscopy
3.	VOC 3	Medical Diagnostics

Department may offer at least one paper in whole UG program on MOOC's platform and it will be compulsory to all students.

Summer and/or winter internship: duration will be 2-4 weeks (minimum 90 working hours).

Abbreviations:

AEC= Ability enhancement course; SEC= Skill enhancement course; VAC= Value added course
(Subject to approval by the competent authority)

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Value Added Courses: ZOUAVAT1

Semester	VAC	Course Title	Credits
I	VAC-I	Bhartiya Vigyan Ka Itihas	Theory: 02

About the course

The course provides an insight into the status of science in ancient India, its gradual development, innovations and the pioneers in the field of science, reputed research institutions in India and cutting edge research in science.

Course outcomes

1. The students will feel pride to know the pioneer role of Indians in the development of astronomy, mathematics, engineering and medicine in the World history.
2. Develop understanding of various branches of science during different eras and analyze the role played by different Indian organizations in science.
3. Appraise the contribution of different Indian Scientists.
4. Students will be aware about the modern development of animals, agriculture and biological sciences in republic India.

Course Outcomes and their mapping with Programme Outcomes

CO	PO						PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3
CO1	2	3	2	3	3	2	1	3	2
CO2	3	3	2	3	2	2	2	3	3
CO3	3	2	2	2	2	1	2	3	2
CO4	3	2	1	2	1	2	2	2	1
CO5	-	-	-	-	-	-	-	-	-

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

Theory

Unit I: Science in ancient and medieval India

10 Lecture

History of development in astronomy, mathematics, engineering and medicine subjects in Ancient India, Influence of the Islamic world and Europe on developments in the fields of mathematics, chemistry, astronomy and medicine.

Unit 2: Prominent Indian scientists

12 Lecture

Eminent scholars in mathematics and astronomy: Baudhayana, Aryabhata, Brahmagupta, Bhaskaracharya, Varahamihira, and Nagarjuna, Medical science of Ancient India (Ayurveda and Yoga); Susruta, Charak. Scientists of Modern India: Srinivas Ramanujan, C.V. Raman, Jagdish Chandra Bose, Homi Jehangir Bhabha, Vikram Sarabhai etc.

Unit III: Indian science in before and after Independence

13 Lecture

Introduction of different surveyors, zoologists and doctors as early scientist in Colonial India, India's perception and adoption for new scientific knowledge in Modern India, Establishment of premier research organizations like CSIR, DRDO and ICAR and ICMR, IIT's, Establishment of Atomic Energy Commission, Launching of the space satellites, ISRO's accomplishments, Zoological survey of India.

Recommended readings

1. Kuppuram, G. (1990) History of Science and Technology in India, South Asia Books.
2. Handa, O.C. (2014) Reflections on the history of Indian Science and Technology, Pentagon Press.
3. Basu, A. (2006) Chemical Science in Colonial India: The Science in Social History, K.P. Bagchi & Co.
4. Habib, I. (2016) A people's history of India 20: Technology in Medieval India, 5th Edition, Tulika Books.
5. Rahim, A. et al (1982) Science and Technology in Medieval India – A Bibliography of Source Materials in Sanskrit, Arabic and Persian, New Delhi: Indian National Science Academy.

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Value Added Courses: ZOUBVATI

Semester	VAC	Course Title	Credits
II	VAC-II	Food, Nutrition and Health (Health & Wellness)	Theory: 02

About the course

The course covers the basic concepts of balanced diet for people of different ages besides focussing on the consequences of malnutrition and the deficiency diseases and the diseases caused due to poor hygiene.

Course outcomes

1. Imparting the basic concept of food and nutrition including the concept of a balanced diet, nutrient needs, and dietary patterns for various groups.
2. Understanding the biochemistry of major food components and the effects of their deficiency on health and evaluating the effectiveness of nutrition interventions when dealing with certain health problems.
3. Understanding the importance of lifestyle-related diseases, their causes, and prevention through dietary and lifestyle modifications.
4. Understand the importance of food and water safety and methods associated with the preservation of food and purification of contaminated water and make students aware of food, nutrition, and health needs.

Course Outcomes and their mapping with Programme Outcomes

COs	POs						PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3
CO1	3	2	1	-	3	-	3	-	1
CO2	2	3	-	1	2	-	2	2	1
CO3	1	2	1	1	2	2	2	1	-
CO4	2	1	1	2	2	1	1	2	1

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

Theory

Unit 1: Nutrition and dietary nutrients

08 Lectures

Basic concept of Food: Components and nutrients. Concept of balanced diet, nutrient requirements and dietary pattern for different groups viz., adults, pregnant and nursing mothers, infants, school children, adolescents and elderly people.

Unit 2: Macro nutrients and micronutrients

09 Lectures

Nutritional Biochemistry: Macronutrients: Carbohydrates, Lipids, Proteins- Definition, Classification, their dietary source and role. Micronutrients: Vitamins- Water-soluble and Fat-soluble: vitamins- their sources and importance. Important minerals viz., Iron, Calcium, Phosphorus, Iodine, Selenium and Zinc: their biological functions.

Unit 3: Malnutrition and nutrient deficiency diseases

10 Lectures

Definition and concept of health: Common nutritional deficiency diseases- Protein Malnutrition (e.g., Kwashiorkor and Marasmus), Vitamin A deficiency, Iron deficiency and Iodine deficiency disorders- their symptoms, treatment, prevention and government initiatives, if any. Life style dependent diseases- hypertension, diabetes mellitus, and obesity- their causes and prevention. Social health problems- smoking, alcoholism, narcotics. Acquired Immuno Deficiency Syndrome (AIDS): causes, treatment and prevention. Other ailments viz., cold, cough, and fever, their causes and treatment.

Unit 4: Diseases caused by microorganisms

10 Lectures

Food hygiene: Potable water- sources and methods of purification at domestic level. Food and Water-borne infections: Bacterial diseases: cholera, dysentery; typhoid fever, viral diseases: Hepatitis, Poliomyelitis etc., Protozoan diseases: amoebiasis, giardiasis; Parasitic diseases: taeniasis and ascariasis their transmission, causative agent, sources of infection, symptoms and prevention. Causes of food spoilage and its prevention.

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Department of Forestry, wildlife & Environmental Sciences
Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh

Value added Course for UG I Semester As per NEP 2020 Guidelines of the University

Course Curriculum

VAC-1: Environmental Education

Credit- 2

Sub Code	L	T	P	Duration	IA	ESE (T)	Total	Credits
FOUAVAT1	2	-		2 hours	30	70	100	2

Course objectives:

1. Develop a critical understanding of the environmental issues of concern
2. Understand the concept of natural resources; identify types of natural resources, their distribution and use with special reference to India.
3. Explain sustainable development, its goals, targets, challenges and global strategies for sustainable development.
4. To develop scientific, interpretive and creative thinking skills in the students about environment.
5. To explore the problems that we face in understanding our nature that correlate with socio-economical solution for sustainable development.

Unit I. Introduction to environmental studies, Humans and the Environment-

Multidisciplinary nature of environment, scope and importance, Man-environment interaction: Population growth and natural resource exploitation. Concept of sustainability and Sustainable Development Goals (SDGs).

Unit II- Natural Resources and Environment Pollution

Overview of natural resources: Classification of natural resources, Land resources, water resources, Energy resources; Environmental pollution types, causes, effects, controls; Solid waste management, 3R Principle.

Unit III- Biodiversity Conservation and environmental issues

Biological diversity concept; hot spots; Endangered and endemic species of India. Threats to biodiversity, man-wildlife conflicts; Conservation of biodiversity, Environmental issues at local, regional, and global scale.

Unit IV- Ecology & Ecosystems

Structure and function of ecosystem, Energy flow, food chains, food webs and ecological succession. Forest ecosystem, Grassland ecosystem, Desert ecosystem and Aquatic ecosystems

Unit V. Climate Change: Impacts, Adaptation and Mitigation

Understanding climate change: greenhouse gas emissions, global climate change, temperature, rainfall, net zero targets for the future; Energy efficiency measures.

Unit VI: Environment Management, Environmental Policies, Acts, treaties and regulations

Introduction to environmental laws and regulation, Constitutional provisions, The Air (Prevention and Control of Pollution) Act; The Environment (Protection) Act, 1986; International agreements: Montreal and Kyoto protocols; UNFCCC; Kyoto Protocol.

Chapter VII: Human Communities and the Environment

Human population growth: Impacts on environment, Resettlement and rehabilitation of industrial and mining projects; Disaster and its management, major Environmental movements.

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