



## GOVT. SWAMI ATMANAND POST GRADUATE COLLEGE

NARAYANPUR (CG)494661

Affiliated to Shaheed Mahendra Karma Vishwavidhalaya, Bastar, Jagdalpur, (C.G.)  
Registered Under Section 2(f) & 12(b) of UGC Act



1-3-1

### 1.3.1 Integration of Cross-Cutting Issues into the Curriculum

Government Swami Atmanand P.G. College, Narayanpur, firmly advocates for integrating cross-cutting issues related to professional ethics, gender, human values, environment, and sustainability into its curriculum. This approach is aimed at fostering the holistic development of students, thereby empowering them to become professionals capable of contributing meaningfully to the socio-cultural and economic advancement of the nation. Over the past several decades, the college has made significant strides in promoting value-based education, which is essential for cultivating responsible citizenship. While the university prescribes the syllabus, the college endeavors to address these critical issues within the framework of its educational mandate. The following initiatives have been implemented:

#### 1. Gender

The college organizes a variety of programs aimed at women and girls students, including folk dance competitions and health check-up camps for corona and hemoglobin screening. The Women's Anti-Harassment Committee and the Internal Complaints Committee are instrumental in conducting programs centered on women's empowerment, legal rights for women, and the observance of International Women's Day. The N.S.S. and N.C.C. units actively engage in extension activities, both on campus and in surrounding communities. Key gender-related issues are addressed through initiatives such as the Save Girl Child campaign, essay and poster exhibitions, and rangoli competitions.

#### 2. Environment and Sustainability


The N.S.S. and N.C.C. actively promote environmental protection through tree plantation drives and sustainable development initiatives. Annually, the N.S.S. unit undertakes a comprehensive range of activities in neighboring villages during special camps, which include tree planting, cleanliness drives, gutter cleaning, the establishment of soak pits, and plastic-free campaigns. Furthermore, awareness programs—such as quizzes and poster

competitions—along with guest lectures, are organized to educate students about biodiversity, environmental issues, and sustainability practices. The college has also launched various initiatives aimed at environmental conservation, including cleanliness campaigns at temples and public spaces, and commemorates significant dates such as World Environment Day and N.S.S. Day. Additionally, the college participates in the Swachh Bharat Summer Internship (SBSI) Abhiyan and tree plantation programs introduced by the Government of India.

### 3. Human Values and Professional Ethics

To promote a scientific approach and enhance social awareness among students, the college facilitates lectures, quizzes, and essay competitions in collaboration with N.S.S., N.C.C., and various government agencies. Efforts to integrate ethical and human values are furthered through extracurricular activities. Programs organized under the N.S.S., N.C.C., SVEEP, and the Political Science department contribute to the inculcation of human values in students. The college also hosts guest lectures focused on value education. National festivals such as Independence Day and Republic Day serve as platforms for reinforcing patriotic and moral values. Furthermore, the college initiates various social activities, including Ek Bharat Shreshtha Bharat (EBSB), health and hygiene awareness programs, voter awareness campaigns, Jal-Shakti Abhiyan, and road safety campaigns.



  
(Dr. S. R. Kunjam)  
Principal  
Govt. Swami Atmanand Post Graduate  
College Narayanpur (C.G.)  
Principal  
Govt. Swami Atmanand Post Graduate  
College Narayanpur (C.G.)



# SYLLABUS

## B.A. PART-III (ECONOMICS)

### Paper I : DEVELOPMENT AND ENVIRONMENTAL ECONOMICS

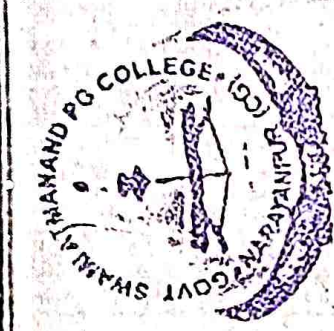
- Unit-1** : Economic Growth and Development : Factor affecting Economic Growth (Labour, Capital and Technology), Developed and Under Developed Economy, Poverty : Absolute and Relative, Marxian Model of Economic Growth, Mahalanobis Model of Economic Growth. Balanced and Unbalanced Growth.
- Unit-2** : Problems of Population and Growth Pattern of Population. Theory of Demographic Transition. Population, Poverty and Environment. Schumpeter's Theory of Economic Growth, Theory of Big-Push, Nelson's Theory of Low-level Income Equilibrium Trap, Theory of Critical Minimum Efforts.
- Unit-3** : Harrod and Domar Growth Model, Solow's Model of Economic Growth, Meades Neo Classical Models, Mrs. Joan Robinson's Growth Model, A. Lewis Theory of Unlimited Supply of Labour.
- Unit-4** : Environment : Environmental and Use, Environmental Disruption as an Allocation, Problem. Valuation of Environmental Damages—Land, Water, Air and Forest, Prevention Control and Abatement of Pollution, Choice of Policy Instruments in Developing Countries, Environmental Legislation, Indicators of Sustainable Development, Environmental Accounting.
- Unit-5** : Concept of Intellectual Capital : Food Security, Education, Health and Nutrition, Role of Agriculture in Economic Development, Land Reforms Efficiency and Productivity in Agriculture, New Technology and Sustainable Agriculture, Globalization and Agriculture Growth, The Choice of Technique Appropriate Technology and Employment.



## SEMESTER- III ENVIRONMENTAL ECONOMICS

### Paper - IV

- Unit - I - Welfare Economics - Definition of welfare Economics. Criterion of Social Welfare-  
Bentham Criteria, Cardinal Criterion, Pareto Optimality Criteria, Kaldor-Hicks  
Compensation Criterion, The Bergson criterion, The problem of second best.
- Unit - II - Social Welfare function, Maximization of social welfare, Maximization in perfect  
competition, public goods and private goods. Market failure & public goods.
- Unit - III - Environmental Economics - beneficiation of Environmental Economics, Relation  
between Environmental Economics and Economics, Environmental Economics and





Ecological Economics, Environmental and resources Economics, important-issues in Environmental Economics. Macro economic policy and Environmental.

Unit - IV - Theories of Externalities - Economic and Diseconomies, External Cost, Marginal social cost., Marginal Private cost. Pigeon Taxes and Subsidies.

Unit - V - Environmental value- use value, option value and non use value, international carbon Tax. Environment and W.T.O.

#### Reference :-

1. Madhu Raj - Environmental Economics.
2. Steve Baker - Environmental Economics.
3. D.W. Pearce - Environmental Economics.
4. Baurnol, W.J. and W.E. Oates. (1988) : The Theory of Environmental Policy, (2<sup>nd</sup> Edition) Cambridge University Press, Cambridge.
5. Berman, P. (Ed.) (1995) : Health Sector Reform in Developing Countries : Making health development sustainable, Boston : Harvard Series on Population and international Health.
6. Blaug, M. (1972) : Introduction to Economics of Education, J. Perguin, London.



8. Godelier, M. University Press, London  
 9. Sturrock, J (ed) Structural Anthropology Tavistock, London  
 1979 Structuralism and order from Lévi-Strauss, P. (ed) Oxford, London.  
 10. Turner, B.S. 1999 Classical sociology saqg, New Delhi  
 11. Turner, J.H. 2001 The structure of sociological theory Rawat, Jaipur  
 12. Zeilin, I.M. 1998 Rethinking sociology: A critique of contemporary Tr Rawat, Jaipur.

Paper No.XII

भारत में सामाजिक आंदोलन

Marks-8

SOCIAL MOVEMENTS IN INDIA

- Unit-I: Nature and Types - प्रकृति और प्रकार  
 a. Characteristics - विशेषता  
 b. Types - प्रकार  
 c. Reasons - कारण  
 d. Power Structure and Social Movements - सामा. आंदोलन की संरचना
- Unit -II: Basis of Social Movement - सामा. आंदोलन का आधार  
 a. Class, Caste, Ethnicity and Gender - वर्ग, जाति, जातीयता और लिंग  
 b. Types of leadership and relationship between leaders and masses - नेतृत्व के प्रकार  
 c. Political institution and social movement. राजनीतिक संस्था एवं सामा. आंदोलन  
 d. Role of media in social movement. सामा. आंदोलन में मीडिया की भूमिका
- Unit-III: Theoretical Perspectives - दैर्घ्यवस्तु परिप्रेक्ष्य  
 a. Marxian and Post-Marxian - मार्क्सवाद एवं नवमार्क्सवाद  
 b. Weberian and Post-Weberian - वेबर संबंधी परिप्रेक्ष्यवाद  
 c. Structural-Functional - संरचनात्मक प्रकार्यवाद  
 d. Postmodernist - उत्तर आधुनिकता
- Unit-IV: Traditional Social Movements  
 a. Labour and Trade Union मजदूर एवं श्रमिक  
 b. Tribal जनजाति आंदोलन  
 c. Peasant कृषक आंदोलन  
 d. Nationalist राष्ट्रिय आंदोलन
- Unit-V: New Social Movements  
 a. Dalit दलित  
 b. Women महिला  
 c. Ethnic **संजातीय आंदोलन**  
 d. Environmental **पर्यावरण**

References:

1. Banks, J.A., 1972; The Sociology of Social Movements (London : Macmillan)  
 2. Desai, A.R., Ed., 1979; Peasant Struggle in India (Bombay : Oxford University Press)  
 3. Danagare, D.N., 1983; Peasant Movements in India 1920-1950 (Delhi : Central Board of Secondary Education)





## SYLLABUS FOR 2014-15

COURSE OF STUDIES FOR M.A. EXAMINATION IN SOCIOLOGY (UNDER SEMESTER SYSTEM IN UNIVERSITY TEACHING DEPARTMENT AND AFFILIATED COLLEGES

M.A. Examination in Sociology shall be conducted in four semesters, each having 500 hundred marks, totaling to 2000 marks.

The detailed Course Structure Semester wise is mentioned below:

Sl. No.	Paper No.	Title	Marks		
<b>A. FIRST SEMESTER</b>					
Sr. No.	Paper	Subject	I	T	Total
1	Paper-I	Classical Sociological Tradition	20	80	100
2	Paper-II	Philosophical and Conceptual Foundation of Research Methodology	20	80	100
3	Paper-III	Social Change in India	20	80	100
4	Paper-IV	Rural Sociology	20	80	100
5	Paper-V	Practical-I			100
<b>B. SECOND SEMESTER</b>					
6.	Paper-VI	Classical Sociological Thinkers	20	80	100
7.	Paper-VII	Quantitative Research Techniques in Sociology	20	80	100
8.	Paper-VIII	Sociology of Development	20	80	100
9	Paper-IX	Indian Rural Society	20	80	100
10.	Paper-X	Practical-II			100
<b>C. THIRD SEMESTER</b>					
11.	Paper-XI	Classical Sociological Theories	20	80	100
12.	Paper-XII	Social Movements in India	20	80	100
13.	Paper-XIII	Perspectives of Study to Indian Society	20	80	100
14	Paper-XIV	Industry and Society in India-I	20	80	100
15	Paper-XV	Criminology-I	20	80	100

Sociology



**विभागाध्यक्ष**

**(समाज शास्त्र)**

शास्त्र, स्वयंसेवा, ज्ञान, सातकोत्तर  
महाविद्यालय - ...

<b>D. FOURTH SEMESTER</b>					
16	Paper-XVI	Modern Sociological Theories	20	80	100
17	Paper-XVII	Comparative Sociology	20	80	100
18	Paper-XVIII	Industry and Society in India-II	20	80	100
19	Paper-XIX	Criminology-II	20	80	100
20	Paper-XX	Project Report	-	-	100

✓ Paper No. I

**FIRST SEMESTER**

Marks-80

**CLASSICAL SOCIOLOGICAL TRADITION**

- Unit-I: Historical Background of The Emergence of Sociology**
- Traditional Feudal Economy and Social Structure
  - Impact of Industrial Revolution and New Mode of Production on Society and Economy.
  - Emergence of Capitalist Mode of Production- Nature and Feature of Capitalism
  - Enlightenment and It's Impact on Thinking and Reasoning

- Unit-II: Auguste Comte**
- Social Statics and Dynamics
  - Law of Three Stages
  - Hierarchy of Sciences
  - Positivism

- Unit-III: Emile Durkheim**
- Social Facts
  - Mechanical and Organic Solidarity
  - Division of Labour
  - Theory of Suicide

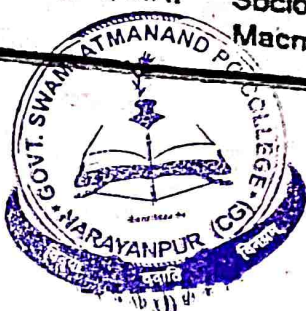
- Unit-IV: Vilfredo Pareto**
- Logical and Non- Logical Action
  - Residues and Derivations
  - Theory of Social Change
  - Contributions to Methodology

- Unit-V: Herbert Spencer**
- The survival of the fittest
  - Social Darwinism
  - Evolution
  - Synthetic Philosophy

**References:**

- Abraham, F and Morgan, J.H. 1985. *Sociological Thought from Comte to Sorokin* Macmillan, New Delhi.

M.A. - Sociology





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| <p>5. Devasia, I. and Devasia, V V (ed), 1980</p> <p>6. Goswami, B K , 1983</p> <p>7. Mohanty, S, 1990</p> <p>8. Reid, S , 1976</p> <p>9. Shankardas, R D 2000</p> <p>10. Sutherland, E H. and Donald, R.C , 1968</p> <p>11. William, H.E., 1990</p> | <p>Female criminals and Female Victims An Indian Perspective<br/>Dattasons, Nagpur.</p> <p>Criminology and Penology Allahabad</p> <p>Crime and Criminals in India Ashish Pub House New C</p> <p>Crime and Criminology Doydan press, Illinayso</p> <p>Punishment and the Prison: India and Intern<br/>perspective, Sage, New Delhi.</p> <p>Principles of Criminology The Times of India Press, Bot</p> <p>The correction Profession Sage, New Delhi</p> |
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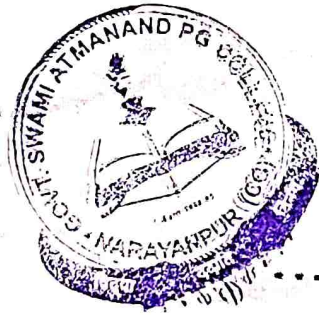
**Paper No. XX**

**Marks-**

**PROJECT REPORT**

**On Rural and Urban Problems**

Scheme of Evaluation- 50% by Internal Examiner and rest 50% by Viva-Voce Exam  
evaluated both by the Internal and External Examiner.





**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)  
COURSE CURRICULUM**

**PART A: INTRODUCTION**


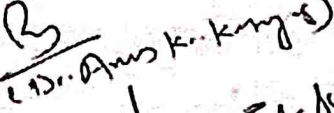
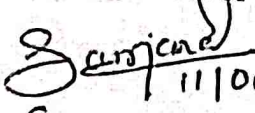


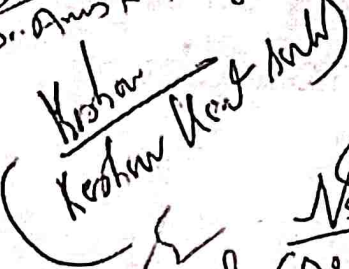
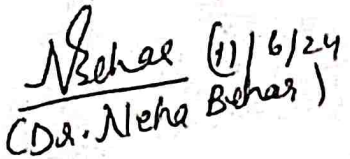
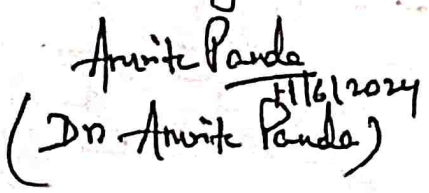
Program: Certificate Course		Semester- I Sem	Session: 2024-25
1	Course Code	AEC 01	
2	Course Title	Environmental Studies	
3	Course Type	Ability Enhancement Course (AEC)	
4	Prerequisite (If Any)	As per requirement	
5	Course Outcome (CO)	At the end of this course, students will be able to – CO 01: relate the basic concept of the environment CO 02: explain environmental alterations CO 03: develop skills in environmental measurement CO 04: examine correction measures of the environment	
6	Credit Value	02 C	01 Credit = 15 Hrs. Teaching-Learning
7	Total Marks	Max. Marks: 50	Minimum Pass marks: 20

**PART: B CONTENT OF THE COURSE**

Total No. of Teaching-Learning Periods: 30Hours/ 30Periods

UNIT	TOPIC (Course Contents)	No. of Hours
I	<b>Basic Composition:</b> 1. Abiotic and Biotic components of the environment 2. Biodiversity—Concept, types, and measures about its protection 3. Basic concept of Bio-Geo Chemical Cycle 4. Energy Flow in an ecosystem	07
II	<b>Alterations in Environment:</b> 1. Concept and components of the pond ecosystem 2. Air pollution and measures for its control 3. Water pollution and measures for its control 4. Global warming, Climate change, and possible measures	07
III	<b>Measurements of Environmental Components</b> 1. Soil composition and methods of its analysis 2. Water analysis methods for DO, BOD, COD 3. Water analysis methods for pH, TDS, Turbidity, Salinity, and Alkalinity 4. Information about environmental factors—PM-10, PM-2.5, NO2, O3	08
IV	<b>Application Measures</b> 1. Useful microbes to control water pollution 2. Useful microbes to control soil pollution 3. Concept of Biodegradation 4. Concept of Phytoremediation	08
Key Words	Ecosystem, Pollution, Climate Change, Biodegradation	

Name and Signature of Convener and Members of CBOS

 Dr. Ujjwal Saha  
 Dr. Anuska Karmas  
 Dr. Sanjana Bhagat  
 Dr. Shivani Shrivastava  
 Dr. Shubha Divan  
 Dr. Pramod Mishra  
 Dr. Neha Behar  
 Dr. Anvita Panda



## PART-C: Learning Resources

Text Books, Reference Books, and Others

Text Books Recommended –

1. Ecology and Environment, 8<sup>th</sup> Edition, P.D.Sharma, Rastogi Publication, Meerut.
2. Environmental Biology, 2<sup>nd</sup> Edition, P.D.Sharma, Rastogi Publication, Meerut.
3. Environmental Biology and Toxicology, 2<sup>nd</sup> Edition, P.D.Sharma, Rastogi Publication, Meerut.
4. Environmental Studies, 1<sup>st</sup> Edition, S.V.S.Rana, Rastogi Publication, Meerut.
5. Environmental Biotechnology, 1<sup>st</sup> Edition, S. V. S. Rana, Rastogi Publication, Meerut.

Online Resources–

➤ e-Resources / e-books and e-learning portals

Online Resources–

➤ e-Resources / e-books and e-learning portals

## PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks:

50 Marks

Continuous Internal Assessment (CIA):


15 Marks

End Semester Exam (ESE):

35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar + Attendance - 05 Total Marks - 15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):	Two sections – A & B Section A: Q1. Objective – 05 x1 = 05 Mark; Q2. Short answer type- 5x2 =10 Marks Section B: Descriptive answer type qts..out of 2 from each unit- 4x05 =20 Marks	

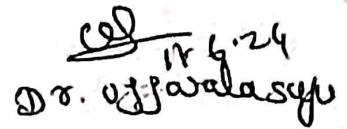
Name and Signature of Convener & Members of CBoS:

  
11/06/24

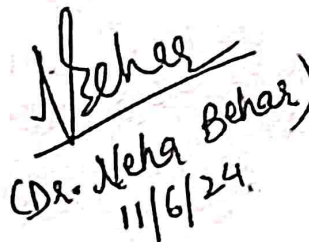
(Dr. Sanjane Bhagat)

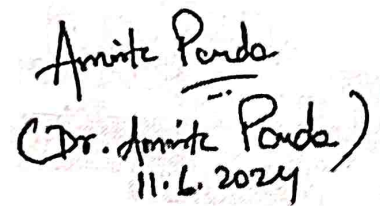
  
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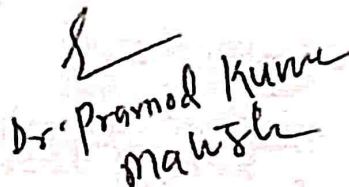
(Dr. Shivani Sharma)

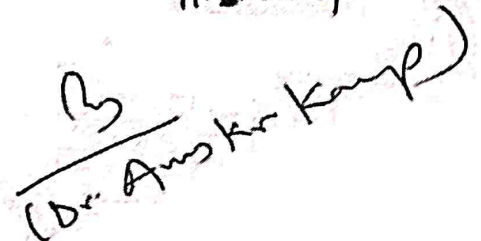
  
11/6/24  
Dr. Vijayalaxmi

  
11/06/24  
(Dr. Shubha Diwan)

  
11/6/24  
(Dr. Neha Behar)

  
11.6.2024  
(Dr. Amite Pouda)

  
Dr. Pramod Kumar  
Mahesh

  
(Dr. Anurag Kumar)



चार वर्षीय स्नातक पाठ्यक्रम : 2024-28

समाजशास्त्र विभाग कोर्स करिकुलम

खण्ड-अ : परिचय

कार्यक्रम: बैचलर इन आर्ट्स (आनर्स)		सेमेस्टर -VII	सत्र : 2024-25
विषय : समाजशास्त्र			
1	पाठ्यक्रम कोड	SOSE-08	
2	पाठ्यक्रम शीर्षक	ट्रांसजेंडर और समाज (TRANSGENDER AND SOCIETY)	
3	पाठ्यक्रम का प्रकार	DSE	
4	पूर्वापेक्षा (यदि कोई हो तो)	कार्यक्रम अनुसार	
5	लर्निंग आउटकम (CLO)	<p>कोर्स पूरा होने के बाद विद्यार्थी निम्नलिखित उद्देश्यों को पूर्ण करने में सक्षम हो सकेंगे-</p> <ul style="list-style-type: none"> <li>• यह पाठ्यक्रम विद्यार्थी को ट्रांसजेंडर के प्रति संवेदनशील बनाते हुए उनकी सामाजिक स्वीकृति में विस्तार करेगा।</li> <li>• यह पाठ्यक्रम विद्यार्थियों में ट्रांसजेंडर प्रति आर्थिक एवं सांस्कृतिक स्थिति में हो रहे परिवर्तन से अवगत करायेगा।</li> <li>• यह पाठ्यक्रम विद्यार्थियों को ट्रांसजेंडर के प्रति सामाज में होने वाले हिंसा और उसके निदान से अवगत करायेगा।</li> </ul>	
6	क्रेडिट महत्व	04	क्रेडिट = 15 घण्टे का अध्ययन/प्रशिक्षण/पर्यवेक्षण
7	कुल अंक :	अधिकतम अंक :100	न्यूनतम उत्तीर्ण अंक : 40

खण्ड-ब : कोर्स की विषय-वस्तु

कुल अध्यापन कालखण्ड (1 घण्टा प्रति कालखण्ड) 60 कालखण्ड (60 घण्टे)

इकाई	विषय-वस्तु	कुल कालखण्ड की संख्या
इकाई -1 ट्रांसजेंडर एक परिचय	<ol style="list-style-type: none"> <li>1. ट्रांसजेंडर- अवधारणा उद्देश्य और प्रकार।</li> <li>2. भारत में ट्रांसजेंडर की ऐतिहासिक पृष्ठभूमि।</li> <li>3. भारत में ट्रांसजेंडर समुदाय की स्थिति।</li> </ol>	15
इकाई -2 ट्रांसजेंडर समुदाय की समस्या	<ol style="list-style-type: none"> <li>1. सामाजिक समस्या - स्वीकार्यता की कमी एवं भेदभाव, सामाजिक बहिष्कार, सामाजिक अपेक्षा स्वीकृति।</li> <li>2. पारिवारिक संबंध की समस्या - संपर्क एवं अस्वीकृति।</li> <li>3. आर्थिक समस्या, अशिक्षा, गरीबी एवं बेरोजगारी।</li> <li>4. स्वास्थ्य की समस्या - एच.आई.वी. से संबंधित संक्रमण एवं स्वास्थ्य जांच की कमी।</li> <li>5. मनोवैज्ञानिक समस्या - पहचान का संकट, अकेलापन एवं भय।</li> </ol>	15
इकाई -3 ट्रांसजेंडर समुदाय एवं हिंसा	<ol style="list-style-type: none"> <li>1. हिंसा के प्रकार - घरेलू हिंसा, यौन हिंसा, मौखिक हिंसा।</li> <li>2. हिंसा के कारण।</li> <li>3. हिंसा को दूर करने के उपाय।</li> </ol>	15
इकाई -4 ट्रांसजेंडर एवं बदलते आयाम	<ol style="list-style-type: none"> <li>1. संवैधानिक एवं कानूनी अधिकार।</li> <li>2. ट्रांसजेंडर संरक्षण (अधिकारों का संरक्षण अधिनियम 2019)।</li> <li>3. ट्रांसजेंडर एवं मिडिया।</li> <li>4. ट्रांसजेंडर एवं राजनीति।</li> <li>5. प्रतिद्वंद्व ट्रांसजेंडर की उपलब्धियाँ।</li> </ol>	15

हस्ताक्षर, सदस्य एवं संयोजक (केन्द्रीय अध्ययन मंडल)

① ③ ⑥   
 ② 10.6.24 ④ 10.6.24 ⑦   
 ⑤



**SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR  
SESSION 2021-22**

**M. Sc. ZOOLOGY  
SEMESTER - III  
PAPER – III  
ENVIRONMENT PHYSIOLOGY AND POPULATION ECOLOGY**

**Max. Marks - 80**

**Important Note:**

Each theory will have **five questions** of equal marks. First question [Multiple choice type or short answer type] will be based on all units [complete syllabus] with no internal choice, whereas remaining question will be unit wise with internal choice.

**UNIT-I**

- 1.1. Population dynamics
- 1.2. Demography, life table, reproductive rates, reproductive values
- 1.3. Population growth, exponential, non-overlapping
- 1.4. Stochastic and time lag models of population growth
- 1.5. Population density
- 1.6. Population evolution
- 1.7. Community dynamics: Characteristics, development and classification

**UNIT-II**

- 2.1. Adaptations
  - 2.1.1. Levels of adaptation
  - 2.1.2. Mechanisms of adaptation
- 2.2. Adaptations to different environments
  - 2.2.1. Marine, shores and estuaries
  - 2.2.2. Freshwater
  - 2.2.3. Terrestrial Life

**UNIT-III**

- 3.1. Stress Physiology: Basic concepts of environmental stress and strain, Concept of elastic and plastic strain.
- 3.2. Stress avoidance, stress tolerance and stress resistance.
- 3.3. Acclimatization, acclimation and adaptation.
- 3.4. Endothermic and physiological mechanism of regulation of body temperature.

**UNIT-IV**

- 4.1. Stress physiology in different conditions
- 4.2. Osmoregulation in aqueous and terrestrial habitats.
- 4.3. Physiological response to oxygen deficient stress.
- 4.4. Physiological response to body exercise.
- 4.5. Effect of meditation and yoga

**SUGGESTED READING MATERIALS (ALL LATEST EDITION)**

1. Ecology with special reference to animal & man, S. Charles, Kendeigh Prentice hall of India Pvt. Ltd. NewDelhi
2. Elements of Tropical Ecology, Yanney Ewusie (English language Book Society, Heine Mann Educational Book Publication)
3. Fundamentals of Ecology, Odum P.
4. Animal Physiology, Mechanism and Adaptation, Eckert R., W.H. Freeman and Co.
5. Biochemical Adaptation, Hochachka P.W, and Somero S.N, Princeton, New Jersey
6. Animal Physiology, Adaptation and Environment, Schiemidt Nielsen, Cambridge
7. General & Comparative Animal Physiology, Hoar W.S. Princeton Hall of India
8. Environmental Physiology, Willmer, P.G. Stone & Johansan I, Blackwell Science Oxford





**SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR  
SESSION 2022-23**

**M.Sc. CHEMISTRY  
SEMESTER - IV  
PAPER - CH - 22  
APPLIED CHEMICAL ANALYSIS**

Term End/Semester Examination M.M. 80  
Internal Assessment M.M. 20

**UNIT - I**

- A. **Air Pollution Monitoring and Analysis:** Classification of air pollution monitoring levels, air quality, standards and index, monitoring and analysis of selected air borne pollutants: SO<sub>2</sub>, NO<sub>x</sub>, SPM, VOC's, Pb, CO<sub>2</sub>, POP's, Hg, carbon and ozone air pollution control devices viz ESP's, scrubber technique etc. Atmospheric chemistry of acid rains, photochemical smog, greenhouse effect, global warming, ozone hole.

**UNIT - II**

- A. **Soil and Water Pollution:** Soil and water quality standards, monitoring and analysis of selected soil water contaminates: COD, pesticides, heavy metals, POP's, fluoride, cyanide, nitrate, phosphate, oil & grease, Geobiochemical impact of municipal solid waste, steel plants effluent, domestic sewage. Control devices of water pollutants.

**UNIT - III**

**Food Analysis**

- A. Introduction to general Constituents of food, Proximate Constituents and their analysis, Additives- Introduction -Types - Study of preservatives colors and Antioxidants and method of estimation, adulteration - Introduction, Types, Test for adulterants.  
B. Introduction standards composition and analysis of following foods: Wheat, Bread, Biscuits, Jam, Jelly, Honey, Milk, Ice Cream, Butter, Cheese, Milk Powder, Oils and Fats, Tea, Coffee, Soft drinks, Alcoholic beverages, Cereal and pulses, Confectionery, Fruits, Vegetables, Egg, Fish, Meat.

**UNIT - IV**

**Cosmetics, Clinical and Drug Analysis**

- A. Introduction of Cosmetics, evaluation of cosmetics materials, raw material and additives, Cosmetics colors, Perfumes in cosmetics, Cosmetics formulating, introduction, standards and methods of analysis, Creams, face powders, Make-up, Shaving preparations, Bath preparations.  
B. Concepts and principles of analytic methods commonly used in the clinical species: i.e. ammonia, blood urea Nitrogen, Ca, Cl, CO<sub>2</sub>, Fe, K, Li, Mg, Na, P, urea, glucose. Method for analysis of proteins (i.e. albumin, bilirubin, creatinine, cholesterol, HDL-cholesterol, triglycerides, creatinine) and Enzymes (i.e. Alanine Aminotransferase, acid phosphates, alkaline phosphates, amylase, aspartate Aminotransferase, cholinesterase, lactate, and lipase).

**BOOK SUGGESTED:**

1. Environmental Chemistry, S.E. Manahan, Lewis Publishers.
2. Environmental chemistry, Sharma and Kaur, Krishna Publishers.
3. Environmental Chemistry, A.K. De, Wiley Eastern.
4. Environmental Chemistry, Analysis, S.M. Khopkar, Wiley Eastern.
5. Standard Method of Chemical Analysis, F.J. Welcher Vol. III, Van Nostrand Reinhold Co.
6. Environmental Toxicology, Ed. J. Rose, Gordon and Breach Science Publication.
7. Environmental Chemistry, C. Baird, W.H. Freeman.
8. Analytical chemistry, G.D. Christian, J. Wiley.