

# ST. WILFRED'S P.G. COLLEGE

(Affiliated to the University of Rajasthan)

## 1.3.1

**Institution integrates cross cutting issues relevant to Gender, Environment and Sustainability, Human Values and Professional Ethics into the Curriculum**

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## 1.3.1 Institution integrates cross cutting issues relevant to Gender, Environment and Sustainability, Human Values and Professional Ethics into the Curriculum

### Response:

Education is the most powerful weapon which can be used to change the world. This part of the curriculum consists of courses awareness on cross cutting issues like Gender sensitization, and environment and sustainability. These courses help students to apply analytical thinking in solving issues. Inculcation of values which are the guiding principles of life, be it physical, mental or social well-being is addressed by value education course.

### Gender Sensitization

- Women Development-Issues and concerns, Women Empowerment through these courses. Women's Rights Awareness and Women's studies educate the students on gender equality. Women Empowerment Cell organizes a number of programmes like self-defense, women's rights and sessions on gender equity to supplement the above courses.

### Environment and Sustainability

- The course on Environmental studies which as prescribed by UGC. It enables a holistic understanding of the environment and develops favorable attitude and habits to protect and preserve nature.
- The course on Environmental Literature orients the students on the reaction and behavior of individual in relation to ecological issues.
- Research is carried out pertaining to environmental issues and challenges to find probable solutions in the programmes like Biotechnology, English and chemistry.

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- In addition, a course on Environmental Biotechnology is included in the curriculum of Biotechnology to create awareness on environment sustainability.
- Nature Club organizes a number of programmes like awareness campaigns, rallies, street plays and environmental development projects to involve students to work towards environmental sustainability. The constant effort of the NSS team in the Swachh Bharat Mission promotes cleanliness and hygiene in the campus and surrounding areas and in the adopted villages.

## Professionals Ethics

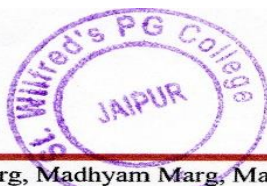
- Courses are offered on Professional Ethics and Values, Business Ethics, Business Etiquettes and Corporate Culture to develop professionally accepted standards of personal and business behavior, values and guiding principles.
- These courses are offered to build and enhance holistic personality in every student.
- Consumer Rights Club educates students on consumer welfare and protection, and Campus to Corporate Club inculcates professional behavior among the students.

## Human Values

- The course on Value Education with topics like human values, self-introspection, family and social values, inter-culture tolerance, social problems and online crimes, helps the students to understand the values and reflect them in their attitude and behavior and contribute to the society.
- Many courses that deal with ethics, human values, human rights and gender sensitization are offered
  - To tone the students with strong moral compass

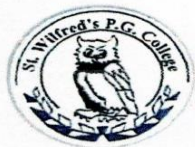
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- To instill the values of democratic decentralization and participatory democracy
- To promote the values of social and economic equality
- To help the students develop attitudes, behaviors and personality in accordance with the expected social norms and values

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## INDEX

S.No.	Year	Cross Cutting Issues				Total
		Gender Sensitization	Environment and Sustainability	Human Values	Professional Ethics	
1	2021-22	5	38	16	8	67

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## Gender Equality, Human Values and Professional Ethics, Environment Sustainability in Curricular and teaching learning material of BCA-PT-I/PT-II/PT-III

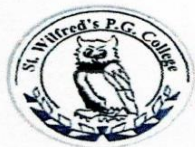
BCA-PT-I  
Session – 2022-23

S. No.	Course code	Course Name	Description	Cross cutting issues relevant to Gender Sensitization/ Human & Professional Values / Environment Sustainability
1	BCA-106	<p>WEB APPLICATION DEVELOPMENT</p> <p>BCA-105 : Web Application Development</p> <p>Question Paper pattern for Main University Examination <span style="float: right;">Max Marks: 100</span></p> <p>Part – I (very short answer) consists 10 questions of two marks each with two questions from each unit. Maximum limit for each question is up to 40 words.            Part – II (short answer) consists 5 questions of four marks each with one question from each unit. Maximum limit for each question is up to 80 words.            Part – III (Long answer) consists 5 questions of twelve marks each with one question from each unit with internal choice.</p> <p style="text-align: center;">Unit – I</p> <p>The Internet – Basic of internet, file transfer, telnet, usenet, gopher, wais, Archie and veronica. Introduction to Internet Protocols-, HTTP, FTP, SMTP protocols.</p> <p>World Wide Web : Elements of the Web, Web browser and its architecture, The web server, the proxy server, Microsoft internet explorer, viewing pages with a browser, using a browser for Mail, News and chat, Security and Privacy issues (cookies, firewalls, Data Security, executable Applets and scripts, blocking system).</p> <p style="text-align: center;">Unit – II</p> <p>HTML Fundamentals: Introduction to HTML, HTML Elements, HTML Semantics, HTML 5 Doc Types, New Structure Tags, Section, Nav, Article, Aside, Header, Footer, HTML Attributes, Headings, Paragraphs, Styles, Quotations, Blocks, Classes, Layout, Iframes, Creating HTML Pages, incorporating Horizontal Rules and Graphical Elements, Hyper-links, Creating HTML Tables, Creating HTML Forms, HTML and Image Techniques, HTML and Page, Development of Website and Webpage (Planning, Navigation and Themes, Elements of a Web page, steps of creating a site, publishing and publicizing site structuring web site).</p> <p style="text-align: center;">Unit-III</p> <p>Cascading Style Sheets: Understanding Style Sheets, CSS Syntax and Applying Style Sheets to HTML document, Developing Style Sheets: inline, internal and external. CSS Selectors, &lt;DIV&gt; tag, Using class and ID, Styling Backgrounds, Styling borders, Styling Text, Styling Fonts, Styling Links, Styling Lists, Styling Tables, Margin, Flex and Grids, Bootstrap &amp; Web page design : CMS, Banks of CMS, Joomla/wordpress-Installation, Design and development of websites.</p> <p style="text-align: right;">10 Dy. Registrar (Acad) University of Rajasthan JAIPUR</p>	Teaches a student to use authentic ways of web designing.	Professional Ethics

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## BCA-PT-II

S.no	Course code	Course Name	Description	Cross cutting issues relevant to Gender Sensitization/ Human & Professional Values / Environment Sustainability
1	BCA-205	<p>CLOUD COMPUTING</p> <p><b>BCA-205: Cloud Computing</b></p> <p>Max Marks: 100</p> <p>Question Paper pattern for Main University Examination</p> <p>Part – I (very short answer) consists 10 questions of two marks each with two questions from each unit. Maximum limit for each question is up to 40 words.</p> <p>Part – II (short answer) consists 5 questions of four marks each with one question from each unit. Maximum limit for each question is up to 80 words.</p> <p>Part – III (Long answer) consists 5 questions of twelve marks each with one question from each unit with internal choice.</p> <p><b>Unit-I</b></p> <p><b>Introduction of Cloud Computing:</b> Definition, Historical Developments, Enabling Technology, Vision, Essential Characteristics of Cloud Computing , Components of Cloud Computing. Challenges and Approaches of Migration into Cloud, Cloud Applications: Applications – Health care, CRM and ERP, Social Networking, Media Applications and Multiplayer Online Gaming, Banefits: For the Market, Enterprise, End user and Individuals.</p>	Teaches a student to understand the professional way of Social Networking and Data security.	Professional Ethics

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## Unit-II

**Cloud Computing Architecture** : Introduction, Cloud Reference Model, Architecture. Infrastructure / Hardware as a Service, Platform as a Service, Software as a Service. Types of Clouds, Public Clouds, Private Clouds, Hybrid Clouds, Community Clouds. Economics of the Cloud, Open Challenges, Cloud Interoperability and Standards. Scalability and Fault Tolerance. Parallel and distributed Computing-MapReduce. Hadoop, High level Language for Cloud, Service Oriented Computing.

## Unit-III

**Virtualization**: Introduction, Characteristics of Virtualized Environment. Taxonomy of Virtualization Techniques. Virtualization and Cloud computing, Virtualization: of CPU. Memory, I/O Devices, Server, Desktop, Network, and data-center. Pros and Cons of Virtualization, Technology Examples- VMware and Microsoft Hyper-V, KVM, Xen.

## Unit-IV

**Introduction of Cloud security services**, Design Principles, Policy Implementation. Cloud Computing Security Challenges, Cloud Computing Security Architecture. Cloud Security Tools and technologies to secure the data in Private and Public Cloud Architecture. Security Concerns, Legal issues and Aspects, Multi-tenancy issues. Risk area of Cloud computing, Data Security in Cloud. Risk Mitigation, Understanding and Identification of Threats in Cloud, SLA-Service Level Agreements, Trust Management.

## Unit-V

**Cloud Platforms in Industry**: Amazon Web Services- Compute Services, Storage Services, Communication Services and Additional Services. Google AppEngine-Architecture and Core Concepts, Application Life-Cycle, cost model. Microsoft Azure-Azure Core Concepts, SQL Azure. Integration of Private and Public Clouds Cloud applications: Protein structure prediction, Data Analysis, Satellite Image Processing, CRM and ERP, Social networking.

### Recommended Books:

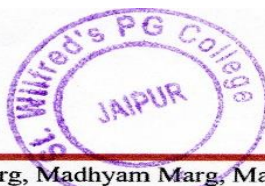
1. Cloud Computing ,Principle and Paradigms, Edited By RajkumarBuyya, JamesBroberg, A. Goscinski, Pub.- Wiley-2016
2. Kumar Saurabh. "Cloud Computing", Wiley Pub 2016
3. Mastering Cloud Computing by Rajkumar Buyya. Christian Vecchiola. S.Thamara Selvi from TMH 2013.
4. Distributed and Cloud Computing. Kai Hawang . GeoffreyC.Fox, Jack J. Dongarra Pub: Elsevier, 2013
5. Krutz . Vines, "Cloud Security " , Wiley Pub,2010
6. Velte, "Cloud Computing- A Practical Approach" ,TMH Pub,2009
7. Katarina Stanoevska-Slabeva, Thomas Wozniak, SantiRistol, "Grid and Cloud Computing - A Business Perspective on Technology and Applications". Springer,2010

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Where the mind is without fear! Where the head is held high!!





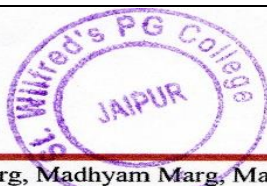
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BCA PT – III

S.no	Course code	Course Name	Description	Cross cutting issues relevant to Gender Sensitization/ Human & Professional Values / Environment Sustainability
1	BCA C02	<p>Network Security &amp; Cryptography</p> <p><b>BCA C02: Network Security &amp; Cryptography</b></p> <p>Question Paper pattern for Main University Examination <i>Max Marks: 100</i></p> <p>Part – I (very short answer) consists 10 questions of two marks each with two questions from each unit. Maximum limit for each question is up to 40 words.</p> <p>Part – II (short answer) consists 5 questions of four marks each with one question from each unit. Maximum limit for each question is up to 80 words.</p> <p>Part – III (Long answer) consists 5 questions of twelve marks each with one question from each unit with internal choice.</p> <p><b>Unit – I</b></p> <p><b>Introduction to Security Attacks :</b> Cryptography, Security Attacks, Security Services and Mechanism.</p> <p><b>Classical Encryption Techniques :</b> Classical Techniques, Conventional Encryption Model, Classical Encryption Techniques.</p> <p><b>Unit - II</b></p> <p><b>Modern Techniques:</b> Simplified DES, Block Ciphers Principles, DES Standards, DES Strength, Differential &amp; Linear Cryptanalysis, Block Cipher Design Principles, Block cipher Modes of Operation.</p> <p><b>Conventional Encryption Algorithms:</b> Triples DES, International Data Encryption Algorithm, RC5, RC2 placement &amp; Encryption Function, Key Distribution, Random Number generation, Placement of Encryption Function.</p> <p><b>Unit - III</b></p> <p><b>Public Key Encryption:</b> Public Key Cryptography: Principle of public key Cryptosystems, RSA algorithm, Key Management, Fermat's Theorem &amp; Euler's Theorem.</p> <p><b>Message Authentication &amp; Hash Function:</b> Authentication Requirements, Authentication Function, Message Authentication Codes, Hash Function, Birthday Attacks, Security of Hash Function &amp; MAC's, MD5 Message Digest algorithm, Secure Hash Algorithm(SHA).</p> <p><i>R. J. Jais</i> 37 Dy. Registrar (Acad.) University of Rajasthan JAIPUR</p>	Helps students to understand Security attacks and Electronic Mail Security in a professional way.	Professional Ethics

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## Unit - IV

**Digital Signatures:** RSA Based, ElGamal Signatures, Undeniable Signatures  
**Authentication:** Model of Authentication Systems, Impersonation, Substitution and spoofing games, Authentication schemes for mutual authentication based on shared secret, two-way public key, one-way public key, Mediated Authentication. One way Authentication.

## Unit - V

**Network and System Security:** Authentication Application- Kerberos x.509, Dictionary Authentication Services, **Electronic Mail Security**, Pretty Good Privacy (PGP). S/mime **Security:** Architecture, Authentication Header, Encapsulation security payloads combining security association, Key Management.

**Web Security:** Secure socket layer & Transport layer security. **Secure electronic transaction (SET)**. System Security: Intruders, viruses, firewall Design principle, Trusted Systems.

### Reference Books:

1. William Stallings; Cryptography and Network Security. Fifth Edn, Pearson.2006;
2. Kaufman Charlie et.al; Network Security: Private Communication in a Public World, 2nd Ed.,PHI/Pearson.
3. Atul Kahate; Cryptography and network Security; Tata McgrawHill.
4. V.K. Pachghare; Cryptography and Information Security; PHI.
5. Matt Bishop, Sathyanarayana; Introduction to Computer Security;Pearson.

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Gender Equality, Human Values and Professional Ethics, Environment Sustainability in Curricular and teaching learning material of BA-PT-I/PT-II/PT-III

BA- PT - I

Session – 2022-23

S. No.	Course code	Course Name	Description	Cross cutting issues relevant to Gender Sensitization / Human & Professional Values / Environment Sustainability
1	BA PT-I Environmental Studies	Environmental Studies	Sensitize students towards environment sustainability.	Environment Sustainability

BA-I

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Syllabus : B.A. Part-I

**3. ENVIRONMENTAL STUDIES**  
B.A. Part-I

**Scheme of examination**

Time	Min Marks	Max.Marks
3 hrs	36	100

This paper will contain 100 multiple choice questions. Each question will carry 1 mark. Students should be encouraged to visit places of Environmental Importance including Natural and Manmade Habitat.

Note:

- The marks secured in this paper shall not be counted in awarding the division to a candidate.
- The candidates will have to clear this compulsory paper in three chances.
- Non-appearing or absence in the examination of compulsory paper will be counted as a chance.

**Unit.1: The Multidisciplinary nature of environmental studies**  
Definition, scope and importance- Relationship between Environmental Studies and other branches of science and social sciences.  
Need for Environmental awareness, Environmental education in present day context.

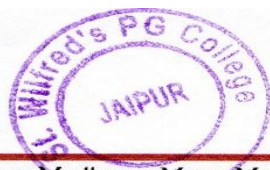
**Unit.2: Natural Resources and Challenges**

- Natural resources and associated problems, Classification of resources: renewable resources, non renewable resources, classes of earth resources, resources regions: Definition and criteria, resource conservation.
- Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
- Water resources: Use and over-utilization of surface and groundwater, floods, drought conflicts over water, dams-benefits and problems.
- Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticides problems, water logging, salinity, case studies.
- Energy resources: Growing energy need, renewable and nonrenewable energy sources, use of alternate energy sources. Case studies.
- Land resources: Land as a resource, Land degradation man induced Landslides, soil erosion and desertification.

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Syllabus : B.A. Part-I

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

### Unit 3: Ecosystems, Concepts, Structure, Functions and Types

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types characteristics features, structure and function of following ecosystem:
  - a. Forest ecosystem, Tropical Temperate and Alpine Ecosystem
  - b. Grassland ecosystem and Their Types
  - c. Desert ecosystem with emphasis on Thar Desert
  - d. Aquatic ecosystems(ponds, streams, lakes, rivers, oceans, estuaries) and Wet Land

### Unit 4: Biodiversity and its conservation

- Introduction –Definition, genetic, species and ecosystem diversity
- Biogeographically classification of India
- Value of biodiversity :consumptive use, productive use, social ethical., aesthetic and option values
- Biodiversity at global, National and local level
- India as a mega-diversity nation
- Hot-spot of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflict
- Endangered, Threatened and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity
- Red Data Book

### Unit 5: Environmental Pollution and Control Measures

#### Definition

- Causes, effects and control measures of:
  - a) Air Pollution
  - b) Water Pollution
  - c) Soil Pollution
  - d) Marine Pollution

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Syllabus : B.A. Part-I

- e) Noise Pollution
- f) Thermal Pollution
- g) Nuclear Hazards
  - Solid waste management" Causes, effects and control measures. of urban and industrial wastes
  - Role of an individual in prevention of pollution
  - Pollution case studies
  - Disaster management: floods earthquake, cyclone and landslides

#### Unit 6 : Social issues, Environment, Laws and Sustainability

- From Unsustainable to Sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies
- Environmental ethics: Issues and possible solution.
- Climate change, global warming, acid rain ozone layer depletion, nuclear accidents and holocaust. Case studies
- Wasteland reclamation.
- Consumerism and waste product.
- Environmental Protection Act.
- Air (Prevention and Control of Pollution) Act
- Wild life protection Act
- Forest Conservation Act
- Biological Diversity Act
- Issues involved in enforcement of environmental legislation
- Public Awareness.

#### Unit 7: Human Population and the Environment

- Population growth, variation among nations
- Population explosion-Family Welfare Programme
- Environment and Human health
- Human Rights
- Value Education
- HIV/AIDS
- Women and Child Welfare
- Role of Information Technology in Environment and human health
- Case Studies

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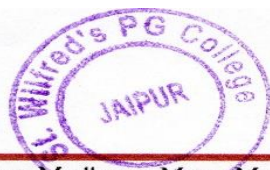


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2.	BA PT-I  Basic Psychological Processes	<p>Basic Psychological Processes</p> <p style="text-align: center;"><b>Paper I - Basic Psychological Processes</b></p> <p style="text-align: center;"><b>Section-A</b></p> <ol style="list-style-type: none"> <li>1. Introduction: Definition and Goals of Psychology; History- Structuralism, Functionalism, Behaviorism, Gestalt and Psychoanalysis; Modern Perspectives- Biological, Psychodynamic, Behavioral, Cognitive, Humanistic, Evolutionary and Socio-cultural; Methods- Observation, Case Study, Surveys and Experimental.</li> <li>2. Biological Basis of Behavior: The Nervous System-Structure and Functions of Neuron. Structure and Functions of Central Nervous System and Peripheral Nervous System.</li> <li>3. Sensation and Perception: Sensation- Meaning, Sensory Receptors, Sensory Thresholds, Habituation and Sensory Adaptation. Perception- Meaning, Constancies- Size, Shape and Brightness, Gestalt Principles, Factors Influencing Perception.</li> </ol> <p style="text-align: center;"><b>Section-B</b></p> <ol style="list-style-type: none"> <li>4. Learning: Definition and Theories- Classical Conditioning, Operant Conditioning, Cognitive Learning, Observational Learning.</li> <li>5. Memory: Definition; Encoding, Storage and Retrieval Processes; Models- Level of Processing, Parallel Distributed Processing and Information Processing- Sensory, Short Term and Long Term Memory; Forgetting- Nature and Causes.</li> <li>6. Motivation and Emotion: Motivation - Meaning and Approaches- Instinct, Drive-reduction, Arousal, Incentive and Humanistic. Emotion- Elements: Physiology, Expression and Subjective Experience; Theories- Cannon-Bard, James-Lange, Schachter-Singer, Opponent-Process.</li> </ol> <p style="text-align: center;"><b>Section-C</b></p> <ol style="list-style-type: none"> <li>7. Cognition: Thinking- Mental Imagery and Concepts; Problem Solving- Trial and Error, Algorithms, Heuristics, Insight; Barriers to Problem Solving.</li> <li>8. Intelligence: Definition and Theories- Spearman, Guilford, Cattell, Sternberg, Gardner; Meaning of IQ; Intelligence Tests.</li> <li>9. Personality: Definition; Type Theories and Trait Theories - Allport, Cattell, McCrae and Costa; Personality Assessment- Self-report Inventories, Projective Tests and Behavioural Assessments.</li> </ol> <p><b>Books Recommended:</b></p> <ul style="list-style-type: none"> <li>• Baron, R.A. &amp; Misra, G. (2015). <i>Psychology</i>. New Delhi: Pearson Education India.</li> </ul> <p style="text-align: right;">               Dy. Registrar (Academic-I)              University of Rajasthan              Jaipur         </p>	Sensitize students towards issues regarding human values and Professional Ethics	Human Values and Professional Ethics

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3	BA PT-I Social Psychology	<p>Social Psychology</p> <p style="text-align: center;"><b>Paper II - Social Psychology</b> <b>Section-A</b></p> <ol style="list-style-type: none"><li>1. Introduction: Meaning, Nature, Scope and Goals of Social Psychology. Methods of Social Psychology: Experimental and Non-Experimental Methods.</li><li>2. Social Perception and Person Perception; Social Perception- Meaning and Nature; Perceptual Defense, Perceptual Accentuation and Subliminal Perception. Person Perception: Meaning and Nature, Role of Non-verbal Cues; Perceivers' Characteristics and Role of Ongoing Interaction.</li><li>3. Attitudes: Nature, Functions, Formation, Change and Measurement.</li></ol> <p style="text-align: center;"><b>Section-B</b></p> <ol style="list-style-type: none"><li>4. Prejudice and Discrimination: Nature and Origin; Reduction of Prejudice and Discrimination.</li><li>5. Interpersonal Attraction: Proximity and Affective basis, Acquaintance and Need to Affiliate; Effects of Observable Characteristics, Similarity and Mutual liking.</li><li>6. Leadership: Definition and Functions; Types of Leadership. Trait, Situational and Contingency Approaches.</li></ol> <p style="text-align: center;"><b>Section-C</b></p> <ol style="list-style-type: none"><li>7. Communication: Meaning, Nature and Types: Verbal and Non-verbal; Barriers in Communication.</li><li>8. Pro-Social Behavior: Personal, Situational and Socio-Cultural Determinants. Explaining Pro-Social Behavior: Empathy, Altruism Hypothesis, Negative-State Relief Model, Emphatic-Joy Hypothesis and Genetic-Determinism Model.</li><li>9. Aggression and Social Problems: Aggression- Theories, Determinants, Prevention and Control; Social Problems -Meaning and Nature; Types of Social Problems - Poverty, Deprivation, Population Explosion, Economic Development; Solutions to Social Problems.</li></ol> <p><b>Books Recommended :</b></p> <ul style="list-style-type: none"><li>• Baron, R.A., Branscombe, N.R., Byrne, D. &amp; Bhardwaj, G. (2012). <i>Fundamentals of Social Psychology</i>, Noida: Dorling Kindersley South Asia.</li><li>• Branscombe, N.R. &amp; Baron, R.A. (2018). <i>Social Psychology</i>. Noida :Pearson India Education.</li><li>• Myers, D.G. (1994). <i>Exploring Social Psychology</i>. New York: McGraw Hill</li><li>• अरुणकुमारसिंह, (2002), समाजमनोविज्ञानकीरूपरेखा, मोतीलालबनारसीदास, दिल्ली</li></ul> <p style="text-align: right;"> Dy. Registrar (Academic-I) University of Rajasthan Jaipur</p>	Sensitize students towards issues regarding human values.	Human Values
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(Affiliated to the University of Rajasthan)

4	BA PT-I  Physical Geography	<p style="text-align: center;">85</p> <p style="text-align: center;">Paper I: Physical Geography</p> <p style="text-align: center;">Section A</p> <p>Definition, scope and development of physical geography, geological history of the Earth; zoning of Earth's interior, rocks, origin of continents and oceans; continental drift theory and plate tectonics; concept of isostasy; views of Airy, Pratt, Joly and Holmes. Earth movements: epirogenic and orogenic; mountain building theories: Kober, Jeffreys, Joly, Joly and Holmes and plate tectonics; denudation, cycle of erosion: views of W.M. Davis and W. Penck, erosional and depositional topographies: river, under ground water, glacier, wind and oceanic waves.</p> <p style="text-align: center;">Section B</p> <p>Composition and structure of the atmosphere, insolation, air temperature, air pressure, pressure belts and planetary winds, monsoon and local winds, humidity, classification of clouds and precipitation, air masses, fronts and cyclones; tropical and temperate, classification of the world climates: Koppen and Thornthwaite, general climatic classification.</p> <p style="text-align: center;">Section C</p> <p>Surface configuration of oceans bottom: Pacific, Atlantic and Indian oceans, ocean depths, horizontal and vertical temperature of oceans, oceanic salinity, tides, oceanic waves and currents, coral reefs and their origin; views of Darwin and Dana, W.M. Davis, Murray, classification of marine resources, biosphere and its components, ecosystems, plant community and animal kingdom, biomes: equatorial rainforest, monsoon, savanna and temperate grasslands.</p> <p>Recommended Readings:</p> <p>1. मोहन, वी.एस. वी. गौतम, ए. 2005, भौतिक भूगोल (जीयमण्डल सहित)। स्वामी प्रकाशनस नेस्ट।      2. वास, पी. 2012, भौतिक भूगोल। राजेश प्रकाशनस, नई दिल्ली।      3. गौतम, अजय 2012, भौतिक भूगोल। स्वामी प्रकाशनस, नेस्ट।      4. Husain, M. 2001, Fundamentals of Physical Geography, Rawat Publication, Jaipur.      5. 'ess, D. 2012: Physical Geography : A Landscape Appreciation, PHI Learning Private limited, New Delhi, Mecknight's Tevt Edition.      6. hular, D.R. 2012: Physical Geography, Kalyani Publishers, New Delhi      7. ड. सविन्द. 2005 : भू-आकृति विज्ञान। तारा प्रकाशनस, वाराणसी।      8. इ. सविन्द. 2011 : भौतिक भूगोल का स्वरूप। प्रथम। पुस्तक भवन, ईलाहाबाद।      9. एम एन, अर्णो एम एल एण्ड विभा, अरुण 2008 भौतिक भूगोल। पयशील प्रकाशन जयपुर।      10. aram, R.C. and Vatal M. 1999 Oceanography, for Geographers, Chaitanya Publishing usa, Allahabad.</p> <p style="text-align: center;">               Dy. Registrar              (Academic)              University of Rajasthan              JAIPUR           </p>	Sensitize students towards environment sustainability.	Environment Sustainability
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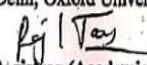
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5	BA PT-I  Introduction to Anthropology	<p style="text-align: center;"><b>Paper I- Introduction to Anthropology</b></p> <p><b>Unit-I</b> Meaning and subject matter of Anthropology. History of Anthropology. Branches of Anthropology:- (a) Social-Cultural Anthropology (b) Physical Anthropology (c) Archaeological Anthropology, (d) Linguistic Anthropology Relationship of Anthropology with Social Sciences, Natural Sciences and Medical Sciences.</p> <p><b>Unit-II</b> Basic Concepts : Culture, Society, Community, Group, Institution. Human Institutions: Family: Definition and functions. Family as the corner stone of human society. Form and Types of family. Joint family system in India. Changes in the institution of family. Marriage: Definition and function in society. Forms and types of marriage. Bridewealth and Dowry. Marriage regulation in India.</p> <p><b>Unit - III</b> Kinship: Meaning of kinship and its role in society. Types of kins. Kin groups unilineal: lineage, clan, phratry , moiety. Kinship behaviour: Avoidance and Joking relationship. Religion: Meaning and role of religion. Theories of origin of religion: Animism and Animatism. Relation of religion to other social institutions. Magic: Definition and types.</p> <p><b>Readings Books :-</b> Beattie John, 1964, Other Cultures: Aims, Methods and Achievements in Social Anthropology, London, Routledge and Kegan Paul Ltd. Fox Robin, (1983), Kinship and Marriage, Cambridge, Cambridge University Press. Hasnain Nadeem, 1962, General Anthropology, New-Delhi, Jawahar Publishers &amp; Distributors. Herskovits Melville Jean, 1948, Man and His works: The Science of Cultural Anthropology, New York, A.A. Knof. Madan T.N. and Majumdar D.N., 1957, An Introduction to Social Anthropology, Bombay, Asia Publishing House (Hindi &amp; English) Mair Lucy, 1965, An Introduction to Social Anthropology, New Delhi, Oxford University Press.</p> <p style="text-align: right;">By:  By. Registrar (Academic-I) University of Rajasthan Jaipur.</p>	Sensitize students towards issues regarding human values.	Human Values
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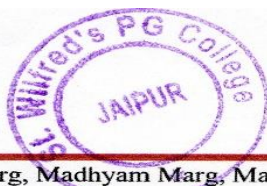
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BA- PT- II

S. No.	Course code	Course Name	Description	Cross cutting issues relevant to Gender Sensitization/ Human & Professional Values / Environment Sustainability
1	BA PT-II Paper II: Sociology of Village	Sociology of Village  <p style="text-align: center;"><i>S4</i> Paper II: Sociology of Village</p> <p style="text-align: right;"><i>Syllabus : B.A. Part-II</i> Max Marks: 100</p> <p><b>Unit 1: Introduction to Rural Sociology</b></p> <ul style="list-style-type: none"><li>• Concept of Rural Sociology &amp; its Development</li><li>• Basic Concepts : Village, Peasant Society, Agrarian Structure, Little, Great &amp; Multiple traditions, Rural-Urban Continuum</li><li>• Features of Economy &amp; Polity in relation to village</li></ul> <p><b>Unit 2: Social Structure of Village</b></p> <ul style="list-style-type: none"><li>• Family, Caste, Kinship and Gender</li><li>• Religion and Village Life</li><li>• Formal and Informal Administrative Structures : Village Panchayats, Caste Panchayat</li></ul> <p><b>Unit 3: Change in Indian Village Structure</b></p> <ul style="list-style-type: none"><li>• Agrarian Distress in Villages : Suicide, Indebtedness, Poverty</li><li>• Agrarian Movement in India</li><li>• Impact of Urbanization &amp; Globalization in Village Systems</li></ul> <p><b>Essential Readings: (in English) :</b></p> <ol style="list-style-type: none"><li>1. Desai A.R., 1959: Rural Sociology India, Popular Prakashan, Bombay.</li><li>2. Rao M.S.A., 1974: Urban Sociology in India, Orient Longman, New Delhi.</li><li>3. Desai A.R., 1979: Rural Sociology India in Transition, Popular Prakashan, Bombay.</li><li>4. D'Souza Alfred, 1978: The Indian City, Poverty, Ecology and Urban Development, Manohar Publication, New Delhi.</li><li>5. Ramkrishana Mukarjee, 1957: The Dynamics of Rural Society, Berlin.</li></ol>	Sensitize students towards issues regarding human values and gender sensitization	Human Values and Gender Sensitization

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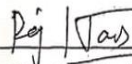


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2	BA PT- II Paper III: Human Development	<p>Human Development</p> <table border="1"> <thead> <tr> <th colspan="2">Contents</th> <th>Hours</th> </tr> </thead> <tbody> <tr> <td colspan="3"><b>UNIT I</b></td> </tr> <tr> <td>• Definition and scope of Human Development as a field of study.</td> <td></td> <td>6</td> </tr> <tr> <td>• Principles of development</td> <td></td> <td>4</td> </tr> <tr> <td>• Role of Heredity and environment and learning and maturation in development.</td> <td></td> <td>4</td> </tr> <tr> <td>• Factors affecting development.</td> <td></td> <td>6</td> </tr> <tr> <td colspan="3"><b>UNIT II</b></td> </tr> <tr> <td colspan="3">Development from conception to adolescence:</td> </tr> <tr> <td>• Physical development</td> <td></td> <td>6</td> </tr> <tr> <td>• Motor development</td> <td></td> <td>5</td> </tr> <tr> <td>• Socio-emotional development</td> <td></td> <td>8</td> </tr> <tr> <td>• Language and cognitive development</td> <td></td> <td>8</td> </tr> <tr> <td colspan="3"><b>UNIT III</b></td> </tr> <tr> <td>• Importance and objectives of early childhood education; impact of deprivation and early stimulation</td> <td></td> <td>8</td> </tr> <tr> <td>• Definitions, functions and types of families; changing roles and challenges faced by Indian Families</td> <td></td> <td>8</td> </tr> <tr> <td>• Understanding differently abled children; definitions, meaning and classification</td> <td></td> <td>10</td> </tr> <tr> <td>• Major development tasks, achievements and problems of adulthood and aging. Need for care and support for aging individuals.</td> <td></td> <td>10</td> </tr> <tr> <td colspan="3"><b>References :</b></td> </tr> <tr> <td colspan="3">1. Santrock JW (2007). Lifespan Development. Tata – McGrawHill. New Delhi. 3<sup>rd</sup>Ed.</td> </tr> <tr> <td colspan="3">2. Bee H (1995). The developing child. Harper Collins College Publisher.</td> </tr> <tr> <td colspan="3">3. Berk L (2006). Child development. Allyn &amp; Bacon. New York.</td> </tr> <tr> <td colspan="3">4. Cole M and Cole SR (1996). The Development of Children. W.H. Freeman and Company.</td> </tr> <tr> <td colspan="3">5. Rice F (1992). Human Development: A Life Span Approach. Prentice Hall.</td> </tr> <tr> <td colspan="3">6. Rice FP. Marriage and Parenthood. Allyn and Bacon Inc. Toronto.</td> </tr> <tr> <td colspan="3">7. Vidhya Bhushan and Sachdeva (2000). Introduction to Sociology.</td> </tr> <tr> <td colspan="3"><b>HUMAN DEVELOPMENT – PRACTICAL III</b></td> </tr> <tr> <td colspan="3">Maximum marks: 50</td> </tr> </tbody> </table> <p style="text-align: right;">   Dy. Registrar (Academic-I)  University of Rajasthan  Jaipur </p>	Contents		Hours	<b>UNIT I</b>			• Definition and scope of Human Development as a field of study.		6	• Principles of development		4	• Role of Heredity and environment and learning and maturation in development.		4	• Factors affecting development.		6	<b>UNIT II</b>			Development from conception to adolescence:			• Physical development		6	• Motor development		5	• Socio-emotional development		8	• Language and cognitive development		8	<b>UNIT III</b>			• Importance and objectives of early childhood education; impact of deprivation and early stimulation		8	• Definitions, functions and types of families; changing roles and challenges faced by Indian Families		8	• Understanding differently abled children; definitions, meaning and classification		10	• Major development tasks, achievements and problems of adulthood and aging. Need for care and support for aging individuals.		10	<b>References :</b>			1. Santrock JW (2007). Lifespan Development. Tata – McGrawHill. New Delhi. 3 <sup>rd</sup> Ed.			2. Bee H (1995). The developing child. Harper Collins College Publisher.			3. Berk L (2006). Child development. Allyn & Bacon. New York.			4. Cole M and Cole SR (1996). The Development of Children. W.H. Freeman and Company.			5. Rice F (1992). Human Development: A Life Span Approach. Prentice Hall.			6. Rice FP. Marriage and Parenthood. Allyn and Bacon Inc. Toronto.			7. Vidhya Bhushan and Sachdeva (2000). Introduction to Sociology.			<b>HUMAN DEVELOPMENT – PRACTICAL III</b>			Maximum marks: 50			Sensitize students towards issues regarding human values and gender sensitization	Human Values and Gender Sensitization
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3	BA PT- II Paper - I Resource Geography	<p>Resource Geography</p> <p>Paper I: Resources Geography</p> <p>Section A</p> <p>Nature, scope and significance of resources geography, definition and classification of resources: renewable and non renewable resources, resource classification of Zimmerman, Natural Resources: Distribution, exploitation, uses and conservation of forest, water, soils, fisheries, mineral resources, energy resources (coal, petroleum, natural gas and non-conventional energy resources).</p> <p>Section B</p> <p>Human resources: Population growth, distribution and density, causes of inequalities, population-resources relationship and problems, Agricultural resources: fisheries and cereal crops: rice, wheat, maize and barley; beverages: tea, coffee and tobacco, commercial crops: cotton, rubber, jute, sugarcane, silk and artificial fibres. Agricultural regions of the world.</p> <p>Section C</p> <p>Concepts of Resources utilization, their conservation, environmental and cultural constraints in resource utilization, water conservation and rainwater harvesting, soil and forest resources conservation, land capability classes, resources regions of the world, resources regions of the India, economic regions of the India, sustainable development.</p> <p>Recommended Readings:</p> <p>Alexander, E.W. 1988: Economic Geography. Prentice Hall India, New Delhi. Bunting B.C., 1987: The Geography of Soil. Prentice hall; New York. कौशिक, एस.डी. 2010: संसाधन भूगोल। रस्तोगी पब्लिकेशन्स, मेरठ। मथुरा. डी. 1988: संसाधन भूगोल। रस्तोगी प्रकाशन, मेरठ। Mitchell, Bruce. 1979: Geography and Resource Analysis. Longmans, London. Park, C.C. 2001: The Environment-Principles and applications. Routledge, London. Robinson, G.W. 1932 : Soils, their Origin, Constitution and Classification. London. Shafi, M. 2004: Agricultural Geography. Pearson India.</p>	Sensitize students towards issues regarding human values and Environment Sustainability	Human Values and Environmental Sustainability
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4	BA PT- II  Paper - II Human Geography	<p>Human Geography</p> <p style="text-align: center;"><b>Paper II: Human Geography</b></p> <p style="text-align: center;">Section A</p> <p>Definition, aims and scope of human geography, relation of human geography with other social sciences. Principles of human geography, essential facts of human geography.</p> <p style="text-align: right;">31 79</p> <p>according to Brunhes and Huntington, schools of man-environment relations: determinism, possibilism and neo-determinism</p> <p style="text-align: center;">Section B</p> <p>Human races: evolution and migration, zone-strata theory, classification of races: types, characteristics and distribution. human races in India, tribes of the world: eskimos, bushman, pigmy, masai, badduian and khigiz; tribes in India: bhils, nagas, santhal, gond, gujar of Jammu and Kashmir and toda. Population growth and theories, distribution and density of world population.</p> <p style="text-align: center;">Section C</p> <p>Migration of population: causes, types and impact; population regions and population policies in India. Rural settlements: factors affecting development of rural settlement, types and patterns of rural settlements, building materials and house types, urban settlements: process of urbanization, urban problems in India, impact of human activities on environment.</p> <p>Recommended Readings:</p> <p>Chandna, R.C. 2000: Geography of Population. Kalyani Publishers; New Delhi. Dohrs, F.E. and Sumners, L.W. (eds.) 1967: Introduction to Geography. Thomas Crowell Co., New York. Dear, M.J. and Flusty, S. (ed.) 2002: The spaces of Post modernity, Readings in Human Geography. Blackwell Publishers Ltd., Oxford. Fellén, G. and Getis, J. 1998: Human Geography-Landscape of human activities. Longman, London. Hussain, M. 2012: Human Geography. Rawat Publications, Jaipur. हार्सन, एम. 2006: संसाधन भूगोल। वस्तुचक्र प्रकाशन, जोरखपुर। Leong, C.C. and Morgan, E.C. 1982: Human and Economic Geography. Oxford University Press, Oxford 2<sup>nd</sup> Edition. कौशिक, एस.डी. 2012: मानव भूगोल। रस्तोगी पब्लिकेशन्स, मेरठ। मौर्य, एस.डी. 2005: जनसंख्या भूगोल। शारदा पुस्तक भवन, एलाहाबाद। पण्ड, पी.पी. 2001: जनसंख्या भूगोल। मध्यप्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल। राय, पी.पी. एवं श्रीवास्तव, पी.के. 2006: मानव भूगोल। वस्तुचक्र प्रकाशन, जोरखपुर। Singh, R.L. 2005: Fundamentals of Human Geography. Shurda Pustak Bhawan, Allahabad.</p> <p style="text-align: center;">Practicals</p> <p style="text-align: center;">Scheme of examination</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">Min. Pass Marks: 18</td> <td style="width: 33%;">Bifurcation of Marks</td> <td style="width: 33%;">Max. Marks: 50</td> </tr> <tr> <td>Written test</td> <td>24</td> <td>Five</td> </tr> <tr> <td>Field survey and viva voce</td> <td>10+04</td> <td>3 hrs.</td> </tr> <tr> <td>Record and viva voce</td> <td>08+04</td> <td>2 1/2 hrs.</td> </tr> </table> <p style="text-align: right;">Dy. Registrar (Academic) University of Rajasthan JAIPUR</p>	Min. Pass Marks: 18	Bifurcation of Marks	Max. Marks: 50	Written test	24	Five	Field survey and viva voce	10+04	3 hrs.	Record and viva voce	08+04	2 1/2 hrs.	Sensitize students towards issues regarding human values and Environment Sustainability	Human Values and Environmental Sustainability
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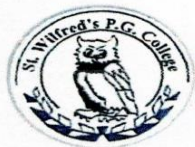
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Ph. 0141-2780436, 2780904 E-mail: [stwilfredscollege@gmail.com](mailto:stwilfredscollege@gmail.com) Website: [www.stwilfredscollege.com](http://www.stwilfredscollege.com)

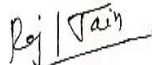
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# ST. WILFRED'S P.G. COLLEGE

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## BA PT- III

S. No.	Course code	Course Name	Description	Cross cutting issues relevant to Gender Sensitization/ Human & Professional Values / Environment Sustainability
1	BA PT- III Paper II: Introducing Sub Sociologies	<b>Introducing Sub Sociologies</b>  <b>Paper II: Introducing Sub Sociologies</b>  Max Marks: 100  Unit I: Sociology of Urban Society <ul style="list-style-type: none"><li>• Concepts: City and its Types, Urbanization, Urbanism, Migration</li><li>• Urban Sociology: Nature, Subject Matter, Significance</li><li>• Issues: Slums, Health and Sanitation</li></ul>  Dy. Registrar (Academic-I) University of Rajasthan Jaipur	Sensitize students towards environment sustainability	Environment Sustainability

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# ST. WILFRED'S P.G. COLLEGE

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50

Syllabus : B.A. Part-III

## Unit II: Sociology of Development

- Concepts: Development & its Forms, Sustainable Development, Modernization
- Sociology of Development: Nature, Subject Matter, Significance
- Issues: Displacement-Rehabilitation, Development Inequalities: Education, Gender

## Unit III: Sociology of Globalization

- Concepts: Globalization, Glocalization, Globalism
- Sociology of Globalization: Nature, Subject Matter, Significance
- Issues: Marginalization: Digital Divide, Economic Divide, Identity Crisis

### Essential Readings: (in English)

1. Doshi, S.L. 2003: Modernity, Past Modernity and Neo-Sociological Theories, Jaipur: Rawat Publications.
2. Flanagan WG (2011): Urban Sociology, Maryland, Rowman & Littlefield
3. Kofman E. & Youngs G. (edt) (1996), Globalization: Theory & Practice, London, Pinter.
4. Singh, Sheobahal, 2010: Sociology of Development, Jaipur: Rawat Publications.
5. Singh, Yogendra (edited) 2014: Indian Sociology Vol. 2, New Delhi: Oxford University Press.
6. Singh, Yogendra, 2002: Culture Change in India, Jaipur: Rawat Publications.
7. Singh, Yogendra, 2005: Ideology & Theory in Indian Sociology, Jaipur: Rawat Publications.
8. Somayaji S. & Dasguptas, 2013: Sociology of Displacement: Policies and Practice, Jaipur: Rawat Publications.

### Essential Readings: (in Hindi)

1. सिंह, शिव बहाल, 2010: विकास का समाजशास्त्र, जयपुर: रावत पब्लिकेशन्स।
2. भार्गव नरेश, 2014 : वैश्वीकरण : समाजशास्त्रीय परिपेक्ष, रावत पब्लिकेशन्स।
3. YMSOE-004, 2018, नगरीय समाजशास्त्र, गलीबाबा पब्लिशिंग हाउस प्राइवेट लिमिटेड।

*Raj / Jao*

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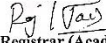
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# ST. WILFRED'S P.G. COLLEGE

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2	BA PT- III  Paper II: Environmental Economics	<p>Environmental Economics</p> <p>Paper- II (b): Environmental Economics Section -A</p> <p>Environmental Economics: An Introduction; Review of Microeconomics and Welfare Economics; The Theory of Externalities: Pareto Optimality and Market Failure in the Presence of Externalities; Property Rights and the Coase Theorem; Sustainable Development: Concepts and Measurement.</p> <p style="text-align: center;">   Dy. Registrar (Academic-I)  University of Rajasthan  Jaipur </p> <p style="text-align: center;">02      Syllabus : B.A. Part-III</p> <p style="text-align: center;"><b>Section-B</b></p> <p>Development and Environment: The Environment Kuznets Curve; Trade and Environment; Environmental Problems; Trans-boundary Environmental Problems: Global Warming and Climate Change; Methods of Environment Valuation: Hedonic Pricing, Contingent Valuation Method and Travel Cost Method.</p> <p style="text-align: center;"><b>Section-C</b></p> <p>International Environmental Policy: Conventions and Treaties, UN Effort to Protect the Environment, Stockholm, Rio, Johansberg, Agenda 21, OECD Environmental Committee Report, Kyoto, Convention on Biodiversity, Paris Climatic Conventions; Environmental Governance in India; WTO and Environment.</p> <p><b>Recommended Books:</b></p> <ol style="list-style-type: none"> <li>1. Charles Kolstad, Intermediate Environmental Economics, Oxford University Press, 2<sup>nd</sup> Edition, 2010</li> <li>2. Robert N. Stavins (ed.), Economics of the Environment: selected Readings, W.W.Norton, 5<sup>th</sup> edition, 2005.</li> <li>3. Roger Perman, Yue Ma, James McGilvray and Michael Common, Natural Resource and Environmental Economics, Pearson Education/ Addison Wesley, 3<sup>rd</sup> edition, 2003.</li> <li>4. Maureen L. Cropper and Wallace E. Oates, 1992, "Environmental Economics: A Survey", Journal of Economic Literature, Volume 30</li> </ol>	Sensitize students towards environment sustainability	Environment Sustainability
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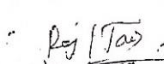
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# ST. WILFRED'S P.G. COLLEGE

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3	BA PT- III Paper I: World regional geography	<p>World regional geography</p> <p>Paper I: World Regional Geography</p> <p>Section A</p> <p><b>Asia:</b> Terrain Pattern, Drainage, Climate, Natural Vegetation, Soils, Population and Economic Base of the Continent In General. Regional Study of South-East and South-West Asia.</p> <p><b>Europe:</b> Terrain Pattern, Drainage, Climate, Natural Vegetation, Soils, Population and Economic Base of the Continent In General ; Regional Study of British Isles, France and Germany.</p> <p>Section B</p> <p><b>North and South America:</b> Terrain Pattern, Drainage, Climate, Natural Vegetation, Soils, Population and Economic Base of the Continent In General; Regional Study of New England and Brazil.</p> <p>Section C</p> <p><b>Australia and New Zealand:</b> Terrain Pattern, Drainage, Climate, Natural Vegetation, Soils, Population and Economic Base of Australia and New Zealand In General.</p> <p><b>Recommended Readings:</b>          Cole, J., 1996. A Geography of the World's Major Regions, Routledge, London.          Deblij, H.J., 1994, Geography : Regions and Concepts, John Wiley, New York.          Dickenson, J.P. et al, 1996. The Geography of the Third World, Routledge, London.          Gourou, P., 1980. The Tropical World, Longman, London.          Jackson, R.H. and Hudman, L.E., 1991. World Regional Geography : Issues for Today, John Wiley, New York.          Kolb, A., 1977. East Asia - Geography of a Cultural Region, Mathuen, London.          Minshull, G.N., 1984 Western Europe, Hodddard &amp; Stoughton, New York.          Patterson, J.H., 1985. Geography of Canada and the United States, Oxford University Press.          Songquiao, Z., 1994. Geography of China, John Wiley, New York.          Ward, P.W. and Miller, A. 1989. World Reginal Geography : A Question of Place, John Wiley, New York.</p> <p style="text-align: center;">               Dy. Registrar              (Academic)              University of Rajasthan              JAIPUR           </p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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4	BA PT- III  Paper II: Geography of India	<p>Geography of India</p> <p>Paper II: Geography of India</p> <p>Section A</p> <p>India in the context of South and Southeast Asia; geological, structural, physiographic divisions, climate, seasons, mechanism of Indian monsoon, major climatic regions, vegetation, major soils and regions; drainage system, water resources and irrigation projects; forests, mineral and power resources: their utilization policy and conservation strategies.</p> <p>Section B</p> <p>Agriculture: typology, major crops, changing pattern of crops, agricultural growth during plan period and green revolution, livestock resources and their development, industrial growth and development; industrial localization with reference to iron and steel, cotton textile, cement and chemical industries, industrial regions; population growth, distribution, problems, policy implication, trends of urbanization and human resource development.</p> <p>Section C</p> <p>Regional disparities in economic development, planning and economic regions of India, multi-level planning, problems and prospects of linking of rivers, environmental issues in India, transport development: rail, road, air and waterways, foreign trade: challenges and prospects.</p> <p>Recommended Readings:</p> <p>Gautam, A.K., 2010: Geography of India, Rastogi Publications, Meerut.</p> <p>Gopal Krishna, R. 2001. Geography of India, Jawahar Publishers &amp; Distributions, New Delhi, 2<sup>nd</sup> Edition.</p> <p>Khullar, D.R. 2006. India a comprehensive Geography, Kaiyazi Publishers, New Delhi</p> <p>Prakash, S. 1986: Geography of India, Vikas Publications, New Delhi</p> <p>Schryver, G. and Sengupta, 1968: Economic Regionalization of India, Census of India Publication, New Delhi.</p> <p>Singh, G. 1998: A Geography of India, Ansa Patil &amp; Sons, Delhi, 5th Edition.</p> <p>Singh, R.L. (ed.) 1971: India: A Regional Geography, NCERT, Varanasi.</p> <p>Spate, O.H.K. and Leachman, A.T.A. 1967: India and Pakistan, Land, People and Economy, Methuen and Co., London.</p> <p>Tirtha, R 2000: Geography of India, Rawal Publications, Jaipur 2<sup>nd</sup> Edition (India)</p> <p>www.stwilfredscollege.com</p> <p>Practicals</p> <p>Scheme of Examination</p> <p>Min. Pass Marks: 48</p> <p>Written test: 24</p> <p>Field survey and map work: 24</p> <p>Report and viva voce: 24</p> <p>Max. Marks: 50</p> <p>Time: 3 hrs</p> <p>10-06</p> <p>02-06</p> <p>Dr. Registrar (Academic) University of Rajasthan Jaipur</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
5	BA PT- III  Paper I: Sociological Thought	Sociological Thought	Sensitize students towards issues regarding human values	Human Values

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Syllabus : B.A. Part-III

## Paper I: Sociological Thought

Max Marks: 100

### Unit I: Classical Sociological Tradition

- Karl Marx: Dialectical Materialism, Class struggle
- Emile Durkheim: Mechanical and Organic Solidarity, Social Fact
- Max Weber: Social Action, Types of Authority

### Unit II: Contemporary Sociological Tradition

- Jurgen Habermas: Legitimation Crisis, Communicative Action
- Antonio Gramsci: Hegemony, Civil Society
- Anthony Giddens: Modernity, Structuration

### Unit III: Indian Sociological Tradition

- M.N. Srinivas: Sanskritization, Dominant Caste
- D.P. Mukherji: Diversity, Dialectics of Tradition
- A.R. Desai: Nationalism, Path of Development

### Essential Readings: (in English) :

1. Doshi, S.L. 2003: Modernity, Post Modernity and Neo-Sociological Thought, Jaipur: Rawat Publication.
2. Coser, Lewis A., 2008: Masters of Sociological Thought, Jaipur: Rawat Publication.
3. Nagla, B. K. 2013: Indian Sociological Thought, Jaipur: Rawat Publication.
4. Raymond Aron, 1967: Main Currents in Sociological Thought, (Vol. I & II), London: Penguin Books.

### Essential Readings: (in Hindi)

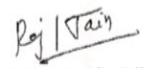
1. दोषी, एस. एल., 2003: आधुनिकता अंतर-आधुनिकता एवं नव-समाजशास्त्रीय सिद्धान्त, जयपुर: रावत पब्लिकेशन्स
2. हुसैन, मुजतबा, 2010: समाजशास्त्रीय विचार, नई दिल्ली: ओरियंट ब्लैकस्वॉन
3. दोषी, एस. एल., 2007, आधुनिक समाजशास्त्रीय विचारक, जयपुर: रावत पब्लिकेशन्स
4. मुकर्जी, रवीन्द्रनाथ, 2003, सामाजिक विचारधारा, दिल्ली: विवेक प्रकाशन

## Paper II: Introducing Sub Sociologies

Max Marks: 100

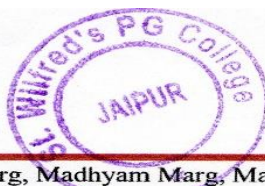
### Unit I: Sociology of Urban Society

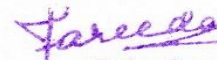
- Concepts: City and its Types, Urbanization, Urbanism, Migration
- Urban Sociology: Nature, Subject Matter, Significance
- Issues: Slums, Health and Sanitation

  
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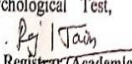
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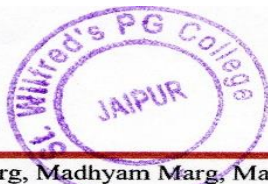
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6	BA PT- III  Paper I: Positive Psychology	<p>Positive Psychology</p> <p style="text-align: center;"><b>Paper I -Positive Psychology</b></p> <p style="text-align: center;"><b>Section A</b></p> <ol style="list-style-type: none"> <li>1. Introduction : Definition, Goals and Assumptions of Positive Psychology; Relationship with other Branches of Psychology</li> <li>2. Happiness: Meaning; Hedonic and Eudaemonic Viewpoint; Positive and Negative Affect; Theoretical Viewpoints; Determinants and Sources; Authentic Happiness; Enhancement of Happiness and Wellbeing.</li> <li>3. Positive Cognitive States and Processes: Self-Efficacy, Optimism, Hope, Mindfulness, Flow and Spirituality.</li> </ol> <p style="text-align: center;"><b>Section B</b></p> <ol style="list-style-type: none"> <li>4. Virtues and Strengths of Character: Classification and Measures of Human Strengths, Gallup's Clifton Strength Finder; VIA Classification; Identifying Personal Strengths.</li> <li>5. Resilience: Meaning and Sources; Developmental and Clinical Perspective; Successful Aging and Growth through Trauma.</li> <li>6. Self-Regulation and Self-Control: Meaning and Theories; Planning for Self-Regulation Success; Self-Regulation Problems – Goal Conflict, Goal Difficulty and Goal Disengagement.</li> </ol> <p style="text-align: center;"><b>Section C</b></p> <ol style="list-style-type: none"> <li>7. Mental Health and Well-Being: Subjective Well-Being and Life Satisfaction, Social Well-Being and Psychological Well-Being, Complete State Model.</li> <li>8. Emotional Intelligence: Meaning, Components and Theories; Enhancement of Emotional Intelligence.</li> <li>9. Pro-Social Behavior: Empathy, Altruism, Gratitude and Forgiveness.</li> </ol> <p><b>Books Recommended:</b></p> <ul style="list-style-type: none"> <li>• Snyder, C.R. &amp; Lopez, S.J.(2007). <i>Positive Psychology</i>. New Delhi: Sage.</li> <li>• Snyder, C.R. &amp; Lopez, I.(2005). <i>Handbook of Positive Psychology</i>. New York: Oxford.</li> <li>• Baumgardner, S. &amp; Crothers, M. (2019). <i>Positive Psychology</i> . Noida: Pearson Education India.</li> </ul> <p style="text-align: center;"><b>Paper II - Psychological Testing and Assessment</b></p> <p style="text-align: center;"><b>Section-A</b></p> <ol style="list-style-type: none"> <li>1. Psychological Testing and Assessment:-Definition, Difference between Testing and Assessment , Tools of Psychological Assessment Interview, Case History Data, behavioral Observation, Computers as tools.</li> <li>2. Psychological Test: Nature, Functions and Uses of Psychological Test, Problem of test</li> </ol> <p style="text-align: right;">   Dy. Registrar (Academic-I)  University of Rajasthan  Jaipur </p>	Sensitize students towards issues regarding human values	Human Values

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# ST. WILFRED'S P.G. COLLEGE

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7	BA PT- III Paper I: Society and Culture in India	Society and Culture in India  <p style="text-align: center;">107 Syllabus : B.A. Part-III</p> <h2 style="text-align: center;">26. ANTHROPOLOGY</h2> <p style="text-align: center;">BA Part III</p> <p>Paper-I Max Marks-100 Min Marks-36</p> <p>Paper-II Max Marks-100 Min Marks-36</p> <p>Note- Each Paper will contain nine questions having three questions from each Unit. Candidates are required to attempt five questions in all selecting atleast one question from each Unit.</p> <p style="text-align: center;"><b>Paper-I Society and Culture in India</b></p> <p><b>UNIT-I</b> Characteristics of Indian Culture: Purushartha, Varna Vyavastha, Ashram Vyavastha, Samnskara. Marriage and Family in India: Continuity and Change.</p> <p><b>UNIT-II</b> Concepts: Great Tradition and Little Tradition, Universalization and Parochialization, Sanskritization and Westernization. Social Stratification: Caste and Class.</p> <p><b>UNIT-III</b> Special Sections of Indian Society and their Problems: Scheduled Castes, Scheduled Tribes, Women and Minorities. Nature of Indian diversity and problems of National Integration.</p> <p><b>List of Books:</b> Ahuja Ram, 1993, Indian Social System, Jaipur, Rawat Publications. Marriott Mckim, 1955, Village India: Studies in Little-Community, Chicago University of Chicago Press. Sharma K.L. 1997, Social Stratification in India, New-Delhi, Sage Publication. Singh, Y., 1999, Modernization of Indian Tradition, Jaipur, Rawat Publications. Srinivas M.N., 1966, Social Change in Modern India, California, Los Angeles, आहुजा राम, 2000, भारतीय समाज, जयपुर, रावत पब्लिकेशन्स। योगेन्द्र सिंह, 2006, भारतीय परम्परा का आधुनिकीकरण, रावत पब्लिकेशन्स, जयपुर, अनुवादक: अरविन्द कुमार अग्रवाल।</p> <p style="text-align: right;"><i>Raj (Taj)</i> Dy. Registrar (Academic-I) University of Rajasthan Jaipur</p>	Sensitize students towards issues regarding human values and Gender Sensitization	Human Values and Gender Sensitization
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# ST. WILFRED'S P.G. COLLEGE

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8	BA PT- III Paper II: Peasant Society and Folk Culture	Peasant Society and Folk Culture  Syllabus : B.A. Part-III  <b>Paper-II Peasant Society and Folk Culture</b>  <b>UNIT-I</b> Meaning of Rural, Characteristics of Indian rural communities. <b>Concept and characteristics of Peasant and Peasant Society</b> , Characteristics of Folk Society.  <b>UNIT-II</b> Panchayati Raj: Structure and function of Panchayats, Impact of Panchayati Raj on Rural India. <b>Change and development in rural society</b> .  <b>UNIT-III</b> Folklore: Definition and function. Classification of Folk literature. Folk Literature and its <b>Social Content: Family, Women, Caste and Religion</b> . Concept of Elite tradition.  <b>List of Books:</b> Beteille Andre, 1974, The Concept of Peasant Society: Six Essays in Comparative Sociology, Oxford, Oxford University Press. Desai A.R., 1969, Rural Sociology in India, Bombay, Popular Prakashan Private Limited. Deva Indra, 1989, Folk Culture and Peasant Society in India, Jaipur, Rawat Publications. Dube S.C., 1955, Indian Village, London Routledge and Kegan Paul. Islam Mazharul, 1985, Folk lore: the Pulse of the People, New-Delhi, Concept Publishing Company. Redfield Robert, 1947, Peasant Society and Culture Chicago, University Chicago Press. श्रीवास्तव, ए.आर.एन., 1999, भारतीय समाज: समाजशास्त्रीय विवेचन, के.के. पब्लिकेशन्स।	Sensitize students towards issues regarding human values and Gender Sensitization	Human Values and Gender Sensitization
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# ST. WILFRED'S P.G. COLLEGE

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Gender Equality, Human Values and Professional Ethics, Environment Sustainability in Curricula and teaching learning material of BBA-PT-I/PT-II/PT-III

## BBA PT- I

S.	Course code	Course Name	Description	Cross cutting issues relevant to Gender Sensitization/ Human & Professional Values / Environment Sustainability
3	BBA PT- I Paper III Legal Aspects of Indian Business	<b>Legal Aspects of Indian Business</b>  Paper-III: Legal Aspects of Indian Business Scheme: Maximum Marks: 100 3 hours duration Minimum Pass Marks: 36 Unit-I Law of contract: Nature of contract, Classifications, Offer and Acceptance, Capacity to contract, Free Consent, Consideration, Legality of object, Agreement declared void, Performance of Contract, Discharge of Contract, Remedies for breach of contract. Unit-II Special Contract: Indemnity, Guarantee, Agency. Unit-III Sale of Goods Act: Formation of Contract of sale, Goods and their classification, price conditions & warranties, Passing of property in goods, Performance of contract of sale, Unpaid seller, sale by auction. Unit-IV Negotiable Instruments Act: Definition of Negotiable Instruments, Features, Promissory note, Bill of Exchange & cheque, Holder & Holder in due course, Crossing of cheque, Types of crossing, Dishonours of cheque. Unit-V Indian Companies Act: Meaning & Nature of company, Lifting of Corporate veil: Functions, Duties, Liabilities and Right of Promoters: Procedure of Registration: Contents and alteration of Memorandum and Articles of Association, Prospectus, Statement in lieu of Prospectus. Directors: Power and Duties, Appointment and Removal of Directors, Appointment and Role of company secretary. Books recommended: 1 Avtar Singh—Company Law (Eastern Books Co. Lucknow) 2 Gulshan and Kapoor—Business Law. 3 Avtar Singh— Mercantile Law (Eastern Books Co. Lucknow) 4 M.J Matthew— Commercial Law (RBSA, Jaipur) 5 M>J Matthew—Company Law (RBSA, Jaipur) 6 Majumdar and Kapoor—Company Law and Practice (Taxman New Delhi)	Enable students to understand Legal Environment regarding Business regulation in India.	Professional Ethics

Registrar  
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## BBA PT- III

S. No	Course code	Course Name	Description	Cross cutting issues relevant to Gender Sensitization/ Human & Professional Values / Environment Sustainability
1	BBA PT- III Paper I Organizational Behavior	Organizational Behavior  <u>Paper - I</u> <u>Organizational Behaviour</u>  Unit I : Meaning and Concept of Organization Behaviour, Role of OB in Today's Business organization, Challenges and Opportunities, Theories of Organization Behaviour, Social Systems and Organizational Culture.  Unit II : Perception, Nature, Importance, Difference between Sensation and Perception; Personality: Meaning, Determinants of Personality, Personality Traits and Types, Values attitudes and Job Satisfaction.  Unit III : Interpersonal Behaviour, Group Dynamics- Meaning, Norms and Role, Theories of Group, Cohesiveness, Dynamics of Informal Group, Team and Team building.  Unit IV : Definitions of Conflict, Process, Negotiations Process, Individual differences in negotiation effectiveness, Causes of Stress and its effects, Stress and Conflict Management.  Unit V : Meaning, Nature and factors of Organizational Change, Planned Change, Resistance to Change, Change Agent, Concept of Organizational Development, Organizational Development Interventions.  Books Recommended : 1. Prasad, L.M., Organizational Behaviour, S. Chand, New Delhi 2. Robbins, Stephen P., Organizational Behaviour: Concept, Controversies, Applications, Prentice Hall of India, Pvt. Ltd. New Delhi 3. Luthans Fred, Organizational Behaviour, Mc-Graw-Hill 4. Dr. P. S. S. Kumar, Dr. Anukriti Sharma and K. S. Krishna, Organizational Behaviour, Jahanvi Publications. 5. Prof. Anil Mehta, Organizational Behaviour, RBD, Jaipur 6. Organizational Behaviour, Thakur Publication, Jaipur	Enable students to understand the behavioral aspects of human resources in an organization.	Professional Ethics

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2	BBA PT- III  Paper II  Indian Management Thought and Business Leaders	Indian Management Thought and Business Leaders  <p style="text-align: center;"><u>Paper- II</u> <u>Indian Management Thought and Business Leaders</u></p> <p><u>Unit- I</u> Spirituality and Management- Concept of Spirituality, Indian Ethos and Values, Role of Values in Management, Western Values vis a vis Indian Values, Applications of Yoga in Management- Personality Development, Meditation and Management of stress.</p> <p><u>Unit- II</u> Indian Epics and Management- Dimensions of Vedic Management, Bhagwad Gita, Ramayan, Kautilaya's Arthshastra.</p> <p><u>Unit- III</u> Indian Thinkers- Swami Vivekanand, Mahatma Gandhi, S.K. Chakraborty, C.K. Prahlad.</p> <p><u>Unit- IV</u> Indian Business Leaders: JRD Tata, Ram Krishan Bajaj, G D Birla, Dhirubhai Ambani.</p> <p><u>Unit- V</u> Indian Business Leaders: Narayana Murthy, Azim Premji, Lakshmi Mittal, Sunil Bharti Mittal.</p> <p><u>Books Recommended</u></p> <ol style="list-style-type: none"><li>1. Chakraborty, S.K. and Bhattachary., Pradip: Human Values, New Age International (P) Limited Publishers.</li><li>2. Saneev, Rinku and Khanna, Parul: Ethics and Values in Business Management, Ane Books Pvt. Ltd.</li><li>3. Khanna, S. : Vedic Management, Taxman Publications (P) Ltd.</li><li>4. Bhavad Gita as Viewed by Swami Vivekananda: Vedanta Press &amp; Bookshop.</li><li>5. Rajgopalachari, C. : Ramayan, Bhartiya V-dya Bhawan.</li><li>6. Gita Piramal: Business Legends.</li></ol> <p style="text-align: center;">(19)</p> <p style="text-align: center;"><i>Pg. 1/1</i> Dr. Registrar (Academic) University of Rajasthan Jaipur</p>	Enable students to Learn business ethics accompanied with Indian ethos required on Global Level.	Professional Ethics & Human Values
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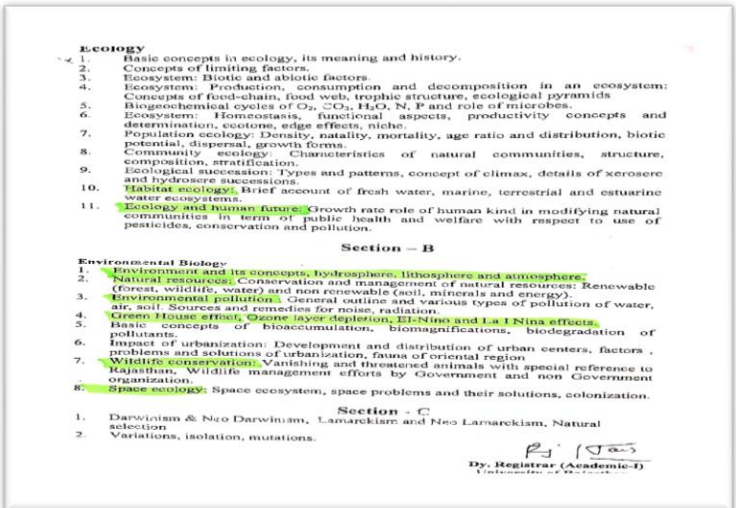
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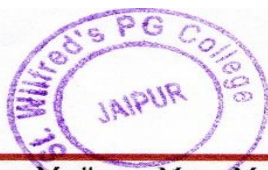
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B.Sc. III

S. No	Course code	Course Name	Description	Cross cutting issues relevant to Gender Sensitization/ Human & Professional Values / Environment Sustainability
1	B.Sc. III Zoology II Ecology, Environmental Biology and Evolution	<p>Ecology, Environmental Biology and Evolution</p>  <p>3. Concept of species and speciation.</p> <p>4. Adaptations (Desert, fresh water, Deep Sea and flight) Mimicry.</p> <p>5. Polymorphism: Population genetics, genetic drift and Hardy-Weinberg law.</p> <p>6. Evolution of man, Phylogeny of horse.</p> <p>7. Zoogeography: Principles and concepts of parallelism, endemism etc and factors influencing animal distribution.</p> <p>8. Zoogeographical realms and faunal peculiarities, evolution of realms, plate tectonics &amp; continental drifts and island zoogeography.</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability

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2	B.Sc. III Botany Paper II Ecology & Economic Botany	<p>Ecology &amp; Economic Botany</p> <p>Paper-II Ecology &amp; Economic Botany (2 hrs /week) Unit-1</p> <p>Plants and Environment: Atmosphere (four distinct zone viz. stratosphere, troposphere, mesosphere and thermosphere). Adaptation (Morphological, anatomical and physiological responses) of plants to water (Hydrophytes and Xerophytes).</p> <p>Light (global radiation, photosynthetically active radiation. Zonation in water body: littoral, limnetic and profundal zones; photoperiodism, heliophytes and sciophytes)</p> <p>Temperature (Raunkier's classification of plants: megatherm, mesotherm, microtherm, heikistotherm; themoperiodicity and vernalisation).</p> <p>Soil (soil profile, development-weathering and maturation). Soil texture, soil types, role of pH, organic matter, soil water, soil nutrients. Interactions among organisms (neutralism, amensalism, allelopathy), competition, predation, parasitism, protocoooperation, mutualism. Environmental protection act.</p> <p>Unit-2</p> <p>Community, Ecosystem and Phytogeography. Community characteristics: stratification, life forms and biological spectrum, frequency density and cover. Ecological succession; types (primary and secondary) mechanism nulation, migration, ecesis, reaction and climax: xerosere, hydrosere,</p> <p>Ecosystems: Structure-abiotic and biotic components, trophic level, food chain, food web, ecological pyramids, energy flow (Box and Pipe model of Odum). Biogeochemical cycles of carbon, and phosphorus, Vegetation types of Rajasthan, Endangered plants of Rajasthan.</p> <p>Unit-3</p> <p>Basic concept of center of origin of cultivated plants. Food plants-rice, wheat, maize, potato, sugarcane. Vegetables : General account with a note on radish, onion, garlic, cabbage, spinach, cauliflower. cucumber, tomato, lady finger and pea. Fruits: General account with a note on apple, banana, ber, mango, mulberry, jamun, watermelon, muskmelon, guava and orange. Vegetable oil: groundnut, mustard and coconut.</p> <p>Unit-4</p> <p>Spices: General account with an emphasis on those cultivated in Rajasthan</p> <p>31</p> <p>Registrar University of Rajasthan JAIPUR</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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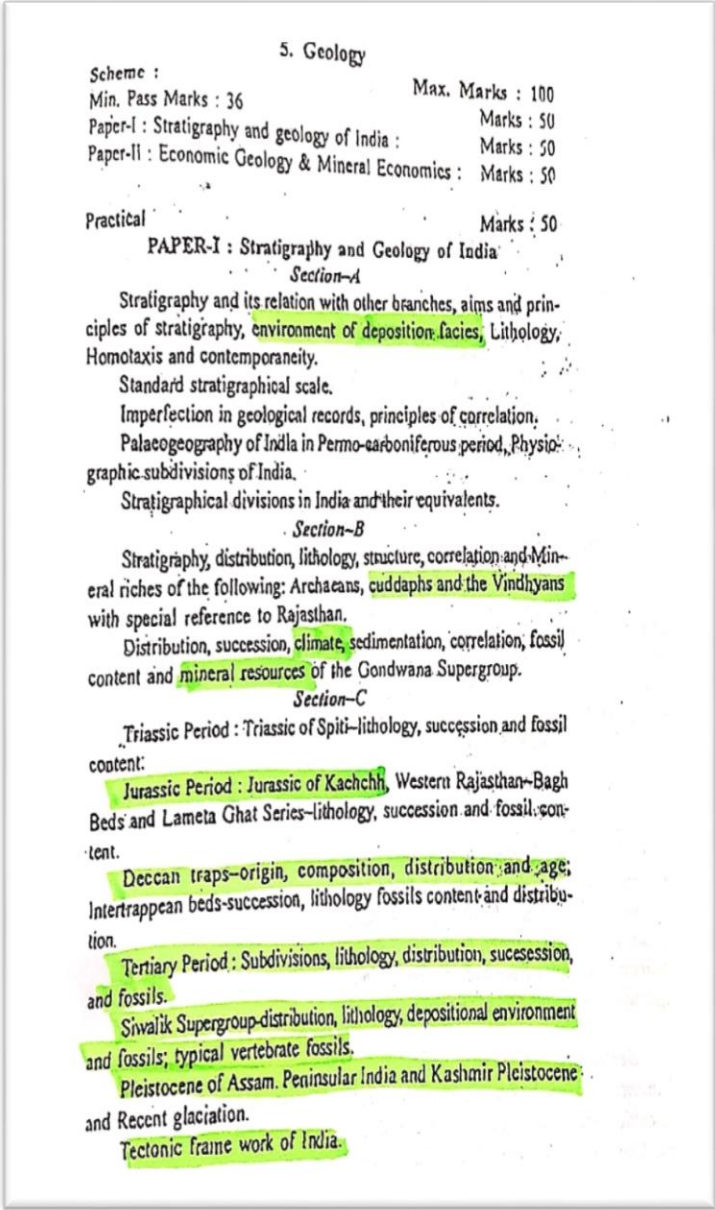
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3	B.Sc. III Geology Paper I Stratigraphy and Geology of India	Stratigraphy and Geology of India   <p>5. Geology Scheme : Min. Pass Marks : 36 Max. Marks : 100 Paper-I : Stratigraphy and geology of India : Marks : 50 Paper-II : Economic Geology &amp; Mineral Economics : Marks : 50 Practical Marks : 50 PAPER-I : Stratigraphy and Geology of India Section-A Stratigraphy and its relation with other branches, aims and principles of stratigraphy, environment of deposition, facies, Lithology, Homotaxis and contemporaneity. Standard stratigraphical scale. Imperfection in geological records, principles of correlation, Palaeogeography of India in Permo-carboniferous period, Physiographic subdivisions of India. Stratigraphical divisions in India and their equivalents. Section-B Stratigraphy, distribution, lithology, structure, correlation and Mineral riches of the following: Archaean, Cuddapahs and the Vindhyan with special reference to Rajasthan. Distribution, succession, climate, sedimentation, correlation, fossil content and mineral resources of the Gondwana Supergroup. Section-C Triassic Period : Triassic of Spiti—lithology, succession and fossil content. Jurassic Period : Jurassic of Kachchh, Western Rajasthan—Bagh Beds and Lameta Ghat Series—lithology, succession and fossil content. Deccan traps—origin, composition, distribution and age; Intertrappean beds—succession, lithology fossils content and distribution. Tertiary Period : Subdivisions, lithology, distribution, succession and fossils. Siwalik Supergroup—distribution, lithology, depositional environment and fossils; typical vertebrate fossils. Pleistocene of Assam, Peninsular India and Kashmir Pleistocene and Recent glaciation. Tectonic frame work of India.</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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4	B.Sc. III Geology Paper II Economic Geology and Mineral Economics	<p>Economic Geology and Mineral Economics</p> <p><i>(100/100)</i> Jolite, Nummulitic ... with plant impressions.</p> <p><b>PAPER-II : Economic Geology and Mineral Economics</b></p> <p>Note : The paper will contain nine questions having three questions in each section. Candidates are required to attempt five questions in all, selecting at least one question from each section.</p> <p><b>Section-A</b> Economic Geology and its relationship with various branches of Geology, Magma and its relationship with mineral deposits, Ore and gangue minerals. Historical development of Economic Geology, Processes, of Mineral formation : Magmatic, Hydrothermal, Contact metasomatic, Evaporation, Oxidation and supergene enrichment, Sedimentation, Mechanical concentration, Residual concentration and Metamorphism.</p> <p><b>Section-B</b> Classification of mineral deposits : outlines of Lindgren's and Bateman's classification, Important ores, Composition-physical properties, mode of occurrence, association, origin, distribution in India &amp; uses of the following metals, gold, silver, copper; lead iron, manganese, chromium and aluminum. Examples from Indian stratigraphic record. Environmental implications of exploitation of mineral resources.</p> <p><b>Section-C</b> Important industrial minerals : Model of occurrence, physical properties, chemical composition and distribution in India-Refractory, Abrasives, Ceramics, Cement, Gemstones, Glass, Paint, and Fertilizers. Coal, petroleum and radioactive minerals : their occurrences, distribution and origin-oil traps. Building stones : characters, distribution and mode of occurrence.</p> <p><i>Raj. Vas</i> <b>Dy. Registrar</b> (Academic) University of Rajasthan JAIPUR</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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5	B.Sc. III Economics Paper II Environmental Economics	<p>Environmental Economics</p> <p>Chapter - II (b): Environmental Economics</p> <p><b>Section -A</b></p> <p>Environmental Economics: An Introduction; Review of Microeconomics and Welfare Economics; The Theory of Externalities: Pareto Optimality and Market Failure in the Presence of Externalities; Property Rights and the Coase Theorem; Sustainable Development: Concepts and Measurement.</p> <p><b>Section-B</b></p> <p>Development and Environment: The Environment Kuznets Curve; Trade and Environment; Environmental Problems; Trans-boundary Environmental Problems: Global Warming and Climate Change; Methods of Environment Valuation: Hedonic Pricing, Contingent Valuation Method and Travel Cost Method.</p> <p><b>Section-C</b></p> <p>International Environmental Policy: Conventions and Treaties, UN Effort to Protect the Environment, Stockholm, Rio, Johansberg, Agenda 21, OECD Environmental Committee Report, Kyoto, Convention on Biodiversity, Paris Climatic Conventions; Environmental Governance in India; WTO and Environment.</p> <p><b>Recommended Books:</b></p> <ol style="list-style-type: none"><li>1. Charles Kolstad, Intermediate Environmental Economics, Oxford University Press. 2<sup>nd</sup> Edition, 2010</li><li>2. Robert N. Stavins (ed.), Economics of the Environment: selected Readings, W.W.Norton, 5<sup>th</sup> edition, 2005.</li><li>3. Roger Perman, Yue Ma, James McGilvray and Michael Common, Natural Resource and Environmental Economics, Pearson Education/ Addison Wesley, 3<sup>rd</sup> edition, 2003.</li><li>4. Maureen L. Cropper and Wallace E. Oates, 1992, "Environmental Economics: A Survey", Journal of Economic Literature, Volume 30, pp. 675-740.</li></ol> <p>48</p> <p><i>[Signature]</i> Dy. Registrar (Academic-I) University of Rajasthan Jaipur</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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6	B.Sc. III Geography Paper I World Regional Geography	<p>World Regional Geography</p> <p>Paper 1: World Regional Geography</p> <p>Section A</p> <p>Asia: Terrain Pattern, Drainage, Climate, Natural Vegetation, Soils, Population and Economic Base of the Continent In General. Regional Study of South-East and South-West Asia.</p> <p>Europe: Terrain Pattern, Drainage, Climate, Natural Vegetation, Soils, Population and Economic Base of the Continent In General; Regional Study of British Isles, France and Germany.</p> <p>Section B</p> <p>North and South America: Terrain Pattern, Drainage, Climate, Natural Vegetation, Soils, Population and Economic Base of the Continent In General; Regional Study of New England and Brazil.</p> <p>Section C</p> <p>Australia and New Zealand: Terrain Pattern, Drainage, Climate, Natural Vegetation, Soils, Population and Economic Base of Australia and New Zealand In General.</p> <p>Recommended Readings:</p> <p>Cole, J., 1996. A Geography of the World's Major Regions, Routledge, London.</p> <p>DeBlij, H.J., 1994, Geography : Regions and Concepts, John Wiley, New York.</p> <p>Dickenson, J.P., et al. 1996. The Geography of the Third World, Routledge, London.</p> <p>Gourou, P., 1980. The Tropical World, Longman, London.</p> <p>Jackson, R.H. and Hudman, L.E., 1991. World Regional Geography : Issues for Today, John Wiley, New York.</p> <p>Kolb, A., 1977. East Asia - Geography of a Cultural Region, Mathuen, London.</p> <p>Minshull, G.N., 1984 Western Europe, Hoddard &amp; Stoughton, New York.</p> <p>Patterson. J.H., 1985. Geography of Canada and the United States. Oxford University Press.</p> <p>Songquiao, Z., 1994. Geography of China, John Wiley, New York.</p> <p>Ward, P.W. and Miller, A. 1989. World Reginal Geography : A Question of Place. John Wiley, New York.</p> <p>51</p> <p>Dy. Registrar (Academic) University of Rajasthan JAIPUR</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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7	B.Sc. III Geography Paper II Geography of India	<p>Geography of India</p> <p>Paper II: Geography of India</p> <p>Section A</p> <p>India in the context of South and Southeast Asia, geological structure, physiographic divisions, climate: seasons, mechanism of Indian monsoon, major climate regions; vegetation, major soils and regions, drainage system, water resources and irrigation projects; forests, mineral and power resources: their utilization policy and conservation strategies.</p> <p>Section B</p> <p>Agriculture: typology, major crops, changing pattern of crops, agricultural growth during plan period and green revolution, livestock resources and their development, industrial growth and development; industrial localization with reference to iron and steel, cotton, textile, cement and chemical industries, industrial regions; population growth, distribution, problems, policy implication, trends of urbanization and human resource development.</p> <p>Section C</p> <p>Regional disparities in economic development, planning and economic regions of India, multilevel planning, problems and prospects of linking of rivers, environmental issues in India, transport development: rail, road, air and waterways, foreign trade: challenges and prospects.</p> <p>Recommended Readings:</p> <p>Gautam, Alka, 2010: Geography of India, Rastogi Publications, Meerut. Gopal Krishnan, R. 2001: Geography of India, Jawahar Publishers &amp; Distributions, New Delhi, 2<sup>nd</sup> Edition Kbultar, D.R. 2006. India a comprehensive Geography; Kalyani Publishers, New Delhi माधुरीया, सी. 1999: आधुनिक भारत का वृहत भूगोल। साहित्य भवन पब्लिकेशन्स, आगरा। Sdasnyuk, G. and Sengupta, 1968: Economic Regionalisation of India, Census of India Publication, New Delhi. Singh, G. 1998: A Geography of India, Atma Ram &amp; Sons, Delhi, Sixth Edition Singh, R.L. (ed.) 1971: India: A Regional Geography, NCSI, Varanasi. Spence, G.B.C. and Learmonth, A.T.A. 1967: India and Pakistan, Land, People and Economy, Methuen &amp; Co., London. Tirtha, K. 2000: Geography of India, Rawat Publications, Jaipur 2<sup>nd</sup> Edition (India) शिवार, आर.सी. 2012: भारत का भूगोल। प्रयाग पुस्तक भवन, इलाहाबाद।</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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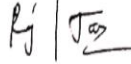
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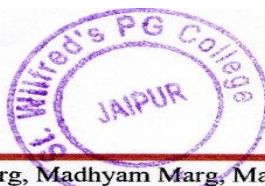
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8	B.Sc. III Psychology Paper I Positive Psychology	<p>Positive Psychology</p> <div style="border: 1px solid black; padding: 10px;"><p style="text-align: center;"><b>Paper I -Positive Psychology</b> <b>Section A</b></p><ol style="list-style-type: none"><li>1. Introduction : Definition, Goals and Assumptions of Positive Psychology; Relationship with other Branches of Psychology</li><li>2. Happiness: Meaning; Hedonic and Eudaemonic Viewpoint; Positive and Negative Affect; Theoretical Viewpoints; Determinants and Sources; Authentic Happiness; Enhancement of Happiness and Wellbeing.</li><li>3. Positive Cognitive States and Processes: Self-Efficacy, Optimism, Hope, Mindfulness, Flow and Spirituality.</li></ol><p style="text-align: center;"><b>Section B</b></p><ol style="list-style-type: none"><li>4. Virtues and Strengths of Character: Classification and Measures of Human Strengths, Gallup's Clifton Strength Finder; VIA Classification; Identifying Personal Strengths.</li><li>5. Resilience: Meaning and Sources; Developmental and Clinical Perspective; Successful Aging and Growth through Trauma.</li><li>6. Self-Regulation and Self-Control; Meaning and Theories; Planning for Self-Regulation Success; Self-Regulation Problems - Goal Conflict, Goal Difficulty and Goal Disengagement.</li></ol><p style="text-align: center;"><b>Section C</b></p><ol style="list-style-type: none"><li>7. Mental Health and Well-Being; Subjective Well-Being and Life Satisfaction, Social Well-Being and Psychological Well-Being, Complete State Model.</li><li>8. Emotional Intelligence: Meaning, Components and Theories; Enhancement of Emotional Intelligence.</li><li>9. Pro-Social Behavior: Empathy, Altruism, Gratitude and Forgiveness.</li></ol></div> <p style="text-align: center;">61</p> <p style="text-align: right;"> Dy. Registrar (Academic-I) University of Rajasthan &amp; Jaipur</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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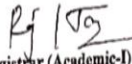
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9	B.Sc. III EVS Paper I Environmental Management and Planning	<p style="text-align: center;"><b>Paper -I Environmental Management and Planning</b></p> <p style="text-align: center;">Section -A</p> <ol style="list-style-type: none"> <li>1. Air Pollution Abatement; Study of metrological parameters.</li> <li>2. Vertical motion of air, and atmospheric stability;</li> <li>3. Wind direction, frequency, and lapse rates.</li> <li>4. Temperature inversion</li> <li>5. Dispersal of pollutants in the air</li> <li>6. Air pollution with respect to distance from source of emissions of pollutants</li> </ol> <p style="text-align: center;">Section-B</p> <ol style="list-style-type: none"> <li>1. Types of pollutant sampling and measurement.</li> <li>2. Ambient air sampling</li> <li>3. Collection of Gaseous air pollutants</li> <li>4. Collection of particulate pollutants</li> <li>5. Stack sampling</li> <li>6. Analysis of air pollutants, SOx, NOx, CO<sub>2</sub>, CO and SPM.</li> </ol> <p style="text-align: center;">Section-C</p> <ol style="list-style-type: none"> <li>1. Control methods; source correction method</li> <li>2. Cleaning of Gaseous effluents</li> <li>3. Air pollution control equipments, Gravitational settling chambers, cyclone separators, Fabric filters, Electrostatic precipitators, wet samplers.</li> <li>4. Control of gaseous air pollutants; SOx</li> <li>5. Control of gaseous air pollutants; NOx and CO</li> </ol> <p><b>Suggested Readings:</b></p> <ul style="list-style-type: none"> <li>❖ Baldwin, J.H. 1985. Environmental Planning and Management. International Book Distribution, Dehradun</li> <li>❖ Bandhu, D. and Ramnath, N.L. 1982. Education for Environmental Planning and observation. Natraj publishers, Dehradun.</li> <li>❖ Cornwell, D.A and Davis, M.L. 2000. Introduction to Environmental Engineering. McGraw Hill. International Edition.</li> <li>❖ De Nevers, N.L. 2000. Pollution Control Engineering. McGraw Hill. International Edition. Mexico.</li> <li>❖ Environmental Management and Planning</li> <li>❖ Liu, D.H.F. and Liptak, B.G. 2000. Air Pollution. Lewis Publishers. Washington, D.C.</li> <li>❖ Mohan, I, 1989. Environmental pollution and Management, Ashish Publishing House, New Delhi.</li> </ul> <p style="text-align: center;">70</p> <p style="text-align: right;">   Dy. Registrar (Academic-I)  University of Rajasthan  Jaipur </p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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10	B.Sc. III EVS Paper II Environmental Impact Assessment and Sustainable Development	<p>Environmental Impact Assessment and Sustainable Development</p> <p>Paper-II Environmental Impact Assessment and Sustainable Development</p> <p>Section-A</p> <ol style="list-style-type: none"><li>1. Basic Concepts of Sustainable Development</li><li>2. Sustainable Industrialization.</li><li>3. Sustainable Agriculture</li><li>4. Sustainable Tourism</li><li>5. Sustainable Mining</li><li>6. Sustainable Transportation and Sustainable housing</li><li>7. Environmental awareness Programs</li><li>8. Role of National and International Organizations in Conservation of Environment</li><li>9. Role of Media in Environmental Conservation</li><li>10. Significance of International Conference on Human Environment, Stockholm, 1972; Earth Summit, Rio de Janeiro, 1992; Earth Summit – II, Johannesburg, 2002; Earth Summit-III-2012.</li></ol> <p>Section-B</p> <ol style="list-style-type: none"><li>1. Environmental Impact Assessment, Processes in different developing and Developed Countries.</li><li>2. Environmental Impact Assessment: Methods; Adhoc, Simple Checklists, Overlays, Matrices, Networks.</li><li>3. Environmental Economics</li><li>4. Environmental Management Systems (EMS)</li><li>5. Environmental Policy of India</li><li>6. Environmental policy of Rajasthan.</li></ol> <p>71</p> <p>Dy. Registrar (Academic-I) University of Rajasthan</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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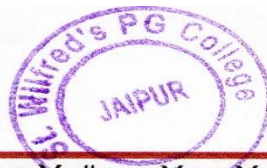
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		<p style="text-align: center;">Section-C</p> <ol style="list-style-type: none"><li>1. Concept of Environmental Audit</li><li>2. Setting up of an Audit programme.</li><li>3. Environmental Audit process.</li><li>4. Benefits of Environmental audit</li><li>5. Various methods of Environmental audit</li><li>6. Environmental Laws- Indian Forest Act, 1927, (The air prevention and control of pollution) Act, 1981, The Water (prevention and control of pollution) Act, 1974, The Wildlife Protection Act, 1972, Forest Conservation Act, 1980, The Environmental (Protection) Act, 1986, The Biodiversity Act, 2002.</li></ol>		
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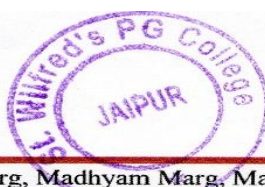
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M.Sc. (P)

S. No	Course code	Course Name	Description	Cross cutting issues relevant to Gender Sensitization/ Human & Professional Values / Environment Sustainability
1	M.Sc. (P) Chemistry Paper - V Green and sustainable chemistry	Green and sustainable chemistry  Paper V : CH -405 GREEN AND SUSTAINABLE CHEMISTRY (2 hrs. or 3 periods / week) Exam Duration : 3 hrs. Max. Marks : 50  UNIT - I Introduction, principle and concepts of Green Chemistry Need for green chemistry; Inception and evolution of green chemistry; Twelve principles of green chemistry with their explanations and examples; Designing a green synthesis using these principles. Green chemistry in day to day life.  UNIT - II Non-traditional greener alternative approaches Different approaches to green synthesis: (a) Uses of green reagents in organic synthesis - Dimethyl carbonate, polymer supported reagents - peracids and chromic acid; (b) Green catalysis, role of catalysis in sustainable development, homogeneous and heterogeneous catalysts; Introduction, advantages and applications of - (i) Nanocatalysts, (ii) Phase transfer catalysts, (iii) Biocatalysts, (iv) Organocatalysts, in organic synthesis.  UNIT - III Applications of non-conventional energy sources Introduction of microwave induced synthesis: Microwave activation, equipment, time and energy benefits, limitations. Organic transformations under microwaves - Fries rearrangement, Diels-Alder reaction, decarboxylation, saponification of ester, alkylation of reactive methylene compounds; Heterocyclic synthesis - $\beta$ -Lactams, pyrrole, quinoline. Introduction of ultrasound assisted green synthesis: Instrumentation, physical aspects, applications in organic transformations. Electrochemical synthesis: Introduction, synthesis of sebacic acid and adiponitrile.  UNIT - IV Environmentally Benign Solutions to Organic Solvents Ionic liquids as green solvents: Introduction, properties and types of ionic liquids. Synthetic applications - Diels-Alder reaction, epoxidation and Heck reaction. Aqueous phase reactions: Enhancement of selectivity, efficiency. Synthetic applications - 1,3-Dipolar Cycloadditions, Carbon-Carbon bond-forming processes and bromination reactions. Fluorous solvents in green chemistry: Scope, definition and their synthetic applicability. Role of supercritical carbon dioxide in green chemistry. Ethyl lactate as a renewable green solvent: Properties and applications.  UNIT - V Synthesis of Nanomaterials Greener synthesis of Nanomaterials- Microwaveassisted synthesis of Quantum Dots (QD) in aqueous medium, Magnetic Nanoparticles, MW-assisted Nano Catalysis in water. Synthesis of Nanoparticles using Bacteria, Yeast, Algae and Fungus.  SUGGESTED BOOKS AND REFERENCES: 1. P.A.G. Blackie, Organic synthesis in water, Springer. 2. P.T. Anastas, J.C. Warner, Green Chemistry, theory and practice, Oxford University Press. 3. M. Lancaster, Green Chemistry: An introductory text, Royal Society of Chemistry. 4. V. Polshettiwar, T. Asefa, G. Hutchings, Nanocatalysis: Synthesis and applications, Wiley. 5. M.A. Ryan, M. Timmesand, Introduction to Green Chemistry, American Chemical Society. 6. P.T. Anastas, Handbook of Green Chemistry, John Wiley and Sons. 7. V.K. Ahluwalia, MKidwai, New Trends in Green Chemistry, Springer. 8. Paul T Anastas, Innovations in Green Chemistry and Green Engineering, Springer.  10 Raj / Jaipur Registrar (Academic) University of Rajasthan Jaipur	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability

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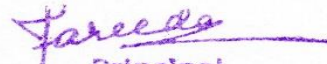
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2	M.Sc.(P) EVS Paper - I Fundamentals of ecology and environmental science	Fundamentals of ecology and environmental science  <b>Paper I: Fundamentals of Ecology and Environmental Science</b> Duration 3 hrs.      Max. Marks:100      Min. Pass Marks:36 Unit-1 : History and scope of ecology and environmental science, <b>Human ecology and human settlements</b> , evolution, origin of life and specification, population ecology, interactions and ecological model, definition and components of environment, <b>conceptual development of ecological terminology</b> , ecological landmark, relationship of ecology with other branches of science, interrelatedness, <b>importance of environmental science for human beings.</b> Unit -2: Ecosystem concept: Biotic and abiotic components of ecosystem, ecotones and biomes, ecological pyramids of number, biomass and energy. Food Chain, food web and trophic levels, ecological amplitude and ecological niches. Unit -3: Ecological energetic: first and second laws of thermodynamics and flow of energy in ecosystem. <b>Biogeochemical cycling:</b> Carbon, Nitrogen, Phosphorus and Sulphur and hydrological cycles and microbial ecology. Unit -4: Primary and secondary productivity of different ecosystems in the world, methods of measurements of productivity and the factors affecting productivity, Ecosystem services.	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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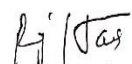


  
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# ST. WILFRED'S P.G. COLLEGE

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3	M.Sc. (P) EVS Paper - II Ecosystem-Structure, Functions and diversity	<p>Ecosystem-Structure, Functions and diversity</p> <p><b>Paper II: Ecosystem- Structure, Functions and Diversity</b></p> <p>Duration 3 hrs. Max. Marks:100 Min. Pass Marks:36</p> <p>Unit-1: The ecological principles and factors determining survival of life on earth, The global ecosystem and the place of man in it; human food chain and the energy requirements for the maintenance of human ecosystems on earth. The concept of global "ecological balance" and the threats of its imbalances due to rising human population, mathematical modeling of ecosystem.</p> <p>Unit -2 : Forest ecosystem- Forest as an ecosystem, distribution of forests, types of forests, economics and ecology of forest, role of forests in protection of species regulation of climate and production of various produce. Depletion of biodiversity from forest and the world forest conservation policies.</p> <p>Unit-3: Grassland ecosystem - Distribution and types of grasslands, rangelands and biodiversity in grassland, and productivity in grasslands. Wetland Ecosystem- Distribution, energetic and productivity in wetlands, biodiversity and economic importance of wetlands.</p> <p>Unit-4: Desert Ecosystem and Wastelands-Desert as ecosystems, hot and cold deserts, productivity, characteristics and global distribution of deserts. Desertification process, ecological, geological, geographical and geomorphological aspects of Thar desert, adaption in desert, fauna and flora, Vegetation types of Thar Desert, change in land use pattern due to introduction of canals and environmental consequences. Types and distribution of wastelands in India. Aquatic Ecosystem: Lentic and lotic ecosystem, structure, energy flow and productivity in estuaries, marine ecosystem, structure biodiversity and productivity in marine ecosystem.</p> <p style="text-align: right;">   Dy. Registrar (Academic-I)  University of Rajasthan  Jaipur </p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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4	M.Sc. (P) EVS Environmental pollution and health	Environmental pollution and health  <b>Paper III: Environmental Pollution and Health</b>  Duration 3 hrs.                      Max. Marks:100                      Min. Pass Marks:36  Unit -1 : Air Pollution : Air pollution and Human Health, Atmospheric composition and stratification. Types of air pollutants, sources of emissions of air pollutants, atmospheric physics and chemistry of air pollution, methods of detection and measurement of air pollution. Effect of air pollution on vegetation, man, animals, materials and environment; Global warming, levels of emissions of greenhouse gases, greenhouse effect, climate change, sea level rise, implication of global warming on mainland (agriculture, residential places and diseases). Ozone depletion, chemistry of depletion, chemicals affecting stratospheric ozone layer, consequences of ozone depletion, acid rain: chemistry, causes and effects of acid rain.  Unit-2: Water Pollution: Potable-water standards, types of water pollutants and their sources, impacts of water pollution on human, plants and animals. Waterborne diseases:diarrhea, dysentery, typhoid, viral hepatitis and their control. Marine pollution causes, impacts and consequences of marine pollution, Economics of water. Waste water and their categories, management of water resources.  Unit-3: Noise Pollution and Land Pollution: Sources and causes of noise pollution, methods of detection of noise levels, biomedical aspects of noise pollution. Sources and causes of land degradation and land pollution. Impacts of land pollution, physio-chemical and bacteriological sampling as analysis of soil quality, soil pollution control, Interaction of industrial waste with soil components.  Unit-4: Radiation pollution and thermal pollution: Radiation characteristics, radiation pollution, causes and impacts of radiation pollution. Thermal pollution, causes and impacts of thermal pollution, magnitude of thermal pollution in India.  <p style="text-align: right;"><i>Pj / (tar)</i> Dy. Registrar (Academic-I) University of Rajasthan Jaipur</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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5	M.Sc. (P) EVS Paper - IV Environmental education and policy	Environmental education and policy  <div style="border: 1px solid black; padding: 10px; text-align: center;"><p><b>Paper IV: Environmental Education and Policy</b></p><p>Duration 3 hrs.      Max. Marks:100      Min. Pass Marks:36</p><p>Unit -1: Eco politics and Environmental activism, the birth of Eco politics and environmental movements and environmentalism, Chipko, Appiko, Silent Valley, Doon Valley, Narmada Dam, Tehri Dam, Almetti Dam etc, the Stockholm Conference on Human Environment of 1972 and the Rio Earth Summit of 1992.</p><p>Unit -2: NGO's and Environmental Conservation, National NGO's, KSSP etc., Environmental conservation measures taken, i.e. Role of Ecological Task Force.</p><p>Unit -3: Role of International Organizations in Environmental conservations and Environmental politics : Role of International Union for conservation of Nature and natural resources (IUCN), World-wide Fund for Nature (WWF), UNEP, UNESCO, GEF, IGBP etc., Environmental politics for afforestation, abatement of Industrial pollution, automobile pollution, pollution due to power generation etc.</p><p>Unit -4: Environmental laws and International conventions, environmental provisions in the constitution of India, environmental laws for the protection of air, water, forest and wildlife in India. Various conversations and treaties for protection of global environment. The Basel convention 1989, London convention 1972, The United Nations Convention and climate change 1992. The Montreal Protocol 1989, Biodiversity convention 1993.</p><p style="text-align: right;"> Dy. Registrar (Academic-I) University of Rajasthan Jaipur</p></div>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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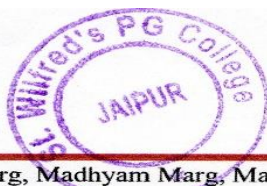
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M.Sc. (F)

S. No	Course code	Course Name	Description	Cross cutting issues relevant to Gender Sensitization/ Human & Professional Values / Environment Sustainability
1	M.Sc. (F) Chemistry Paper - III Environmental Chemistry	Environmental Chemistry  Paper-III : CH-503 Environmental Chemistry (2 Hrs. or 3 period / week) Exam Duration : 3 hrs. Max. Marks : 50  <i>Unit-I</i> Atmosphere: Atmospheric layers, Vertical temperature profile, heat radiation, budget of the earth atmosphere system, Properties of troposphere, thermodynamic derivation of lapse rate, Temperature inversion, Calculations of Global mean temperature of the atmosphere, Pressure variation in atmosphere and sea level height, Biogeochemical cycles of carbon, nitrogen, sulphur, phosphorus and oxygen, Residence times. Atmospheric Chemistry: Sources of trace atmospheric constituents : nitrogen oxides, sulphur dioxide and other sulphur compounds, carbon oxides, carbonaceous compounds and other halogen compounds, methane and other hydrocarbons. Tropospheric Photochemistry: Mechanism of photochemical decomposition of NO <sub>2</sub> and formation of ozone, Formation of oxygen atoms, hydroxyl, hydroperoxy and organic radicals and hydrogen peroxide, Reactions of hydroxyl radicals with methane and other organic compounds, Reactions of OH radicals with SO <sub>2</sub> and NO <sub>x</sub> , Formation of nitrate radical and its reactions, Photochemical smog, meteorological conditions and chemistry of its formation.  <i>Unit-II</i> Air Pollution (Air pollutants and their classification, Aerosols - sources, size distribution and effect on visibility, climate and health, Acid Rain: Definition, acid rain precursors and their aqueous and gas phase atmospheric oxidation reactions, Damaging effects on aquatic life, plants, buildings and health, Monitoring of SO <sub>2</sub> and NO <sub>x</sub> - Acid rain control strategies.  19  Prof. J. S. Grew Principal St. Wilfred's P.G. College Jaipur	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability

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**Stratospheric Ozone Depletion** : Mechanism of ozone formation, Mechanism of catalytic ozone depletion. Discovery of Antarctic ozone hole. Instrumental methods for detection of ozone depletion gases.

**Green House Effect** : Terrestrial and solar radiation spectra. Major green house gases and their sources and Global warming potentials. Climate change and consequences.

**Urban Air Pollution** : Exhaust emissions, damaging effects of carbon monoxide. Monitoring of CO. Control strategies.

#### Unit-III

**Aquatic Chemistry and Water Pollution** : Redox chemistry in natural waters. Dissolved oxygen, biological oxygen demand, chemical oxygen demand, determination of DO, BOD and COD. Aerobic and anaerobic reactions of organic sulphur and nitrogen compounds in water, acid-base chemistry of fresh water and sea water. Aluminum, nitrate and fluoride in water. Eutrophication. Sources of water pollution. Treatment of waste water and sewage. Purification of drinking water, techniques of purification and disinfection.

#### Unit-IV

##### Environmental Toxicology

**Toxic Heavy Metals** - Mercury, lead, arsenic and cadmium. Causes of toxicity. Bioaccumulation, sources of heavy metals. Chemical speciation of Hg, Pb, As and Cd. Biochemical and damaging effects.

**Toxic Organic Compounds** - Pesticides, classification, properties and uses of organochlorine and organophosphorus pesticides, detection and damaging effects.

**Polychlorinated Biphenyls** - Properties, uses and environmental contamination and effects.

**Polynuclear Aromatic Hydrocarbons** - Sources, structures and as pollutants.

#### Unit-V

##### Soil and Environmental Disasters

Soil composition, micro and macronutrients. Soil pollution by fertilizers, plastic and metals. Methods of remediation of soil.

Bhopal gas tragedy, Chernobyl, Three mile island, Minamata Disease, Seveso (Italy), London smog.

##### Books Suggested:

1. Environmental Chemistry. Colin Baird, W.H. Freeman Co. New York. 1998.
2. Chemistry of Atmospheres. R.P. Wayne. Oxford.
3. Environment Chemistry, A.K. De, Wiley Eastern, 2004.
4. Environmental Chemistry, S.E. Manahan, Lewis Publishers.
5. Introduction to Atmospheric Chemistry, P.V. Hobbs, Cambridge.

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2	M.Sc. (F) EVS Paper - I Waste treatment and management	Waste treatment and management  <div style="text-align: center;"><p><u>EVS</u></p><p>M.Sc. FINAL</p><p><i>Note: Each paper will have 9 questions out of which a student has to attempt 5 questions including the question no. 1, which will be compulsory, and one question selecting from each unit. The question no. 1 will carry 20 marks and will be of short objective type of questions, such as multiples choice types questions (10 questions of 1/2 marks each), one line answer type (5 questions of 1 mark each)/fill in the blanks type (five question of 1 mark each), one word type (5 questions of 1 mark each).</i></p><p><b>Paper I: Waste Treatment and Management</b></p><p>Duration:3 hrs.                      Max. Marks:100                      Min. pass. Marks:36</p><p>Unit-1: Urban waste management, characteristics and nature of solid waste; generation transportation, disposal and treatment of solid waste. Recovery, recycling and reuse of waste.</p><p>Unit-2: Industrial waste management-generation of industrial waste, minimization o waste generation, recycling and recovery of materials, industrial waste treatment (Chemical) waste management, classification of toxic waste, treatment of toxic waste and safe disposal.</p><p>Unit-3: Nuclear waste treatment -Reprocessing of nuclear waste, recovery of nuclea filling material for reuse, treatment and safe disposal of nuclear waste.</p><p>Unit-4: Hazardous waste management -Classification, nature and characteristics o hazardous waste, Techniques of hazardous waste treatment, Disposal of hazardou waste.</p> <p style="text-align: right;"><i>Raj Hans</i> Dy. Registrar (Academic-I) University of Rajasthan Jaipur</p></div>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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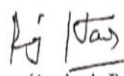


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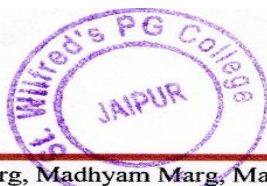
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3	<p>M.Sc. (F) EVS</p> <p>Paper - II</p> <p>Natural resources and biodiversity conservation</p>	<p>Natural resources and biodiversity conservation</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p align="center"><b>Paper II: Natural Resources and Biodiversity Conservation</b></p> <p>Duration: 3 hrs.                      Max. Marks: 100                      Min. pass. Marks: 36</p> <p>it-1: Classification of resources: Renewable resources, Nonrenewable resources Classes of earth resources, resource regions: Definition and criteria, resource conservation.</p> <p>it-2: Natural resources-non mineral resources, Land, Soil, Water, Inland Water, plants animals, microorganisms, the forest produce and the marine resources Agricultural resources, Natural resources-mineral resources and fuel resources Minerals and metals, fossil fuel, coal, petroleum, natural gas.</p> <p>it-3: Alternatives of resources and non-conventional energy sources, solar, wind hydel, tidal and geothermal energy resources, the nuclear fuels, biomass energy hydrogen as fuel etc.</p> <p>it-4: In-situ biodiversity and conservation, conservation of biodiversity in Biosphere Reserves, Reserve Forests, National Parks, Tiger Projects, Sanctuaries, places around shrines, sacred grooves etc. Biotechnology and its application in biodiversity conservation, Ex-situ conservation of biodiversity, gene bank, germplasm storage, live museum etc.</p> </div> <p align="right">   Dy. Registrar (Academic-I)  University of Rajasthan  Jaipur </p>	<p>Help students to learn environmental issues with regard to make a sustainable environment.</p>	<p>Environmental Sustainability</p>
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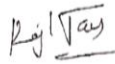
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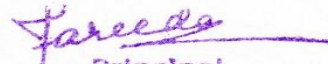
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4	M.Sc. (F) EVS Paper – III A Environmental impact assessment, (EIA) and sustainable development	Environmental impact assessment, (EIA) and sustainable development  <div style="border: 1px solid black; padding: 10px; text-align: center;"><p><b>Special Paper: A-Environmental management and Planning</b></p><p><i>Note: Each paper will have 9 questions out of which a student has to attempt 5 questions including the question no. 1, which will be compulsory, and one question selecting from each unit. The question no. 1 will carry 20 marks and will be of short objective type of questions, such as multiples choice types questions (10 questions of 1/2 marks each), one line answer type ( 5 questions of 1 mark each)fill in the blanks type( five question of 1 mark each), one word type ( 5 questions of 1 mark each ).</i></p><p><b>Paper IIIA: Environmental Impact Assessment, (EIA)and Sustainable Development</b></p><p>Duration:3 hrs.                      Max. Marks:100                      Min. pass. Marks:36</p><p>Unit-1: Procedures and methodologies of EIA, cost-benefit analysis and auditing, origin of the concept of Environmental Impact Statement; preparation, procedure of EIA in different countries and methodologies of preparation of EIA. Environmental Auditing (EA) and its applications.</p><p>Unit-2: EIA, EA and Environmental modelling of thermal power project, EIA and EA methodologies of thermal power projects, mitigation of impacts and economically sound and ecologically sustainable development.</p><p>Unit-3: EIA and EA of nuclear power projects, EIA and EA methodologies of nuclear power project, siting ,mitigation of adverse impacts.EIA and EA of other developmental projects, EIA and EA of tourism, transportation, irrigation, dams, agriculture and industries.</p><p>Unit-4: EIA and EA of mining projects, river projects, procedures and methodologies of EIA and EA of mining and river valley project.</p> <p style="text-align: right;"> Dy. Registrar (Academic-I) University of Rajasthan Jaipur</p></div>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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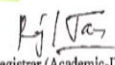
  
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6	<p>M.Sc. (F) EVS</p> <p>Paper - IIIB</p> <p>The human population culture and environments</p>	<p>The human population culture and environments</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;"><b>B-Human Ecology and Population Studies</b></p> <p><i>Note: Each paper will have 9 questions out of which a student has to attempt 5 questions including the question no. 1, which will be compulsory, and one question selecting from each unit. The question no. 1 will carry 20 marks and will be of short objective type of questions, such as multiples choice types questions (10 questions of 1/2 marks each), one line answer type (5 questions of 1 mark each) fill in the blanks type (five question of 1 mark each), one word type (5 questions of 1 mark each).</i></p> <p style="text-align: center;"><b>Paper IIIB: The Human Population Culture and Environment</b></p> <p>Duration:3 hrs.                      Max. Marks:100                      Min. pass. Marks:36</p> <p><b>Unit-1: The Human Environment:</b> The natural and man-made environment, impact of human activities on the environment and its ecological consequences; environmental problems threatening human existence on earth; impact of degraded environment on the quality; strategies for management of human environment for survival with dignity and comfort.</p> <p><b>Unit-2: Human Population and their Environmental Impact:</b> The growing human population on earth and its environmental consequences, population and resource- the relationship between population explosion, poverty and pollution; population policies and strategies for population control. <b>Ecological Adaptation of Man:</b> The ecological adaptations of man, its survival value; human behavioral changes-a bio indicator of environmental pollution, role of heredity and environment in human growth and development.</p> <p><b>Unit-3: Human Culture and its Environmental Imperatives:</b> Cultural evolution of man and the impact of human culture on the environment; the environmental impact of "modernization", culture of "over-consumerism" and the extravagant life style; the conflict between human "need" and "greed" the traditional human culture including tribal cultures and practices and their ecological significances; role of human faith and tradition in ecosystem preservation.</p> <p><b>Unit-4: The Human Ecosystem:</b> Manmade ecosystem on earth-urban, rural, agricultural and industrial ecosystem components of the human ecosystem and its link with the natural ecosystem, human ecosystem as highly energy and resource intensive and the threat to its stability, the future of human ecosystem on earth.</p> <p style="text-align: right;"> Dy. Registrar (Academic-I) University of Rajasthan Jaipur</p> </div>	<p>Help students to learn environmental issues with regard to make a sustainable environment.</p>	<p>Environmental Sustainability</p>
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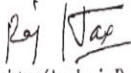
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7	M.Sc. (F) EVS Paper - IVB  Social impact assessment and sustainable development	Social impact assessment and sustainable development  <div data-bbox="370 403 1110 1688" style="border: 1px solid black; padding: 10px;"><p style="text-align: center;"><b>Paper IVB: Social Impact Assessment and Sustainable Development</b></p><p>Duration:3 hrs.      Max. Marks:100      Min. pass. Marks:36</p><p>Unit-1: Technological Revolution: Industrialization, Farmization, and Urbanization Ecological-Economics: The dilemma of human development- Economy V Ecology, economic development vis-a-vis ecological destruction. Need for system of environmental "auditing and accounting "in all developmental projects.</p><p>Unit-2: Sustainable Development : The Brundtland Commission Report (1987) about sustainable development; the strategies for sustainable industrialization sustainable agriculture, sustainable urbanization, and sustainable transport system need for change in developmental philosophy based on human needs and not greed, equity in resource distribution and consumption; revival of traditional system of development with modern scientific knowledge, the Gandhian philosophy of development and its relevancy to the modern human society.</p><p>Unit-3:Eco politics and Development :Politics and Environment, the North and South Eco political divide on the issue of environment and development, National and International politics on the course of development and environmental conservation; role of politician, parliament and the legislature in environment and development.</p><p>Unit-4: Developmental Priorities and Problems and Mankind: Agriculture, Industries, Tourism, Power generation, New Technologies, Energy intensities technology.</p><p style="text-align: right;"> Dy. Registrar (Academic-I) University of Rajasthan Jaipur</p></div>	Help students to learn environmental issues with regard to make a sustainable environment and understand human values.	Environmental Sustainability & human values
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8	M.Sc. (F) Botany Paper - VIII Plant Ecology	<p>Plant Ecology</p> <p style="text-align: center;"><b>Paper-VIII : Plant Ecology</b></p> <p><b>Scheme of Examination</b> <span style="float: right;"><b>Max. Marks 100</b></span></p> <p>Each paper will have 9 questions, out of which a student has to attempt 5 questions including the question No.1 which will be compulsory. The question No.1 will carry 20 marks and will be of short answer type questions with a limit of 20 words.</p> <p style="text-align: center;"><b>Unit-I</b></p> <p><b>Science of Ecology:</b> Introduction of Ecology, Evolutionary ecology, ecological models;</p> <p><b>Population:</b> Characteristics of population, population size and exponential growth, limits of population growth, Competition and coexistence, intra-specific interactions, interspecific interactions, scramble and contest competition model, mutualism, commensalism and allelopathy, prey-predator interactions.</p> <p><b>Vegetation organization :</b> Concepts of community and continuum, community coefficients; interspecific associations, ordination, species diversity and pattern diversity in community, concept of habitat and ecotone, ecological niche.</p> <p style="text-align: center;"><b>Unit-II</b></p> <p><b>Vegetation development :</b> Temporal changes (cyclic and non-cyclic), mechanism of ecological succession (relay floristic and initial floristic composition), succession models (facilitation, tolerance and inhibition models), Changes in ecosystem properties during succession, concept of climax.</p> <p><b>Ecosystem:</b> Nature and size of ecosystem, components of an ecosystem (Producers, consumers and decomposers), Grazing (grassland) and Detritus food chain in freshwater ecosystems, food webs, ecological energetic: Solar radiation and energy intakes at the earth's surface, energy flow models, Productivity of various ecosystems of the world and global biogeochemical cycles of carbon and nitrogen.</p> <p style="text-align: center;"><b>Unit-III</b></p> <p><b>Ecosystem stability :</b> Concept (resistance and resilience), ecological perturbations (natural and anthropogenic) and their impact on plants and ecosystems, Restoration of degraded ecosystem, ecology of plant invasion, environmental impact assessment, ecosystem restoration.</p> <p><b>Biomes and biodiversity :</b> Major biomes of the world and impact of changing climate on biomes, Biodiversity: Concept and levels, role of biodiversity in ecosystem functions and stability, assessment (local, national and global), speciation and extinction, Biodiversity act of India</p> <p style="text-align: center;">(30)</p> <p style="text-align: right;"><i>R. J. Jain</i> Dy. Registrar (Academic) University of Rajasthan</p>	Help students to learn environmental issues with regard to make a sustainable environment	Environmental Sustainability
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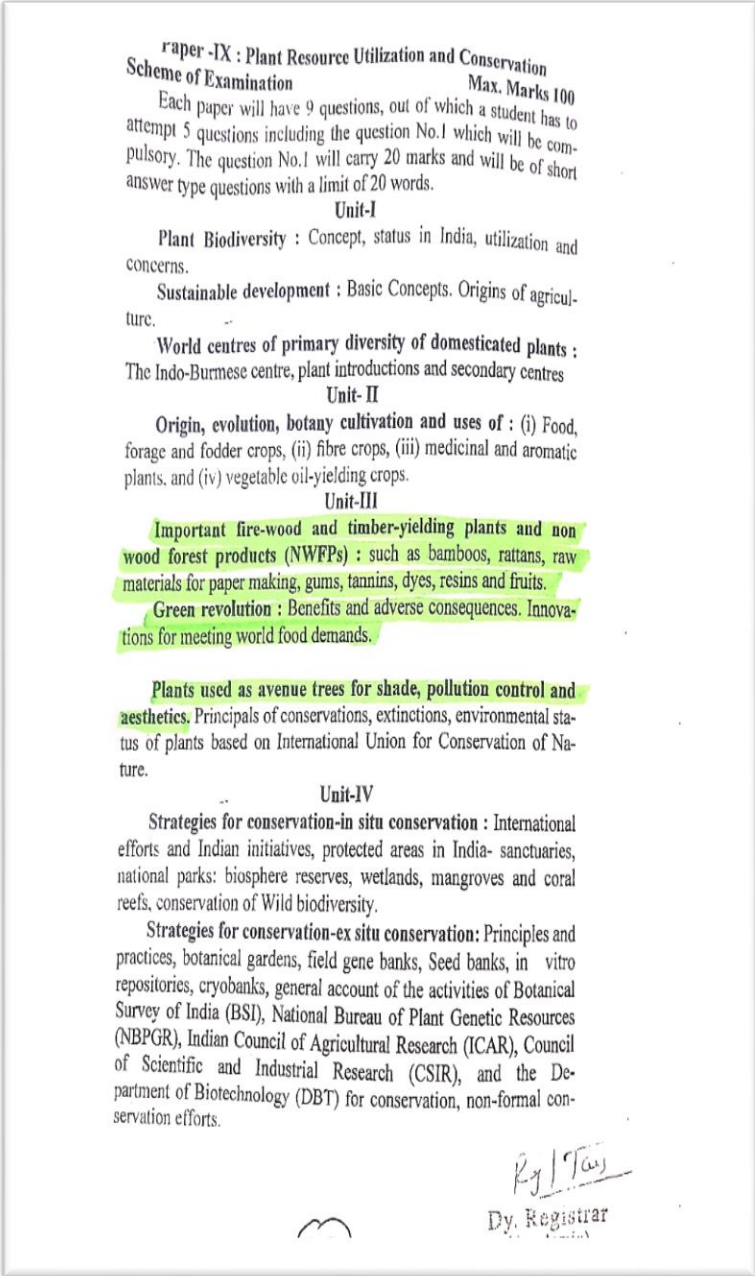


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9	M.Sc. (F) Botany  Paper - IX  Plant resource utilization and conservation	Plant resource utilization and conservation   <p><b>Paper - IX : Plant Resource Utilization and Conservation</b> <b>Scheme of Examination</b> <span style="float: right;">Max. Marks 100</span> Each paper will have 9 questions, out of which a student has to attempt 5 questions including the question No.1 which will be compulsory. The question No.1 will carry 20 marks and will be of short answer type questions with a limit of 20 words.</p> <p style="text-align: center;"><b>Unit-I</b></p> <p><b>Plant Biodiversity</b> : Concept, status in India, utilization and concerns. <b>Sustainable development</b> : Basic Concepts. Origins of agriculture. <b>World centres of primary diversity of domesticated plants</b> : The Indo-Burmese centre, plant introductions and secondary centres</p> <p style="text-align: center;"><b>Unit- II</b></p> <p><b>Origin, evolution, botany cultivation and uses of</b> : (i) Food, forage and fodder crops, (ii) fibre crops, (iii) medicinal and aromatic plants, and (iv) vegetable oil-yielding crops.</p> <p style="text-align: center;"><b>Unit-III</b></p> <p><b>Important fire-wood and timber-yielding plants and non wood forest products (NWFPs)</b> : such as bamboos, rattans, raw materials for paper making, gums, tannins, dyes, resins and fruits. <b>Green revolution</b> : Benefits and adverse consequences. Innovations for meeting world food demands.</p> <p><b>Plants used as avenue trees for shade, pollution control and aesthetics.</b> Principles of conservations, extinctions, environmental status of plants based on International Union for Conservation of Nature.</p> <p style="text-align: center;"><b>Unit-IV</b></p> <p><b>Strategies for conservation-in situ conservation</b> : International efforts and Indian initiatives, protected areas in India- sanctuaries, national parks: biosphere reserves, wetlands, mangroves and coral reefs, conservation of Wild biodiversity.</p> <p><b>Strategies for conservation-ex situ conservation:</b> Principles and practices, botanical gardens, field gene banks, Seed banks, in vitro repositories, cryobanks, general account of the activities of Botanical Survey of India (BSI), National Bureau of Plant Genetic Resources (NBPGR), Indian Council of Agricultural Research (ICAR), Council of Scientific and Industrial Research (CSIR), and the Department of Biotechnology (DBT) for conservation, non-formal conservation efforts.</p> <p style="text-align: right;"><i>Rg/Taj</i> Dy. Registrar</p>	Help students to learn environmental issues with regard to make a sustainable environment	Environmental Sustainability
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# ST. WILFRED'S P.G. COLLEGE

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10	M.Sc. (F) Botany  Paper – IX A  Advanced Plant Pathology	Advanced Plant Pathology  <div data-bbox="370 403 1117 1684" style="border: 1px solid black; padding: 10px;"><p style="text-align: center;"><b>Paper-XI (a) : Advanced Plant Pathology - I</b> <b>Schemes of Examination</b> <span style="float: right;"><b>Max. Mark : 100</b></span></p><p>Each paper will have 9 questions, out of which a student has to attempt 5 questions including the question No.1 which will be compulsory. The question No.1 will carry 20 marks and will be of several short objective type of questions such as multiple choice type, one line answer type, one word type and fill in the blanks type.</p><p style="text-align: center;"><b>Unit-I</b></p><p><b>Plant Pathology</b> : History &amp; Scope. Nature, Origin &amp; Evolution of parasitism. Biotic and abiotic pathogens. Pathogen factors in disease development. Penetration, infection and pathogenesis. Physiological specialisation in phytopathogenic microbes.</p><p style="text-align: center;"><b>Unit-II</b></p><p><b>Host factors in disease development:</b> Inoculum potential; Phenomena of resistance and susceptibility. Protective and defence mechanisms in plants; Phytoalexins. Breeding for disease resistant plants.</p><p><b>Environmental factors in disease development:</b> Epiphytotics and plant disease forecasting.</p><p style="text-align: center;"><b>Unit-III</b></p><p>IPM, Application of biotechnology and information technology to pest management.</p><p><b>Molecular Plant Pathology</b> : Molecular diagnosis, identification of genes and specific molecules in disease development; molecular manipulation of resistance. Non-parasitic diseases and control measures.</p><p style="text-align: center;"><b>Unit-IV</b></p><p><b>Principles of plant protection,</b> Physical, chemical and biological control of plant diseases.</p><p><b>Classification and anatomy of galls</b> : Some insect induced plant galls of Rajasthan, mechanism and physiology of insect galls.</p><p style="text-align: right; margin-top: 20px;"><i>Rg/Tas</i> Dy. Registrar (Academic) University of Rajasthan</p></div>	Help students to learn environmental issues with regard to make a sustainable environment	Environmental Sustainability
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# ST. WILFRED'S P.G. COLLEGE

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11	M.Sc. (F) Botany Paper – IX C Ecosystem Ecology	<p><b>Ecosystem Ecology</b></p> <p style="text-align: center;"><b>Paper-XI (c) : Ecosystem Ecology</b></p> <p><b>Schemes of Examination</b> <span style="float: right;"><b>Max. Mark : 100</b></span></p> <p>Each paper will have 9 questions, out of which a student has to attempt 5 questions including the question No.1 which will be compulsory. The question No.1 will carry 20 marks and will be of short answer type questions with a limit of 20 words.</p> <p style="text-align: center;"><b>Unit-I</b></p> <p><b>Grassland Ecosystems</b> - Characteristics of grasslands, stratification, grasslands and grazing, grasslands and drought, grassland and animal life, Grasslands types with special reference to Prairie and Savannah, Indian grasslands.</p> <p><b>Forest Ecosystems</b> - Stratification of the forest, Forest types - Boreal, Temperate and Tropical forests, Forest animal life</p> <p style="text-align: center;"><b>Unit II</b></p> <p><b>Freshwater Ecosystems</b> -Classification of Freshwater Habitats, Lentic: Lakes &amp; Ponds: Temperature and Oxygen stratification, Zonation based on light penetration, Flora and fauna, Productivity classes of lakes, Marshes and Swamps, Bogs Lotic: Springs, Streams and Rivers.</p> <p><b>Marine and Estuarine Ecosystems</b> - Characteristics of marine environment: Salinity, Temperature and pressure, Zonation and Stratification, Tides, Estuarine ecosystem: Types of Estuaries, Flora and fauna, Estuarine productivity, Coral reef ecosystem, Mangrove ecosystem</p> <p style="text-align: center;"><b>Unit III</b></p> <p><b>Urban Ecosystem</b> -Urban environment and Climatic conditions, additional physical complexes (modified surfaces including parking lots, roofs, and landscaping, buildings, transportation networks, infrastructure and public amenities), flora and fauna (human beings as largest macro consumer), Implications of urbanization: problems of air pollutants, drinking water supply, floods, waste disposal.</p> <p><b>Rural ecosystems:</b> Rural environment and climate, physical complexes (fields, agricultural implements and machines), Flora and fauna, Problems of discharge of chemical fertilizers, pesticides and drinking water. Management of waste, Principle; Social Forestry.</p> <p style="text-align: center;"><b>Unit III</b></p> <p><b>Desert Ecosystem:</b> Desert: Definition, classification (hot and cold), physiography, desert features, flora, fauna and water, formation, topography, distribution and characteristics of world deserts; Thar</p> <p style="text-align: right;">By Registrar (Academic) University of Rajasthan</p> <p style="text-align: center;">(50)</p>	Help students to learn environmental issues with regard to make a sustainable environment	Environmental Sustainability
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# ST. WILFRED'S P.G. COLLEGE

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12	M.Sc. (F) Botany Paper – XII C Environmental Biology	<p><b>Environmental Biology</b></p> <p><b>Paper-XII (c) : Environmental Biology</b> Max. Mark : 100</p> <p><b>Schemes of Examination</b> Each paper will have 9 questions, out of which a student has to attempt 5 questions including the question No.1 which will be compulsory. The question No.1 will carry 20 marks and will be of short answer type questions with a limit of 20 words.</p> <p><b>Unit-I</b> <b>Air Pollution:</b> Important Primary (CO, CO<sub>2</sub>, Oxides of Sulphur &amp; Nitrogen, H<sub>2</sub>S, Chlorine, Particulates, Odour Producing compounds) &amp; Secondary Air Pollutants (Smog, Acid rain, Primary Photochemical reaction, Formation of ozone and peroxyacetyl nitrate in air), Effects of air pollutants on Buildings &amp; Monuments, Plants, man and animals; Biomonitoring, Air pollution control (particulates and gaseous pollutants), Green belt, Ozone depletion, mechanism of depletion, control strategies;</p> <p><b>Unit-II</b> <b>Water Pollution:</b> Eutrophication – Process and CONTRL; Oil Pollution, Thermal Pollution, Heavy metal Pollution, Treatment, Disposal &amp; Recycling of Wastewaters, drinking water standards, Minimum National Standards</p> <p><b>Solid &amp; Hazardous waste management &amp; Resource Recovery:</b> Solid wastes, Types, collection, Shrinking waste streams: 3Rs (Reduction, Recycle &amp; Reuse), composting, energy from waste, demanufacturing; Methods of disposal: Landfill, Open dumps, Exporting waste; Hazardous waste: Definition, disposal and management.</p> <p><b>Unit-III</b> <b>Climatic Issues:</b> Greenhouse gases (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, CFCs: sources, trends and roles and consequence of greenhouse effects (CO<sub>2</sub> fertilization, global warming, sea level rise, Biodiversity erosion), Carbon sequestration, Applications of GIS and REMOTE Sensing technology in environmental studies, the future of planet earth.</p> <p><b>Policies, Regulations &amp; related issues:</b> Water (Prevention and Control of Pollution) Act 1974; Air (Prevention and Control of Pollution) Act 1981; Environment (Protection) Act 1986, Wild Life Protection Act 1972, Forest (Conservation) Act 1980, Biodiversity Act 2002.</p> <p><b>Unit-IV</b> <b>Environmental Concerns:</b> Environmental auditing, Ecological footprints. Environment Impact Assessment, Bioindicator and biomarkers of environmental mhealth; Environmental economics,</p> <p style="text-align: center;">(53)</p> <p style="text-align: right;">Rg Jan Dy. Registrar (Academic)</p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability
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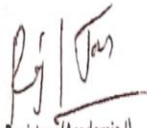
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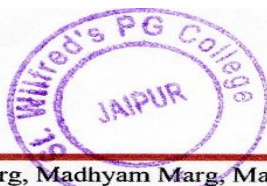
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13	M.Sc. (F) Zoology  Paper - II  Environmental Biology and Ethology	<p style="text-align: center;">M.Sc. FINAL (ZOOLOGY)</p> <p style="text-align: center;"><b>PAPER II : ENVIRONMENTAL BIOLOGY AND ETHOLOGY</b></p> <p>Duration : 3 Hours      Max. Marks - 100      Periods : 70</p> <p>Unit I - Environmental Biology</p> <ol style="list-style-type: none"> <li>1. Interactions between environment and biota <span style="float: right;">5</span> <ol style="list-style-type: none"> <li>1.1 Concept of habitat and ecological niches</li> <li>1.2 Limiting factors.</li> <li>1.3 Energy flow, food chain, food web and trophic levels, ecological pyramids.</li> <li>1.4 Biotic community: Concept, structure, dominance, fluctuation and succession.</li> <li>1.5 Various nutrient cycles in nature.</li> </ol> </li> </ol> <p style="text-align: right;">   Dy. Registrar (Academic-I)  University of Rajasthan  Jaipur </p>	Help students to learn environmental issues with regard to make a sustainable environment.	Environmental Sustainability and Human Value
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2. Ecosystem dynamics and management
  - 2.1 Complexity, stability and homeostasis of ecosystems.
  - 2.2 Functional aspects and productivity concept.
  - 2.3 Niche, ecotone and overlapping of niches.
  - 2.4 Character displacement, speciation and extinction.
3. Environmental impact assessment
  - 3.1 Environmental pollution.
  - 3.2 Population and impact of urbanization.
4. Principles of conservation: Conservations strategies
  - 4.1 Various natural resources.
  - 4.2 Present status and future needs.
  - 4.3 Management.
  - 4.4 Biodiversity of India and Rajasthan and their management.
5. Prospects and strategies for sustainable communities. 2
6. Organisation and dynamics of ecological communities 7
  - 6.1 The habitat approach.
  - 6.2 A detailed knowledge of communities of fresh water, marine, terrestrial and estuarine areas with respect to
    - 6.2.1 Extent
    - 6.2.2 Zonation
    - 6.2.3 Environment
    - 6.2.4 Biota
    - 6.2.5 Adaptations
7. The ecological outlook 5
  - 7.1 Applied human ecology
  - 7.2 Radiation (electromagnetic and ionizing) and environment
  - 7.3 Climatic changes (*El Nino* and *La Nina*)
  - 7.4 Space ecology
  - 7.5 Human future

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## Unit II: Ethology

### 1. Introduction to Ethology

- 1.1 Branches and significance of Ethology: Ethophysiology, Ethoendocrinology, Neuroethology, Human ethology, Behavioural genetics, sociobiology.
- 1.2 Milestones of Ethology : Konrad Lorenz, Niko Tinbergen, Karl Von Frisch, BF Skinner, HF Harlow.
- 1.3 Proximate and ultimate mechanisms of ethology.

### 2. Concepts of Ethology :

- 2.1 Motivation and Innate behaviour ( Fixed action pattern).
- 2.2 Sign stimulus, super normal stimulus.
- 2.3 Action specific energy and Innate releasing mechanism.
- 2.4 Difference between learned and Innate behaviours.

### 3. Nervous system and Behaviour

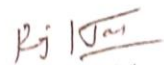
- 3.1 Mammalian brain structure and behaviour.
- 3.2 Hypothalamus and Innate behaviour.
- 3.3 Behavioural endocrinology including effect of drugs.
- 3.4 Orientation - taxis and kinesis, bird migration and navigation
- 3.5 Biological clocks, Chronobiology.

### 4. Learning and Imprinting

- 4.1 Introduction and definitions.
- 4.2 Habituation; Conditioning.
- 4.3 Trial and error; Imprinting .
- 4.4 Neural mechanism of learning .
- 4.5 Birds song learning behavior in the context of Tinbergen's 4 aims.

### 5. Sociobiology

- 5.1 Introduction- definition, WO Wilson, Richard Dawkins, WD Hamilton.
- 5.2 Units of sociobiology,

  
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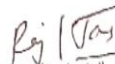
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Syllabus M.Sc. Zoology

- 5.3 Hamilton's theory and Altruism, cooperation, reciprocity and Eusociality,  
5.4 Properties, advantages of a social group, Social organisation in primates.
6. Social Behaviour
- 6.1 Parental care- Types, Parent offspring conflict.  
6.2 Courtship and mating.  
6.3 Aggression and territory  
6.4 Evolution of social systems.
7. Communication in animals
- 7.1 Auditory, Echolocation, Infra- and ultra- sounds.  
7.2 Tactile, Visual,  
7.3 Pheromones- vertebrates and invertebrates  
7.4 Language of honey bees-circle and waggle dance.
8. Human Behaviour-
- 8.1 Desmond Morris, Sarah Hrdy.  
8.2 Sign stimulus, Imprinting.  
8.3 Kinship, Aggression.  
8.4 Pheromones.

### Recommended Books (Environmental Biology)

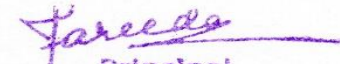
1. Begon, M. Harper, J.I. and Townsend, C.R.: Ecology, Individuals, Populations and Communities. Blackwell Science, Oxford University Press, Oxford.
2. Cherritt, J.M.: Ecological Concepts, Blackwell Scientific Publication, Oxford, U.K.
3. Elseth, B.D. and Baumgartner, K.M.: Population Biology, Van Nostrand Col, New York.
4. Jorgenson, S.E.: Fundamentals of Ecological Modeling, Elsevier.
5. Krebs, C.J.: Ecological Methodology, Harper and Row, New York.
6. Krebs, C.J.: Ecology, Harper and Row, New York.

  
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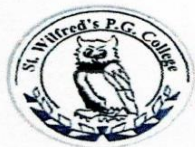
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Where the mind is without fear! Where the head is held high!!



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Where the mind is without fear! Where the head is held high!!