CRITERION – 1- CURRICULAR ASPECTS

1.3.1 –

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

01. Environmental Studies – For All Program First Year

02. Geography - For B.A. - Part – I

03. Zoology – For B.Sc.- Part – III Paper - 1

04. Botany – For B.Sc. – Part – III Paper - 1

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UNIT-I THE MULTI DISCIPLINARY NATUREOF ENVIRONMENTALSTUDIES

Definition, Scope and

Importance Natural Resources:

Renewable and Nonrenewable Resources

(a) Forest resources: Use and over-exploitation, deforestation, Timber extraction, mining, dams and their effects on forests and tribal people and relevant forest Act.

(b) Water resources: Use and over-utilization of surface and ground water, floods drought, conflicts over water, dams benefits and problems and relevant Act.

(c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

(d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging ,salinity.

(e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources.

(f) Land resources: Land as a resource, land degradation, man induced landslides soil erosion and desertification.

(12 Lecture)

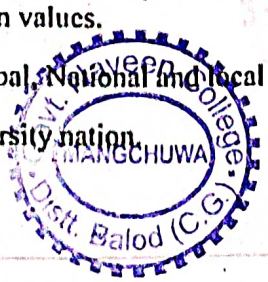
UNIT-II ECOSYSTEM

(a) Concept, Structure and Function of and ecosystem

- Producers, consumers and decomposers.
- Energy flow in thee co system
- Ecological succession
- Food chains, food webs and ecological pyramids.
- Introduction, Types, Characteristics Features, Structure and Function of Forest, Grass, Desert and Aquatic Ecosystem.

(b) Biodiversity and its Conservation

- Introduction - Definition: genetic, species and ecosystem diversity
- Bio-geographical classification of India.
- Value of biodiversity: Consumptive use, Productive use, social ethics, aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as mega-diversity nation.



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- Hot spots of biodiversity.
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wild life conflict.
- Endangered and endemic species of India.
- Conservation of biodiversity: In situ and Ex-situ conservation of biodiversity.

(12Lecture)

UNIT- III

(a) Causes, effect and control measures of

- Air water, soil, marine, noise, nuclear pollution and Human population.
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Disaster Management: floods, earthquake, cyclone and landslides.

(12Lecture)

(b) Environmental Management

- From Unsustainable to sustainable development.
- Urban problems related to energy.
- Water conservation, rain water harvesting, water shed management.
- Resettlement and rehabilitation of people, its problems and concerns.
- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.
- Wasteland reclamation
- Environment protection Act: Issues involved in enforcement of environmental legislation.
- Role of Information Technology in Environment and Human Health.

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UNIT- IV

General background and historical perspective- Historical development and concept of Human Rights, Meaning and definition of Human Rights, Kind and Classification of Human Rights.

Protection of Human Rights under the UNO Charter, protection of Human Rights under the Universal Declaration of Human Rights, 1948.

Convention on the Elimination of all forms of Discrimination against women.

Convention on the Rights of the Child, 1989.

UNIT-V

Impact of Human Rights norms in India, Human Rights under the Constitution of India, Fundamental Rights under the Constitution ofIndia, Directive Principles of State policy under the Constitution of India, Enforcement of Human Rights in India.

Protection of Human Rights under the Human Rights Act, 1993- National Human Rights Commission, State Human Rights Commission and Human Rights court in India.

Fundamental Duties under the Constitution of India.

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Reference/ Books Recommended

1. SK Kapoor- Human rights under International Law and IndianLaw.
2. HO Agrawal- Internation Law and HumanRights
3. एस.के. कपूर —मानव अधिकार
4. जे.एन. पान्डेय — भारत का संविधान
5. एम.डी. चतुर्वेदी —भारत का संविधान
6. J.N.Pandey - Constitutional Law ofIndia
7. Agarwal K.C. 2001 Environmental Biology, Nidi pub. Ltd.Bikaner
8. Bharucha Erach, the Biodiversity of India, Mapin pub. Ltd. Ahmedabad 380013,India, Email:mapin@icenet.net(R)
9. Bruinner R.C. 1989, Hazardous Waste Incineration. McGraw HillInc.480p
10. Clark R.S. Marine pollution, Clanderson press Oxford(TB)
11. Cuningham, W.P.Cooper. T.H.Gorhani, E & Hepworth.M.T,200
12. Dr. A.K.- Environmental Chemistry. Wiley EasternLtd.
13. Down to Earth, Center for Science and Environment(R)
14. Gloick, H.P. 1993 Water in crisis. pacific institute for studies in Deve. Environment& Security. Stockholm Eng. Institute. Oxford University, Press. m473p.
15. Hawkins R.E. Encyclopedia of Indian Natural History, Bombay Natural History Society, Mumbai(R)
16. Heywood, V.H. & Watson, T.T.1995 Global Biodiversity Assessment, Cambridge Univ. Press1140p
17. Jadhav H. & Bhosale, V.H. 1995 Environmental Protection and Law. Himalayapub. House, Delhi284p
18. Mckinney M.L.& School R.M.1996, environmental Science systems & solutions,web enhanced edition,639p
19. Mhadkar A.K. Matter Hazardous, Techno-Sciencepublication(TB)
20. Miller T.G.Jr. Environment Science, Wadsworth publication co.(TB)
21. Odum E.P.1971, Fundamentals of Ecology, W.B. Saunders Co.USA,574p
22. Rao M.N. & Datta, A.K. 1987, Waste water treatment. Oxford & IBH pub.co.pvt.Ltd 345p
23. Sharma B.K. 2001, Environmental chemistry, Goel pub. House,Meerut
24. Survey of the Environment, TheHidu(M)
25. Townsend C. Harper J. And Michael Begon, Essentials of Ecology, Blackwell Science(TB)
26. Trivedi R.K.Handbook of Environment Laws, Rules, Guidlines, Compliancesand Standards, Vol land II, EnvironmentMedia(R)
27. Trivedi R.K. and P.K. Goel, Introduction to air pollution, Techno-Science publication (TB)
28. Wanger K.D.1998, Environmental Management. W.B. Saunders Co. Philadelphia,USA 499p

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Program: B.A./B.Sc.	Class: I Year.	Session : 2023-24

Paper I: Physical Geography (UGeo-0101)

Course Learning Outcome (CLO)	After the completion of course, the students will have ability to: 1. Understand the internal structure of the earth, rocks that compose it and forces within the earth that act to deform it. 2. Analyze how the natural and anthropogenic operating factors affect the development of land forms. 3. Understand about the denudation processes that unceasingly act at the earth's surface to shape land forms and reduce relief. 4. Assess the role of structure, stage and time in shaping the land forms. 5. Identify the Atmospheric pressure, winds humidity, concept of precipitation, its types and understand the Air Masses and Fronts and the Weather Forecasting. 6. Identify the relief of the ocean bottom, temperature, salinity of ocean water, tide, currents coral reef and oceanic resources.

Content of the Course

Unit	Topic
1.	Origin of the Earth, Geological Time Scale, Earth's Interior, Continental Drift Theory (Wegner), Plate Tectonics, Isostasy.
2.	Earth movements: Earthquakes and Volcanoes, Rocks, Weathering, Erosion and Normal cycle of erosion, Evolution of landscapes: Fluvial, Aeolian (Arid and Semi Arid), Glacial, Karst.
3.	Elements of Weather and Climate, Composition and Structure of the Atmosphere. World patterns of Atmospheric Temperature, Pressure, and Winds.
4.	Atmospheric Humidity and Disturbances, Climatic Classification of Koppen, Geographical account of world climate patterns: Equatorial, Monsoon, Desert and Tundra.
5.	Bottom relief of Ocean, Distribution of Temperature and Salinity of Oceans and Seas, Currents and Tides, Ocean Deposition. Law of the Sea.

Learning Resources: Text Books, Reference Books, Other Resources

Suggested Readings:

1. Ahmed, E.: Coastal Geomorphology of India.
2. Chorley, R. J.: Spatial Analysis in Geomorphology, Methuen, London, 1972.
3. Dayal, P. : A Text book of Geomorphology, R.K. Books, New Delhi.
4. Gautam, Alka : Geomorphology, Sharda Pustak Bhawan, Allahabad.
5. Holms, A.: Principles of Physical Geology, Thomas Nelson, London.
6. Jha, V.C. : Geomorphology, Vasundhara Publication, Gorakhpur.
7. Sparks, B.W. Geomorphology, Longman, London, 1960.
8. Sharma, H.S. (ed.): Perspective in Geomorphology, Concept, New Delhi, 1980.
9. Singh, S : Geomorphology, Prayag Publication, Allahabad, 1998.
10. Steers, J.A. : The Unstable Earth Methuen, London.
11. Thornbury, W.I.). Principles of Geomorphology, John Wiley, New York, 1960.
12. Strahler, A.N.: Physical Geography, Willey, New York.
13. सिंह,एस.बी.(2001) : भौतिक भूगोल, सारा बुक डैपो,वाराणसी।
14. सिंह, सविन्द्र (2016) : भौतिक भूगोल, प्रयाग पुस्तक भवन, इलाहाबाद।
15. दयाल, परमे वर (2012) : भौतिक भूगोल, पंच शील प्रका शन, जयपुर।
16. हुसैन, माजिद (2000) : भौतिक भूगोल, रावत पब्लिकेशन, जयपुर।

Suggested equivalent online course: 1. epgp.inflibnet.ac.in 2. virtual lectures available on youtube

Dr. Sheela Shirley

Govt. Naveen College MANGCHUWA Balod (C.G.)

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Program: B.A./B.Sc.	Class: I Year.	Session : 2023-24

Paper II: Human Geography (UGeo-0102)

Course Learning Outcome (CLO)	After the completion of course, the students will have ability to: 1. Discuss and describe the major concepts and key principles of Human Geography including place, space, scale and landscape. 2. Appreciate the diversity of the cultural backgrounds and places. 3. Problem solving from a geographic perspective by understanding the role location plays.

Unit	Content of the Course Topic
1.	Meaning, Definition, Nature and Scope of Human Geography, Man - environment relationship: Determinism, Possibilism, Determinism, Neo-Determinism and Probabilism; Human Development Index (HDI).
2.	Human Races: Formation and Evolution, Characteristics, Classification and Distribution. Human adaptation to environment: Eskimos, Bushman, Pigmy and Masai.
3.	Growth, Density and Distribution of World Population and factors influencing spatial distribution. Over, Under, and Optimum Population; Migration of Population.
4.	Rural Settlements: Characteristics, Types and Regional Pattern, Rural Houses in India. Urban Settlement- Types and Pattern.
5.	Environmental Issues: Global Warming, Climate Change, Acid rain, Deforestation, Desertification, Air, Water and Soil Pollution.

Learning Resources :Text Books, Reference Books, Other Resources

Suggested Readings:

1. Chisholm, M. (1985): Human Geography, 2nd edition, Penguin Books, London.
2. De Blij, H.J.(1996): Human Geography: Culture, Society and Space,. 2nd edition. John Wiley and Sons, New York.
3. Fellman, J. D., Arthur, G., Judith, G., Hopkins, J. and Dan, S. (2007): Human Geography: Landscapes of Human Activities. McGraw-Hill, New York. 10th edition.
4. Haggett, P. (2004): Geography: A Modern Synthesis. 8th edition, Harper and Row, New York.
5. Huggett, R. J. (1998): Fundamentals of Biogeography, Routledge, London.
6. Hussain, M. (1994): Human Geography, Rawat Publications, Jaipur.
7. Johnston, R. J., Gregory, D., Pratt, G. and Watts, M. (2009): The Dictionary of Human Geography. 5th edition, Basil Blackwell Publishers, Oxford.
8. Norton, W. (2008): Human Geography, Oxford University Press, New York. 5th ed.
9. Singh, K. N. and Singh, J. (2001): *Manav Bhugol*. Gyanodaya Prakashan, Gorakhpur. 2nd edition.
10. Singh, L.R. (2005): Fundamentals of Human Geography, Sharda Pustak Bhawan, Allahabad
11. Smith, D. M.(1977): Human Geography- A Welfare Approach, Edward Arnold (Publishers) Ltd., London

Suggested equivalent online course:
epgp.inflibnet.ac.in 2. virtual lectures available on YouTube

(Dr. Charles Sidda)

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Paper III :Practical Geography (UGeo-0103)

Course Learning Outcome (CLO)	After the completion of course, the students will have ability to: 1. Develop hands on skills in diagrammatic representation of data. 2. Comprehend thematic mapping techniques, its cartographic representation and interpretation. 3. Take up Cartography as a profession.

Content of the Course

Unit	Topic
	MM- 25
Section A: Cartography And Statistical Methods	
1.	Basic concept of Latitude and Longitude. Identification of tropic of Cancer, Capricorn and equator on map, name of country and state. Northern hemisphere and southern hemisphere. Practice on world and India map.
2.	Scale: Statement Scale, Representative Fraction (R.F.), Linear scale – Simple, Diagonal, Comparative, and Time Scales.
3.	Methods of showing relief; Meaning of contour, basic features of Contours line, Hachures; Representation of different landforms by Contours; Conical hill, Plateau, V and U shape valley, Waterfall.
4.	Graphs and Diagram: Triangular graph, Bar Diagram (Simple and Composite and multiple), Circle Diagram, Pie Diagram.
5.	Statistical Technique: Mean Median, Mode
	MM-15
Section B: Surveying	
6.	Chain and Tape Survey. Triangulation method, Open Traverse and Closed Traverse
	MM-10
Section C: Practical Record And Viva Voce	

Learning Resources: Text Books, Reference Books, Other Resources

Suggested Readings:

1. Davis, R.E. and Foote, F.S. (1953): Surveying, 4th edition, McGraw Hill Publication, New York
2. Jones, P.A.(1968): Fieldwork in Geography, Longmans, Green and Company Ltd., First Publication, London
3. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
4. Natrajan, V. (1976): Advanced Surveying, B.I. Publications., Mumbai
5. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition.
6. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata.
7. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi,.
8. Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.
9. Venkataramaiah, C. (1997): A Text Book of Surveying, Universities Press, Hyderabad.
10. वर्मा,जे.पी. (2001) : प्रायोगिक भूगोल, रस्तोगी पब्लिकेशन, मेरठ
11. मिश्रा, आर.एन.एवं पी.के.वर्मा (2010) : प्रायोगिक भूगोल, सागर पब्लिकेशन्स, जयपुर
12. तिवारी,आर.सी.एवं सुधाकर त्रिपाठी (2009) : आधिनय प्रायोगात्मक भूगोल, प्रयाग पुस्तक भवन
13. मौंक हाउस तथा विलिन्सन (अनुवाद डी. प्रेमचन्द अग्रवाल) : मानचित्र तथा आरेख, मध्यप्रदेश हिंदी इलाहाबाद ग्रंथ अकादमी भोपाल

Suggested equivalent online course:
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Hemchand Yadav Vishwavidyala, Durg (C.G.)

Zoology

B.Sc. Part III (2021-22)

Paper-I

ECOLOGY, ENVIRONMENTAL BIOLOGY: TOXICOLOGY, MICROBIOLOGY AND MEDICAL ZOOLOGY

Unit: I (Ecology)

- Aims and scopes of ecology
- Major ecosystems of the world-Brief introduction
- Population- Characteristics and regulation of densities
- Communities and ecosystem
- Bio-geo chemical cycles
- Air & water pollution
- Ecological succession

Unit: II (Environmental Biology)

- Laws of limiting factor
- Food chain in fresh water ecosystem
- Energy flow in ecosystem- Trophic levels
- Conservation of natural resources
- Environmental impact assessment

Unit: III (Toxicology)

- Definition and classification of Toxicants
- Basic Concept of toxicology
- Principal of systematic toxicology
- Heavy metal Toxicity (Arsenic, Murcury, Lead, Cadmium)
- Animal poisons- snake venom, scorpion & bee poisoning
- Food poisoning

Unit: IV (Microbiology)

- -General and applied microbiology
- Microbiology of domestic water and sewage
- Microbiology of milk & milk products
- Industrial microbiology: fermentation process, production of penicillin, alcoholic breverages, bioleaching.

Unit:V (Medical Zoology)

- Brief introduction to pathogenic microorganisms, Ricketssia, Spirochaetes, AIDS and Typhoid
- Brief account of life history & pathogenicity of the following pathogens with reference to man: prophylaxis & treatment
- Pathogenic protozoan's- Entamoeba, Trypanosome & Plasmodium
- Pathogenic helminthes- Schistosoma
- Nematode pathogenic parasites of man
- Vector insects

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B.SC.-III

PAPER- I (BOTANY)

(ANALYTICAL TECHNOLOGY PLANT PATHOLOGY, EXPERIMENTAL EMBRYOLOGY, ELEMENTARY BIOSTATISTICS, ENVIRONMENTAL POLLUTION AND CONSERVATION)

UNIT-I

Structure, Principle and applications of analytical instrumentation.

Chromatography technique, Oven, Incubator, Autoclave, Centrifuge, Spectrophotometere

UNIT-II

Plant Tissue culture techniques, growth media, totipotency, protoplast culture, somatic hybrids and cybrids, micropropagation, somaclonal variations, haploid culture.

Analytical techniques: Microscopy-Light microscope, Electron microscope

UNIT-III

General principles of plant pathology, general symptoms of fungal, bacterial and viral diseases; mode of infection] diseases resistance and control measures, plant quarantine. A study of epidemiology and etiology of following plant diseases.

Rust diseases of wheat, Tikka diseases of groung nut, Red rot of sugar can, Bacterial blight of rice, yellow vein mosaic of b hindi, Little Leaf of brinjal.

UNIT-IV

Introduction to pollution, green house gases, Ozone depletion, Dissolve oxygen, B.O.D., C.O.D.

Bio magnification, Eutrophication, Acid precipitation, Pytoremediation. Plant indicators, Biogeographical Zones of India, Concept of Biodiversity, CBD, MAB, National parks and biodiversity Hot spots, Conservation strategies, Red Data Book, IUCN threat categories, invasive species, endemic species, concept of sustainable development.

UNIT-V

ELEMENTARY BIOSTATISTICS:

Introduction and application of Biostatics, measure of central tendency-Mean, Median, Mode, measures of dispersal-Standard devintion, standard error.

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