SHIVAJI UNIVERSITY, KOLHAPUR DEPARTMENT OF GEOGRAPHY

A PAPER UNDER CHOICE BASED CREDIT SYSTEM

Course Code:

Title of the Paper: Environmental Geography Department at which course will be conducted: Geography Duration: 1 Semester (six months) Contact session: Theory – 60 hours. Practical: NA Credits: Four (04) Course Coordinator: Contact HOD, Dept. of Geography. Eligibility: Post Graduate students of Geography, Botany, Zoology, Sociology, Economics, Environment Science. Intake: Geography students: 25-30; Other departments: Maximum: 15 Course offered during: Odd Semester (Third Semester) Course Fee: As per university rules

Course Content:

Unit-1: Introduction to Environmental Geography (15)

Concept of Environment: Major elements of Environment; Functioning of Environmental systems: role of biotic and abiotic elements; Biodiversity: meaning, biological evolution, interaction between species; Environmental factors influencing biodiversity.

Unit-2: Terrestrial and Aquatic Ecosystems (15)

Terrestrial and Aquatic ecosystems - location, types and characteristics; Energy flow in an ecosystem; Ecological pyramids and food chains; Succession, restoration and simplification of ecosystem; Ecosystem stability: risk, conservation and management; Biogeochemical cycles.

Unit-3: Natural Hazards (15)

Natural Hazards: earthquakes, volcanoes, tsunami, tropical cyclones, droughts, floods, famines; Forest fires: distribution, causes and consequences; Disaster management in Maharashtra and India.

Unit-IV Conservation and management of environment (15)

Conservation and management of environment; Concept of sustainable development; Sustaining living resources; Conservation of wildlife and biological diversity; Land degradation and noise pollution; Environment impact assessment; Environmental issues and policies in India.

Examination Method:

At the end of the semester, final examination will be conducted. The pattern and nature of theory question paper will be as follows:

Paper type	Internal Marks	Final Exam Marks	Total Exam Marks	
Theory 20		80	100	

Note:

1. Internal marks (Theory = 20 marks): Class Test: 10 marks. Assignment/Seminar: 10 marks

Question	Type of	Number of	Number of	Marks per	Total Marks
No.	Question	Questions to	Questions to	question	
		be asked	be answered		
Q. 1.	Objective	16	16	01	16
	Type (MCQ)				
	Short answer	04	04	04	16
Q. 2.	(definition				
	type)				
Q. 3	Short Notes	03	02	08	16
	(Descriptive)				
	Long	02	01	16	16
Q. 4	Answer/Essay				
	Туре				
	Long	02	01	16	16
Q. 5	Answer/Essay				
	Туре				
Total = 05					80

Nature of Question Paper in Final Exam (Theory)

Text Books/ Reference Books:

Books:

- 1. Abbott, P.L: Natural Disasters. McGraw-Hill, London.
- 2. Botkin, D.B., Keller, E.A. (2007): *Environmental science: Earth as a Living Planet*. John Wiley and Sons, New York.
- 3. Cunningham, W. Cunningham, Mary (2010): *Environmental Science: A Global Concern.* MacGraw-Hill, London.
- 4. Government of India (2010): Status of Environment Report. New Delhi.
- 5. Keller, E.A, Vecchio, D. E. de: *Natural Hazards: Earth's Processes as Hazards, Disasters, and Catastrophes.* Prentice Hall, New York.
- 6. Marsh, W.M., Grossa, J. (2005): *Environmental Geography: Science, land use, and Earth Systems.* John Wiley, New York.
- 7. McKinney, M.L., Schoch, R. M. (2003): *Environmental science: Systems and Solutions*. Jones & Bartlett Learning, 2003.
- 8. Miller, G.T, Spoolman, Scott (2011): Environmental Science. Brooks Cloe, London.
- 9. Raven, P.H, Berg, L.R, Hassenzahl, D.M Peter: *Environment*. John Wiley, New Delhi.
- 10. **Savinder Singh** (1991): *Environmental Geography*. Prayag Pustak Bhavan, Allahabad.
- 11. Wright, R.T., Nebel, B.J. (2005): *Environmental science: Toward a sustainable future.* Pearson/Prentice Hall, New Jersey.

Website: http://www.pbs.org/wnet/savageearth/

Any other information if any:

Population growth, industrialization and urbanization processes have altered the state of environment throughout the world. This has led to serious consequences in different parts of the world. There is an urgency to understand the spatial patterns of all environmental elements and systems that are naturally inter-related with each other. This paper is of interdisciplinary in nature, having applicability beneficial to the enthusiastic students of Geography, Botany, Zoology, Sociology, Economics, and Environmental Science. To keep pace with the globalization and interdisciplinary nature of academic activities, we would like to offer the paper ENVIRONMENTAL GEOGRAPHY for CBCS. After completing this paper, the students will be able to conduct research in their respective discipline with focus on solving environmental problems in different parts of the world.

DEPARTMENT OF GEOGRAPHY SHIVAJI UNIVERSITY, KOLHAPUR PAPER UNDER CHOICE BASED CREDIT SYSTEM

Course code:

Title of Course: Fundamentals and Applications of Remote Sensing

Department at which course will be conducted: Geography

Duration: One Semester(6 Months)

Contact session: Theory-60 hours and Practical: NA

Credits: Four

Course Coordinator:

Eligibility: Post graduate students of Geography, Botany, Environment,

Geology and Physics

Intake: Geography (50): Other Dept.: (10)

Course offered during: Odd semester Course Fee: As per University rules.

Course content:

Unit-1: Introduction & Principles of Remote Sensing (20)

Definition and scope of remote sensing; History and development of remote sensing technology; Electromagnetic radiation (EMR) and electromagnetic spectrum; EMR interaction with atmosphere and earth surface; Atmospheric window and spectral reflectance curve; Resolutions in remote sensing; Types of remote sensing; Principles and applications of optical, thermal & microwave remote sensing; Introduction to hyper-spectral remote sensing.

Unit-2: Aerial Photography (12)

Aerial photographs: types, scale, & resolution; Types of aerial cameras and photographic films; Geometry of aerial photographs; Flight planning; Impact

of season, time, & topography on aerial photographs; Parallax, relief displacement, and orthophotos.

Unit-3: Satellite Remote Sensing (14)

Satellite: types and their characteristics; Types of Sensor; Orbital and sensor characteristics of major earth resource satellites: LANDSAT, SPOT, IRS, & Quickbard; Recent developments of Indian remote sensing satellite programme; Environmental, meteorological & communicational satellites.

Unit-4: Image Interpretation & Applications of Remote Sensing in Geography (14)

Elements of visual image interpretation; Aerial photos vs. satellite imagery; Application of remote sensing in (a) Land use/ land cover mapping, (b) Landform analysis, (c) Resource evaluation, (d) Natural hazards assessment, and (e) Urban & regional planning.

Examination Method:

At the end the semester, final examination will be conducted. The pattern and nature of theory question paper will be as fallows,

Paper Type	Internal Marks	Final Exam Marks	Total Marks
Theory	20	80	100

Note:

1. Internal marks (Theory = 20 marks): Class Test: 10 Marks & Assignment/Seminar: 10 marks

Question No.	Type of Question	Number of Questions to be Asked	Number of Questions to be Answered	Marks per Question	Total Marks
Q1.	Objective type (MCQ)	16	16	01	16
Q2.	Short Answer (Definition type)	04	04	04	16
Q3.	Short Notes (Descriptive type)	03	02	08	16
Q4.	Long Answer/ Essay type	02	01	16	16
Q5.	Long Answer/ Essay type	02	01	16	16
Total = 05					80

Nature of Question Paper in Final Exam (Theory):

Text Books/Reference books;

Books:

- 1. Aber, J.S., Marzolff, I., and Ries, J. (2010): *Small-Format Aerial Photography: Principles, Techniques and Geoscience Applications*, Elsevier, Amsterdam, 268pp.
- 2. Campbell, J.B., and Wynne, R.H. (2011): *Introduction to Remote Sensing (5th Ed.)*, Guilford Press, New York, 667pp.
- 3. Jensen, J.R. (2006): Remote Sensing of the Environment: An Earth Resource Perspective (2nd Ed.), Prentice Hall, New Jersey, 608pp.
- 4. Konecny, G. (2003): Geoinformation: Remote sensing, Photogrammetry and Geographic Information Systems, Taylor & Francis, London, 266pp.
- 5. Lillesand, T.M., Kiefer, R.W., and Chipman, J.W. (2007): *Remote Sensing and Image Interpretation (6th Ed.)*. Wiley, New Jersey, 804pp.
- 6. Morgan, D., and Falkner, E. (2001): *Aerial Mapping: Methods and Applications (2nd Ed.)*, CRC Press, Boca Raton, Florida, 216pp.
- 7. Quattrochi, D.A., and Goodchild, M.F. (1997): *Scale in Remote Sensing and GIS*, CRC Press, Boca Raton, Florida, 432pp.
- 8. **Reddy, M.A. (2008)**: *Textbook of Remote Sensing and Geographical Information System (3rd Ed.)*, BS Publications, Hyderabad, 476pp.
- 9. Sabins, F.F. (2007): Remote Sensing: Principles and Interpretation (3rd Ed.), Waveland Press, Long Grove, Illinois, 512pp.
- 10. Schowengerdt, R.A. (2006): Remote Sensing: Models and Methods for Image Processing (3rd Ed.), Elsevier, Amsterdam, 560pp.
- 11. Wolf, P., DeWitt, B., Wilkinson, B. (2012): *Elements of Photogrammetry with Application in GIS (4th Ed.)*, McGraw-Hill, New York, 640pp.

Journals:

- 1. Remote Sensing of Environment
- 2. ASPRS Photogrammetric Engineering and Remote Sensing
- 3. IJPRS Journal of Photogrammetry and Remote Sensing
- 4. International Journal of Remote Sensing
- 5. IEEE Transactions on Geosciences and Remote Sensing
- 6. IEEE Letters on Geosciences and Remote Sensing
- 7. Journal of the Indian Society of Remote Sensing

Any other information if any:

The field of remote sensing has experienced a rapid growth in technology and applications. This field is interdisciplinary and one should have knowledge of Physics, Geography, Environment and Mathematics to get acquainted with this discipline. This subject is having various applications related with Geography, Geology, Botany and Environmental Science. In order to keep up with the requirement of increased trained manpower in this area, we would like to introduce this paper for CBCS. The students of Physics, Geology, Environmental Science and Botany can choose this subject and apply these techniques in their research.