

Courses offered Under CBCS for B.A. /B.Sc.

Semester	Paper	Title	Credits	Type
I	GEB-103 (Theory)	Fundamentals of Remote Sensing	04	CB
II	GEB-202 (Theory)	Principles of Ecology	04	CB
III	GEB-304 (Practical)	Land Surveying and GPS	04	AECC
IV	GEB-403 (Theory)	Environmental Issues and Management	04	CB
V	GEB-503 (Theory)	Population and Development	04	CB
VI	GEB-604 (Practical)	GIS	04	SEC

**Sd/
(Prof. Shahnaz Parveen)**

Head

Semester –I
Fundamentals of Remote Sensing
(Choice Based Paper)
Paper – III (GEB-103)

Credits: 4

Unit-I

Introduction to Remote Sensing; EMR and EMS; Stages of Remote Sensing; Remote Sensing & its Types; Interaction of EMR with Atmosphere and Earth Surface Features.

Unit-II

Remote Sensing Platforms and Sensors; Satellite Series: IRS, Spot, IKONOS and Quick Bird.

Unit-III

Digital images and their types; Image Resolutions: Spatial, Spectral, Radiometric and Temporal; Image Histograms; Image Rectification: Radiometric and Geometric.

Unit-IV

Aerial Photographs and their types; Geometry of Aerial Photographs; Scales of Aerial Photographs; Difference between Aerial Photographs and Maps; Difference between Aerial photographs and Imageries

Books Recommended:

1. Lillisand,T., Keifer, Ralph W., Chipman, J. 2011. Remote Sensing and Image Interpretation. John Wiley Pub., New York.
2. Campbell, J.B. 1996(2nd edition). Introduction to Remote Sensing. Taylor and Francis, London.
3. Curran, P. 1985. Principles of Remote Sensing. Longman, London.
4. Sabins, J.F.F. 1997. Remote Sensing: Principles and Interpretation. W.H. Freeman & Co., New York.
5. Jenson, J.R. 2013. Remote Sensing and Environment. Pearson India
6. Kumar, S. 2005. Basics of Remote Sensing and GIS. Laxmi Pub.

Semester-II
Principles of Ecology (Choice Based Paper)
Paper – V (GEB-202)

Credits: 4

Unit-I

Introduction Definition, Scope, Evolution and development; Difference between Ecology and Human Ecology; Environmentalism; Conservation Ethics.

Unit-II

Man and Environment Interaction; Human Adaptation and Modification; Environmental Adaptation Types, Aquatic, Desert and Land adaptations

Unit-III

Nutrient cycles: Water Cycle. Nitrogen Cycle, Carbon Cycle, Phosphorous Cycle; Human Population Size and Growth; Carrying Capacity of Earth.

Unit-IV

Ecosystem: Definition, Components, Types and functions; Food Chain, Food Webs and Energy Trophic Levels; Energy flow within the Ecosystem: Y- Shaped Model.

Books Recommended:

1. Odum, E.P. 2004. Fundamentals of Ecology. Cengage Learning, New York.
2. Arumugam, N. 2014. Concepts of Ecology. Saras Publication, Delhi.
3. Pushpam Kumar, Reddy B. Sudhakar. 2007. Ecology and Human Well Being. Sage Publication.
4. Robert Ezra Park. 2003. Human Communities: The City and Human Ecology. Freeman Press.
5. Vladimir F. Krapivin., Costas A. Varotsos. 2005. Biogeochemical Cycles in Globalization and Sustainable Development. Springer.
6. Lovett G.M., Jones C., Turns M.G., Weather K.C. 2005. Ecosystem Function in Heterogenous Landscapes. Springer.
7. Yueh-Hsin Lo, Juan A. Blanco and Shovonlal Roy. Biodiversity in Ecosystem. InTech Publishers.
8. Herbert C. Hanson. 1962. Dictionary of Ecology. Philosophical Library Publisher .
9. Ehrlich, P.R, Ehrlich, A.H. and Holdren, J.P. 2000(Revised). Human Ecology. W.H.Freeman & Co. San Franchisco.

Courses offered Under CBCS for M.A. /M.Sc.

Semester	Paper	Title	Credits	Type
I	GGM-106(Theory)	Hydrology and Water Resources	04	CB
II	GGM-206(Practical)	Land Surveying and GPS	04	SEC
II	GGM-207 (Theory)	Human Ecology	04	CB
III	GGM-306(Theory)	Political Geography	04	CB
III	GGM-307(Practical)	Advance Statistical Methods	02	AECC
III	GGM-308(Practical)	Digital Cartography	02	AECC
IV	GGM-405(Theory)	Watershed Management	04	CB

**Sd/
(Prof. Shahnaz Parveen)**

Head

Semester-I
CHOICE BASED PAPER(CB)
HYDROLOGY AND WATER RESOURCES
Paper - I (GGM-106)

Credits: 4

UNIT I: INTRODUCTION

Definition and scope of Hydrology, Hydrological cycle, Structure and properties of water, inventory of earth's water resources, quality and quantity of available water, Water as a cyclic resource.

UNIT II: SURFACE WATER DYNAMICS

Surface water: sources and factors affecting quality and quantity; Precipitation: forms and factors; Interception: factors; Runoff: sources and factors affecting runoff; Evaporation: measurement and factors; Evapotranspiration: control and factors.

UNIT III: GROUND WATER DYNAMICS

Ground water: Characteristics of stream flow, Darcy's Law, permeability, Infiltration, Ground water storage, Ground water aquifers in different rock systems, movement and discharge.

UNIT IV: WATER RESOURCE PROBLEMS

Environmental influences on water resources; sectoral demands for water; urban water supply; water management; water harvesting; water pollution and control.

SUGGESTED READINGS:

1. Timothy, Davie. 2003. Fundamentals of Hydrology. Routledge, Taylor and Francis Group, U.K.
2. Todd, D.K. 2009. Groundwater Hydrology. John Wiley & Sons Inc.
3. Mahajan, G. 1989. Evaluation and Development of Groundwater. Ashish Publishing House, New Delhi.
4. Karanth, K.R.C. 1988. Ground Water: Exploration, Assessment and Development. Tata-Mcgraw Hill, New Delhi.
5. Andrew D. Ward and Stanley Trimble. 2004(2nd edition). Environmental Hydrology. Lewis Publishers.

6. Wright. R.T and Nebel. B.J. 2002(8th Edition). Environmental Science: Toward a Sustainable Future. Prentice Hall India Ltd.
7. Vijay P. Singh. 1995. Environmental Hydrology. Kluwer Academic Publications, The Netherlands.
8. Subramaniam V. 2002. Text Book of Environmental Science. Narosa Publishing House, Delhi.
9. Santhosh Kumar Garg. 2007. Hydrology and Water Resources Engineering. Khanna Publishers, Delhi.
10. Patra, K.C. 2004. Hydrology and Water Resources Engineering. Narosa Publications, New Delhi.
11. Viessmann, Warren., Lewis, Gary. 2002(5th edition) Introduction to Hydrology. Prentice Hall.
12. Hendriks Martin. 2010. Introduction to Hydrology. Oxford University Press, London.
13. Raghunath H.M.2006. Hydrology: Principles, Analysis and Design. New Age International Publishers , Mysore.

Semester-II
Skill Enhancement Course (SEC)
LAND SURVEYING AND GPS
(GGM-206)

Credits: 4

Unit-I: Theory and Principles

Surveying: Definition, classification, objectives, principles; Plane and geodetic surveys; Triangulation: Principles, base line measurement, extension of the base.

Unit-II: Field Work

Levelling by Dumpy level; Resection: (Two point and Three point problem) by Plane Table; Horizontal and Inclined Range Determination by Telescopic alidade; Triangulation by Theodolite.

Unit-III: GPS Theory

Overview of Global Positioning System; GPS: Receivers, Satellite Constellations, Segments, Antennas, Signal Codes and errors; Accuracy of GPS measurements; Application of GPS.

Unit-IV: Field Work

GPS Surveying and Mapping: Field Exercises using Hand Held GPS

Books Recommended:

1. Aylmer Johnson, 2004. Plane and Geodetic Surveying. CRC Press.
2. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
3. Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.

Semester –II
Human Ecology
CHOICE BASED PAPER (CB)
Paper II(GGM-207)

Credits: 4

UNIT I: INTRODUCTION

Human Ecology: Evolution & Development; Key Concepts: Anthropocentrism, cultural lag; Environmental ethics and institutions.

UNIT II: HUMANS AND ENVIRONMENT

Humans and the Biosphere: Co-evolution and co-adaptation of human system and ecosystems; Resources and technologies; Environment and consumerism: Problems and consequences; Geographies of hunger and health.

UNIT III: HUMANS AND BIOPHYSICAL SYSTEM

Humans as persons and agents of larger social system; Human population: size, growth and biophysical carrying capacity of Earth; Ecosystem: components and functions; Energy Flow: Food chain, Food Web and Trophic Levels; Material Cycles: Nitrogen and Carbon.

UNIT IV: GLOBAL CHANGE ADAPTATION

Environmental Adaptations and behavioral changes; Environmental crises and Management: Eco regional and watershed management strategies; Landscapes restoration and conservation of biodiversity.

Books Recommended:

1. Dieter Steiner and Marcus Nauser (ed.). 1993. Human Ecology. Routledge.
2. Ehrlich, P.R, Ehrlich, A.H. and Holdren, J.P. 2000(Revised). Human Ecology. W.H.Freeman & Co. San Francisco
3. George Theodorson (ed.). 1961. Studies in Human Ecology. Harper & Row, New York.
4. Quinn, J.A. 1971. Human Ecology (2nd Edition). Archon Books, New York.
5. Odum, E.P. 2004. Fundamentals of Ecology. Cengage Learning, New York.
6. Arumugam, N. 2014. Concepts of Ecology. Saras Publication, Delhi.
7. Robert Ezra Park. 2003. Human Communities: The City and Human Ecology. Freeman Press.
8. Lovett G.M., Jones C., Turns M.G., Weather K.C. 2005. Ecosystem Function in Heterogenous Landscapes. Springer.
9. Pushpam Kumar, Reddy B. Sudhakar. 2007. Ecology and Human Well Being. Sage Publication.
10. Vladimir F. Krapivin., Costas A. Varotsos. 2005. Biogeochemical Cycles in Globalization and Sustainable Development. Springer.