B.A./B.Sc. IN GEOGRAPHY PROGRAMME (FYUGP)
DETAILED SYLLABUS OF 2nd SEMESTER

Course Title : **CLIMATOLOGY AND BIOGEOGRAPHY**
Course Code : **MINGGR2**
Nature of Course : **Minor**
Total Credits : **4 Credits**
Distribution of Marks : 80 (End-Sem.) (60 T+20 P) + 20 (In-Sem.)

Course Objectives: The instructional objectives of this Course are:

1. To scientific understanding of the physical aspects of Earth's climate system and the factors that influence climate change.
2. To explore the global balance of energy and transfer of radiation in the atmosphere through in-depth quantitative analysis and the general circulation of winds.
3. To highlight important atmospheric phenomena and their direct bearing on man. It emphasis is on understanding the weather phenomena and its impact on day to day life.

UNITS	COURSE CONTENTS	L	T	P	LTP60*hrs*
1 (20 Marks)	**INTRODUCTION TO CLIMATOLOGY**: 1.1 Meaning, Nature and Scope of Climatology 1.2 Composition and Structure of Atmosphere, Elements of weather and climate, 1.3 Temperature Distribution, Insolation, Heat budget, Temperature Inversion,	12	2		14
2 (20 Marks)	**ATMOSPHERIC PRESSURE AND WINDS:** **2.1** Pressure Belts and General Circulation, Jet Streams, Monsoon: Origin And Mechanism, **2.2** Concept of Airmass and Fronts, Cyclones and Anticyclones, Local winds Evaporation, Humidity, Condensation, Fog and Clouds, Precipitation **2.3** Types Climatic Classification: Koeppen and Thornwaite,	14	2		16
3 (20Marks)	**INTRODUCTION TO BIOGEOGRAPHY:** **3.1** Meaning, Scope and Significance of Biogeography **3.2** Ecology and Ecosystem, Structure and Functioning of Ecosystem **3.3** Biomes and Biodiversity hotspots of the world. **3.4** Loss of Bidiversity and Its Conservation.	15	3		18
4 (20 Marks)	**PRACTICAL:** **4.1** Interpretation of various weather symbols depicted on maps. **4.2** Preparation of rainfall-temperature graphs; Hythergraph, Climograph and Ergograph **4.3** Mapping of protected areas (National park, biosphere reserve and wildlife sanctuary) of India. Mapping of			12	

	zoogeographic regions of the world. Mapping of Biodiversity hotspots of the world and India.				
	Total:				60

Where, ***L: Lectures*** ***T: Tutorials*** ***P: Practicals***

Modes of In-Semester assessment: 20 marks

1. One Unit test - - - - - - 10 marks
2. Any one of the following activities listed below - - 10 marks
   a. Group Discussion
   b. Seminar presentation on any of the relevant topics
   c. Practical

Learning Outcomes: On completion of this Course, a student will be able to –

(1) understand the mean global atmospheric circulations and disturbances,

(2) world climate systems, climatic variability and change, impact on human activities

Suggested Readings:

1. Anthes R. A., Panofsky H. A., Cahir J. J. and Rango A., 1978: The Atmosphere, Columbus.

2. Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.

3. Barry R. G. and Corley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.

4. Batten L. J., 1979: Fundamentals of Meteorology, Prentice-Hall Inc., Englewood Cliffs, New Jersey. 5. Boucher K., 1975: Global Climates, Halstead Press, New York.

5. Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi

6. Das,P.K.,1968: The Monsoon, National Book Trust,New Delhi.

7. Hobbs,J.E.,1980: Applied Climatology, Butterworth.

8. Lal,D.S.,1998: Climatology, ShardaPustakBhawan, Allahabad.

9. Lockwood,J.G.,1976: World Climatology-Environmental Approach, Ed. Arnold Ltd..

10. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey

11. Menon,P.A.,: Our Weather, National Book Trust

12. Miller,A.A.,1953: Climatology, Dutton.

13.Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.

14. Stringer, E.N., 1982: An Introduction to Climate, International Studies.

15. Thompson D. R. and Perry A. (eds.), 1997: Applied Climatology: Principles and Practice, Routledge, USA and Canada.

B.A./B.Sc. IN GEOGRAPHY PROGRAMME (FYUGP)
DETAILED SYLLABUS OF 1ST SEMESTER

Title of the Course : PRACTICALS ON MORPHOMETRIC TECHNIQUES AND SURVEYING
Course Code : SEC106
Nature of The Course : Skill Enhancement Course (SEC)
Total Credits : 3
Distribution of Marks : 80 (End-Sem.) (60 T+20 P) + 20 (In-Sem.)

COURSE OBJECTIVES:

- The main objective of this paper is to make the students understand the various morphometric techniques used in drainage analysis.
- The students will also learn about the various slope analysis techniques and uses of different types of scale.
- The students will also learn about different methods of surveying.

UNITS	NAME	CONTENTS	L	T	P	Total Hours
1 (20 marks)	**Representation of Relief and Analysis**	a. Profile Drawing and Interpretation (Serial, Superimposed, Composite, Projected). b. Preparation And Analysis of Relative Relief Maps Based on Smith's Method. c. Preparation and Analysis of Absolute Relief Maps Based on Wentworth's Method.	**2**		**9**	**11**
2 (20 marks)	**Analysis of Basin Morphometry**	a. Geographical Significance of Morphometric Analysis of Drainage Basin. b. Stream Ordering-Horton and Strahler. c. Basin Area Demarcation, Drainage Density, Drainage Frequency, Bifurcation ratio.	**2**		**9**	**11**
3 (20 marks)	**Surveying**	a. Plane table surveying and prismatic compass (open and open/closed transverse) b. Dumpy Level Surveying (rise and fall, contouring) c. Theodolite (known distance and unknown height)	**2**		**10**	**12**
4 (20 marks)	**Field survey method**	a. Basic properties of a schedule and questionnaire. b. Preparation of household schedule for socio-economic survey. c. Methods of tabulation and organization of data. d. Methods of interpretation of data	**2**		**9**	**11**
		Total	**8**		**37**	**45**

Where, L: Lectures T: Tutorials P: Practicals

B.A./B.Sc. IN GEOGRAPHY PROGRAMME (FYUGP)
DETAILED SYLLABUS OF 1ST SEMESTER

Title of the Course	**:**	**HUMAN GEOGRAPHY**
Course Code	**:**	**GECGGR1B**
Nature of The Course	**:**	**Generic Elective Course (GEC)**
Total Credits	**:**	**3**
Distribution of Marks	**:**	**80 (End Sem) + 20 (In-Sem)**

COURSE OBJECTIVES:

- To understand various dimensions of Human Geography and its relevance.
- To analyse population growth and distribution and understand theories of population.
- To understand the relationship between space and society.

UNITS	NAME	CONTENTS	L	T	P	Total Hours
1 (20 marks)	**Introduction to Human Geography**	a. Human Geography: Definition, Nature and Scope and contemporary relevance. b. Approaches to the study of Human Geography c. Environmental Determinism, Possibilism, Neo-Determinism.	**8**	**2**		**10**
2 (20 marks)	**Population**	a. Population Growth and Distribution; Density (World) b. Population Composition (Age-Sex and Literacy). c. Theories of Population- Demographic Transition Theory, Thomas Robert Malthus.	**11**	**2**		**13**
3 (20 marks)	**Space and Society**	a. Social Space – Concept and Types. b. Social space and Society: Cultural Regions c. World Distribution of race, religion and linguistic groups	**11**	**2**		**13**
4 (20 marks)	**Tribal Life in India**	a. Definition of Tribe b. Classification of Indian tribes c. Major Tribes- Bhils, Gonds, Santhals, Mundas, Bodos, etc.	**8**	**1**		**9**
		Total	**38**	**7**		**45**

Where, ***L: Lectures*** ***T: Tutorials*** ***P: Practicals***

MODES OF IN-SEMESTER ASSESSMENT: **(20 Marks)**

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Group Discussion
  - Seminar presentation on any of the relevant topics
  - Debate

B.A./B.Sc. IN GEOGRAPHY PROGRAMME (FYUGP)
DETAILED SYLLABUS OF 1ST SEMESTER

Title of the Course : PHYSICAL GEOGRAPHY
Course Code : GECGGR1A
Nature of The Course : Generic Elective Course (GEC)
Total Credits : 3
Distribution of Marks : 80 (End Sem) + 20 (In-Sem)

COURSE OBJECTIVES:

- To explain the concept, definition and scope of earth systems.
- To understand the atmospheric composition and structure.
- To acquire knowledge about the interior of the earth and its interior movements.

UNITS	NAME	CONTENTS	L	T	P	Total Hours
1 (20 marks)	**Introduction to Physical Geography**	a. Physical Geography: Definition, Nature and Scope. b. Earth and its Components	**6**	**1**		**7**
2 (20 marks)	**Atmosphere**	a. Atmosphere- Definition, composition, structure b. Temperature; Factors and Distribution Insolation, Heat Budget c. Air masses: source regions, classification and modifications d. Concept and types of fronts: Frontogenesis and Frontolysis	**11**	**2**		**13**
3 (20 marks)	**Lithosphere and Biosphere**	a. Earth: Interior, Structure and Isostasy. b. Earth Movements: Folds and Faults (Types and causes) c. Earthquakes and Volcanoes (Distribution, causes, effects). d. Soil and Vegetation; Types and Distribution	**11**	**2**		**13**
4 (20 marks)	**Hydrosphere**	a. Concept of Hydrological Cycle b. Ocean Water Movement- Currents and Tides c. Nature and formation of waves and tides. d. Sea level changes: causes and consequences.	**10**	**2**		**12**
		TOTAL	**38**	**7**		**45**

Where, ***L: Lectures*** ***T: Tutorials*** ***P: Practicals***

GG2G1: ENVIRONMENT AND DEVELOPMENT

CREDIT 4
TOTAL MARKS 100

Course Definition:

Environmental geography is the study of the characteristics features of various components of the environment, the interactions between and among the components in a geo-ecosystem in terms of ecosystem of varying spatial and temporal scales.

Course Objectives:

- To develop conceptual and theoretical ideas of environment as well as relationship between man and environment in different geo climatic regions.
- The learners will also understand the nature and intensity of some burning environmental issues at local, regional and global level along with mitigation programs and policies.

UNIT	NAME	CONTENTS	L	T	P
1	**Conceptual Basis**	a) Emergence of Environmental Geography as a branch of Geography and its scope and significance. b) Man Environment Relationship: Historical perspective on man's interaction with environment; population growth and environment. c) Approaches to study environment management and Environment impact assessment.	**10**	**2**	
2	**Ecosystem in the context of Environmental Development**	a) Ecosystem and Ecology: Meaning and Concept b) Environment and Development: Concept of environment and development. c) Concept and type of ecosystem; functioning of and energy flow in eco-system. d) Bio-geochemical cycles and biosphere as an ecosystem.	**10**	**2**	
3	**Environmental Hazards**	a) Environmental hazards: Meaning and types. b) Tectonic disaster and climatic hazards of the world and NE India. c) Flood hazards with special reference to the floods of the Brahmaputra River. d) Global and regional environmental programs and policies	**10**	**2**	
4	**Concept of**	a) Genesis and evolution of the concept of	**10**	**2**	

	Sustainable Development and Environmental Management	Sustainable development b) Sustainable development goals: Meaning, concepts and objectives. c) Carbon footprint and sustainable development. d) Concept of environmental management and its necessity.			

In-semester Examination 20 Marks, Internal Evaluation 20 Marks and End Semester 60 Marks

References

1. Cantledge, B (ed), 1992 : Monitoring the Environment, Oxford University Press, Oxford
2. Lodha, M.R.,(ed) 1996 : Academic's Dictionary of Environment.
3. Park, C.,1997 : The Environment, Routledge, London.
4. Santra, S.C.,2011 : Environmental Science .
5. Seshagiri, N.,2014 : Pollution.
6. Singh, S.,1991 : Environment Geography, PrayagPustakBhawan, Allahabad.
7. Strahler, A.N.& A.H. Strahler, 1976 : Geography and Man's Environment, John Willey, New York.
8. Simon, I.G.,1982 : Bio geographical Process, Allen &Unwin, London.
9. Singh, B.R.& Mishra, S.,1996 : Environmental Law in India Issues and Responses .
10. Thomas, S.,& Siddhartha, K.,(ed)2013 : Biospere A Geography of Life.
11. Varma, P.S.&V. K. Agarwal, 1989, : Principles of Ecology, S.Chand & Co.,New Delhi.
12. Ress,J.,1985: Natural Resources, Routledge, London.

GG2G2: CLIMATOLOGY AND OCEANOGRAPHY

CREDIT 4
TOTAL MARKS 100

Course Definition:

Climatology is the scientific study of climate. It is a branch of atmospheric sciences concerned with both the description of climate and the analysis of the causes of climatic differences. Climatology also includes aspects of oceanography which is the study of the physical and biological aspects of the ocean

Course Objectives:

- To conceptualize the fundamentals of climate and weather and different climatic types.
- It also focuses on the nature and development of different atmospheric processes and whether phenomena over the surface of the earth.
- To give knowledge to the students about the various properties of oceans and its recent changes.

UNIT	NAME	CONTENTS	L	T	P
1	**Basic concepts in Climatology& Hydrological Cycle**	a) Insolation, Heat balance and distribution of temperature. b) Concept of hydrological cycle-Humidity, evaporation, Transpiration, Condensation and Precipitation. c) Concept of atmospheric equilibrium stability& instability.	**8**	**4**	
2	**Atmospheric Circulation**	a) Atmosphere Pressure, global pressure systems and general Atmospheric circulation. b) The Monsoon-its origin, mechanism and development, Indian monsoon, concepts of El-nino and LA- NINA and its impact on India c) Air mass and fronts-types and characteristics and their influence on weather and Climate	**8**	**4**	
3	**Physical and Chemical properties of Sea Water**	a) Temperature and density of the sea water. b) Salinity of the oceans: controls and distribution. c) Marine Deposits, formation of coral reefs.	**8**	**4**	
4	**Dynamics of the Marine environment**	a) Nature and formation of waves and tides. b) Sea level changes: causes and consequences. c) Impact of humans on the Marine environment	**8**	**4**	

GG1D3: WORLD REGIONAL GEOGRAPHY
CREDIT 4
TOTAL MARKS 100

Course Definition:

World Geography is a systematic investigation and comprehensive approach to search the spatial and regional variations of geographic phenomenon. World regional geography is also important for knowledge of spatial distribution of life and resources across the globe.

Course Objectives:

- General understanding of the concept of research and identification of overall process of designing a research work,
- To have a deeper understanding of complete designing of research from statement of research problem to final thesis writing
- Critical assessment of research methods pertinent to technology innovation research in the field of earth science

Credits: 4(3+1+0) (40 lectures, 8 Tutorials)

UNIT	NAME	CONTENTS	L	T	P
1	**ASIA**	a) Physiography : Relief and Drainage b) Soil and Climate c) Forest and Natural Vegetation d) Agriculture and Industry	**10**	**2**	
2	**EUROPE**	a) Physiography : Relief and Drainage b) Soil and Climate c) Forrest and Natural Vegetation d) Agriculture and Industry	**10**	**2**	
3	**NORTH AND SOUTH AMERICA**	a) Physiography : Relief and Drainage b) Soil and Climate c) Forest and Natural Vegetation d) Agriculture and Industry	**10**	**2**	
4	**AFRICA AND AUSTRALIA**	a. Physiography : Relief and Drainage b. Soil and Climate c. Forest and Natural Vegetation d. Agriculture and Industry	**10**	**2**	

Suggested Readings (Paper)

1. Hussain Mazid, 2012. World Geography, Rawat Publications, New Delhi
2. Joseph J Hobbs. 2007. World Regional Geography, Brooks/Cole Cengage Learning, Belmont, USA

GG1D1: CULTURAL GEOGRAPHY
CREDIT 4
TOTAL MARKS 100

Course Definition:

Cultural Geography forms one of the basic contemporary branches of Human Geography today. If culture has to be defined as the way of life and Geography as the man – environment relationship, it becomes important to understand how culture, which is essentially manmade and the environment comes to a juncture. This course on Cultural Geography not only focuses on acquainting the students with the relationship between culture and geography, but also has been designed to keep the students abreast with the contemporary issues in Geography.

Course Objectives:

- This course opens with the motive of introducing Cultural Geography as a new dimension in the discipline of Geography.
- To provide with the basic understanding of the evolution of Cultural Geography which include the Old and the New Schools of Cultural Geography.
- It attempts to lay the foundational background in Cultural Geography.
- To understand the main theoretical backgrounds.
- It focuses on the role of culture in shaping places, regions, and landscapes.
- To equip the students with the understanding of the production and diffusion of folk and popular culture.
- To appreciate culture from geographical perspective.
- To enable the learner to understand the cultural issues of the North East region of India, which encompasses the contemporary issues of the region as a cultural entity as a whole.

Unit	Name of the Units	Contents	L	T	P
1.	**Introduction to Cultural Geography and Berkeley School of Cultural Geography**	a) Meaning, definition, nature and scope of cultural geography. b) Environmental Determinism and the birth of Cultural Geography. c) Carl O Saur and his contribution. d) The Morphology of Landscape. e) Superorganisism and its discontent.	**12**		

GG1C2: CLIMATOLOGY
CREDIT 4
TOTAL MARKS 100

Course Definition:

Climatology is the scientific study of climate. It is a branch of atmospheric sciences concerned with both the description of climate and the analysis of the causes of climatic differences. It also cover broad aspects of climate induced atmospheric phenomena's over different part of the earth surfaces

Course Objectives:

- To conceptualize the fundamentals of climate and weather and different climatic types.
- It also focuses on the nature and development of different atmospheric processes and whether phenomena over the surface of the earth.

UNIT	NAME	CONTENTS	L	T	P
1	**Basic concept of weather, climate and atmosphere**	a) Elements and characteristics of weather and climate b) Origin and development of atmosphere c) Layered structure and composition of atmosphere	**8**	**4**	
2	**Basic concepts in heat, atmospheric Temperature & Hydrological Cycle**	a) Insolation, Heat balance and distribution of temperature. b) Concept of hydrological cycle: factors controlling evaporation, transpiration, condensation and precipitation c) Adiabatic process of temperature change: dry and moist adiabatic lapse rate and atmospheric condition.	**8**	**4**	
3	**Atmospheric circulation**	a) Atmosphere pressure, global pressure systems and wind belts and its impact (El-Niño, La –Nina) b) The Monsoon-its origin, mechanism and development: Indian monsoon	**8**	**4**	
4	**Atmospheric processes**	a) Air masses: source regions, classification and modifications b) Atmospheric disturbances: tropical and temperate cyclones c) Concept and types of fronts: Frontogenesis and Frontolysis	**8**	**4**	

GE 4 (6 C)

GGRM GE401AT6: INDUSTRIAL GEOGRAPHY **84 HOURS/LECTURES**

(The main objective of this paper is to make the students aware about the nature and scope of industrial geography. The students will also know about the various industrial policies of India and impact of industries in the environment, society and economy of India.)

TITLE	UNITS	L	T	P
INDUSTRIAL GEOGRAPHY	1. Nature and Scope of Industrial Geography	8	5	
	2. Types, Geographical Characteristics and Location of Industries (Weber's Theory): Small and Medium Industries, Heavy Industries: Coal and Iron based industries, Rural based Industries, Footloose Industry.	15	7	
	3. Mega Industrial Complexes: National Capital Region, Mumbai-Pune Industrial Region, Bengaluru-Chennai Industrial Region and Chota Nagpur Industrial Region	15	7	
	4. Impact of Industrialisation in India: Environmental; Social and Economic	8	5	
	5. Industrial Policy of India	10	4	

Reading List

1. Alexander J.W. (1979). Economic Geography, Printice Hall of India Pvt. Ltd., New Delhi.
2. Goh Cheng Leong (1997). "Human and economic geography", Oxford University Press, New York.
3. Thoman, R.S., Conkling E.C. and Yeates, M.H. (1968). Geography of Economic Activity, McGraw Hill Book Company, 1968.
4. Miller, E. (1962) Geography of Manufacturing Printice Hall - Englewood Cliff, New Jersey
5. Gunnar Alexandersson (1967). "Geography of Manufacturing, Prentice Hall, New Jersey
Truman, A. Harishorn, John W. Alexander (2000) "Economic Geography", Prentice Hall of India Ltd., New Delhi.
6. Singh, Jagdish 2003: *India - A Comprehensive & Systematic Geography*, Gyanodaya Prakashan, Gorakhpur.
7. Tirtha, Ranjit 2002: *Geography of India,* Rawat Publs., Jaipur & New Delhi.
8. Pathak, C. R. 2003: *Spatial Structure and Processes of Development in India*. Regional Science Assoc., Kolkata.
9. Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad
10. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur

GE 4
GGRM GE 401BT6: SUSTAINABLE DEVELOPMENT **84 HOURS/LECTURES**

(The main objective of this paper is to make the students understand the basic concept and history of development of sustainable development. The students will also know about the role of various agencies in sustainable development.)

TITLE	UNITS	L	T	P
SUSTAINABLE DEVELOPMENT	1. Sustainable Development: Definition, Components, Limitations and Historical Background.	9	5	
	2. The Millennium Development Goals: National Strategies and International Experiences	9	5	
	3. Sustainable Regional Development: Need and examples from different Ecosystems.	9	5	
	4. Inclusive Development: Education, Health; Climate Change: The role of higher education in sustainable development; The human right to health; Poverty and disease; The Challenges of Universal Health Coverage; Policies and Global Cooperation for Climate Change	15	7	
	5. Sustainable Development Policies and Programmes: The proposal for SDGs at Rio+20; Illustrative SDGs; Goal-Based Development; Financing for Sustainable Development; Principles of Good Governance; National Environmental Policy, CDM.	14	6	

Reading List

1. Agyeman, Julian, Robert D. Bullard and Bob Evans (Eds.) (2003) Just Sustainabilities: Development in an Unequal World. London: Earthscan. (Introduction and conclusion.).
2. Ayers, Jessica and David Dodman (2010) "Climate change adaptation and development I: the state of the debate". Progress in Development Studies 10 (2): 161-168.
3. Baker, Susan (2006) Sustainable Development. Milton Park, Abingdon, Oxon; New York, N.Y.: Routledge. (Chapter 2, "The concept of sustainable development").
4. Brosius, Peter (1997) "Endangered forest, endangered people: Environmentalist representations of indigenous knowledge", Human Ecology 25: 47-69.
5. Lohman, Larry (2003) "Re-imagining the population debate". Corner House Briefing 28.
6. Martínez-Alier, Joan et al (2010) "Sustainable de-growth: Mapping the context, criticisms and future prospects of an emergent paradigm" Ecological Economics 69: 1741-1747.
7. Merchant, Carolyn (Ed.) (1994) Ecology. Atlantic Highlands, N.J: Humanities Press. (Introduction, pp 1- 25.)
8. Osorio, Leonardo et al (2005) "Debates on sustainable development: towards a holistic view of reality". Environment, Development and Sustainability 7: 501-518.
9. Robbins, Paul (2004) Political Ecology: A Critical Introduction. Blackwell Publishing.

GE 3 (6 C)

GGRM GE 301AT6: CLIMATE CHANGE: VULNERABILITY AND ADAPTATION
84 HOURS/LECTURES

(The main objective of this paper is to make the students understand climate change and the factors responsible for such changes. The students will also learn about the various negative impact of climate change on flora and fauna and its mitigations.)

TITLE	UNITS	L	T	P
CLIMATE CHANGE: VULNERABILITY AND ADAPTATION	1. Science of Climate Change: Understanding Climate Change; Green House Gases and Global Warming; Global Climatic Assessment- IPCC	12	6	
	2. Climate Change and Vulnerability: Physical Vulnerability; Economic Vulnerability; Social Vulnerability	12	6	
	3. Impact of Climate Change: Agriculture and Water; Flora and Fauna; Human Health	10	5	
	4. Adaptation and Mitigation: Global Initiatives with Particular Reference to South Asia.	10	6	
	5. National Action Plan on Climate Change; Local Institutions (Urban Local Bodies, Panchayats)	12	5	

Further Readings

1. IPCC. (2007) Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working
Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.
2. IPCC (2014) *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the*
Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, United
Kingdom and New York, NY, USA.
3. IPCC (2014) *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional*
Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, United Kingdom and New York,NY, USA.
4. Palutikof, J. P., van der Linden, P. J. and Hanson, C. E. (eds.), Cambridge University Press,
Cambridge, UK.

GE 1

GGRM GE 101BT6: GEOGRAPHY OF TOURISM

84HOURS/ LECTURES

(The main objective of this paper is to make the students aware about the scope and nature of tourism. The students will also learn about the impact of tourism in the economy, environment and society)

TITLE	UNITS	L	T	P
GEOGRAPHY OF TOURISM	1. Scope and Nature: Concepts and Issues, Tourism, Recreation and Leisure Inter-Relations; Geographical Parameters of Tourism by Robinson.	12	6	
	2. Type of Tourism: Nature Tourism, Cultural Tourism, Medical Tourism, Pilgrimage	10	6	
	3. Recent Trends of Tourism: International and Regional; Domestic (India); Eco-Tourism, Sustainable Tourism, Meetings Incentives Conventions and Exhibitions (MICE)	12	5	
	4. Impact of Tourism: Economy; Environment; Society	10	5	
	5. Tourism in India: Tourism Infrastructure; Case Studies of Himalaya, Desert and Coastal Areas; National Tourism Policy	12	6	

Reading List

1. Dhar, P.N. (2006) International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi.
2. Hall, M. and Stephen, P. (2006) Geography of Tourism and Recreation – Environment, Place and Space, Routledge, London.
3. Kamra, K. K. and Chand, M. (2007) Basics of Tourism: Theory, Operation and Practise, Kanishka Publishers, Pune.
4. Page, S. J. (2011) Tourism Management: An Introduction, Butterworth-Heinemann-USA. Chapter 2.
5. Raj, R. and Nigel, D. (2007) Morpeth Religious Tourism and Pilgrimage Festivals Management: An International perspective by, CABI, Cambridge, USA, www.cabi.org.
6. Tourism Recreation and Research Journal, Center for Tourism Research and Development, Lucknow
7. Singh Jagbir (2014) "Eco-Tourism" Published by - I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

ELECTIVE GENERIC PAPERS
GE 1 (6 C)
GGRM GE 101AT6: DISASTER MANAGEMENT

84 HOURS/ LECTURES

(The main objective of this paper is to make the students aware about the concepts of hazards, disasters, risk and vulnerability. In this paper an attempt has been made to prepare the students about the Do's And Don'ts during and post disaster.)

TITLE	UNITS	L	T	P
DISASTER MANAGEMENT	1. Disasters: Definition and Concepts: Hazards, Disasters; Risk and Vulnerability; Classification	10	5	
	2. Disasters in India: (a) Flood: Causes, Impact, Distribution and Mapping; Landslide: Causes, Impact, Distribution and Mapping; Drought: Causes, Impact, Distribution and Mapping	12	6	
	3. Disasters in India: (b) Earthquake and Tsunami: Causes, Impact, Distribution and Mapping; Cyclone: Causes, Impact, Distribution and Mapping.	12	6	
	4. Manmade disasters: Causes, Impact, Distribution and Mapping	10	5	
	5. Response and Mitigation to Disasters: Mitigation and Preparedness, NDMA and NIDM; Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During and Post Disasters	12	6	

Reading List

8. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
9. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
10. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and GeologicalDisasters, Macmillan, Delhi.
11. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi.Chapter 1, 2 and 3

DSE 2 (6 C)
GGRM DSE502BT6: **AGRICULTURAL GEOGRAPHY**
84 HOURS/ LECTURES

(The objective of this course is to enhance the concept of agricultural activities, its determinants and types under different geo- environmental condition of the world. The course also introduces learners with some Land use and cropping intensity models)

TITLE	UNITS	L	T	P
AGRICULTURAL GEOGRAPHY	1. Defining the Field: Introduction, nature and scope; Land use/ land cover definition and classification.	12	6	
	2. Determinants of Agriculture: Physical, Technological and Institutional	10	6	
	3. Agricultural Regions of India: Agro-climatic, Agro-ecological & Crop Combination Regions.	12	6	
	4. Agricultural Systems of the World (Whittlesey's classification) and Agricultural Land use model (Von Thuenen, modification and relevance).	12	5	
	5. Agricultural Revolutions in India: Green, White, Blue, Pink.	10	5	

Reading List

1. Basu, D.N., and Guha, G.S., 1996: Agro-*Climatic Regional Planning in India*, Vol.I & II, Concept Publication, New Delhi.
2. Bryant, C.R., Johnston, T.R, 1992: *Agriculture in the City Countryside*, Belhaven Press, London.
3. Burger, A., 1994: *Agriculture of the World*, Aldershot, Avebury.
4. Grigg, D.B., 1984: *Introduction to Agricultural Geography*, Hutchinson, London.
5. Ilbery B. W., 1985: *Agricultural Geography: A Social and Economic Analysis*, Oxford University Press.
6. Mohammad, N., 1992: *New Dimension in Agriculture Geography*, Vol. I to VIII, Concept Pub., New Delhi.
7. Roling, N.G., and Wageruters, M.A.E.,(ed.) 1998: *Facilitating Sustainable Agriculture*, Cambridge University Press, Cambridge.
8. Shafi, M., 2006: *Agricultural Geography*, Doring Kindersley India Pvt. Ltd., New Delhi
9. Singh, J., and Dhillon, S.S., 1984: Agricultural Geography, Tata McGraw Hill, New Delhi.
10. Tarrant J. R., 1973: *Agricultural Geography*, David and Charles, Devon.

DSE 3 (6 C) GGRM DSE 601AT6:
GEOGRAPHY OF HEALTH AND WELLBEING 84 HOURS/ LECTURES

(The objective of the course is to conceptualize learner in the field of health and well being, relationship between human activities, health and environment. The course also covers broad aspects of pollution, climate change and health issues in different parts of the world.)

TITLE	UNITS	L	T	P
GEOGRAPHY OF HEALTH AND WELLBEING	1. Perspectives on Health: Definition; linkages with environment, development and health; driving forces in health and environmental trends - population dynamics, urbanization, poverty and inequality.	12	6	
	2. Pressure on Environmental Quality and Health: Human activities and environmental pressure land use and agricultural development; industralisation; transport and energy.	12	6	
	3. Exposure and Health Risks: Air pollution; household wastes; water; housing; workplace.	10	5	
	4.Health and Disease Pattern in Environmental Context with special reference to India, Types of Diseases and their regional pattern (Communicable and Lifestyle related diseases).	12	6	
	5. Climate Change and Human Health: Changes in climate system – heat and cold; Biological disease agents; food production and nutrition.	10	5	

Reading List:

1. Akhtar Rais (Ed.), 1990 : Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi.
2. Avon Joan L. and Jonathan A Patzed.2001 : Ecosystem Changes and Public Health,Baltimin,
John Hopling Unit Press(ed).
3. Bradley,D.,1977: Water, Wastes and Health in Hot Climates, John Wiley Chichesten.
4. Christaler George and Hristopoles Dionissios, 1998: Spatio Temporal Environment Health Modelling , Boston Kluwer Academic Press.
5. Cliff, A.D. and Peter,H., 1988 : Atlas of Disease Distributions, Blackwell Publishers, Oxford.
6. Gatrell, A.,and Loytonen, 1998 : GIS and Health, Taylor and Francis Ltd, London.
7. Hardham T. and Tannav M.,(eds): Urban Health in Developing Countries; Progress, Projects,
Earthgoan, London.
8. Murray C. and A. Lopez, 1996 : The Global Burden of Disease, Harvard University Press.
9. Moeller Dade wed., 1993: Environmental Health, Cambridge, Harward Univ. Press.
10. Phillips, D.and Verhasselt, Y., 1994: Health and Development, Routledge, London.
11. Tromp, S., 1980: Biometeorology: The Impact of Weather and Climate on Humans and their
Environment, Heydon and Son. Llyod and Keith S McLachlan (1998), *Land Locked States of Africa and Asia* (vo.2), Frank Cass

DSE 3 (6 C) GGRM DSE 601BT6:

POLITICAL GEOGRAPHY **84 HOURS/ LECTURES**

(The objective of the course is to conceptualize learner in the field of political geography, origin of nations and states, concept and theories of Heartland and Rimland, Electoral Geography, Resource Conflicts and politics of Displacements.)

TITLE	UNITS	L	T	P
POLITICAL GEOGRAPHY	1. Introduction: Concepts, Nature and Scope	10	5	
	2. State, Nation and Nation State – Concept of Nation and State, Attributes of State – Frontiers, Boundaries, Shape, Size, Territory and Sovereignty, Concept of Nation State; Geopolitics; Theories (Heartland and Rimland)	12	6	
	3. Electoral Geography – Geography of Voting, Geographic Influences on Voting pattern, Geography of Representation, Gerrymandering	12	6	
	4. Political Geography of Resource Conflicts – Water Sharing Disputes, Disputes and Conflicts Related to Forest Rights and Minerals	12	6	
	5. Politics of Displacement: Issues of relief, compensation and rehabilitation: with reference to Dams and Special Economic Zones	10	5	

Reading List

1. Agnew J., 2002: Making Political Geography, Arnold.

2. Agnew J., Mitchell K. and Toal G., 2003: A Companion to Political Geography, Blackwell.

3. Cox K. R., Low M. and Robinson J., 2008: The Sage Handbook of Political Geography, Sage Publications.

4. Cox K., 2002: Political Geography: Territory, State and Society, Wiley-Blackwell

5. Gallaher C., et al, 2009: Key Concepts in Political Geography, Sage Publications.

6. Glassner M., 1993: Political Geography, Wiley.

7. Jones M., 2004: An Introduction to Political Geography: Space, Place and Politics, Routledg .

8. Mathur H M and M MCernea (eds.) Development, Displacement and Resettlement – Focus on Asian Experience, Vikas, Delhi

9. Painter J. and Jeffrey A., 2009: Political Geography, Sage Publications.

10. Taylor P. and Flint C., 2000: Political Geography, Pearson Education.

11. Verma M K (2004): Development, Displacement and Resettlement, Rawat Publications, Delhi

12. Hodder Dick, Sarah J Llyod and Keith S McLachlan (1998), Land Locked States of Africa and Asia (vo.2), Frank Cass

DSE 4 (6 C)
GGRM DSE 602AT6: HYDROLOGY AND OCEANOGRAPHY
84 HOURS/ LECTURES

(The main objective of this course is to enhance the students about the concept and components of hydrological cycle and its intervention by anthropogenic activities. The course also incorporates bottom configuration and ocean dynamics along with physical and chemical properties of ocean sea water.)

TITLE	UNITS	L	T	P
HYDROLOGY AND OCEANOGRAPHY	1. Hydrological Cycle: Systems approach in hydrology, human impact on the hydrological cycle; Precipitation, interception, evaporation, evapo-transpiration, infiltration, ground-water, run off and over land flow; Hydrological input and output.	12	6	
	2. River Basin and Problems of Regional Hydrology: Characteristics of river basins, basin surface run-off, measurement of river discharge; floods and droughts.	12	6	
	3. Ocean Floor Topography and Oceanic Movements – Waves, Currents and Tides.	10	5	
	4. Ocean Salinity and Temperature – Distribution and Determinants.	10	6	
	5. Coral Reefs and Marine Deposits and Ocean Resources: Types and Theories of Origin; Biotic,Mineral.	12	5	

Reading List

1. Andrew. D. ward and Stanley, Trimble (2004): Environmental Hydrology, 2nd edition,Lewis Publishers, CRC Press.
2. Karanth, K.R., 1988 : Ground Water: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi.
3. Ramaswamy, C. (1985): Review of floods in India during the past 75 years: A Perspective.Indian National Science Academy, New Delhi.
4. Rao, K.L., 1982 : India's Water Wealth 2nd edition, Orient Longman, Delhi,.
5. Singh, Vijay P. (1995): Environmental Hydrology. Kluwar Academic Publications, TheNetherlands.
6. Anikouchine W. A. and Sternberg R. W., 1973: *The World Oceans: An Introduction toOceanography*, Prentice-Hall.
7. Garrison T., 1998: *Oceanography*, Wordsworth Company, Belmont.
8. Kershaw S., 2000: *Oceanography: An Earth Science Perspective*, Stanley Thornes, UK.
9. Pinet P. R., 2008: *Invitation to Oceanography* (Fifth Edition), Jones and Barlett Publishers,USA, UK and Canada.

DSE 1

GGRM DSE501B T6: RESOURCE GEOGRAPHY 84 HOURS/ LECTURES

(The main objective of the course to develop the concept of recourse, utilization pattern, classification and its distribution over the earth. The course also focuses on significances of resource management and sustainable development.)

TITLE	UNITS	L	T	P
RESOURCE GEOGRAPHY	1. Natural Resource: Concept, Classification and Techniques	10	6	
	2. Distribution, Utilization, Problems and Management of Land Resources and Water Resources	12	6	
	3. Distribution, Utilization, Problems and Management of Forests and Energy Resources	12	6	
	4. Appraisal and Conservation of Natural Resources	12	5	
	5. Sustainable Resource Development	10	5	

Reading List

1. Cutter S. N., Renwich H. L. and Renwick W., 1991: *Exploitation, Conservation, Preservation: A Geographical Perspective on Natural Resources Use*, John Wiley and Sons, New York.
2. Gadgil M. and Guha R., 2005: *The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity*, Oxford University Press. USA.
3. Holechek J. L. C., Richard A., Fisher J. T. and Valdez R., 2003: *Natural Resources: Ecology*,
Economics and Policy, Prentice Hall, New Jersey.
4. Jones G. and Hollier G., 1997: *Resources, Society and Environmental Management*, Paul Chapman,London.
5. Klee G., 1991: *Conservation of Natural Resources*, Prentice Hall, Englewood.
6. Mather A. S. and Chapman K., 1995: *Environmental Resources*, John Wiley and Sons, New York.
7. Mitchell B., 1997: *Resource and Environmental Management*, Longman Harlow, England.
8. Owen S. and Owen P. L., 1991: *Environment, Resources and Conservation*, Cambridge University Press, New York.
9. Rees J., 1990: *Natural Resources: Allocation, Economics and Policy*, Routledge.London

SEC 2 (4 C)
GGRMSEC401AP2: GEOGRAPHICAL INFORMATION SYSTEM (PRACTICAL)
56 HOURS /LECTURES

(The objective of the course is to enhance the technical skills in the field of processing and analysis of both spatial and non-spatial data in GIS Software acquired from GPS, Remote sensing and land base surveys and its utilities in various fields.)

TITLE	UNITS	L	T	P
GEOGRAPHICAL INFORMATION SYSTEM	1. Geographical Information System (GIS): Definition and Components.	2		8
	2. Global Positioning System (GPS) – Principles and Uses; DGPS.	3		7
	3. GIS Data Structures: Types (spatial and Non-spatial), Raster and Vector Data Structure.	3		8
	4. GIS Data Analysis: Input; Geo-Referencing; Editing, Output and Query; Overlays.	3		9
	5. Application of GIS**:** Land Use Mapping; Urban Sprawl Analysis; Forests Monitoring.	3		10

Practical Record: A project file consisting of 5 exercises on using any GIS Software on above
mentioned themes.

Reading List

1. Bhatta, B. (2010) Analysis of Urban Growth and Sprawl from Remote Sensing,Springer, Berlin Heidelberg.41
2. Burrough, P.A., and McDonnell, R.A. (2000) Principles of Geographical Information System-Spatial Information System and Geo-statistics. Oxford University Press
3. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad
4. Heywoods, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Infromation system. Prentice Hall.
5. Jha, M.M. and Singh, R.B. (2008) Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.
6. Nag, P. (2008) Introduction to GIS, Concept India, New Delhi.
7. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
8. Singh, R.B. and Murai, S. (1998)

Course C 13
GGRM601T6: EVOLUTION OF GEOGRAPHICAL THOUGHT (Theory) 84 Lectures

(The objective of the course is familiarizing the learner towards the development of geographic ideas during the era of ancient, pre-modern and modern period. The course will also enlighten the learners with the contemporary issues and approaches of development of the discipline.)

Title	Contents	L	T	P
Evolution Of Geographical Thought	1. Paradigms in Geography	4	2	
	2. Pre-Modern – Early Origins of Geographical Thinking with reference to the Classical and Medieval Philosophies.	13	6	
	3. Modern – Evolution of Geographical Thinking and Disciplinary Trends in Germany, France, Britain, United States of America.	13	7	
	4. Debates – Environmental Determinism and Possibilism, Systematic and Regional, Ideographic and Nomeothetic.	13	7	
	5. Trends – Quantitative Revolution and its Impact, Behaviouralism, Systems Approach, Radicalism, Feminism; Towards Post Modernism – Changing Concept of Space in Geography, Future of Geography.	13	6	

Reading List

1. Arentsen M., Stam R. and Thuijis R., 2000: *Post-modern Approaches to Space*, ebook.
2. Bhat, L.S. (2009) Geography in India (Selected Themes). Pearson
3. Bonnett A., 2008: *What is Geography?* Sage.
4. Dikshit R. D., 1997: Geographical Thought: A Contextual History of Ideas, Prentice– Hall India.
5. Hartshone R., 1959: *Perspectives of Nature of Geography*, Rand MacNally and Co.
6. Holt-Jensen A., 2011: *Geography: History and Its Concepts: A Students Guide*, SAGE.
7. Johnston R. J., (Ed.): *Dictionary of Human Geography*, Routledge.
8. Johnston R. J., 1997: *Geography and Geographers, Anglo-American Human Geography since 1945*, Arnold, London.
9. Kapur A., 2001: *Indian Geography Voice of Concern*, Concept Publications.
10. Martin Geoffrey J., 2005: *All Possible Worlds: A History of Geographical Ideas*, Oxford.
11. Soja, Edward 1989. *Post-modern Geographies*, Verso, London. Reprinted 1997: Rawat Publ., Jaipur and New Delhi.

Course C14
GGRM602T6: DISASTER MANAGEMENT **48 Lectures**

(The main objective of this paper is to make the students aware about the concepts of hazards, disasters, risk and vulnerability. In this paper an attempt has been made to prepare the students about the Do's And Don'ts during and post disaster.)

TITLE	UNITS	L	T	P
DISASTER MANAGEMENT	1. Disasters: Definition and Concepts: Hazards, Disasters; Risk and Vulnerability; Classification	6	2	
	2. Disasters in India: Flood, Landslide, Drought, Earthquake and Tsunami, Cyclone, : Causes, Impact and Distribution	10	6	
	3. Manmade disasters: Causes, Impact and Distribution	6	2	
	4. Response and Mitigation to Disasters: Mitigation and Preparedness, NDMA and NIDM;Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During and Post Disasters	10	6	

Reading List

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3

5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
6. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
8. Singh Jagbir (2007) "Disaster Management Future Challenges and Oppurtunities", 2007.Publisher-I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com**).**

Course C14
GGRM602P6: DISASTER MANAGEMENT BASED PROJECT WORK 20Lectures

(The main objective of the field work is to conduct an extensive survey over an area to evaluate the nature, intensity, frequency and impact of a Hazard/ disaster and suggesting possible mitigation measures)

	L	**T**	**P**
Field Work (Flood, Landslide, Drought, Earthquake, Cyclone and Manmade Disaster)	4		16

Reading List

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials &
Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters,
Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
6. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic
Publications. Dordrecht.
8. Singh Jagbir (2007) "Disaster Management Future Challenges and Oppurtunities", 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

Course C8
GGRM401T6 : ECONOMIC GEOGRAPHY (Theory) 84 hours

(The goal of this course is to enhance the learner with the basic ideas of primary, secondary and tertiary activities and its spatio-temporal pattern. The learners will also acquire the knowledge of some economic development models in relation to agriculture and industry.)

Title	Contents	L	T	P
Economic Geography	1. Introduction: Concept and classification of economic activity	4	2	-
	2. Factors Affecting location of Economic Activity with special reference to Agriculture (Von Thunen theory), Industry (Weber's theory).	12	6	-
	3. Primary Activities: Subsistence and Commercial agriculture, forestry, fishing and mining.	14	7	-
	4. Secondary Activities: Manufacturing (Cotton Textile, Iron and Steel), Concept of Manufacturing Regions, Special Economic Zones and Technology Parks.	16	7	-
	5. Tertiary Activities: Transport, Trade and Services.	10	6	-

Reading List

1. Alexander J. W., 1963: *Economic Geography*, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Coe N. M., Kelly P. F. and Yeung H. W., 2007: *Economic Geography: A Contemporary Introduction*, Wiley-Blackwell.
3. Hodder B. W. and Lee Roger, 1974: *Economic Geography*, Taylor and Francis.
4. Combes P., Mayer T. and Thisse J. F., 2008: *Economic Geography: The Integration of Regions and Nations*, Princeton University Press.
5. Wheeler J. O., 1998: *Economic Geography*, Wiley..
6. Durand L., 1961: *Economic Geography*, Crowell.
7. Bagchi-Sen S. and Smith H. L., 2006: *Economic Geography: Past, Present and Future*, Taylor and Francis.
8. Willington D. E., 2008: *Economic Geography*, Husband Press.
9. Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: The *Oxford*

Course C 9
GGRM402T6: ENVIRONMENTAL GEOGRAPHY (Theory) 84 hours

(The objective of this course is to develop conceptual and theoretical ideas of environment as well as relationship between man and environment in different geo climatic regions. The learners will also attain the nature and intensity of some burning environmental issues at local, regional and global level along with mitigation programs and policies.)

Title	Contents	L	T	P
Environmental Geography	1. Environmental Geography – Concept and Scope	6	4	-
	2. Human-Environment Relationships – Historical Progression, Adaptation in different Biomes.	12	6	-
	3. Ecosystem – Concept, Structure and Functions	12	6	-
	4. Environmental Problems in Tropical, Temperate and Polar Ecosystems	12	6	-
	5. Environmental Programmes and Policies – Global, National and Local levels	14	6	-

Reading List

1. Chandna R. C., 2002: *Environmental Geography*, Kalyani, Ludhiana.
2. Cunninghum W. P. and Cunninghum M. A., 2004: *Principals of EnvironmentalScience: Inquiry and Applications*, Tata Macgraw Hill, New Delhi.
3. Goudie A., 2001: *The Nature of the Environment*, Blackwell, Oxford.
4. Singh, R.B. (Eds.) (2009) Biogeography and Biodiversity. Rawat Publication, Jaipur
5. Miller G. T., 2004: *Environmental Science: Working with the Earth*, Thomson BrooksCole,
Singapore.
6. MoEF, 2006: *National Environmental Policy-2006*, Ministry of Environment andForests, Government of India.
7. Singh, R.B. and Hietala, R. (Eds.) (2014) Livelihood security in Northwestern Himalaya: Case
studies from changing socio-economic environments in Himachal Pradesh, India. Advances in
Geographical and Environmental Studies, Springer
8. Odum, E. P. et al, 2005: *Fundamentals of Ecology*, Ceneage Learning India.
9. Singh S., 1997: *Environmental Geography*, Prayag Pustak Bhawan. Allahabad.
10. UNEP, 2007: *Global Environment Outlook: GEO4: Environment For Development*, United Nations Environment Programme.
11. Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume 1. Advances in Geographical and Environmental Studies, Springer
12. Singh, R.B. (1998) Ecological Techniques and Approaches to Vulnerable Environment, New
Delhi, Oxford & IBH Pub..
13. Singh, Savindra 2001. *Paryavaran Bhugol*, Prayag Pustak Bhawan, Allahabad. (in Hindi)

Course C6
GGRM302T6: REGIONAL GEOGRAPHY OF WORLD (Theory) 56 hours

(The main objective of this course to develop understanding of the learner about climate, soil and topography in different continents of the world. the course also familiarize learner with industrialization and population distribution in developed, developing and underdeveloped nations of the world.)

Title	Contents	L	T	P
Regional Geography Of World	1. Physiography, climate, soil and vegetation of Asia, Africa, Europe, North America	14	4	-
	2. Mineral resources and industrial development of the developed, developing and the underdeveloped countries	12	4	-
	3. Distribution of population of World	6	3	-
	4. Regional studies of Middle East and South East Asia and the Mediterranean region	10	3	-

Reading Lists:

1. Manku, D.S. : A Regional Geography of World, Kalyani Publishers
2. Gautam, A : World Geography, Sarda Pushtak Bhawan, Allahabad
3. Bradshaw, M : World Regional Geography
4. Gourou, P. (1980) : The Tropical World, Longman, London
5. Cole, J. (1996) : A Geography of World's Major Regions, Routledge, London

Course C4

GGRM 202T4: GEOGRAPHY OF INDIA (Theory) 56 Hours

(The objective of this paper is to make the students familiar with the various aspects of India. The students will learn about the physical, anthropogenic and economic diversity of India and the factors responsible for such diversities.)

Title	Contents	L	T	P
Geography Of India	1. Physical: Physiographic Divisions, soil and vegetation, climate (characteristics and classification)	10	4	-
	2. Population: Distribution and growth, Structure; Social: Distribution of population by race, caste, religion, language, tribes and their correlates	13	3	-
	3. Economic: Mineral and power resources distribution and utilisation of iron ore, coal, petroleum, gas; agricultural production and distribution of rice and wheat, industrial development : automobile and Information technology	13	3	-
	4. Physical Geography of North East India.	4	2	-
	5. Resource- agriculture, mineral, forest and Industries of Assam.	4	2	-

Reading List

1. Deshpande C. D., 1992: *India: A Regional Interpretation*, ICSSR, New Delhi.
2. Johnson, B. L. C., ed. 2001. *Geographical Dictionary of India.* Vision Books, New Delhi.
3. Mandal R. B. (ed.), 1990: *Patterns of Regional Geography – An Intenational Perspective. Vol. 3 –Indian Perspective*.
4. Sdyasuk Galina and P Sengupta (1967): *Economic Regionalisation of India*, Census of India
5. Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
6. Singh R. L., 1971: *India: A Regional Geography*, National Geographical Society of India.
7. Singh, Jagdish 2003: *India - A Comprehensive & Systematic Geography*, Gyanodaya Prakashan,Gorakhpur.
8. Spate O. H. K. and Learmonth A. T. A., 1967: *India and Pakistan: A General and Regional*
Geography, Methuen.
9. Tirtha, Ranjit 2002: *Geography of India,* Rawat Publs., Jaipur & New Delhi.
10. Pathak, C. R. 2003: *Spatial Structure and Processes of Development in India.* Regional Science Assoc., Kolkata.
11. Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad
12. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur

Course C4

GGRM 202P2: PRACTICAL ON THEMATIC CARTOGARPHY 28hours

(The main objective of this paper is to make the students aware of the various application of thematic mapping and shape index analysis.)

Title	Contents	L	T	P
Practical on Thematic cartography	**Unit – I Thematic mapping and shape index analysis of India** 1. Preparation of maps showing geographical themes – minerals, forest, agriculture etc. 2. Shape index analysis – comparison of shapes of Pre and Post Independent India	4		8
	Unit – II Thematic mapping of NE India Preparation of maps showing geographical themes – soil, industries, population minerals, forest, agriculture etc	4		8
	Unit- III Age- sex pyramid Develop and developing countries.	2		2

Course C2
GGRM 102T4 CLIMATOLOGY (Theory) 56 hours

(The main objective of this paper is to make the students aware of the composition of atmosphere and various climatic processes. The students will also learn about various factors responsible for the climatic disturbances.)

Title	Contents	L	T	P
Climatology	1. Atmospheric Composition and Structure – Variation with Altitude, Latitude and Season.	6	3	
	2. Insolation and Temperature – Factors and Distribution, Heat Budget, Temperature Inversion.	9	3	
	3. Atmospheric Pressure and Winds – Planetary Winds, Forces affecting Winds, General Circulation, Jet Streams.	9	3	
	4. Atmospheric Moisture – Evaporation, Humidity, Condensation, Fog and Clouds, Precipitation Types, Stability and Instability; Climatic Regions (Koppen)	11	3	
	5. Cyclones – Tropical Cyclones, Extra Tropical Cyclones, Monsoon - Origin and Mechanism.	7	2	

Reading List

1. Barry R. G. and Carleton A. M., 2001: *Synoptic and Dynamic Climatology*, Routledge, UK.
2. Barry R. G. and Corley R. J., 1998: *Atmosphere, Weather and Climate*, Routledge, New York.
3. Critchfield H. J., 1987: *General Climatology*, Prentice-Hall of India, New Delhi
4. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: *The Atmosphere: An Introduction to Meteorology*, Prentice-Hall, Englewood Cliffs, New Jersey.
5. Oliver J. E. and Hidore J. J., 2002: *Climatology: An Atmospheric Science*, Pearson Education, New Delhi.
6. Trewartha G. T. and Horne L. H., 1980: *An Introduction to Climate*, McGraw-Hill.
7. Gupta L S(2000): Jalvayu Vigyan, Hindi Madhyam Karyanvay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi
8. Lal, D S (2006): Jalvayu Vigyan, Prayag Pustak Bhavan, Allahabad
9. Vatal, M (1986): Bhautik Bhugol, Central Book Depot, Allahabad
10. Singh, S (2009): Jalvayu Vigyan, Prayag Pustak Bhawan, Allahabad

Course C2

GGRM 102P2: PRACTICALS BASED ON CLIMATIC DATA 28 hours

(The main objective of this paper is to make the students gain knowledge of the various weather symbols and to prepare graphs based on climatic data. The students will also find out the variability in the distribution of rainfall and the factors responsible for such variation in the pattern of rainfall.)

	Contents	L	T	P
Practical's Based On Climatic Data	1.Study of weather symbols	2		4
	2. Indian daily weather map interpretation for the summer and winter seasons.	4		4
	3.Representation of climatic data: (a) Preparation of Climograph, Hythergraph and Ergograph and their interpretation (b) Preparation of rainfall variability map of Assam	6		8

SEMESTER I

COURSE C1 (Theory) **84 Hours / lectures**

GGRM 101T4: GEOMORPHOLOGY AND BIO GEOGRAPHY

(The main objective of this paper is to make the students comprehend the various processes responsible for the development of diverse landforms on the earth surface. The candidate will also learn how the natural surrounding and human activities are responsible for the distribution of plants and animals.)

	Units	**L**	**T**	**P**
	1. Geomorphology: Nature and Scope.	1	1	-
	2. Earth: Interior Structure and Isostasy.	4	1	-
	3. Earth Movements: Plate Tectonics, Types of Folds and Faults, Earthquakes and Volcanoes.	6	2	-
	4. Geomorphic Processes: Weathering, Mass Wasting, Cycle of Erosion (Davis and Penck).	6	2	-
	5. Evolution of Landforms (Erosional and Depositional): Fluvial, Karst, Aeolian, Glacial, and Coastal.	8	3	-
	6. Definition, scope and significance of Bio Geography	3	1	-
	7. World distribution of plants and its relation to soil, climate and human activities	5	2	-
	8. World distribution of animals and its relation with vegetation, climate and Human activities	5	1	-
	9. Soil – soil forming processes, classification and distribution of soil, soil horizon and profile, soil erosion and conservation. Importance of soil, major soil types of India and Assam	4	1	-

Reading List

1. Bloom A. L., 2003: *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms*, Prentice-Hall of
India, New Delhi.
2. Bridges E. M., 1990: *World Geomorphology*, Cambridge University Press, Cambridge.
3. Christopherson, Robert W., (2011), Geosystems: *An Introduction to Physical Geography*, 8 Ed.,
Macmillan Publishing Company

B.A./B.Sc. IN GEOGRAPHY PROGRAMME (FYUGP)
DETAILED SYLLABUS OF 2nd SEMESTER

Title of the Course : ENVIRONMENTAL SCIENCE
Course Code : VAC3
Nature of the Course : VALUE ADDED COURSES
Total Credits : 02
Distribution of Marks : 40 (End-Sem.) + 10 (In-Sem.)
COURSE OBJECTIVES:

1. To understand the various environmental challenges faced by world.
2. To create a sense of how to be more responsible towards the environment.
3. To provide fundamental knowledge of environmental science and its importance in present day context.
4. To develop strategies for the development of environmental degradation

UNITS	CONTENTS	L	T	P	Total Hours
1 (12 Marks)	ENVIRONMENTAL SCIENCE 1.1 Nature, Scope and importance of environmental Science. 1.2 Climate change, causes, societal impacts, adaptation 1.3 Sustainable development and living	9	1		10
2 (12 Marks)	ENVIRONMENTAL DEGRADATION 2.1 Land degradation: Causes and consequences. 2.2 Exploitation of surface and ground water, 2.3 Air pollution: anthropogenic causes, impact on health, agriculture, climate, hydrology	9	1		10
3 (16 Marks)	ENVIRONMENTAL CASE STUDIES AND COMMUNITY BASED ACTIVITIES **3.1** Wildlife; Poaching, man--wildlife conflicts, Conservation and mitigation. **3.2** Waste Management; Solid waste, urban waste, industrial waste and pollution; **3.3** Water management; Reuse and Rain water harvesting, Air pollution reduction and climate change mitigation	10			10
	Total	**28**	**2**		**30**

Where, ***L: Lectures*** ***T: Tutorials*** ***P: Practicals***