

**DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,
AURANGABAD.**



Circular / Acad Sec./ HF/ Curriculum-12(7)/ NEP-PG/ 2023.

It is hereby inform to all concerned that, on the recommendation of Dean, Faculty of Humanities; **the Hon'ble Vice-Chancellor has accepted the following subject wise Curriculum of National Education Policy-2020** under the faculty of Humanities in his emergency powers under Section 12 [7] of the Maharashtra Public University Act, 2016 on behalf of the Academic Council.

Sr. No.	PG Subject wise Curriculum	Semesters
01.	M.A. First & Second Year Progressively [English] for affiliated Colleges, Uni. Campus & Sub-Campus.	Ist & IInd and IIIrd & IVth
02.	M.A. First & Second Year Progressively [Geography] for affiliated Colleges and University Campus.	Ist & IInd and IIIrd & IVth
03.	M.A. First & Second Year Progressively [Sociology] for affiliated Colleges and University Campus.	Ist & IInd and IIIrd & IVth
04.	M.A. First & Second Year Progressively [Economics] for affiliated Colleges and University Campus.	Ist & IInd and IIIrd & IVth

This is effective from the Academic Year 2023-24 and Onwards progressively as appended herewith.

All concerned are requested to note the contents of this circular and bring notice to the students, teachers and staff for their information and necessary action.

University campus,
Aurangabad-431 004.
Ref. No. SU/Col. & UC/NEP-20/
PG/ 2023/ 3692-702

}}
}}
}}
}}

**Deputy Registrar,
Academic.**

Date: 03.07.2023.

Copy forwarded with compliments to:-

- 1] The Head, all concerned departments ,**
Dr. Babasaheb Ambedkar Marathwada University, Aurangabad and Sub-Center, Osmanabad.
- 2] The Principal, all affiliated colleges,**
Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
- 3] The Director, University Network & Information Centre, UNIC,**
with a request to upload this Circular on University Website.

:: 02 ::

Copy to :-

- 1] **The Director, Board of Examinations & Evaluation,**
 - 2] **The Sec. Officer, [M.A. Unit] Exam. Branch,**
 - 3] **The Section Officer, [Eligibility Unit],**
 - 4] **The Programmer [Computer Unit-1] Examinations,**
 - 5] **The Programmer [Computer Unit-2] Examinations,**
 - 6] **The In-charge, [E-Suvidha Kendra],**
 - 7] **The Public Relation Officer,**
 - 8] **The Record Keeper,**
- Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.**

-==*-

DrK*030723/-



Re-Accredited By NAAC 'A' Grade

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD (MS), INDIA

**DEPARTMENT OF GEOGRAPHY
(AUTONOMOUS)**

As per the Curriculum of National Education Policy
Curriculum Structure and Scheme of Evaluation for M.A./MSc. Geography

Ambedkar

OUTCOME BASED EDUCATION CURRICULUM STARTED FROM

With effect from Academic Year 2023-2024

Ambedkar



Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
As per the Curriculum of National Education Policy
Curriculum Structure and Scheme of Evaluation for M.A./M.Sc. First Year Semester-I
Department of Geography (Autonomous)
Outcome Based Education

Sr. No.	Type of Paper	Paper No.	Name of the Subject	Total Credits
1	Mandatory Theory	GMT-01	Geomorphology	04
2		GMT-02	Population Geography	04
3		GMT-03	Geography of India	04
4	Mandatory Practical	GMP-01	Practical-1 (Laboratory Course)	02
5		GET-01	Industrial Geography	04
6	Elective (Select any one from Basket)	GET-02	Geography of Water Resources	
7		GET-03	Fluvial Geomorphology	
8		GET-04	Principals of Remote Sensing	04
9	Research Methodology	GRM-01	Research Methodology in Geography	
Total				22

Laboratory Course: A Minimum of 30 hours in laboratory activities per credit it required in a semester

***Foundation/ Bridge Course- Introduction of Geography**

- 1) The bridge course will be taught in the first semester.
- 2) Any UG Degree holder from any faculty can get admission by completing 'concern subject' 6 months short term or Bridge Course or Fundamentals course in the department.
- 3) Upon successful completion of this bridge course students will be awarded a certificate at the university Department/ College level.
- 4) The Paper "Bridge Course" is a compulsory paper which credits are not included in the degree.



Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
As per the Curriculum of National Education Policy
Curriculum Structure and Scheme of Evaluation for M.A./MSc. First Year Semester-II
Department of Geography (Autonomous)
Outcome Based Education

Sr. No.	Type of Paper	Paper No.	Name of the Subject	Total Credits
1	Mandatory Theory	GMT-04	Climatology	04
2		GMT-05	Settlement Geography	04
3		GMT-06	Geographical Thought	04
4	Mandatory Practical	GMP-02	Practical-2 (Laboratory course)	02
5	Elective (Select any one from Basket)	GET-05	Geography of Transportation and Trade	04
6		GET-06	Geography of Health	
7		GET-07	Coastal Geomorphology	
8		GET-08	Geographical Study of Natural Disaster	
9	On Job Training/ Field Project	GFP-01	Field Project (Village Survey)	04
Total				22

Laboratory Course: A Minimum of 30 hours in laboratory activities per credit it required in a semester

Ambedkar

Ambedkar



Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
As per the Curriculum of National Education Policy
Curriculum Structure and Scheme of Evaluation for M.A./MSc. Second Year Semester-III
Department of Geography (Autonomous)
Outcome Based Education

Sr. No.	Type of Paper	Paper No.	Name of the Subject	Total Credits
1	Mandatory Theory	GMT-07	Oceanography	04
2		GMT-08	Political Geography	04
3		GMT-09	Geography of Economic Activities	04
4	Mandatory Practical	GMP-03	Practical-3 (Laboratory Course)	02
5	Elective (Select any one from Basket)	GET-09	Cultural Geography	04
6		GET-10	Urban Geography	
7		GET-11	Arid Geomorphology	
8		GET-12	Biogeography	
9	Research Project	GRP-01	Research Project in Geography	04
Total				22

Laboratory Course: A Minimum of 30 hours in laboratory activities per credit it required in a semester

Handwritten signature

Handwritten signature



Dr. Babasaheb Ambedkar Marathwada University, Aurangabad

As per the Curriculum of National Education Policy

Curriculum Structure and Scheme of Evaluation for M.A./MSc. Second Year Semester-IV

Department of Geography (Autonomous)

Outcome Based Education

Sr. No.	Type of Paper	Paper No.	Name of the Subject	Total Credits
1	Mandatory Theory	GMT-10	Geography of Environment	04
2		GMT-11	Agriculture Geography	04
3		GMT-12	Regional Development	04
4	Elective (Select any one from Basket)	GET-13	Social Geography	04
5		GET-14	Glacial Geomorphology	
6		GET-15	Rural Geography	
7		GET-16	Principal of GIS Applications	
8	Research Project	GRP-02	Research Project in Geography	06
	Total			22

Handwritten signature

Handwritten signature

Name of the Program: M.A. I Geography		
Semester-I Theory Paper	Name of the Course GMT-01: Geomorphology	Credits : 04

Course Objectives:

1. It being a course at the interface of geography with earth, the students to be sensitized to background of geology and environmental sciences.
2. To familiarize the students with the need for understanding of geomorphology with reference to certain fundamental concept, focusing on the unity of geomorphology in the earth materials and the processes with or without an element of time. Process component of geomorphology is segmented into the internal and external processes of landscape evolution.
3. Finally a few selected applications of geomorphology to societal requirements and quality of environment are dealt with.

Course Outcomes:

1. Classify and describe landforms in a variety of environmental settings.
2. Explain the theories of Uniformitarianism, Catastrophism and appreciation.
3. Describe the significance of spatial and temporal scales in geomorphology.
4. Analyze geomorphological systems in terms of resisting and driving forces.
5. Explain the surface processes important in the creation of landforms.
6. Quantitatively use and evaluate geomorphological data with numerical, statistical and cartographical methods.
7. Ability to analyze relationships between physical and human aspects of environments and landscapes.

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	A) Nature and Scope of Geomorphology: Definition of Geomorphology, Fundamental Concepts in Geomorphology, B) Interior of the Earth C) Basic Theories in Geomorphology: Wegener's Continental Drift, Plate Tectonics, Theory of Isostasy, W M Davis's Concept of Geomorphic Cycle	20	20
II	A) Endogenic geomorphic forces: Epiorogenic and Orogenic Movements, Compression, Tension, Folds, Faults, earthquake and volcanoes. C) Rocks and Minerals: Types of Rocks Classification of Rocks B) Denudational Processes:	15	15

	Weathering, Types of Weathering, Erosion Mass Movement.		
III	Land Forms: Erosional and Depositional Landforms associated with Fluvial, Glacial, Arid, Karts and Coastal processes.	15	15
IV	Slope Morphology: Types of Slope, Slope Formation and Processes Theory of Slope Development	05	15
V	Applied Geomorphology: Geomorphology and Human activities- Agriculture, Industries, Settlement, Transportation and Mining	05	15
Total		60	80

Reference Books:

1. Thornbury, W. D. (1960), Principles of Geomorphology, John Wiley and Sons, New York.
2. Chorley, R. J., Schumm, S. A. and Sugden, D. E.(1984): Geomorphology, Methuen, London.
3. Kale, V. S. and Gupta, A. (2001): Introduction to Geomorphology, Orient Longman, Calcutta.
4. Savindra Singh (2002), Geomorphology, Prayag Pustak Bhawan, Allahabad
5. Spark B. W. (1972), Geomorphology, Longman, NewYork
6. Steers, A. (1958), The Unstable Earth, Methuen,London
7. Ollier, C. D. (1981), Tectonics and Landforms, Longman , London
8. Strahler A. H and Strahler, A. N. (1992), Modern Physical Geography, John Wiley, New York
9. Wooldridge and Morgan: Geomorphology
10. Holmes: Physical Geology
11. Fairbridge, R. W. (1968), Encyclopedia of Geomorphology, Reinholdts, New York.

Web Resources:

1. www.wikipedia.org
2. www.encyclopedia.com
3. <http://jgesnet.com>

Name of the Program: M.A. I Geography		
Semester: I Theory Paper	Name of the Course GMT-02-Population Geography	Credits : 04

Course Objectives:

1. To introduce the students to the complex dimensions of population.
2. To understand and evaluate the association between demographic and socio-economic attributes of population and the resultant levels of social well-being and economic development.
3. To understand the role and relationship between population and environment in an ever changing space-time continuum.

Course Outcomes:

1. Analyze the types of data of population geography.
2. Describe the distribution and density of population.
3. Apply the theories of population in arriving at solutions to the issues.
4. Investigate Current Issues and Problems in India.

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	A) Population Geography: Definitions, Nature and Scope B) Sources of Population Data- Census, Sample Surveys and Vital Statistics C) Basic Concepts: Population Growth, Birth rate, Death rate, Crude Birth rate, Crude Death Rate, Infant Mortality rate, Fertility, Mortality, Migration, Age, Sex ratio, Age and Sex Pyramid, Density and literacy	15	20
II	Population Growth: A) World Population Growth- Pre-historic and Modern period. Demographic Transition Model Malthusian Theory of Population B) Factors affecting on Population Growth: 1. Terrain 2. Climate 3. Soil 4. Water Bodies, 5. Mineral Resources 6. Industries 7. Transport 8. Urbanization 9. Socio-economic and Cultural 10. Political Peace and Violence 11. Literacy	15	15
III	A) Population Distribution: Distribution of Population in India, Pattern of World Population Distribution. B) Migration: Factors Affecting Migration and Types of Migration	10	15

IV	Population Composition: A) Characteristics of Population Composition- Age-Sex, Rural-Urban, Occupational Structure and Education Level B) Population Policies in Developed and Developing Countries	10	15
V	Population as a Resource: A) Concepts: 1. Over Population, 2. Optimum Population 3. Under Population B) Various aspects of Population: 1. Size, 2. Growth, 3. Age, 4. Education 5. Health C) Population Resource Regions: 1. Plain 2. Plateau 3. Mountain 4. Coastal	10	15
Total		60	80

Reference Books:

1. BeaujeuGarnier J. – Geography of Poluation, Longman Group Ltd.
2. Chandna R. C. (2000) – A Geography of Population, Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi
3. Bhende Asha and Kanitkar T. – Principles of Population Studies, Himalaya Publishing House, Bombay, 1993.
4. Clark J. I. Geography of Population Approaches and Applications, Pergamon Press Ltd., Oxford

Web Resources:

1. www.wikipedia.org
2. www.encyclopedia.com
3. <http://jgesnet.com>

Name of the Program: M.A. I Geography		
Semester I Theory Paper	Name of the Course GMT-03- Geography of India	Credits: 04

Course Objectives:

1. To acquaint the students with the geography of our Nation.
2. To make the student aware of the magnitude of problems and Prospects at the National level.
3. To help the students to understand the interrelationship between the subject and society.
4. To help the students to understand the recent trends in regional studies.

Course Outcomes:

1. Define the Areal Differentiation in India.
2. Describe the Physical and Human Phenomena.
3. Interpreter the Co-relation of Physical and Human factors in India.
4. Examine Social and Cultural Issues in India.
5. Appraise the development of People.

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	Introduction A) Geographical Background of India Location and Extent, Historical Background International Boundaries of India and Related Issues States and Union territories B) Major Physiographic Regions: The Northern Mountains The North Indian Plains The Peninsular Plateau The Coastal lowlands and Islands	10	15
II	Drainage System and Climate: A) Himalayan Rivers System: The Indus, The Ganga, The Brahmaputra B) Peninsular River System: East Flowing Rivers: Mahanadi, Godavari, Krishna, Kaveri Major West Flowing Rivers: Narmada, Tapi, Mahi Minor West Flowing Rivers originating in Western Ghat C) Climate: Seasonal Weather Characteristics Climatic Divisions Indian Monsoon- Jet Stream, El Nino and La Nina	10	15
III	Natural Resources and Population: A) Resources Types of Resources Classification of Resources Soil, Vegetation, Water Mineral and Marin Resources B) Population Population Characteristics – Spatial pattern of Distribution	15	15

	Growth and Composition- Rural-Urban, Age-Sex, Occupational, educational, ethnic and Religious Determinants of Population- Population Policies		
IV	Agriculture and Industry A) Production, Productivity, Yield of Major food crops Major Crop Regions Regional Variation in Agriculture Development Factors affecting on Indian Agriculture Agro-Climatic Zones Green Revolution B) Industry: Industrial development Industrial Regions Industrial Policies in India	15	20
V	Trade and Transport and Natural Disaster in India A) Trade Development of Trade Internal and External Trade B) Transport: Patterns of Transport Network- Railways, Roadways, Airways and Pipelines Regional Development Planning Globalization and its impact on Indian Economy C) Natural Disaster: Earthquake Drought Flood Cyclone Tsunami and Himalayan highland Hazards	10	
			15
Total		60	80

❖ **Reference Books:**

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. Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
4. Singh R. L., 1971: India: A Regional Geography, National Geographical Society of India.
5. Singh, Jagdish 2003: India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
6. Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.
7. Pathak, C. R. 2003: Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.
8. Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad
9. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur

❖ **Web Resources:**

1. www.wikipedia.org
2. www.encyclopedia.com
3. <http://jgesnet.com>

Name of the Program: M.A. I Geography		
Semester: I Practical Paper	Name of the Course GMP-01- Practical	Credits: 02

Course Objectives:

1. To understand the morphological analysis with help of calculations.
2. To understand the various demographic Methods with the help of calculations.
3. To understand the analysis of drainage network patterns.
4. To understand the various indices calculations with the help of the given example.
5. To indicate the methods of visual and digital interpretation of satellite imageries.

Course Outcomes:

1. Define the various Drainage basin and stream order.
2. Examine the hypsometric integral, cross profiles, and block diagram.
3. Understanding the population pyramid and major statistics.
4. To analyze satellite data generation and aerial photograph products.

❖ **Practical / field work list:**

Unit No.	Teaching and learning point	Practical	Mark
I	Morphological analysis: 1) Calculate stream order and Bifurcation Ratio 2) Slope Analysis Analysis of Drainage Network Pattern: 3) Drainage Network-bifurcation ratio, 4) Length ratio, 5) Drainage density, 6) Drainage texture, 7) Stream Frequency;	15	20
II	Various Demographic Indices and calculate them with suitable examples - 1) Mean age of females at marriage and fertility 2) Mean age of females at marriage and infant mortality 3) Underweight children of 1 to 47 months and under 5-year mortality rate 4) Percentage of women married to a blood relative and infant mortality 5) Mean age of females at marriage and delivery deaths 6) Per capita income of the family and infant mortality rate 7) Level of education of mother and number of deliveries	15	20
III	Population Indices 1. Age-sex pyramid 2. Child-woman ratio 3. Dependency ratio 4. Infant mortality ratio 5. Age-specific mortality 6. Population growth rate	15	20
IV	Fundamentals Investigations of Remote Sensing 1. To understand the various types of aerial photographs and their applications. 2. To study the working of stereoscope. 3. To determine the scale of given aerial photograph. 4. To determine the relief displacement from given aerial	15	20

	photograph. 5. To determine the focal length of given aerial photograph. Photo Interpretation 1. To explain the cultural/social/ agricultural features from given aerial photographs. 2. To identify the patterns of Drainage from given aerial photographs. 3. To explain the cultural/social/ agricultural features from given satellite image.		
V	Journal and Viva	-	20
Total		60	100

Reference Book

1. Basu, S.R. and majumder paramita (2006), lamdaslides scenario of the Darjeeling Himalayas in West Bengal, India; Geo.Rev. Ind., V.68, No.2, june 2006.
2. Bryant, M. (1974), Digital Image Processing, Chelmsford, MA, Optronics International publications’.
3. Clarke, K.C., (1990), Analytical and Computer cartography, Englewood cliffs, N.J. Practice-Hall.
4. Chorly, R. (ed) (1987), Handling Geographic Information, London.
5. Fryirs, K. A., & Brierley, G. J. (2013). Geomorphologic Analysis of River Systems, Chichester: Wiley-Blackwell.
6. King, C. A. M. (1966). Techniques in Geomorphology. London: Edward Arnold Ltd.
7. Leopold, L. B., Wolman, M. G., & Miller, J. P. (1964). Fluvial Processes in Geomorphology. San Franscisco.
8. Pijushkanti Saha and Pratha Basu (2010), Advanced Practical Geography, Arunabha Sen, Kolakata.
9. Rogerson, P. A. (2010). Statistical Methods for Geography, London: Sage Publications.
10. Strahler, A. N. (1964). Part II. Quantitative geomorphology of drainage basins and channel networks. Handbook.

Name of the Program: M.A. I Geography		
Semester I Theory Paper	Name of the Course GET-01- Industrial Geography	Credits: 04

Course Objectives:

1. Introduce the students to the development of industry.
2. To explain the theories and models in Industrial geography
3. To study the different industrial regions in the world.
4. Explain the influence and problems of industrial development.

Course Outcomes:

- 1) On completion of the course the student will be able to understand comprehensively stages of the economic process and development of Industries.
- 2) It will help them to identify industrial problems and consequences.
- 3) It will help them to understand the development and significance of manufacturing Industries and its links with the world economy.
- 4) Students will understand the location of major manufacturing activities with the support of various industrial location theories and models.

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	Introduction: • Nature, scope, and recent developments, • Factors of industrial location, • Methods of measuring the spatial distribution of manufacturing industries, • Classification of Industries	05	15
II	Theories and models of industrial location: • Theories of Industrial Location- Alfred Weber- E. M. Hoover August Losch	10	15
III	Important industrial regions of the world • Selecting one each of USA, Russia, Japan, Britain and West Europe. • Important industrial regions of India, (i) The Hooghly side industrial region. (ii) The Damoder valley industrial region. (iii) The Ruhr basin industrial region. (iv) The Great Lakes industrial region. (v) Industrial centres of Rajasthan: Bhiwadi, Bhilwara, Jaipur and Luni Basin.	15	15

IV	Manufacturing industries : • The textile industry, • Iron & steel, Aluminium, Oil refining, • Footloose Industries: Automobile, Commercial ship building; • Raw material oriented industries- Copper, pulp & paper, cement. • Tourism Industry • ICT Industry	15	15
V	Problems of Industrial development; • Industrial development and environmental degradation, • Industries and economic development, • Impact of globalisation on industrial development, • Industrial decentralization and its impact on urban fringe, • Changing industrial policy	15	20
Grand Total		60	80

Reference Books:

1. Alexanderson, C: Geography of Manufacturing, Prentice Hall Bombay, 1967.
2. Chauhan, M L & Khandelwal, M K : Dyeing, Printing and Textile, Ritu Publication, Jaipur, 2005.
3. Choudhary, M R : Industrial Geography of India.
4. Estall, R C & Buchanan, R O : Industrial Activity and Economic Geography, Hutchinson & Co. London.
5. Hartshorne, T A & Alexander, J W : Economic Geography, Prentice Hall, New Delhi, 2000.
6. Hoover, E M : The Location of Economic Activity, McGraw Hill, New York.
7. Isard, W : Methods of Regional Analysis, The Techno. Press of MIT & John Willey, New York, 1956.
8. Lloyed, Peter E & Dicken, P: Location in Space: A Theoretical Approach to Economic Geography, Harper & Row, New York, 1972.
9. Miller, E : A Geography of Manufacturing, Prentice Hall, Englewood Cliffs, New Jersey, 1962.

Name of the Program: M.A. I Geography		
Semester I Theory Paper	Name of the Course GET-02- Geography of Water Resource	Credits: 04

Course Objectives:

1. Describing each component of the water cycle in detail;
2. Understanding and applying the seminal physical equations related to surface water
3. hydrology and hydraulics, groundwater, and sediment transport;
4. Conducting a flood frequency analysis;
5. Explaining why hydrology is important in terms of natural/environmental hazards;
6. Analyzing how hydrologic processes are important in agriculture and ecology;
7. Discussing why hydrology is important to society, how it influences the human-built
8. environment and how in turn human beings impact the natural hydrology of systems

Course Outcomes:

- 1) It will help them to understand regional problems related to water resource.
- 2) On completion of the course the students will be understand water management.

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	Introduction: What is hydrology!? Hydrologic Cycle Water as a natural resources focus of geographical interest Inventory and distribution of world's water resources (surface and subsurface)	05	15
II	Water demands and use – Groundwater; aquifers Methods of estimation – Agricultural and industrial uses of water. Irrigation method of distribution of the water to farms. Water harvesting techniques and water conservations.	10	15
III	Water Resources Management. Wells and groundwater management Groundwater contamination Watersheds/drainage basins General trends of water supply to the urban and rural areas in India. Internal navigation hydel power and recreation.	15	15

IV	Water Problems – Pollution, logging, alkalinity of soil. Food –structural and non- structural adjustment of flood Hazards.	15	15
V	Conservation and planning for the development of water Resources. Flood management and planning Evolution of flood policies and insurance Social and institutional considerations use of surface and ground water resources. Watershed management. International and Interstate river water disputer.	15	20
Grand Total		60	80

Reference Books:

1. **Agarwal, Anil and Sunita Narain:** Dying wisdom: Rise, fall and postential of India's Traditional water Harvesting System centre for science and environment, **New Delhi, 1997.**
2. **Economic and social Commission for Asia and the pacific, United:** Guidelines for the preparation of National master water plans **1989.**
3. Govt.of India, Ministry of Agriculture Report of the irrigation commission, vol. I to IV, **New Delhi, 1972.**
4. **Gulhati, N.D:** Development of inter- state Rivers: Law and practice in India. Allied pub, **Bombay, 1972.**
5. International water Resource Association and Central Board of irrigation & power: water for Human Needs, Vols. I to V Proceeding of the second world congress on water resources, 12-16 December, **New Delhi, 1975.**
6. **Jones, J.A.:** Global Hydrology: Processes, Resources and Environmental management, **Longman, 1997.**
7. **Matter, J.R.,** Water Resources Distribution, use and Management, john willey, Marylane, 1984.
8. **Newson, M.**Land, water and Development River Basin Systems and their Sustainable management, Routledge, **London, 1992.**
9. **Pereria, H.C:** Landuse and Water Resources, Cambridge University press, **Cambriddge, 1973.**
10. **Rao, K.L.:** India's water wealth, orient Longman, **New Delhi, 1979.**
11. **Singh, R.A.and Singh, S.R.:** water management: principles and practices, Tara publication, **Varanasi, 1979.**
12. **Tideman, E.M.watershed management:** Guidelines for India conditions, omerga, New Delhi, 1996.

- 13. Todd, D.K.:** Ground water Hydrology, John Willey, **New York, 1959.**
- 14. U.S.D.A. :** The year Book of Agriculture: water, oxford and I.B.H.Publishing Co, **New Delhi, 1955.**
- 15. Verghese, B.G.:** water of Hope: Integrated water resource Development and Regional Co-operation within the Himalayan – Ganga –Brahmaputra –Barak Basin, oxford IBH, **New Delhi, 1990.**

Name of the Program: M.A. I Geography		
Semester: I Theory Paper	Name of the Course GET-03- Fluvial Geomorphology	Credits : 04

Course Objectives:

1. The rivers being the major geomorphic agent of erosion, the course assumes significance as it mainly deals with an understanding of the fluvial forms and processes. The evolution of drainage pattern and alluvial channels are governed by the forces resisting and driving the flow of water. The students are introduced to the activities of these two forces and their resultant effects on the flow patterns, sediment load and channel patterns.
2. The use of rivers and the landscape develop certain feedback mechanism within the system which has the ability to alter the human vis-à-vis fluvial environments.

Course Outcomes:

1. Analyze the basic concepts of Fluvial Geomorphology.
2. Describe the Features of channel morphology.
3. Interpret of fluvial erosion and its landforms.
4. Examine the Sediment Transportation of Fluvial system.
5. Explain the Fluvial Deposition and its landforms.

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	Fluvial Geomorphology and Geography; • Definition and scope • Hydrological cycle and Sub-cycle • Drainage pattern evolution • Limits of drainage development • Channel changes with time	10	15
II	Fundamentals of river mechanics: • Types of flow and flow discrimination • Forces acting in channels • Low regimes • Sediment load of streams. • Sediment transport • Competent velocity; • Lift force; • Critical tractive force.	20	20

III	Hydraulic geometry of streams at a station and down-stream: • Channel thalweg • Causes of concavity; • Channel patterns, • Equilibrium profile - straight, meandering and braided.	10	15
IV	Drainage basin as a fundamental geomorphic unit. • Drainage basin - form and process • Drainage basin morphometry • Morphometric interrelations	10	15
V	Applied fluvial geomorphology; • Human adjustment to flood plain, • Alluvial fans and deltaic environments (case studies). • Effects of reservoirs on fluvial systems. • Remote sensing and GIS application to fluvial environments.	10	15
Total		60	80

Reference Books:

1. Chorley R.J. (ed) 'Introduction of Fluvial Processes Methuen & Co., London, 1973.
2. Coates D.R. and Vitek J.I. Thresholds in Geomorphology. George Allen Unwin, London 1980.
3. Gregory K.J. 'River Channel Changes' John Wiley & Sons, New York, 1977.
4. Gregory K.J. and Walling, D.E.: Drainage Basin: Forms and Process- A Geomorphological Approach. John Wiley & Sons, New York, 1985.
5. Kingston D. Fluvial Forms and Processes Edward Arnold, London, 1984.
6. Leopold C.B. et.al.: Fluvial Processes in Geomorphology; Freeman, London 1964.
7. Morisawa M.(ed.) Fluvial Geomorphology. George Allen & Unwin, 1981.
8. Gleick, P.H. (ed.): Water in Crisis Oxford University Press, New York 1993.
9. Morisawa M: 'Streams - Their Dynamics and Morphology' McGraw Hill, New York, 1968.
10. Leopold, L. B., Wolman, M. G. and Miller, P. (1954) Fluvial processes in Geomorphology, Freeman and Co., San Francisco.
11. Schumm, S. A. (1977). Fluvial Systems. Wiley, New York.
12. Richards, K. (1982). River: Forms and processes in alluvial channels. Methuen and Co. London
13. Morisawa, M. (1985). Rivers: Forms and Processes, Longman
13. Dr. Kale, V. S. and Gupta, A. (2001). Introduction of Geomorphology, Orient Longman, Kolkata.

Web Resources:

1. www.wikipedia.org
2. www.encyclopedia.com
3. <http://jgesnet.com>

Name of the Program: M.A. I Geography		
Semester: I Theory Paper	Name of the Course GET-04- Principals of Remote Sensing	Credits : 04

Course Objectives:

- To introduce to the students the basic principles of Remote Sensing;
- 2. To indicate the methods of visual and digital interpretations of satellite imageries.
- 3. To outline the application value of remote sensing.

Course Outcomes:

- 1. To describe the basic principles of Remote Sensing.
- 2. To explain the EMR (Electromagnetic Radiation).
- 3. To describe the Aerial photography and it's Classification.
- 4. To analyze Satellite Data Generation and Aerial Photography Products.

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	Introduction to Remote Sensing: 1. Definition of Remote Sensing 2. History of Remote Sensing 3. Type and Scope of Remote Sensing 4. Aerial Remote Sensing 5. Satellite Remote Sensing 6. Indian, European and US Satellite Systems	10	15
II	EMR (Electromagnetic Radiation): 1. Stages in remote sensing data acquisition 2. Electromagnetic Radiation and Electromagnetic Spectrum 3. Spectral Quantities 4. Black Body Radiation and Radiation Laws 5. Spectral Signature 6. Interaction of EMR with atmosphere and Earth's surface features	20	20
III	Platforms, Sensors, Orbits: 1. Definition: Platforms, Sensors, Orbits 2. Types of Platform 3. Types of Cameras 4. Types of Sensors: Optical and Microwave Sensors; Passive and Active Sensors 5. Characteristics of Sensors 6. Types of Satellite Orbits	10	15

IV	Aerial photography: 1. Introduction to Aerial Photography 2. Principles of photography 3. Basic Photogrammetry 4. Aerial or Flight cameras 5. Classification of Aerial Photographs 6. Flight Manning (Overlaps) 7. Photo Scale and Flight Height 8. Ground Coverage	10	15
V	Data products: 1. Satellite Data Generation 2. Digital Products 3. Data Formats 4. Aerial Photography Products	10	15
Total		60	80

Reference Books:

1. Joseph, G. (2004): Fundamentals of Remote Sensing, Universities Press, Hyderabad, India
2. Lillesand, TM, Kiefer, RW and Chipman, JW (2008): Remote Sensing and Image Interpretation, John Wiley & Sons, New Delhi
3. Sabins, FF (1996): Remote Sensing: Principles & Interpretation, WH Freeman & Company, San Francisco
4. Jensen, JR (2005): Introductory Digital Image Processing, Prentice Hall, New Jersey
5. Drury, SA (2001): Image Interpretation in Geology, Blackwell, Oxford
6. Campbell, J (2002): Introduction to Remote Sensing, Taylor & Francis, London
7. Anji Reddy, M (2008): Textbook of Remote Sensing and Geographic Information System, B.S. Publication, Hyderabad

Web Resources:

1. www.wikipedia.org
2. www.encyclopedia.com
3. <http://igesnet.com>

Name of the Program: M.A. I Geography		
Semester I Theory Paper	Name of the Course GRM-01- Research Methodology	Credits: 04

Course Objectives:

1. The main goal of the research is to improve the quality and level of living in society.
2. The purpose of a research study is to find out the hidden facts about a business phenomenon
3. Identifying the cause-and-effect relationship
4. To innovate new ideas and improve quality.
5. To learn the significance of statistics in geography.
6. Understand the importance of the use of data in geography
7. Recognize the importance and application of Statistics in Geography
8. Interpret statistical data for a holistic understanding of geographical phenomena.
9. Know about different types of sampling.

Course Outcomes:

1. Demonstrate the ability to choose methods appropriate to research aims and objectives
2. Understand the limitations of particular research methods
3. Develop skills in qualitative and quantitative data analysis and presentation
4. Develop advanced critical thinking skills
5. Demonstrate enhanced writing skills
6. To understand the importance and use of statistical techniques in geography
7. Form frequency distribution tables and graphically interpret the results.
8. To measure central tendency and dispersion of data.
9. To examine the relationship between two or more variables with correlation and regression analysis.

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	Research: 1. Meaning and Connect of Research. 2. Purpose of Research in Geography. 3. Types of Research 4. Descriptive and Analytic 5. Applied/Fundamental Research 6. Quantitative and Qualitative 7. Conceptual and Empirical 8. Experimental and Non-Experimental 9. Cross-Section Study 10. Longitudinal Study 11. Research ethics,	10	15
II	Research Process 1. Identification and Selection of the research problem 2. Review of literature 3. Formulate the Hypothesis 4. Preparation of Research Design 5. Sample: Methods, Design 6. Data Collection	10	15

	7. Data analysis (hypothesis testing) 8. Interpret and Report		
III	Introduction to Statistical Techniques in Geography 1. Definition of statistics, 2. Importance, and use of statistical techniques in geography, Various types of averages, 3. Sampling 4. Characteristics of samples, 5. Methods of sampling, Statistical significance,	10	15
IV	Measures of Statistics 1. Measures of central tendency using simple, discrete, and continuous data: Mean, Median and Mode. 2. Measures of dispersion: Absolute measurements- Mean deviation, Quartile deviation, and Standard deviation. 3. Relative measurements: Coefficient of mean deviation, Coefficient of quartile deviation, Coefficient of variations,	15	20
V	Analysis of Statistical Relationship 1. Skewness: Karl Pearson's and Bowley's methods 2. Kurtosis, Correlation analysis: Rank order correlation and Product moment correlation, 3. Kendall's coefficient	15	15
Total		60	80

References:

1. Krishna Swamy K.N., Siva Kumar A.I., Mathirajan M., "Management Research Methodology (2006), Pearson Education, New Delhi.
2. Kothari C.R., "Research Methodology, Methods and Techniques, Second edition, (2008), New Age International Publication.
3. Ranjit Kumar: Research Methodology, A step by step guide for beginners, Pearson Education, Sixth Edition 2009.
4. Mark Saunders, Philip Lewis, Adrain Thornhiu: Research Methods for Business Students, Pearson Education.
5. Ram Ahuja, "Research Methods", (2001), Rawat Publications, New Delhi.
6. Cooper D., Schindler P., Business research methods", (2003) Tata Mc-Graw Hill, New Delhi.

Name of the Program: M.A. I Geography		
Semester: II Theory Paper	Name of the Course GMT-04: Climatology	Credits : 04

❖ **Course Objectives:**

The aim of the course is to provide an understanding of weather phenomena; dynamics of global climates and generation of climatic information and their application.

❖ **Course Outcomes:**

1. Describe the meteorology and climatology
2. Describe the scientific problems addressed by metrology and climatology.
3. Describe the methods and techniques of the data gathering
4. Perform meteorological measurements and use meteorological data for climatic analysis.
5. Describe/implement the basic meteorological process in the Earth atmosphere.

❖ **Course Contents:**

Unit	Teaching / Learning Points	Periods	Marks
I	Basic Concepts: Nature and Scope of Climatology, Development of Modern Climatology, Weather and Climate,	10	15
II	Earth's Atmosphere: Composition and Vertical Structure, Heat Balance and Budget of Earth	10	15
III	A) Temperature and Air Pressure: Distribution of Temperature: Vertical and Horizontal Distribution of Pressure, Atmospheric pressure & general circulation of winds B) Humidity: Evaporation, Humidity, Condensation Formation of Clouds and their types Precipitation – types and characteristics.	10	20
IV	A) Air Masses and Fronts: Source Regions, Classification Frontogenesis and Frontolysis, Types of Fronts. B) Atmospheric Disturbances: Cyclones, Anticyclones, Storms, Water spouts, thunderstorms and tornadoes. El Nino and La Nina	15	15
V	Classification of Climate: Bases of Classification Kop pen's Classification of Climate, Thornthwaite	15	15
Grand Total		60	80

Reference Books:

1. Frederick K. Lutgen, Edward Tar buck: “The Atmosphere An Introduction to Meteorology”
Prentice Hall, Englewood Cliffs, New Jersey 0762 ,1998
2. 4. Sellers W.D : “Physical Climatology”University of Chicago Press. 1965
3. 5. Trewartha G.T: An Introduction to climate “McGraw Hill BK Co. New York, 1968.
4. 6. Das P. K. : The Monsoon, Prayag pustak Bhavan, Allahabad.
5. Shastri Rama: Weather and Weather Forecasting, Ministry & Information NBT Delhi.
6. Lal D. S.: Climatology. Prayag pustak Bhavan, Allahabad.
7. Ramashatri: Weather & Weather forecasting, Ministry of Information & Broadcasting.
8. Savindra Sing (2000) : Climatology, Prayag Pustak Bhavan, Allahabad.
9. Mather JR (1975): Climatology : Fundamentals & Applications. Mc Gray Hills Book, New York.
10. Hobbs J.E. (1980) : Applied Climatology, Butterworth, London
11. Crist Field : Principles of Climatology; Prentice Hall, London.
12. Oliver J. E. (1973) : Climate & Mans Environment, John Wiley & Sons; New York.
13. Byers R.H. : “General Meteorology “McGraw Hill BKCo New York 1974

❖ Web Resources:

1. www.wikipedia.org
2. www.encyclopedia.com
3. <http://jgesnet.com>
4. <http://www.imd.gov.in>

Name of the Program: M. A. I Geography		
Semester: II Theory	Name of the Course GMT-05: Settlement Geography	Credits: 04

Course Objectives:

1. Acquire knowledge about Rural settlements- Definition, nature, and characteristics
2. Analyze the morphology of rural settlements
3. Learn the rural house types, census categories of rural settlements, and idea of social segregation
4. Learn the census definition and categories of urban settlements

Course Outcomes:

1. Acquire clear concepts of rural and urban settlements.
2. A Greater understanding of the origin and distribution of settlements; their classifications; settlement structure and settlement hierarchy; models and theories explaining the morphology of rural and urban centers.
3. Fosters an ability to think in spatial terms, using geographic principles to understand the past as well as the present growth of settlements.
4. Inculcate a greater understanding of the man-land relationship that is crucial for sustainable development.

Practical / field work list:

Unit	Teaching and Learning points	Practical's	Marks
I	Introduction: i. Nature, scope, significance, and approaches to study Settlement Geography ii. Development of Settlement Geography iii. Theories of the evolution of settlements and Geographical factors affecting the growth of settlement distribution iv. Types of Settlement: Rural and Urban Rural-urban dichotomy and continuum	15	20
II	Rural settlement: i. Site, location, types, and pattern ii. Morphology of rural settlement iii. Rural House types: planned and architectural styles in different geographical environments iv. Types and patterns of rural settlements with reference to North East India	15	20
III	Urban Settlement: i. Origin of the cities: Ancient and Medieval ii. Industrial growth and urban expansion iii. Functional classification of urban centers: Harris and Nelson iv. Functional classification of Indian cities: Ashok Mitra and others	15	20
IV	Settlement Hierarchy and Policies: i. Rural service center ii. Central Place theory (Christaller) iii. Theory of Losch and its application iv. Issues and policies of Settlements, settlement planning	15	20
V	Morphological characteristics of rural and urban settlements with special reference to India, Concentric zone and multiple nuclei models of urban growth; problems of urban housing and the emergence of status.	-	20
Total		60	100

Reference Book

1. Bogue, D J : Principles in Demography, John Willey, New York, 1969.
2. Census of India: India-A State Profile, 1991.
3. Chandana, R C : Geography of Population, Concept, New Delhi, 2000.
4. Chisolm, : Rural Settlement and Land use.
5. Clark, John I : Population Geography, PergamonPress, Oxford, 1973.
6. Garnier, B J : Geography of Population, Longman, London, 1970.
7. Hudson, E S : Geography of Settlement
8. Jones: A Population Geography.
9. Mamoria C B : India's Population Problem, KitabMahal, New Delhi, 1981.
10. Mitra Ashok: Indi's Population: Aspects of Quality and Control, Vol. I & II, Abhinav, New Delhi, 1978.
11. Sharma, R C : settlement Geography of Indian Desert, Kumar Brothers, New Delhi, 1972.
12. Singh, R L : Meaning, Objective, Scope of Settlement Geography, B.H.U.
13. Smailes, A E : The Geography of Towns, HutchinsonUniversity Library, London, 1953.
14. Srinivasan, K : Basic Demographic Techniques and Applications, Sage, N. Delhi, 1998.
15. Sundram, K V and SudeshNangia (ed.): Population Geography, Heritage , Delhi, 1986.
16. Woods, R : Population Analysis in Geography, Longman, London, 1979.
17. Zelinsky, W: A Prologue to Population Geography, Prentice Hall, 1966.
18. Verma: AdhivasBhoogol, RajasthanHindiGranthAcademy, Jaipur.

Name of the Program: M.A. I Geography		
Semester II Theory Paper	Name of the Course GMT-06: Geographical Thoughts	Credits : 04

Course Objectives:

1. Define the geographical thoughts.
2. Describe the contribution of modern geographers.
3. Solve the paradigms and philosophy in geography.
4. Examine laws theories and models in geography.
5. Judge the major approaches in geography.
6. Assemble laws and theories in geography.

Course Outcomes:

1. Students will understand the philosophical and methodological foundations of the subject and its place in the world of knowledge.
2. Student Familiaritive with the major landmarks in development of geographic thoughts of different periods of time.

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	Introduction Historical Development Contributions: Greek, Roman, Arab, Indian, Impact of Explorations and Discoveries,	15	20
II	Founders of Modern Geographical Thought: Alexander von-Humboldt, Carl Ritter, Friedrich Ratzel, Vidal de la Blache, Richard Hartshorne,	15	15
III	A) Dualism and Dichotomies in Geography: Determinism verses Possibilism Systematic versus Regional Geography B) Conceptual and Methodological development: Paradigms and philosophy in Geography	10	15
IV	A) Measurements and explanation in Geography: Laws, theories, and models B) Areal differentiation and Spatial Organization: Structure, Pattern & Process	10	15
V	Approaches: Positivism, Humanism, Radicalism, Behavioralist Quantitative revolution in Geography	10	15
Total		60	80

❖ **Reference Books:**

1. Abler, Adams J. & Gould P. (1971): Spatial organization. The Geographer's view of the world. Prentice Hall, Englewood Cliffs, New Jersey.
2. Adhikari Sudeepa (1972): Fundamentals of Geographic Thought. Chaitanya Publishing House, Allahabad.
3. Dickinson R.E. (1969) : The makers of modern Geography. Routledge & Kegan Paul, London.
4. Dixit R.D. (1999): Development of Geographic Thought Longmans India Limited.
5. Freeman T.W. (1965): Geography As social science. Harper International Edition Harper & Row, Publishers, New York.
6. Harvey D. (1969): Explanation in Geography. London, Edward Arnold.
7. Hartshorne R. (1959): Perspective on the Nature of Geography. Rand McNally, Chicago.
8. Majid Hussain (1999): Geographic Thought. Rawat Publishing House, Jaipur.
9. Richard Peet (1977): Radical Geography - Alternative viewpoints on contemporary social issues. Methuen & Co. Ltd. London.
10. Holt Jensen, Arid: (1998) Geography: History and Concepts, Sage publication, New Delhi.

❖ **Web Resources:**

1. www.wikipedia.org
2. www.encyclopedia.com
3. <http://jgesnet.com>

Name of the Program: M.A. I Geography		
Semester: II Practical Paper	Name of the Course GMP-02- Practical	Credits: 02

Course Objectives:

1. To understand the basic units of scientific notation for conversion.
2. To familiarize the students with the weather instruments techniques of weather elements.
3. To prepare the climatic maps using different methods.
4. To identify the climatic sign and symbols, and weather reports by IMD.
5. Apply the statistical methods of trade and transport.

Course Outcomes:

1. Apply an understanding of synoptic processes and the ability to interpret a range of graphical and visual data to the explanation of weather events and forecasting.
2. To identify various sources of climate data
3. To understand the formats of Indian daily weather reports and reading of weather signs and symbols
4. To analyze present and future trends of meteorological elements.
5. To gain knowledge on transport and marketing geography
- 6.

❖ **Practical / field work list:**

Unit No.	Teaching and learning point	Practical	Mark
I	Introduction 1) Scientific notation and conversion of different units 2) Instrumentation and measurement techniques of weather elements and processing of weather data 3) Preparation of climatic maps and diagrams: wind roses, circular graph, climograph and water budget diagram	15	20
II	Climatology Practical: 1. Conventional Sing and Symbols of Weather 2. Climatic map analysis: Daily IMD weather reports 3. Preparations of Climatic maps and Diagrams- Circular Graph, Climograph, Wind rose and water budget diagram 4. Statistical analysis of climatic data	15	20
III	Interpretation of Topographical Maps : Plain, Plateaus and Mountainous regions under the following heads. 1. Physical features 2. Drainage 3. Natural Vegetation 4. Means of transport and 5. Human Settlement	15	20
IV	Techniques in Trade and Transport Geography 1. Techniques in Network Structure: Ratio Measure Alpha, Beta, Gamma, and Associate Number and Cyclometric Number 2. Break Point Theory 3. Law of Retail Trade Gravitation	15	20
V	Journal and Viva	-	20
Total		60	100

Reference Book

1. Basu, S.R. and majumder paramita (2006), lamdaslides scenario of the Darjeeling Himalayas in West Bengal, India; Geo.Rev. Ind., V.68, No.2, june 2006.
2. Bryant, M. (1974), Digital Image Processing, Chelmsford, MA, Optronics International publications'.
3. Clarke, K.C., (1990), Analytical and Computer cartography, Englewood cliffs, N.J. Practice-Hall.
4. Chorly, R. (ed) (1987), Handling Geographic Information, London.
5. Fryirs, K. A., & Brierley, G. J. (2013). Geomorphologic Analysis of River Systems, Chichester: Wiley-Blackwell.
6. King, C. A. M. (1966). Techniques in Geomorphology. London: Edward Arnold Ltd.
7. Leopold, L. B., Wolman, M. G., & Miller, J. P. (1964). Fluvial Processes in Geomorphology. San Franscisco.
8. Pijushkanti Saha and Pratha Basu (2010), Advanced Practical Geography, Arunabha Sen, Kolakata.
9. Rogerson, P. A. (2010). Statistical Methods for Geography, London: Sage Publications.
10. Strahler, A. N. (1964). Part II. Quantitative geomorphology of drainage basins and channel networks. Handbook.

Name of the Program: M.A. I Geography		
Semester: II Theory Paper	Name of the Course GET-05: Geography of Trade and Transportation	Credits: 04

Course Objectives:

1. Students will learn about the role of transport in entire economic and social processes.
2. To make students understand the locational advantage of different economic and social institutes based on transport principles.
3. To be aware of the role of public transport in addressing the problems of congestion and air pollution.
4. To understanding may help them in formulating a plan for regional development and economic regeneration through proper transport planning.

Course Outcomes:

1. Students shall learn about the significance of transport in multifaceted development.
2. Significance of various models.
3. Role of theories related to transport network.
4. About the Accessibility, connectivity, and policy interventions.
5. They will be applying the various approaches of transport in daily life

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	Introduction: Nature, scope, significance, and development of transport geography, Factors associated with the development of the transport system; economic, social, cultural, and institutional. Economic and regional development and transport development.	15	15
II	Accessibility of Transport Characteristics and relative significance of different models of transport: Railways, roads, ways, waterways, pipelines, etc. Structure- accessibility and flow models; network Structure, graph theoretic measures, measurement of accessibility,	15	20
III	Theories and Models: of spatial interaction (Edward Ullman and M. E. Hurst) Measures and Indices of connectivity and accessibility; Spatial Flow Models: Gravity Model and its variants, World Trade Organization, Globalization and Liberalization, and World Trade Patterns. Problems and Prospects of Inter and Intra Regional Cooperation and Trade.	10	15
IV	Theories related to freight route structure. Bases of spatial interaction, complementarity, Intervening opportunities and transferability. Patterns of movement: the type, patterns of Movement and transport modes. Transport network; the function, pattern of movement, Geometry and transport development.	10	15

V	Policy and Development Transport policy and planning in India. National Highways and Golden Quadrilateral, State and District Roads, Pradhan Mantri Gram Sadak Yojana, National Freight corridor, Green corridor	10	15
Grand Total		60	80

References:

1. Chorley R.J. &Hogget P.: Models in Geography Methuen & Co. London. 1967.
2. Hurst, M.E.(ed.): Transportation Geography, McGraw-Hill, 1974.
3. Hogget, F and Chorley, R.J. Network Analysis', Edward Arnold, London, 1968.
4. Hay, A.: Transport Economy, MacMillan, London, 1973.
5. Hoyle, B.S.(ed): Transport and Development, MacMillan, London, 1973.
6. Raza, M. and AgrawalY.P. : Transport Geography of India, Concept, New Delhi, 1985.
7. Robison H &Bam ford C.G.: Geography of Transport MacDonald& Evans. London 1978.
8. Toffee, E.J. & Gauthier (Jr.) H.L. Geography of Transportation, Prentice-Hall, Englewood Cliffs, N.J., 1973.
9. Ullman E.L.: American Commodity Flow University of Washington Press 1957.
10. White H.P. and Senior, M.L. Transport Geography, Longman, London, 1983.
11. Mukherjee

Name of the Program: M.A. I Geography		
Semester: II Theory Paper	Name of the Course GET-06: Geography of Health	Credits: 04

Course Objectives:

1. Critically appraise health research;
2. Describe the geographical aspect of the diffusion of disease;
3. Explain the sociocultural determinants of health in context;
4. Explain the challenges health care provision and health care planning

Course Outcomes:

1. Understand how to read health research critically
2. Describe the geographical aspects of disease diffusion.
3. Know and understand the differences between the social science of health and the biomedical model of health
4. Know and understand how the social context and other determinants affect health
5. Understand the changing global context of public health.
6. Know and understand the reasons for differences in health access and outcomes across social groups and classes.

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	Introduction: Meaning , scope, Development of geography of health; Debate in health geography and medical geography; Geographical factors affecting human health and diseases..	15	15
II	Types and classification of disease; Disease mapping; Disease diffusion. World distribution of major disease. Climate change and human health; Changes in Climate System – Heat and cold, Biological disease agents, food production and nutrition;	15	20
III	Quantitative methods, Qualitative approach and GIS in interpreting geography of health; Health care and caring; Management of health services in India.	10	15
IV	Past diseases and diseases of modern civilization; Health and diseases pattern in environmental context with special reference to India. Ecology, etiology and transmission of Cholera, Malaria, Tuberculosis, Hepatitis, Leprosy cancer and aids Diffusion of disease and the causes for the same.	10	15

V	Health care international organization WHO, UNICEF and Red cross. Health care Planning and policies in India. Primary health care, Inequalities in health care services. Programmes and policies of health care in India.	10	15
Grand Total		60	80

References:

1. Akhtar, Rais ed. (1990): Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi.
2. Akhtar, Rais and Izhar, Nilofar eds.(2010): Global Medical Geography, Rawat Publications, Jaipur.
3. Avon, Joan, L. and Jonathan, A. Patzed (2001): Ecosystem Changes and Public Health, John Hopkins University Press, Batimin.
4. Brown, Tim et al eds. (2010): A Companion to Health and Medical Geography, Wiley BlackWell, Chichester.
5. Christaler, George and Hristopoles, Deonirson (1998): Spatio – Temporal Environment Health Modeling, Kluwer Academic Press, Boston.
6. Cliff, A.D. and Peter, H. (1988): Atlas of Disease Distributions, BlackWell Publishers, Oxford.
7. Emch, Michael et al (2017): Health and Medical Geography, 4th Edition, Guilford Press, New York.
8. Gatrell, Anthony C. and Elliott, Susan J. (2015): Geography of Health – An Introduction, 3rd Edition, Wiley BlackWell, Chichester.
9. Gatrell, A and Laytosen (1998): GIS and Health, Taylor and Francis Ltd., London.
10. Harphon T. and Tanner, M., eds (1995): Urban Health in Developing Countries – Progress and Prospects, Routledge, London.
11. Meade, Melinda S. and Emch Michael (2010): Medical Geography, 3rd Edition, The Guilford Press, New York.

Name of the Program: M.A. I Geography		
Semester II Theory Paper	Name of the Course GET-07: Coastal Geomorphology	Credits: 04

Course Objectives:

1. Acquire an understanding of the dynamism of the coastal zone
2. Understand how coastal processes operate
3. Acquire an understanding of how coastal landforms develop and change
4. Gain practical skills and knowledge to quantify processes and changes in the coastal environment
5. Understand how Geomorphology can contribute to managing coastal environments

Course Outcomes:

1. To understand the coastal processes which configure the coastal zone and coastal landforms as well as coastal management issues.
2. To understand coastal processes, that act along the coastline as well as the coastal landforms which are the main result of these processes
3. Explain the formation of coastal landforms and how they can be used for coastal reconstruction
4. Explain how coastal processes and landforms are affected by climate changes and human interventions
5. Analyze coastal landforms and landscapes
6. Perform paleo-environmental reconstructions

Course contents:

Unit	Teaching / Learning Points	Periods	Marks
I	Significance of coastal geomorphology; • Classification of coasts and shore; coastal • Processes - waves in shallow and deep water, wave energy, wave-induced currents, • Tides and tidal waves; coastal materials - sand and shingle, organic reefs.	10	15
II	Coastal erosion- • Movement of materials, sorting; beach profile. • Coastal landforms: Sand dunes and sand ridges, spits, barriers, lagoons, cliffs - their origin and distribution.	10	20
III	Classification : • Classification of coasts by Johnson, Shepard, and Cotton. Submarine morphology, • Continental shelf, continental slope, submarine canyons, and oceanic ridges.	10	15

IV	Tidal landforms; • Tidal landforms; mudflats- processes and morphology. • Salt Marsh- Processes and Morphology. • Formation of estuaries and mangroves.	15	15
V	Applied coastal geomorphology; • Mechanism of sea-level changes, and eustatic movements; • Evolution of Eastern and Western Coasts of India, Coast Zone Management.	15	15
Grand Total		60	80

Reference Books:

1. Ahmad, E.: Coastal Geomorphology of India. Orient Longmans, Bombay, 1973.
2. Bose, A. et. al: Coastal Zone Management of West Bengal, Pub. Sea Explorers Institute, Calcutta, 1985. Curriculum Development Committee in Geography 113
3. Bird, E.C.: Coasts -An Introduction to Coastal Geomorphology. Basil-Blackwell, Oxford, 1984
4. Davis, J.L.: Geographical Variation in Coastal Development. Hafner Pub. Co., New York, 1973.
5. French, P.W.: Coastal and Estuarine Management, Routledge, London, 1997.
6. John, P: An Introduction to Coastal Geomorphology. Arnold- Heinemann, London, 1984.
7. King, C.A.M; Beaches & Coasts, Edward Arnold, London, 1972.
8. Scientific American : Readings in Earth Sciences, Vols I-III. Taraporevala Pub., Bombay, 1975..
9. Shepard, F.P. and Wanless, N.R.: Our Changing Coastlines. Oxford University Press, 1971.

Web Resources:

1. www.wikipedia.org
2. www.encyclopedia.com
3. <http://jgesnet.com>

Name of the Program: M.A. I Geography		
Semester II Theory Paper	Name of the Course GET- 08: Geographical Study of Natural Disaster	Credits : 04

Course Objectives:

1. Understanding foundations of hazards, disasters and associated natural/social phenomena
2. Introduce knowledge about existing global frameworks and existing agreements (e.g. Sendai)
3. Give introduce Technological innovations in Disaster Risk Reduction: Advantages and problems
4. Experience on conducting independent DM study including data search, analysis and presentation of disaster case study

Course Outcomes:

1. State the major concepts about disaster management.
2. Classify the major cyclonic regions.
3. Solve the problems of arrival cyclones.
4. Examine the major flood Disaster regions.
5. Design the Disaster warning system.

Course Contents:

Unit	Teaching / Learning Points	Periods	Marks
I	Meaning of disaster, calamity, Hazards, Major characteristics of disasters. Physical disasters. Major regions of the world of such disasters and loss of life and property.	15	15
II	Earth movement: Volcanic earthquake and Tsunami Causes and effects of Earthquake and Volcanoes Distribution of Earthquake and Volcanic region of the world	15	15
III	Hazards-cyclone, Hurricanes Tornado, Typhoons, causes for the formation of cyclones. Regions of the cyclones. Precautions before the arrival of cyclones. Effect of cyclonic hazards. Thunder storm, lightening, hail storms and cloud burst calamities.	10	15
IV	Flood disaster. Reasons and types of flood disasters. Wet draught areas. Consequences of floods. Major rivers of heavy floods, measures of flood controls.	10	20
V	Disaster warning system. Rehabilitations, Prevention, Social Response measures for disasters.	10	15
Total		60	80

Reference Books:

1. Dhara S : Natural disaster, Minimizing Risks the Hindu survey of Environment (2001)
2. Daoglas I and Spencer T : Environmental change and Tropical Geomorphology (Edited) George Allen and Unwin London (1985)
3. Embleton C: Natural Hazards and Global change, ITC Journal 1989 ¾ pp 169-175, Erickson S. L and King B. J. Fundamental of Environmental Management wiley New York (1999)
4. Gupta H. K. Dons and Earthquakes Elsevier Amsterdam (1976)
5. Press F. Need for Action Reduction copying with Natural Hazards, UNESCO (1993)
6. Sinha D. K. towards Basic of Natural disasters, University of Calcutta (1990)
7. Verstappen H. T. Geomorphology, Natural disaster and Global disaster. Proceeding of the symposium sept- 14-16 1989, Enschede Netherlands PP 159- 164.

Web Resources:

1. www.wikipedia.org
2. www.encyclopedia.com
3. <http://jgesnet.com>

Name of the Program: M.A. I Geography		
Semester: II Field Project	Name of the Course GFP- 01 : Field Project (Village Survey)	Credits: 04

➤ **Physical Survey:**

1. Location on toposheet (lat. & long),
2. Extension,
3. Grid reference if available,
4. Height above mean sea level, area,
5. Site and situation
6. Physical features surrounding the village Position of the village on the cross-section line
7. Drainage System
8. Land-use

➤ **Socio-Economic Survey:**

- Population,
- Population structure,
- Facilities available Information regarding households - based on at least 10% sample survey

➤ **Data Analysis and Mapping:**

- Primary and Secondary Data Analysis
- Preparation of Various Maps showing present status
- Prepared of Developmental Plan with Description

➤ **Report Writing:**

- Report writing Preparation of Results

Reference Book

1. Ramamurthy, K. (1982): Map interpretation, Madras
2. Dury G.H. (1960), Map Interpretation. Sir Isaac Pitman and Sons Limited, Pitman House Bath.
3. Meux A. H. (1960), Reading Topographical Maps. University of London Press Limited
4. Jones P. A. (1968), Field work in Geography. Longmans, Green and Company Limited
5. Archer J. E and Dalton T. H. (1968), Field work in Geography B.T. Batsford Limited London
6. Wheeler K.S. Ed (1970), Geography in the field. Blond Educational, London.
7. Gupta, KK & Tyagi VC (1992): Working with maps, Survey of India Publication, Dehradun
8. Vaidyanadhan. R. 1968). Index to a set of 60 topographical maps, CSIR, New Delhi