Syllabus
for
B.A. Geography

Mizoram University

Under

NEP

2023

Semester	Course	Course No.	Course Code	Category	Credit	Marks		
						Continous	End Semester	Total
I	Physical Geography	I	GEOG 100	CC	4			
	Human Geography	II	GEOG 101	CC	4			
	Minor Course				4			
	Regional Geography (MC)	III	GEOG 102	MC	3			
	Ability Enhancement Course				3			
	Value Added Course				2			
	Total				**20**			
II	Geography of India	IV	GEOG 103	CC	4			
	Environmental Geography	V	GEOG 104	CC	4			
	Minor Course				4			
	Geography of Mizoram (MC)	VI	GEOG 105	MC	3			
	Skill Enhancement Course				3			
	Value Added Course				2			
	Total				**20**			
Exit Option with UG CERTIFICATE								
III	Climatology	VII	GEOG 200	CC	4			
	Economic Geography	VIII	GEOG 201	CC	4			
	Minor Course				4			
	Geography of Tourism (MC)	IX	GEOG 202		3			
	Skill Enhancement Course				3			
	Value Added Course				2			
	Total				**20**			
IV	Geomorphology	X	GEOG 203	CC	4			
	Population and Settlement Geography	XI	GEOG 204	CC	4			
	Minor Course				4			
	Ability Enhancement Course				3			
	Skill Enhancement Course				3			
	Value Added Course				2			
	Total				**20**			
Exit Option with UG DIPLOMA								
V	Geographical Thought	XII	GEOG 300	CC	4			
	Fundamentals of RS and GIS	XIII	GEOG 301	CC	4			
	Cartographic Techniques (P)	XIV	GEOG 302	CC	4			
	Minor Course				4			
	Ability Enhancement Course				2			
	Internship				2			
	Total				**20**			
VI	Urban Geography	XV	GEOG 303		4			
	Agriculture Geography	XVI	GEOG 304		4			
	Surveying and Research Methodology	XVII	GEOG 305		4			
	Remote Sensing, GIS and Project Work	XVIII	GEOG 306		4			
	Minor Course				4			
	Total				**20**			
Exit Option with UG DEGREE								

VII	Social Geography	XIX	GEOG 400	CC	4			
	Political Geography	XX	GEOG 401	CC	4			
	Digital Remote Sensing	XXI	GEOG 402	CC	4			
	Minor Course				4			
	Minor Course				4			
	Total				**20**			
VIII	Regional Development and Planning	XXII	GEOG 403	CC	4			
	Resource Geography	XXIII	GEOG 404	CC	4			
	Geography of Health and Wellbeing	XXIV	GEOG 405	CC	4			
	Hydrology and Soil studies	XXV	GEOG 406	CC	4			
	Remote Sensing and GIS (P)	XXVI	GEOG 407	CC	4			
	Total				**20**			
Exit Option with UG DEGREE (HONOURS WITHOUT RESEARCH)								
VIII	Regional Development & Planning	XXII	GEOG 403		4			
	Remote Sensing and GIS (P)	XXVI	GEOG 407		4			
	Research Project/Dissertation	XXVII	GEOG 408		12			
	Total				**20**			
Exit Option with UG DEGREE (HONOURS WITH RESEARCH)								

SEMESTER - I
Paper – I: Physical Geography
Course No: GEOG 100
Credits: 4

UNIT-I

1. Nature and Scope of Physical Geography; Origin of the Solar System-Nebular Hypothesis of Laplace, Inter-Stellar Dust Hypothesis and Big Bang Theory.

UNIT-II

2. Earth Movement: Endogenetic Forces – Epeirogenetic and Orogenic; Plate Tectonic Theory; Continental drift Theory; Seafloor Spreading.

UNIT-III

3. Interior structure of the earth; Earthquakes; Volcanoes; Rocks and minerals: Origin and composition.

UNIT-IV

4. Surface Configuration of the Ocean Floor; Tides; Oceanic Currents – Pacific and Atlantic Oceans; Distribution of Oceanic Salinity.

Suggested Readings:

1. Mankhouse, F.J. (1960): *Principles of Physical Geography*; Hodder and Stoughton, London.
2. Strathler, A.N. and Stratler, A.H. (1992): *Modern Physical Geography*, John Wiley & Sons.
3. Thornbury, W.D. (1969): *Principles of Geomorphology*, Wiley.
4. Bryant Richard H. (2001): *Physical Geography*, Rupa & Co., New Delhi, 2001.
5. King, C.A.M. (1980): *Physical Geography*, Blackwell, Oxford.
6. Singh, Savindra (2020): *Physical Geography*, Pravalika Publications, Allahabad
7. Khullar, D.R. (2017): *Physical Geography*, Kalyani Publishers, Reset edition, New Delhi.
8. Hanwell, J. (1980): *Atmospheric Processes*, Allen and Unwin, London.

SEMESTER - I
Paper – II: Human Geography
Course No: GEOG 101
Credits:4

UNIT-I

1. Nature and Scope of Human Geography; FundamentalConcept in Human Geography: Space, Place, Landscape, Region.

UNIT-II

2. Culture and Society: Cultural Regions; Global Distribution of Race, Religion and Language.

UNIT-III

3. Human Adaptation to the Environment with Special References to the Eskimos, Bushman, Masai and Gujjars.

UNIT-IV

4. Population: Growth, Density and Distribution of Developed and Less Developed Countries; Population Composition – Age and Sex.

Suggested Readings:

1. Hussain, M. (1994): *Human Geography*, Rawat Publication, Jaipur.
2. Hagget, P. (1975): *Geography: A Modern Synthesis*, Happer & Raw, N.Y.
3. Boek, J.O.M. (1978): *A Geography of Mankind*, McGraw Hill, N.Y.
4. Rubenstein, J.M. (2002): *Cultural Landscape: Introduction to Human Geography*, Prentice Hall, New Delhi.
5. Singh, L.R. (2012): *Fundamentals of Human Geography*, Third Revised Edition, Sharda Pushtak Bhawan, Allahabad
6. Perpillon, A.V. (1986): *Human Geography*, 2nd Edition, Longman, N.Y.
7. Holt-Jensen, A. (1999): *Geography, History and Concepts: A Student's Guide*, Sage Publications.

SEMESTER - I
Paper – III: Regional Geography
Course No: GEOG 102
Credits: 3

UNIT-I

1. Asia: Physiographic Division; Climate; Population distribution.

UNIT-II

2. Europe: Physiographic Division; Climate; Population distribution.

UNIT-III

3. North America: Physiographic Division; Climate; Population distribution.

Suggested Readings:

1. Cole, J. (1996) : *A Geography of the World's Major Regions***,** Routledge, London.
2. Cole, J.P. (1975) : *Latin America – Economic and Social Geography*, Butterworth, U.S.A.
3. Dickenson, J.P. et al. (1996) : *The Geography of the Third World***,** Routledge, London.
4. Jackson, R.H. and Hudman, L.E. (1991) : *World Regional Geography* : Issues for Today, John Wiley, New York.
5. Ward, P.W. and Miller, A. (1989) : *World Regional Geography*, John Wiley, New York.
6. Clawson, D.L. (1998) : *World Regional Geography***.**
7. Minshull, G.N. (1984) : *Western Europe*, Hoddard & Stoughton, New York.
8. Hussain, M.( ) : *World Geography*, Rawat, Jaipur.

SEMESTER - II
Paper – IV: Geography of India
Course No: GEOG 103
Credits: 4

UNIT-I

1. Physical Setting: Physiographic Division, Climate, Drainage and Vegetation

UNIT-II

2. Population: Distribution, Density and Growth; Patterns of Urbanization; Internal Migration

UNIT-III

3. Economic: Mineral and Power Resources - Distribution of Iron Ore, Coal, Petroleum; Agriculture – Production and Distribution of Rice, Wheat and Tea.

UNIT-IV

4. Social: Distribution of Population by - Race, Religion, Language and Tribes.

Suggested Readings:

1. Singh, R.L. (Ed.) (1972): *India – A Regional Geography*, Varanasi.
2. Singh, Jagdish, (2003): *India: A Comprehensive Systematic Geography*, Radha, New Delhi
3. Sharma, R.C. (2004): *Geography of India*, Jawahar Pub. & Distributor, N. Delhi.
4. Pachuau, Rintluanga (2009): *Mizoram: A Study in Comprehensive Geography*, Northern Book Centre, New Delhi
5. Kumar, Girindra (2012): *Dynamics of Development and Planning: Mizoram A Comprehensive Regional Analysis*, Kalpaz Publications, Delhi
6. Singh, L.R. (2012): *Fundamentals of Human Geography*, Third Revised Edition, Sharda Pushtak Bhawan, Allahabad
7. Chandna, R.C. (2015): *Geography of Population: Concepts, Determinants and Patterns*, Kalyani Publishers, New Delhi.
9. Deshpande, C.D. (1990): *India: A Regional Interpretation*, ICSSR, New Delhi

SEMESTER - II

Paper – V: Environmental Geography

Course No: GEOG 104

Credits: 4

UNIT-I

1. Definition and Scope of Environmental Geography; Meaning and Components of Environment; Ecosystem– Concept, Components and Functions

UNIT-II

2. Energy Flow in the Ecosystem; Bio-geochemical Cycles: Hydrological Cycle, Carbon Cycle; Nitrogen Cycle

UNIT - III

3. Environmental Problems and Management – Air, Water, Forest and Biodiversity

UNIT - IV

4. Environmental Policies – Global and National; Bio-diversity Hotspots; National Parks & Wildlife Sanctuaries.

Suggested Readings:

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, ThomsonBrooks Cole, Singapore.
6. MoEF, 2006: National Environmental Policy-2006, Ministry of Environment andForests, Government of India.
7. Odum, E. P. et al, 2005: Fundamentals of Ecology, Ceneage Learning India.
8. Singh S., 1997: Environmental Geography, Prayag Pustak Bhawan. Allahabad.

SEMESTER - II

Paper – VI: Geography of Mizoram

Course No: GEOG 105

Credits: 4

UNIT – I

1. Physical Aspects: Relief, Drainage, Vegetation and Climate.

UNIT – II

2. Human Aspects: Population Growth, Density; Ethnic Groups; Urbanization.

UNIT – III

3. Economic Aspects: Occupational Structure; Agricultural Activities, Small Scale & Cottage Industries

Suggested Reading:

1. Gopalakrisnan, R. (1991) : *The North East India Land, Economy and People*, New Delhi.
2. Hrangthiauva and Lalchungnunga (1978) : *Mizo Chanchin* (History and Culture of the Mizos)(in Mizo), Aizawl.
3. Lewin, T.H. (1844) : *A Fly On The Wheel or How I Helped to Govern India*, W.H. Allen & Co.Pallmall.
4. Liangkhaia (1976) : *Mizo Chanchin* (in Mizo), Mizo Academy of Letters, Fourth Edition.Aizawl.
5. Nunthara, C. (1989) : *The Impact of Introduction of Grouping of Villages in Mizoram*, Delhi.
6. Pachuau, Rintluanga (2009) : *Mizoram : A Study in Comprehensive Geography*, Northern Book Centre., New Delhi.
7. Prasad, R.N. and A.K. Agarwal (1991) : *Political and Economic Development of Mizoram*, Mittal Publication, New Delhi.
8. Ray, A.C. (1982): *Mizoram: A Dynamic of Change*, Pearl Publishers, Culcatta.
9. Remkunga (1980) : *Mizo Pi Pute* (Life, Culture and Customs of the Mizos of the Past) (in Mizo), Aizawl.
10. Siama, V.L. (1967) : *Mizo History* (in Mizo), Aijal, 1st Edition.
11. Singh, S.N (1994) : *Mizoram : Historical, Geographical, Social, Economic, Political and Administrative*, Mittal Publications, New Delhi.
12. Kumar, G.
13. Sati, V.P.

SEMESTER - III
Paper – VII: Climatology
Course No: GEOG - 200
Credits: 4

UNIT-I

1. Meaning And Scope of Climatology; Composition and Structure of Atmosphere; Insolation; HeatBudget of The Earth

UNIT-II

2. Air Masses – Origin, Growth, Classification and Distribution; Global Wind Circulation; Tropical & Temperate Cyclones

UNIT-III

3. Mechanism of Monsoon: Classical and Modern Theories; Jet Stream, El-Nino, La-Nina and their Impact on Indian Climate.

UNIT-IV

4. Climatic Classifications- Koppen, Thornthwaite and Trewartha; Climate Change and Global Warming – Causes and Effects

Suggested Readings:

1. Critchfield, H.J. (1975): *General Climatology*, Prentice Hall, India.
2. Lal, D.S. (2012): *Climatology*, Revised Edition, Sharda Pushtak Bhawan, Allahabad.
3. Bryant Richard H. (2001): *Physical Geography*, Rupa & Co., New Delhi, 2001.
4. King, C.A.M. (1980): *Physical Geography*, Blackwell, Oxford, 1980.
5. Lockwood, J.G. (1978): *The Causes of Climate*, Edward Arnold, London, 1978.
6. Trewartha, G.T. & Horn, L.A. (1980): *An Introduction to Climate*, International Series, New Delhi.
7. Singh, Savindra (2020): *Climatology*, Pravalika Publication, Allahabad.

SEMESTER - III

Paper – VIII: Economic Geography

Course No: GEOG -201

Credits: 4

UNIT - I

1. Concept And Classification of Economic Activities; Characteristics of Developed and Developing Countries.

UNIT – II

2. Primary Activities: Subsistence and Commercial Agriculture, Forestry, Fishing and Mining.

UNIT - III

3. Secondary Activities: Manufacturing (Cotton Textile, Iron and Steel); Industrial Regions, Special Economic Zones (SEZs) and Technology Parks.

UNIT – IV

4. Factors Affecting the Location of Industry; Weber's Industrial Location Theory; Economic Globalization.

Suggested Readings:

1. Alexander J.W. (1979): *Economic Geography*, Prentice 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, Mc Graw Hill Book Company.
4. Miller, E. (1962): *Geography of Manufacturing*, Printice Hall - Englewood Cliff, New Jersey
5. Alexandersson, G. (1967). "Geography of Manufacturing, Prentice Hall, New Jersey
6. Truman, A. Harishorn, John W. Alexander (2000): *Economic Geography*, Prentice Hall of India Ltd., New Delhi

SEMESTER - III

Paper – IX: Geography of Tourism

Course No: GEOG -202

Credits: 3

UNIT - I

1. Nature and Scope of Geography of Tourism; Significance of Tourism: Physical, Social, Economic and Political; Geographical Parameters of Tourism by Robinson.

UNIT – II

2. Types of Tourism; Recent Trends in Tourism; Impact of Tourism: Economy; Environment; Society; Sustainable Tourism

UNIT – III

3. Tourism in India: Tourism Infrastructure; Case Study of Tourism in North-East India; National Tourism Policy

Reading List

1. Bhatia, A.K., Tourism Development: Principles and Practice, Sterling Publishers, Delhi, 1997
2. Boniface, BG and Cooper, C, The Geography of Travel and Tourism, Hememann, Butterworth, 12
1994
3. Burns, P.M. and Holden, A, Tourism: A New Perspective, Prentice Hall, London, 1995.
4. Burton, S., Travel Geography, Pitman, London, 1995
5. C. Michaell Hall, Tourism Planning: Policies, Processes and Relationships, Pearson Education, 2007
6. Carter, E. and Lowman, G., Ecotourism, John Wiley and Sons, New York, 1994
7. Cooper, C., Tourism: Principles and Practice, Pitman, London, 1993
8. Geoffrey, Wall and Alister, Mathieson, Tourism: Change, Impacts, Opportunities, Pearson Education, 2005
9. Kaul, R.N., Dynamics of Tourism: A Trilogy, Sterling Publishers, New Delhi, 1985
10. Page, S., Urban Tourism, Routledge and Kegan Paul, London, 1995

SEMESTER – IV
Paper –X: Geomorphology
Course No: GEOG - 203
Credits: 4

UNIT-I

1. Nature And Scope of Geomorphology; Fundamental Concepts – Uniformitarianism, Process, Climate (Based on Thornbury); Modern Trends in Geomorphology.

UNIT-II

2. Geomorphic Process: Weathering, Mass Wasting; Cycle of Erosion – Davis and Penck.

UNIT-III

3. Geomorphic Landforms: Fluvial, Glacial, Aeolian; Karst Topography.

UNIT-IV

4. Characteristics and Evolution of Hillside Slope: Down-Wasting Model of Davis, Parallel Retreat Model of Wood And King, Slope Replacement Model of Penck.

Suggested Readings:

1. Dayal, P. (1996): *A Text Book. of Geomorphology*, Shukla Book Depot, Patna.
2. Dury, G.H.(1980): *The Face of the Earth*, Penguin.
3. Earnst, W.G. (2000): *Earth Systems-Process and Issues*, Cambridge Univ. Press.
4. Kale V. & Gupta, A. (2001): *Elements of Geomorphology*, OUP, Kolkata.
5. Singh, S. (1998): *Geomorphology*, Prayag Pustakalaya, Allahabad.
6. Sparks, B.W. (1960): *Geomorphology*, Longmans.
7. Thornbury, W.D. (2002): *Principles of Geomorphology*, Second Edition, First Indian Reprint, CBS Publishers, New Delhi
8. Burchfield, B.Clark, Foster Robert, J.et al. (1980): *Physical Geology*, Charles E. Merril, Columbus.
9. Bloom, Arthur L. (1998): *Geomorphology*, Pearson Edn. (Singapore) Pte. Ltd.
10. Bryant, Richard H. (2001): *Physical Geography*, Rupa & Co., New Delhi.
11. Mitchell, C.W. (1973): *Terrain Evaluation*, Longman, London

SEMESTER – IV

Paper –XI: Population and Settlement Geography

Course No: GEOG – 204

Credits: 4

UNIT – I

1. Nature and Scope of Population Geography; Growth, Distribution and Density of World Population.

UNIT – II

2. Migration: Types and Determinants; Population Composition: Age and Sex Composition and its Determinants; Workforce and Occupational Composition.

UNIT – III

3. Theories of Population - Malthusian Theory and Marxian Theory; Demographic Transition Theory; Concept of Over-Under and Optimum Population.

UNIT – IV

4. Settlement: Types, Patterns and Morphology of Rural Settlement; Census Classification of Indian Towns-Notified Towns and Census Town; Rural-Urban Fringe; Satellite Towns.

Suggested Readings:

1. Chandna, R.C. (2000): *Geography of Population: Concepts, Determinants and Patterns*, Kalayani Publishers, New Delhi.
2. Clark, J.I. (1965): *Population Geography*, Permagon Press, New York.
3. Sundram, K.V. & Nangia Sudesh, (editors) (1986): *Population Geography*, Heritage Publishers, Delhi.
4. Peters, G.L. and Larkim, R.P. (1979): *Population Geography: Problems, Concepts and Prospects*, Kendele-Hunt Iowa.
5. GOI (2011): Census of India 2011 Series-I India Provisional Population Totals, Published by Registrar General & Census Commissioner, India.
6. GOI(1991): Census of India, 1991 India: A State Profile, Published by office of the Registrar General of India, Census Operations, New Delhi.

SEMESTER – V

Paper – XII: Geographical Thought

Course No: GEOG – 300

Credits: 4

UNIT-I

1. Geographical Thought of Greek, Roman and Arab Geographers.

UNIT-II

2. Methodological Foundations: Contributions of Kant, Varenius, Humboldt, Ritter.

UNIT-III

3. Environmental determinism, Possibilism and Neo-Determinism; Areal Differentiation.

UNIT-IV

4. Quantitative Revolution in Geography; Behavioral geography; Humanistic Geography; Radicalgeography.

Suggested Readings :

1. Hartshorne, R. (2000): Nature of Geography, A.A.G. Lancaster, Penn.(Indian Reprint)
2. Holt-Jensen, A. (1999) *Geography, History and Concepts: A Student's Guide*, Sage Publications
3. Dickinson, R.E. (1969): *The makers of Modern Geography*, Edward Arnold, London.
4. James, P.R. (1980 Ind. Ed.): *All possible World*, Sachin Pub., New Delhi.
5. Dixit, R.D. (1997): *Geographical Thought*, Prentice Hall, New Delhi.
6. Hagget, P. (1975): *Geography of Modern Synthesis*, Harper & Raw, New York.
7. Hussain, M. (2000): *Evolution of Geographical Thought*, Rawat, Jaipur.
8. Adhikari, S. (1998): *Fundamentals of Geographical Thought*, Chaitanya Pub., Allahabad.
9. Rana, Lalita (2008): *Geographical Thought: A Systematic Record of Evolution*, Concept Publishing Company, New Delhi.
10. Rana, Lalita (2008): *Geographical Thought: Classical to Contemporary*, Revised & Enlarged Edition, Concept Publishing Company, New Delhi.

SEMESTER – V

Paper – XIII: Fundamentals of Remote Sensing & GIS

System Course No: GEOG - 301

Credits: 4

UNIT-I

1. Remote Sensing: Definition and Components, Development; Remote Sensing Platforms; Sensors; Satellite Orbits

UNIT-II

2. Process of Remote Sensing: Electromagnetic Radiation and Electromagnetic Spectrum; EMR Interaction with Atmosphere and Earth Surface; Sensor Resolutions (Radiometric, Spectral, Spatial and Temporal)

UNIT-III

3. Geographical Information System: Definition, Concepts and Components; Types of data: Spatial and Non-spatial; Data Models: Raster and Vector; Geo-referencing.

UNIT-IV

4. Interpretation and Application of Remote Sensing and GIS: Basic Elements of Visual Image Interpretation; Land Use / Land Cover; Urban Sprawl Analysis; Forest Monitoring.

Suggested Reading:

1. Pratip Kumar Guha (2013): *Remote Sensing for The Beginner*, East-West Press.
2. Burrough, P.A. (1986): *Principles of Geographic Information Systems*, OUP, Oxford.
3. Campbell, J.B. (2002): *Introduction to Remote Sensing*, Guilford Press, New York
4. Chang, Kang-tsung, (2002): *Introduction to Geographic Information Systems*, Tata- McGraw-Hill, New Delhi.
5. Curran, P.J. (1985): *Principles of Remote Sensing*, Longman, London.
6. Deekshatulu, B.L. & Rajan, Y.S. (1984): *Remote Sensing*, Indian Academy of Science, Bangalore.
7. DeMers, M.N. (2000): *Fundamentals of Geographic Information Systems*, John Wiley, New York.
8. Joseph, Geogre and Jeganathan, C. (2003): *Fundamentals of Remote Sensing*, Third Edition, Universities Press, Hyderabad
9. Bhatta, Basudeb (2008): *Remote Sensing and GIS*, Second Edition, Oxford Universitiy Press
10. Reddy, M. Anji (2002): Textbook of Remote Sensing and Geographical Information Systems, Fourth Edition, BS Publications, Hyderabad.
11. Lillesand, Thomas M., Kiefer, Ralph W. and Chipman, Jonathan W. (2004) *Remote Sensing and Image Interpretation*, Fifth Edition, Wiley

SEMESTER – V

Paper –XIV: Cartographic Techniques (Practical)

Course No: GEOG 302

Credits: 4

UNIT-I

1. Meaning and Importance of Cartography; Types of Scales; Graphical Construction of Plain and Diagonal Scales.

UNIT-II

2. Contours and Profiles- Hills; Cliff; V-Shape Valley; River Meander.

UNIT-III

3. Maps-Classification and Types; Map Projections- Graphical Construction of Polar Zenithal Stereographic, Bonne's and Mercator's Projections

UNIT-IV

4. Cartograms- Dot Method; Shade Method in Relation to Relief, Interpretation of Topographical Map in Relation to Drainage, Transportation and Settlements; Slope Analysis – Wentworth's Method.

Suggested Readings:

1. Monkhouse, F.J. (1967): *Maps and Diagrams*, Methuen, London.
2. Singh, R.L. (1970): *Elements of Practical Geography*, Banaras.
3. Kanitkar, T.P. (1974): *Surveying and Levelling*, Poona Vidyarthi Griha Prakashan, Pune.
4. Misra, R.P. and Ramesh, A. (1986): *Fundamentals of Cartography*, McMillan Co., New Delhi.
5. Robinson, A.H. et al. (1995): *Elements of Cartography*, John Wiley and Sons, USA.
6. Sarkar, A. (1997): Practical Geography: A Systematic Approach, Orient Longman, Kolkata.
7. Singh, R.L. and Singh, Rana .P.B (1991): *Elements of Practical Geography*, Kalyani Publishers, New Delhi
8. Singh, L.R. (2006): *Fundamentals of Practical Geography*, Sharda Pustak Bhawan, Allahabad.

SEMESTER – VI

Paper - XV: Urban Geography

Course No: GEOG – 303

Credits: 4

UNIT-I

1. Meaning, Nature and Scope of Urban Geography; Approaches to the Study of Urban Geography; Concepts and Characteristics of Urbanization.

UNIT-II

2. Primate City Concept and Rank Size Rule; Concept of City Region and its Delimitation; Functional Classification of Urban Settlements

UNIT-III

3. Models of Urban Land Use- Concentric Zone Theory; Sector Theory, and Multiple Nuclei Theory; Central Place Theory

UNIT-IV

4. Urban Problems: Urban Poverty, Housing, Transportation and Environment.

Suggested Readings:

1. Carter, H. (1972): *The Study of Urban Geography*, Edward Arnold, London.
2. Hall T. (2006): *Urban Geography*, Taylor and Francis
3. Pacione, M. (2001): *Urban Geography: A Global Perspective*, Routledge, London.
4. Knox P. L. and Pinch S. (2006): *Urban Social Geography: An Introduction*, Prentice-Hall
5. Ramachandran R (1989): *Urbanisation and Urban Systems of India*, Oxford University Press, New Delhi
6. Ramachandran, R. (1992): *The Study of Urbanisation*, Oxford University Press, Delhi

SEMESTER - VI

Paper – XVI: Agricultural Geography

Course No: GEOG -304

Credits: 4

UNIT-I

1. Nature and Scope of Agricultural Geography; Approaches to the Study of Agricultural Geography: Environment, Economic, Ecological and Systematic Approaches; Origin and Dispersal of Agriculture.

UNIT-II

2. Determinants of Agriculture- Physical, Socio-Economic, Technological and Institutional; Whittlesey's Agricultural Systems of the World; Von Thunen Agricultural Land Use Model.

UNIT-III

3. Concepts of Agricultural Productivity and Efficiency; Agricultural Regionalisation: Agro-Climatic Regions of India, Major Agricultural Regions Of India– Characteristics and Cropping Pattern.

UNIT-IV

4. Agricultural Development in India: Green Revolution; Issues and Problems of Agricultural Development in N.E. Region – Shifting Cultivation and Plantation Agriculture; Agriculture in Mizoram – Problems and Prospects.

Suggested Readings:

8. Critchfield, H.J. (1975): *General Climatology*, Prentice Hall, India.
9. Lal, D.S. (2012): *Climatology*, Revised Edition, Sharda Pushtak Bhawan, Allahabad.
10. Bryant Richard H. (2001): *Physical Geography*, Rupa & Co., New Delhi, 2001.
11. King, C.A.M. (1980): *Physical Geography*, Blackwell, Oxford, 1980.
12. Lockwood, J.G. (1978): *The Causes of Climate*, Edward Arnold, London, 1978.
13. Trewartha, G.T. & Horn, L.A. (1980): *An Introduction to Climate*, International Series, New Delhi.
14. Singh, Savindra (2020): *Climatology*, Pravalika Publication, Allahabad.

SEMESTER - VI

Paper –XVII: Surveying and Research Methodology

Course No: GEOG – 305

Credits: 4

UNIT-I

A. Surveying (20 + 5 = 25 marks)

1. Plane Table (Intersection and Radial Methods, Plotting and Interpretation of the Surveyed Map)
2. Dumpy Level
3. Prismatic Compass Survey-Open and Closed Traverse.

UNIT-II

B. Research Methodology (15 marks)

1. Research: Meaning, Objectives, Types
2. Research process: Problem Identification; Literature Review; Objectives, Data Collection
3. Report Writing: Abstract; Synopsis; Citation Style, Reference and Bibliography; Plagiarism.

UNIT - III

C. Data Collection (10 marks)

1. Data: Nature, Types, Sources
2. Methods of Data collection: Sampling – Types and techniques; Questionnaire Design
3. Data Tabulation: Data Cleaning: Outliers, Normality (Skewness & Kurtosis).

UNIT - IV

D. Data Analysis (20 + 5 = 25 marks)

1. Measures of Central Tendency: Mean, Median, Mode
2. Measures of Dispersion: Range, Variance, Standard deviation, Coefficient of variation.
3. Measures of Association: Correlation (Pearson's & Spearman's); Simple Regression.

Suggested Readings:

1. Misra, R.P.& Ramesh, A. (1989): *Fundamental of Geography*, Concept, New Delhi.
2. Monkhouse, F.J. (1967): *Maps & Diagrams*, Methuen, London.
3. Raize, I. (1982): *Principles of Cartography*, McGraw Hill,N.Y.
4. Mahmood Aslam, (1973): *Statistical Methods in Geography*, Concept, New Delhi.
5. Alvi, Zamir(1995): *Statistical Geography*, Rawat Pub. New Delhi
6. Singh, R.L. and Singh, Rana .P.B (1991): *Elements of Practical Geography*, Kalyani Publishers, New Delhi
7. Singh, L.R. (2006): *Fundamentals of Practical Geography*, Sharda Pustak Bhawan, Allahabad.
8. Gupta, Santosh (2010): *Research Methodology and Statistical Techniques*, Deep & Deep Publication Pvt. Ltd., New Delhi
9. Khan, Md. Zufelguar Ahmad (1998): *Text Book of Practical Geography*, Concept Publishing Company, New Delhi

SEMESTER – VI

Paper – XVIII: Remote Sensing, GIS and Project Work (Practical)

Course No: GEOG - 306

Credits: 4

UNIT-I

Section-A (40 marks including practical record book (5 marks) and Viva-Voce (5 marks)

1. Two (2) exercises will be done from satellite imageries (thematic mapping and interpretation of Land Use/Land Cover and Geomorphic).

2. Three (3) exercises in GIS:

i. Toposheet Geo-referencing and Identification of point, linear and aerial features.
ii. Choropleth Mapping Techniques and
iii. Map Layouting should be done by using GIS software.

UNIT-II

Section B- Project Work (35 marks)

The candidates are expected to study Socio-economic condition or Environmental condition of any village/Town/City/Region for a period not exceeding one week and prepare a report (to be typed at A4 size, containing about 40 pages) on a theme assigned to them. The concerned department (College) must assign supervisor and the topic be decided at the end of the fifth semester to enable the student to put in the required time to complete the project report. The project report is expected to reflect some original interpretation of the theme based on field observations and collected secondary data. (For end Semester examination, the project work will carry thirty (35) marks including twenty five (25) marks for project report and ten (10) marks for viva voce.)

* Colleges are expected to procure materials, instruments and software required to perform the practical works in GIS & RS.

Suggested Readings:

1. Monkhouse, F.J. (1967): *Maps & Diagrams*, Methuen, London.
2. Bhatta , B., (2008): Remote Sensing and GIS, Oxford University Press, New Delhi.
3. Campbell, J. B., (2007): Introduction to Remote Sensing, Guildford Press
4. Hord R.M.,(1989): Digital Image Processing of Remotely Sensed Data, Academic, New York.
5. Lillesand, T. M., Kiefer R. W. and Chipman, J. W., (2004): Remote Sensing and Image Interpretation, Wiley.
6. Richards, J. A. and JiaXiuping., (2005): Remote Sensing Digital Image Analysis: An Introduction, 4th Edition, Springer, Verlag, Berlin.
7. Chang, Kang-tsung, (2002): *Introduction to Geographic Information Systems*, Tata- McGraw-Hill, New Delhi.
8. Mahmood Aslam, (1973): *Statistical Methods in Geography*, Concept, New Delhi.

SEMESTER – VII

Paper – XIX: Social Geography

Course No: GEOG - 400

Credits: 4

UNIT – I

1. Meaning, Scope of Social Geography; Society and Environment, Social Structure, Social Diversity and Plurality

UNIT – II

2. Concepts of Social Justice, Equality and Welfare; Social Indicators Movement and Territorial/Spatial Justice; Social Well-being and Quality of Life – Indicators, and measurement.

UNIT – III

3. Urban Social Space – Segregation, Gentrification and Residential Differentiation; Gender and Space - Gender disparities in Well Being; Cultural Globalization.

UNIT – IV

4. Social Categories: Caste, Class, Religion, Race and their Spatial Distribution (Indian Context); Level of Social Well-being in India.

Suggested Readings:

1. Ahmad Aijazuddin, (2006) :Social Geography,Rawat Publications, Jaipur, India.

2. Carl O. Sauer :The Morphology of Landscape, University of California Publication.

3. Eyles, John, (1979) :An Introduction to Social Geography, Oxford, OUP.

4. Harvey, David: S.,J, (1986) : Exploring Social Geography, George Allen and Unwin.

5. Jones, Emrys (ed.) (1975) :Readings in Social Geography, Oxford.

6. Jordan, Terry, G & Lester Rowntree, : The Human Mosaic: A Thematic Introduction to Cultural Geography

7. Mitchell, D, (2000) :Cultural Geography : A Critical Introduction, Blackwell Publishers.

8. Robertson, I and Richards, P.(eds.) (2003) : Studying Cultural Landscapes, Arnold, London.

9. Smith, David, M. (1979) :Where the Grass is Greener, Pelican.

10. Spencer J.E. and William L.T. Jr, (1969) :Cultural Geography, John Wily and Sons Inc. University of Hayward, USA.

11. Wagner, P.L. and M.W Mikesell, (eds.) (1962) :Reading in Cultural Geography, Chicago.

SEMESTER – VII
Paper – XX: Political Geography
Course No: GEOG - 401
Credits: 4

UNIT – I

1. Nature and Scope of Political Geography; Concept of Nation-State, Boundary and Frontier; Elements of State.

UNIT – II

2. Theories Of Political Geography: Organic State, Wallerstein World System Theory, Heartland And Rimland.

UNIT – III

3. Electoral Geography – Geography of Voting, Geographic Influences on Voting Pattern, Geography of Representation; Gerrymandering

UNIT – IV

4. Geopolitics and the Second World War; Contribution of Karl Housofer and Rudolf Kjellan;Geopolitics of Middle East; Geopolitics of South-East Asia.

Suggested Readings:

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*, Routledge .
8. Mathur H M and M. M. Cernea (eds.) *Development, Displacement and Resettlement – Focus on Asian Experienc*e, 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* (Vol.2), Frank Cass.

SEMESTER – VII

Paper – XXI: Digital Remote Sensing

Course No: GEOG - 402

Credits: 4

UNIT-I

1. Process and type of Remote Sensing: Multispectral Imaging Sensor System; Thermal Remote Sensing System; Microwave Remote Sensing System; Hyper-Spectral Remote Sensing.

UNIT-II

2. Image Processing: Pre-processing (Radiometric and Geometric Correction); Enhancement (Filtering); Image Classification (Supervised and Un-supervised).

UNIT-III

3. Data Analysis: Buffering; Overlay- Raster and Vector; Spatial Interpolation-Inverse Distance Weighted (IDW); Editing; Output.

UNIT-IV

4. Coordinate Systems: Cartesian Coordinate System, Geographic Coordinate System, Projected Coordinate System; Datum; Universal Transverse Mercator (UTM).

References:

1. Bhatta , B., (2008): Remote Sensing and GIS, Oxford University Press, New Delhi.
2. Campbell, J. B., (2007): Introduction to Remote Sensing, Guildford Press
3. Chauniyal, D., (2010): SudurSamvedana Avam Bhaugolik Suchna Pranali, Sharda Pustak Bhawan, Allahabad.
4. Hord R.M.,(1989): Digital Image Processing of Remotely Sensed Data, Academic, New York.
5. Jensen, J. R., (2005): Introductory Digital Image Processing: A Remote Sensing Perspective, Pearson Prentice-Hall.
6. Jensen, J. R.,(2007): Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall Inc, New Jersey.
7. Joseph, G.,(2005): Fundamentals of Remote Sensing, United Press India.
8. Kumar, Dilip, Singh, R.B. and Kaur, Ranjeet.,(2019): "Spatial Information Technology for Sustainable Development Goals", Springer.
9. Li, Z., Chen, J. and Batsavias, E., (2008): Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences, CRC Press, Taylor and Francis, London
10. Lillesand, T. M., Kiefer R. W. and Chipman, J. W., (2004): Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
11. Mukherjee, S. (2004): Textbook of Environmental Remote Sensing, Macmillan, Delhi.
12. Nag, P. and Kudra, M., (1998): Digital Remote Sensing, Concept, New Delhi.
13. Richards, J. A. and JiaXiuping., (2005): Remote Sensing Digital Image Analysis: An Introduction, 4th Edition, Springer, Verlag, Berlin.

SEMESTER – VIII
Paper – XXII: Regional Development and Planning
Course No: GEOG - 403
Credits: 4

UNIT – I

1. Concept of Regions, Regional Development and Planning; Concepts of Growth and Development; Types of Regions.

UNIT – II

2. Theories and Models for Regional Development: Cumulative Causation (Myrdal), Growth Pole Model (Perroux), Stages of Development (Rostow), Central Place Theory (Christaller).

UNIT – III

3. Concept and Causes of Underdevelopment; Human Development: Concept and Measurement (HDI and Human Poverty Index).

UNIT – IV

4. Regional Disparities in India and Regionalism; Parameters of Regional Development; Planning Regions of India.

Suggested Readings:

1. Chand, M., and Puri, V. K. (1983): *Regional Planning in India*, New Delhi: Allied Publishers

2. Chatopadhyay, B. & MoonisRaza (1975) Regional Development: Analytical Framework and indicators, *Indian Journal of Regional Sciences*, Vol. VII, No. 1, pp. 11-34.

3. Clark, Gordon L., Maryann P. Feldman, and Meric S. Gertler (eds.) (2000): *The Oxford Handbook of Economic Geography*, Oxford

4. Dawkins, C. J., (2003): Regional Development Theory: Conceptual Foundations, ClassicWorks and Recent development, *Journal of Planning Literature*, Vol. 18, No. 2, pp. 131-71.

5. Jayasri Ray Chaudhuri (2001): *An Introduction to development and regional planning: with special reference to India*, Orient Longman, Hyderabad

6. John Glasson (1974): *An introduction to regional planning: concept, theory and practice*, Hutchinson, London.

7. D. Chakraborty and A. Ghosh (1983): *Contributions to national and regional planning problems*, K.P.Bagchi, Calcutta

8. Patrick Abercrombie and Sydney A. Kelly (1971): *Growth poles and growth centres in urban and regional planning in India & Training programme for regional development in developing countries:an experiment in India*, Institute of development, Mysore.

SEMESTER – VIII

Paper – XXIII: Resource Geography

Course No: GEOG - 404

Credits: 4

UNIT – I

1. Nature and Scope Resource Geography; Classification of Resources: Bases and Types; Approaches to Resource Utilization: Utilitarian, Conservational, Community-Based Adaptive.

UNIT – II

2. Distribution and Production Pattern of Natural Resources: Land, Water and Forest and Basic Minerals: Iron, Coal, Petroleum, Uranium and Thorium.

UNIT – III

3. Significance of Resources: Backbone of Economic Growth and Development; Globalization and Pattern of International Trade in Mineral Resources (Oil and Natural Gas); Problems of Resource Depletion—Forest, Water, Fossil Fuels.

UNIT – IV

4. The Limit to Growth: Resource Scarcity Hypothesis; Contemporary Energy Crisis and Future Scenario; Concept of Sustainable Development; Concept of Resource Sharing.

Suggested Readings:

1. Adams, W.M., (1990): *Green Development: Environment and Sustainability in theThird World*, Routledge, London.

2. Burton, I. And Rates, R.W.: *Reading in Resource Management and Conservation.*

3. Ehrlich, P.R., Ehrlich, R.H. and G. Holdren, J.P., (1977): *Ecoscience : Population,Resources and Development*, Freeman, San Francisco.

4. Group of Experts, (1980): *Global 2000 Reports to the President*, New York, 1980.

5. Meadows, D.H. (et al.) (1974): *The Limits to Growth*, New York

6. Meadows, D.H., Meadows, D.L. and Randers, J. (1992) :*Beyond the Limits*, Earthscan Publications, London.

7. Mitchell, Bruce (1979) :*Geography and Resource Analysis*, Longman, London.

8. Mitra, A. (1999) :*Resource Studies*; ShridharPubls., Calcutta.

9. Patking, A.E. and Whitaker, U.R.: Our *Natural Resources and Their Conservation.*

10. Reid, S., (2000): *Sustainable Development*, Earthscan, London.

11. Renner, G.T., et al., (1965) :*World Economic Geography* : An Introduction to Economics.

12. Sati, V.P. (ed.) (2008): N*atural Resource and Sustainable Development in the PinderValley, Himalayas*, Bishen Singh Mahendra Pal Singh, Dehradun

13. Sati, V.P. (ed.) (2012): *Natural Resources Conservation and Food Security*, Bishen Singh Mahendra Pal Singh, Dehradun

14. Simon, J.L.(1984) : The *Resourceful Earth : A Response to Global 2000*, New York.

15. W.C.E.D. (1987) :*Our Common Future,* Oxford, New Delhi.

16. Zimmermann, E.W., (1964): *Introduction to World Resources*, Harper, New York.

SEMESTER – VIII

Paper – XXV: Geography of Health and Well-being

Course No: GEOG - 405

Credits: 4

UNIT – I

1. Geographical Perspectives on Health and Well-Being: Definition; Linkages with Environment, Development and Health; Driving Forces in Health and Environmental Trends - Population Dynamics, Urbanization, Poverty and Inequality.

UNIT – II

2. Pressure on Environmental Quality and Health: Human Activities and Environmental Pressure, Land Use and Agricultural Development; Industralisation; Transport and Energy.

UNIT – III

3. Exposure and Health Risks: Air Pollution; Household Wastes; Water; Housing; Workplace.

UNIT – IV

4. Health and Disease Pattern in Environmental Context with Special Reference to India, Types of Diseases and their Regional Pattern; Climate Change and Human Health.

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.

SEMESTER – VIII

Paper – XXV: Hydrology and Soil Studies

Course No: GEOG - 406

Credits: 4

UNIT – I

1. Hydrological Cycle; Human Impact on the Hydrological Cycle; Precipitation, Interception, Evaporation, Evapotranspiration, Infiltration, Groundwater, Run-off and Overland Flow.

UNIT – II

2. Water Balance: Input and Output; Floods and Droughts; Rain Water Harvesting; Integrated Water Resource Management.

UNIT – III

3. River Basin: Characteristics and Problems of River Basins, Basin Surface Run-Off, Measurement of River Discharge; Watershed Management; River Water Dispute; River Linkages.

UNIT – IV

4. Soil Resource: Definition, Types and Distribution, Utilisation, Problems and Management of Soil.

References:

1. Andrew. D. ward, and Stanley, Trimble., (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.
2. Fetter, C.W. (2005):Applied Hydrogeology, CBS Publishers & Distributors, New Delhi.
3. Reddy, K. Ramamohan, Venkateswara Rao,B, Sarala, C., (2014):Hydrology and Watershed Management, Allied Publishers.
4. Karanth, K.R., (1988): Ground Water: Exploration, Assessment and Development, Tata- McGraw Hill, New Delhi.
5. Lyon, J.G., (2003):GIS for Water Resource and Watershed Management, Taylor and Francis, New York. 6. Meinzer,.O.E., (1962):Hydrology, Dover Publication, New York.

SEMESTER – VIII

Paper – XXVI: Remote Sensing & GIS (P)

Course No: GEOG - 407

Credits: 4

UNIT-I

1. Global Positioning System (GPS): Basic Concepts; Principles and Applications; Segments of GPS; Errors in GPS; GPS Operations and Methods; GPS Survey and Integrated with GIS Software; Mapping with GIS Software.

UNIT-II

2. Thematic Mapping and Lay outing: Isopleth (Including Scale, Direction, Lat-Long Value, Legendary, etc., to be Generated with GIS Software).

UNIT-III

3. Raster Data Analysis: Supervised Image Classification; DEM Analysis: Contour, Absolute Relief.

UNIT-IV

4. Sources Of Data: Bhuvan-NRSC; USGS Earth Explorer; Copernicus; Bhukosh-Geological Survey of India; Google Earth; Survey of India-Nakshe Portal (Access and Download Data from Different Sources)

References:

1. Bhatta , B., (2008): Remote Sensing and GIS, Oxford University Press, New Delhi.
2. Campbell, J. B., (2007): Introduction to Remote Sensing, Guildford Press
3. Hord R.M.,(1989): Digital Image Processing of Remotely Sensed Data, Academic, New York. 5. Jensen, J. R., (2005): Introductory Digital Image Processing: A Remote Sensing Perspective, Pearson Prentice-Hall.
4. Jensen, J. R.,(2007): Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall Inc, New Jersey.
5. Joseph, G.,(2005): Fundamentals of Remote Sensing, United Press India.
6. Kumar, Dilip, Singh, R.B. and Kaur, Ranjeet.,(2019): "Spatial Information Technology for Sustainable Development Goals", Springer.
7. Li, Z., Chen, J. and Batsavias, E., (2008): Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences, CRC Press, Taylor and Francis, London
8. Lillesand, T. M., Kiefer R. W. and Chipman, J. W., (2004): Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
9. Mukherjee, S. (2004): Textbook of Environmental Remote Sensing, Macmillan, Delhi.
10. Nag, P. and Kudra, M., (1998): Digital Remote Sensing, Concept, New Delhi.
11. Richards, J. A. and JiaXiuping., (2005): Remote Sensing Digital Image Analysis: An Introduction, 4th Edition, Springer, Verlag, Berlin.