

# **Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar (Mhow), Indore (M.P.)**



## **MASTER OF ARTS**

**in**

## **GEOGRAPHY**

**SYLLABUS**

**Session: 2020-21**

**Dr. B.R. Ambedkar University of Social Sciences**  
**Dr. Ambedkar Nagar (Mhow), Indore (M.P.)**  
**SYLLABUS of M.A. – GEOGRAPHY**

<b>FIRST SEMESTER</b>		
<b>COURSE CODE</b>	<b>COURSE PAPER</b>	<b>CREDITS</b>
GEO – 511	Advanced Physical Geography	4
GEO– 512	Evaluation of Geographical Thought	4
GEO– 513	Economic Geography	4
GEO– 514	Population and Settlement Geography	4
GEO – 515	Practical	4
<b>SECOND SEMESTER</b>		
<b>COURSE CODE</b>	<b>COURSE PAPER</b>	<b>CREDITS</b>
GEO– 521	Climatology	4
GEO– 522	Regional Geography of India: With Special Reference to Madhya Pradesh	4
GEO– 523	Regional Planning and Development	4
GEO – 524	Environmental Geography	4
GEO – 525	Practical	4
<b>THIRD SEMESTER</b>		
<b>COURSE CODE</b>	<b>COURSE PAPER</b>	<b>CREDITS</b>
GEO – 531	Urban Geography	4
GEO - 532	Industrial Geography	4
GEO – 533	Bio Geography	4
GEO – 534	Agricultural Geography	4
GEO – 535	Practical	4
<b>FOURTH SEMESTER</b>		
<b>COURSE CODE</b>	<b>COURSE PAPER</b>	<b>CREDITS</b>
GEO – 541	Political Geography	4
GEO – 542	Cultural Geography	4
GEO – 543	(A) Contemporary Issues in Geography	4
(Select any one)	(B) Research and Quantitative Techniques in Geography	4
GEO – 544	Practical	4
GEO – 545	Dissertation*	18

\*Dissertation is mandatory.

**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**First Semester**

**GEO-511: Advanced Physical Geography**

**4**

**Unit-I :** Geomorphology: Fundamental concepts; Factors controlling landform development; Endogenetic and Exogenetic forces; Denudation process: Weathering and Erosion. Geosynclines; Mountain Building; Continental Drift and Plate Tectonics.

**Unit-II:** Concept of Geomorphic Cycle; Landforms associated with fluvial, glacial, arid, coastal and Karst Topography. Slope-forms and processes; Environmental and Applied Geomorphology.

**Unit-III:** Climatology: Composition and Structure of the Atmosphere; Isolation; Heat budget of the earth; Distribution of temperature; Atmospheric pressure and general circulation of winds; Monsoons and jet streams.

**Unit-IV:** Stability and instability of the atmosphere; Air-masses; Fronts; Temperate and Tropical cyclones; Types and distribution of precipitation; Classification of world climates: Kopen's and Thornthwaite's schemes; Hydrological Cycle; Climate change and Global warming.

**Unit-V:** Oceanography: Origin of ocean basins; Ocean Bottom relief of Indian, Atlantic and Pacific Oceans; Ocean deposits; Coral reefs; Temperature and Salinity of the Oceans; Density of sea water; Tides and ocean currents; Sea – level changes; Ocean's Mineral wealth.

**Books Recommended:**

1. Khan, M.Z.A.&Gangawala Sonal: Global Climate Change, Rawat Publications, Jaipur, 2011.
2. Singh, S.: Geomorphology, Prayag Publication, Allahabad, 1998.
3. Sharma, H.S. (Ed.) :Perceptives in Geomorphology, Concept Publishers, New Delhi.
4. सविन्द्र सिंह : भू-आकृति विज्ञान, वसुन्धरा प्रकाशन, गोरखपुर।
5. कौशिक, एस.डी. : भू-आकृति विज्ञान, रस्तोगी प्रकाशन, मेरठ।

6. नेगी, एस.डी., : भू-आकृति विज्ञान, रस्तोगी प्रकाशन, मेरठ।
7. Barry, R.G. & Chorley, P.J. : Atmosphere, Weather and Climate, Routledge, London and NewYork, 1998.
8. Crichfield, J.H. : General Climatology, Prentice Hall, India, New Delhi, 1993.
9. Das, P.K. : Monsoons, National Book Trust, New Delhi, 1987.
10. Lal, D.S. : Climatology, Chaitanya Publications, Allahabad, 1986.
11. Robinson, P.J. & Henderson, S. : Contemporary Climatology, Henlow, 1999.
12. Thompson, R.D. & Perry, A. (Ed.) : Applied Climatology – Principles and Practice, Routledge , London, 1997.
13. Khan, M.Z.A. & Gangwala Sonal: Global Climate Change, Rawat publications, Jaipur, 2011.
14. Davis, Richard J.A. : Oceanography : An Introduction to the Marine Environment, Wm. C.Crown Iowa, 1996.
15. Garrison, T. : Oceanography – An Introduction to Marine Science, Books/Cole Pacific Grove, USA, 2001.

**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**First Semester**

**GEO-512: Evolution of Geographical Thought 4**

**Unit-I :** Definitions, scope, nature and purpose of Geography (including concepts) and its relation with other social sciences. Post War trends, Inter-disciplinary Trends, Recent trends in Geography. Development of Geography in India.

**Unit-II:** Pre-Scientific Geographical ideas in Ancient and Medieval times: Indian influences. Geography of the Vedic Age and Geography of the Purana's (First four chapters of Geography of Purana's by S.M. Ali).

**Unit-III:** Contribution by Greek, Roman and Arab Geographers (Al-Baruni and Ibn-I-Batuta). The Emergence of scientific Geography in the 18th and 19th centuries.

**Unit-IV:**

Founders of modern Geography-Humboldt, Ritter, Leaders of the first generation after Ratzel, Richthofen, Hettner, Contribution of Vidal-de-la-Blache and Brunhes.

**Unit-V:** Dichotomies in Geography: Physical and Human Geography, Determinism and Possibilism, Regional and Systematic Geography, Qualitative and Quantitative Geography. Theoretical and Applied Geography, Analytical and Synthetical Geography, Positivism, Functionalism, Idealism and Realism in Geography.

**Books Recommended:**

1. Dikshit, R.D.: Geographical Thought A Contextual History of Ideas, Prentice Hall of India Pvt. Ltd.
2. Wooldridge & East: The Spirit and Purpose of Geography, Hutchinson University Library, London.
3. Dikshit, R.D.: The Arts Science of Geography Integrated Readings. Prentice Hall of India, New Delhi, 1994.
4. Saxena, D.P.: Regional Geography of Vedic India, GranthanRambag, Kanpur.
5. Harvey & Holly: Themes in Geographic Thought, Rawat Publications, Jaipur.

6. Husain, Majid: Evolution of Geographical Thought, Rawat Publications, Jaipur.
7. Haggett, P. – Geography: A Modern Synthesis, Harper International Ed.
8. हुसैन, माजिद : भौगोलिक विचारधाराओं का इतिहास, रावत पब्लिकेशन्स, जयपुर।
9. कौशिक, एस.डी. : भौगोलिक विचारधारायें एवं विधि तंत्र।
10. जैन, एस.एम. : भौगोलिक चिन्तन व विधि तंत्र, साहित्य भवन, आगरा।

**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**First Semester**

**GEO-513: Economic Geography**

**4**

**Unit-I :** Nature, Scope and Methods of Economic Geography, Concept of Economy, Simple model of economy, Impact of modern economy on environment. Spatial structure of economy.

**Unit-II:** Types of Agriculture – Subsistence agriculture, Tropical plantation, Mediterranean agriculture, Mixed farming, Stock raising and its products.

Energy Resources of the world – Coal, Petroleum, Hydroelectricity and Atomic power.

Energy Crisis, Non-conventional Sources of Energy.

**Unit-III:** Locational analysis and spatial distribution of Iron and Steel, Cotton textile, Chemical, Paper and pulp industries. Development of marketing systems in the world and WTO.

**Unit-IV:** Location and interaction in a simplified economic landscape. Spatial variation in transport cost. Spatial variation in production cost. Demand scale and agglomeration.

**Unit-V:** Decision making process – a behavioral approach. Concept of economic region-formation and types. Economic regions of World and World Trade Route India.

**Books Recommended:**

1. Lloyd & Dicken : Location in Space: Theoretical Approach to Economic Geography.
2. Mc-Cart & Lindeberg : A Preface to Economic Geography.
3. Smith, D.E. : Industrial Location – An Economic Geographical Analysis.
4. Hodder & Lee : Economic Geography.
5. Berry Conkling & Ray : The Geography of Economic Systems, Prentice Hall.
6. Smith, J.C. & Philip, M.O. : Industrial and Commercial Geography, Henry Halt.
7. Bengston, N.A. & Royen M.V. : Fundamentals of Economic Geography, Prentice Hall, NewYork.
8. Alexander, J.W. : Economic Geography, Prentice Hall, New York.
9. Guha & Chatterjee : A New Approach to Economic Geography.

10. Renner, T.H. & Other : World Economic Geography.
11. Robinson, H. : Economic Geography, M.Sc. Donald, London.
12. Thoman, R.S. : The Geography of Economic Activity, McGraw Hill, New York.
13. Zimmerman E.W. : World Resources and Industries, Harper and Co., New York.
14. Robertson, D. (Ed.) : Globalization and Environment, E. Elgan Co., U.K., 2001.
15. Wheeler, J.O. : Economic Geography, John Willey, New York, 1995.
16. Dreze, J. & Sen, A. : India – Economic Development and Social Opportunity, Oxford University Press, New Delhi, 1996.
17. काशीनाथ सिंह, जगदीश सिंह : आर्थिक भूगोल के मूल तत्व, वसुन्धरा, गोरखपुर।
18. पुरुषोत्तम जैन : आर्थिक भूगोल, रस्तोगी प्रकाशन, मेरठ।
19. सक्सेना, अग्रवाल एवं सक्सेना : आर्थिक भूगोल, राजस्थान हिन्दी ग्रंथ अकादमी, जयपुर-2010 ।



**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**First Semester**

**GEO-514: Population and Settlement Geography** **4**

**Unit-I :** Definition and scope of Population Geography. Theory and Biological Population Geography - Malthusian, Neo- Malthusian and Optimum Population. Theory and Biological Population Census with special reference to the Indian Census. Growth, Density and Distribution of Population in the world with special reference to India.

**Unit-II:** Age and Sex Composition, Economic and religious Composition of Population with special reference to India, Rural and Urban Population and Urbanization, Internal and International Migration, Behavioral Migration Studies. The Population Policy of India.

**Unit-III:** Definition, Scope and Development of Settlement Geography. Approaches to Study of Settlement Geography, Theories of Settlement Geography. Causes of Origin of Settlement Types. Processes of settlement formation, Agglomeration.

**Unit-IV:** Site and situation of Rural and Urban settlements, Settlement pattern, Size and spacing of Rural and Urban settlements, Morphological characteristics of Rural and Urban settlements with special reference to India Sector.

**Unit-V:** Settlement Models : Concentric zone and Settlement Models, multiple Nuclei Models of Urban growth. Model of settlement diffusion. Problems of Urban housing and emergence of status.

**Books Recommended:**

1. Clarks : Population Geography
2. Jones : A Population Geography
3. Trewartha : A Geography of Population
4. Woods : Population Analysis in Geography
5. Beaujeu Garnier : Geography of Population
6. Zelinsky : A Prologue to Population Geography

7. Wilson : Population Geography
8. Chandra : Population Geography
9. Hudson, E.S. : Geography of Settlement
10. Davis : The Population of India and Pakistan
11. A.E. Smailes : The Geography of Towns, Hutchinson University Library, London
12. Singh , R.L. : Meaning, Objectives, Scope of Settlement Geography, B.H.U.
13. Chisholm : Rural Settlement and land Use.
14. Sharma B.L. : Population and Settlement Geography, Malik and Co., Jaipur
15. वर्मा, एल.एन. : अधिवास भूगोल, राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर।

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**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**First Semester**

**GEO-515: PRACTICAL**

**4**

**Unit-I :** The Art and Science of Cartography, History of Maps, Materials, Techniques and Preparation of Maps.

**Unit-II:** Enlargement, Reduction and finding Area of Maps. Use of Planimeter.

**Unit-III:** Interpretation of Weather Maps and Weather Forecast.

**Unit-IV: Map Projection and their classification –**

Construction and characteristics of projections (Mathematical constructions)

(I) Conical Projections:(a) Equal Area with one Standard Parallel (Lambert's Projection)(b) Equal Area with two Standard Parallel (Albert's Projection)(c) Bonne's(d) Polyconic(e) International(II) Cylindrical Projections:(a) Cylindrical Equal Area(b) Mercator's(c) Gall's stereographic(III) Zenithal Projection's(a) Gnomonic 1. Polar Case 2. Eq-case(b) Stereographic 1. Polar Case 2. Eq-case(c) Orthographic 1. Polar Case 2. Eq-case(d) Equal Area 1. Polar Case 2. Eq-case(e) Equidistant 1. Polar Case 2. Eq-case(IV) Conventional Projections:(a) Sinusoidal (b) Mollweide(c) Interrupted Mollweide and Godde's(d) Interrupt SansonFlamsteed (Homelosine)Choice of Projections: Projections used for maps produced in India.

**Unit-V:Geographical Maps/Diagrams:**

(i)Computation of data, preparation of frequency tables, representation of histograms and Ogives. Finding Skewness, computation of Mean. Median and Mode. Deviations: Standard Deviation and Mean Deviation. Correlation. Theoretical Basis of Nearest Neighbour Analysis- Practical exercise onnearest Neighbour Analysis. Network Analysis. Locational Analysis of urban centers. Coefficient ofVariation. (All these be computed from the Statistical Data, preferably based on District or Tehsilunit areas)

(ii) The following types of maps and diagrams be prepared.One exercise on each of the following and their interpretations-Isopleths, Choropleth, Chorochromatic, Isochrones and Population Potential Surface maps. Population Pyramid, Sten-de-Geersand Stilgen-Baurs-Method. Three

dimensional diagrams of economic and social data, Block Pile, Sphere, Pyramid, Graphs, Polygraph, Semilog and log-graphs, Trilinear chart, Circular graph, Climatograph, Hythergraph, Taylor's/Foster's Climograph, annual water deficiency and water surplus graph.

**Books Recommended:**

1. Robinson, A.H. et al – Elements of Geography, John Willey and Sons, U.S.A. 1995.
2. Sarkar, A.K. – Practical Geography – A Systematic Approach, Oriental Longman, Calcutta, 1997.
3. Khan, Z.A. – Text Book of Practical Geography, Concept, New Delhi, 1998.
4. Monkhouse, E.J. & Wilkinson, H.R. – Maps and Diagrams, Methuen, London, 1994.
5. Singh, R.L. – Elements of Practical Geography, Kalyani Pub., New Delhi.
6. Steer, J.A. – Map Projections; University of London Press, London.
7. Lawrence, G.R.P. - Cartographic Methods, London, 1971.
8. Dickinson, G.C. – Statistical Mapping of Statistics, London.
9. जे.पी. शर्मा—प्रयोगात्मक भूगोल, रस्तोगी, मेरठ।

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**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Second Semester**

**GEO-521: Climatology**

**4**

**Unit-I :** Solar Source Insolation: Compositional and thermal structure of the atmosphere, Electromagnetic Radiation Inversion of Temperature. Heat balance of the earth, greenhouse effect and global warming, vertical and horizontal distribution of temperature.

**Unit-II:** Atmospheric motion: Forces controlling motion of air, vertical motion and vorticity , local winds, jet stream, general circulation in the atmosphere; Atmospheric moisture: humidity, evaporation, condensation, precipitation: formation, types, acid rain, world pattern of precipitation.

**Unit-III:** Tropical, temperate and high latitude weather systems- concept of air masses and atmospheric disturbances, ocean atmospheric interaction- El Nino, southern oscillation (ENSO) and La Nina, monsoon winds, norwesters and cyclones, Tropical and Temperate phenomena, climate of India and its controls: Western disturbances.

**Unit-IV:** Climatic classification of Koppen, Thornthwaite and Trewartha Major climates of the world-tropical, temperate, desert and mountain climate.

**Unit-V:** Climatic Changes: Ozone Depletion; Global Warming: Strengthening of Greenhouse effect; Evidences and Possible causes of global warming; Environmental impacts of global warming and society's response.

**Suggested Readings**

1. Barry, R.G. and Chorley, P.J., *Atmosphere, Weather and Climate*, Routledge, London and New York, 1998.
2. Critchfield, J.H.: *General Climatology*, Prentice Hall, India, New Delhi, 1993.
3. Das, P.K.: *Monsoons*, National Book Trust, New Delhi, 1987.
4. Fein, J.S. and Stephens, P.N.: *Monsoons*, Wiley Inter-science, 1987.

5. India Met, Deptt.: *Climatological Tables of Observatories in India*, govt. of India, 1968.
6. Lal. D.S.: *Climatology*, Chaitanya Publications, Allahabad, 1986.
7. Lydolph, P.E.: *The Climate of the Earth*, Rowman, 1985.
8. Menon, P.A.: *Our Weather*, N.B.T., New Delhi, 1989.
9. Oliver, J.E. and John J. Hidore. 2002. *Climatology- An Atmospheric Science* (2nd Ed.) PearsonEducation (Low Price Edition).
10. Peterson, S.: *Introduction to Meteorology*, McGraw Hill Book, London, 1969.
11. Robinson, P.J. and Henderson S.: *Contemporary Climatology*, Henow, 1999.
12. Thompson, R.D. and Perry, A (ed.): *Applied Climatology, Principles and Practice*, Rourtledge, London 1997.

**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Second Semester**

**GEO-522: Regional Geography of India: With Special Reference to Madhya Pradesh 4**

**Unit-I :** Physiographic and Drainage systems. Soils, Vegetation, Origin and Mechanism of Indian Monsoon. Schemes of Natural Physiographic and Climate Classifications. Identification of Drought and Flood Prone Areas.

**Unit-II :** Tribal areas and their problems, Population Growth, Distribution, Density, Sex Ratio and Literacy, Population problems and policies. Urbanization in India.

**Unit-III :** Resources: conservation and utilization of land, mineral, water, biotic and marine resources. Agricultural land use pattern, Green revolution and its impact on Indian Agriculture. Agriculture infrastructure - Irrigation, Fertilizers and Seeds, Dry zone Agriculture. Agro-Climatic Regions of India.

**Unit-IV :** Industry - factors of localization, classification and detailed study of the following - Iron and Steel, Cement, Fertilizer, Paper and Pulp and Sugar Industries. Study of the Network of Road, Railways, Airways and Water ways. Regional disparities in development in India.

**Unit-V :** Geographical study of Madhya Pradesh under the following heads: Relief, Climate, Vegetation, Soils, Agricultural development, Irrigation, Mineral and Power resources, Industrial development, detailed study of the following regions -

1. Narmada and Tapti Basin
2. Bundelkhand Region
3. Satpuda and Vindhya range
4. Malwa Plateau

**Books Recommended:**

1. Govt. of India: Five Year Plans of India.
2. Sharma & Coutinho: Economic and Commercial Geography of India, Vikas, Delhi.
3. Singh, R.L.: India: A Regional Geography, N.G.S.I., Varanasi, 1971.
4. Galyna & Sen Gupta: Economic Regions and Regionalisation in India, 1968.
5. Choudhary, M.R.: Indian Industries: Development and Location.

6. Spate, O.H.K.: India and Pakistan, Methuen & Co., London.
7. Krishna, M.S.: Geology of India and Burma, Law Journal Office, Madras.
8. Kumar, L.S.S. & Others: Agriculture in India, Vol. 1 & II, Asia Publishing House,
  1. Bombay
9. Indian Year Book, Latest Edition: Publication Division, Delhi.
10. Chatterji, S.B. : Climatology of India, Calcutta University, Calcutta.
11. Sharma, T.R. : Location of Industries of India, Hindi Kitab, Bombay.
12. Gazetteers of India : Publication Division, New Delhi.
13. S.P. Roy Choudhary : Land and Soil, National Book Trust, New Delhi.
14. Sinha : A Treaties on Industrial Minerals.



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**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Second Semester**

**GEO-523: Regional Planning and Development 4**

**Unit-I :**Regional concept in Geography, Conceptual and theoretical framework, merits and limitations for application to regional planning and development; changing concept of the region from an interdisciplinary view-point.

**Unit-II :** Concept of space, area and locational attributes. Approaches to delineation of different types of regions and their utility in planning. Planning process - sectoral, temporal and spatial dimensions;

**Unit-III :** Indicators of development and disparities - case study of India. Regional development strategies - concentration v/s dispersal, case studies for plans of developed and developing countries.

**Unit-IV :** Short- term and long-term planning in a national context. Regional plans of India  
Regional development in India - problems and prospects.

**Unit-V :** Concept of Multi-level planning: Decentralized planning; Peoples participation in the planning process; Panchayati Raj system. Role and relationship of Panchayati Raj institutions (Village Panchayat, Panchayat Samiti and Zila Parishad) and administrative structure (Village, Block and District).

**Books Recommended:**

1. Bhat, L.S. : Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
2. Bhat, L.S. : Micro-Level Planning : A Case Study of Karnal Area, Haryana, K.B. Publications, New Delhi, 1976.
3. Gosal, G.S. & Krishan, G.: Regional Disparities in Levels of Socio-Economic Development in Punjab, Vishal Publications, Kurukshetra, 1984.
4. Govt. of India, Planning Commission - Third Five Year Plan, Chapter on Regional Imbalances in Development, New Delhi, 1961.

5. Indian Council of Social Science Research - Survey of Research in Geography, PopularPrakashan, Bombay, 1972.
6. Kundu, A. &Raza,Moonis: Indian Economy - The Regional Dimension, SpectrumPublishers, New Delhi, 1982.
7. Misra, R.P. : Regional Planning Concepts, Techniques and Policies,University of Mysore, Mysore, 1969.
8. Misra, R.P. & Others (eds.): Regional Development Planning in India - A Strategy, Instituteof Development Studies, Mysore 1974.
9. Mitra,A. : Levels of Regional Development, Census of India, Vol.I,Part1A (I) and (II), New Delhi, 1965.
10. Nangia, Sudesh : Delhi Metrololitan Region, Rajesh Publication, Delhi, 1976.
11. Sundaram, K.V. (ed.): Geography and Planning, Essays in Honour of V.L.S. PrakasaRao, Concept Publishing Co., New Delhi, 1985.
12. TarlokSingh : India's Development Experience, McMillan, New Delhi, India,1974.
13. Raza Moonis (ed.) : Regional Development, Heritage Publishers, Delhi 1988.
14. Mishra, R.P. et.al: Multi - Level Planning, Heritage Publishers, Delhi, 1980.

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**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Second Semester**

**GEO-524: Environmental Geography**

**4**

**Unit-I** :Concept of environment and ecology, Nature and scope of the Geography of environment.Eco-system-definition and elements, energy flow in eco-system.

**Unit-II** : Productivity in eco-system. Eco-cycles. Types of eco-system. Man-environment relationships,perception of environment and its quality. Degradation of Environment, Development vis-à-vis ecological crisis. Global Environmental Issues: Climate Change - Ozone depletion, Green House Effectand Global Warming, Desertification, Biodiversity, Eutrophication.

**Unit-III** : Environmental Pollution – Water, Air, Noise, Soil and Radio-activity, causes, impact andmeasures of control with Indian examples. Population, Resources and Ecological crisis.

**Unit-IV** : Environment and quality of life. Environmental Management–Approaches, Management of forest, soil, wildlife, energy and mineral resources, Disasters & their management. Environmental Impact Assessment. Conservation of natural resources.

**Unit-V** : Sustainable development. Environmental policies and programmes (international and national).Environmental problems, planning and legislation in India.

**Books Recommended:**

1. Batel, B. (Ed.) – Management of Environment, Wiby Eastern Ltd., New Delhi, 1980.
2. Desh Bandhu (Ed.) – Environmental Management, Indian Environment, Society, New Delhi.
3. Singh & Singh (Ed.) – Geography of Environment, Concept, New Delhi.
4. Saxena, H.M. – Environmental Geography, Rawat Pub., Jaipur, 2005.
5. Savinder Singh – Geography of Environment, Allahabad.
6. Gupta & Gurjar - Sustainable Development, Rawat Pub., Jaipur.

7. Khan, M.Z.A. & Gangwala Sonal : Global Climate Change, Rawat Publications, Jaipur, 2011.
8. Strahler, A.N. – Geography and Man's Environment, John, Willey.
9. Khan, M.Z.A. & S.K. Agarwal – Environmental Geography, APH Publishing House, New Delhi, 2004.
10. Sharma B.L. & Puja Puar : Global Environmental Challenges, Rohini Books, Jaipur.
11. Saxena H.M. & M.Z.A. Khan: Urbanization, Environmental Degradation and Quality of Life,  
1. Rawat Publications, Jaipur, 2016.
12. Centre for Science – The State of Indian Environment: A Citizen's Report 1982, Environment1985, New Delhi.
13. सविन्द्र सिंह –पर्यावरण भूगोल, इलाहाबाद ।
14. वी.के. श्रीवास्तव : पर्यावरणीय भूगोल एवं पारिस्थितिकी विकास, वसुन्धरा, गोरखपुर।
15. एच.एम. सक्सेना–पर्यावरण एवं परिस्थितिकी भूगोल, राज. हिन्दी ग्रन्थ अकादमी, जयपुर।

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**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Second Semester**

**GEO-525: PRACTICAL**

**4**

**Unit-I :** The Art of surveying, History of surveying, scope, utility and problems. Classification of Surveying.

**Unit-II :** Methods and techniques of representation of relief :(a) Methods and techniques of depicting relief.(b) Profile, gradients and calculation of slopes.(c) Contours and intervisibility.(d) Block diagrams, field sketching, serial profile, hypsographic curves, altimetric frequency graphs.

**Unit-III :** Interpretation of Topographical Maps: A brief history of topographical Maps of the world with special reference to India and the interpretation. Detailed study of Toposheets.

**Unit-IV :** Air photo Interpretation and exercise on the determination of height of plane, parallax, number of runs and number of photographs, knowledge of stereoscopic vision, mosaic, types of cameras, emulsions and stereoscopes, Interpretation and identification of cultural and physical features on aerial photography. Importance of Remote Sensing and GIS in Geographical Studies.

**Unit-V :** Field Surveying and Camp Work:(i) Theodolite: its parts and their functions, use of theodolite, theodolite traverse and traverse computation, independent coordinates.(ii) Use and application of plane table and clinometer in small area survey, traverse, Resectioning: Two and Three -point problems, practical contouring by Clinometer.(iii) Levelling: Terms, types and principles of levelling, Classification of levelling, Profiles and other levelling. Use of Dumpy level, practical contouring, Cross sectioning, use and application of Abney level.

**Survey Camp -** A topographical survey of settlement will be done by organizing a camp at least for a week duration and maps, reports of the camp will be prepared, students will stay at camp. The report shall be prepared separately and independently.

***Books Recommended:***

1. Kanetkar, T.P. & Kukarni, S.V. - Surveying and Levelling, Vol., A.V. Gria Prakash, Puna.
2. Deshpande, T.S. - A Text Book of Surveying and Levelling, United Book Corporation, Pune.
3. James Glending - Principle and Use of Surveying, Blackie and Sons Ltd., Glasgo.
4. B.C. Punamia - Surveying and Field Work, Vol.1, Standard Books Depot, Delhi.
5. Breed, C.B. & Honmer, G.L. - The Principle of Surveying, Vol I and II, New York
6. Davis, R.E. & Foot, F.S. - Surveying, Theory and Practice, John Willey & Sons Inc.
7. T.R. Tracy - Surveying, Theory and Practice, McGraw Hill Book Co., New York.
8. Thrifall, H.S.A. - Text Book of Surveying and Levelling, Chart Grafim, London
9. Williamson - Surveying and Field Work, Constable.
10. Roorkee - Engineering College - Manual of Surveying.
11. N.C. Gautam - Urban Land Use Studies Through Air Photo Interpretation Techniques, Pink Publishing House, Mathura.

**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Third Semester**

**GEO-531: Urban Geography**

**4**

**Unit-I :** Aims and scope of Urban Geography, Place of Urban Geography in the context of Geography. Factors affecting the growth of towns during Neolithic period, Greek and Roman period, Dark Ages, Medieval period, Renaissance period, Industrial Revolution and Modern times. Chief characteristics of the towns of each period, History of the Development of Urban Geography.

**Unit-II :** Trends of urbanization in the world. Urbanization in India since 1901 and its problems. Definitions of Urban centers. Chief characteristics of modern town, City Conurbation, Metropolis and Megalopolis.

**Unit-III :** Spatial pattern and distribution of urban centers. Classification of cities. Urban Rank - Size relationship. The Basic and Non-Basic concept of urban economic functions and its application.

**Unit-IV :** Urban Morphology, Morphology of Indian cities, Market Morphology. Functional structure of towns-C.B.D., Residential areas, manufacturing areas and other functional areas. Models of urban structure. Central Place Theory.

**Unit-V :** Centrifugal and Centripetal forces in Urban Geography, Development of suburbs, Rural-urban fringe, Satellite town, ring towns, Sphere of urban influence (Umland) and its delimitation. Principles of Town Planning -Preparation of a Master Plan with example. Principles of Regional Planning, Study of townscapes in India with special reference to (a) Hill Resort Towns, (b) Cantonment Towns, (c) Walled Towns.

**Books Recommended:**

1. Singh, R.L. : Banaras : A Study in Urban Geography, Students Friends, Allahabad.
2. Harold M. Mayer : Readings in Urban Geography, Central Book Depot., Allahabad.
3. V.L.S. Prakash Rao : Towns of Mysore State, Statistical Publishing House, Calcutta.

4. Shah Manzoor Alam : Hyderabad and Secundrabad Twin City : Studies in Urban Geography, Allied Publishers, Delhi.
5. R.L. Singh : Bangalore: An Urban Survey, National Geographical Society of India, B.H.U., Varanasi.
6. N.V. Sovani : Urbanization and Urban India, Asia Publishing House, Bombay.
7. Ambedkar : Town and Country Planning.
8. Turner, R. : India's of Urban Future, Oxford University Press, Bombay, 1962.
9. Carter : The Study of Urban Geography, Edward Arnold, London, 1972.
10. Northan, R.C. : Urban Geography, John Willey & Sons, N.Y., 1976.
11. Saxena H.M. & : Urbanization, Environmental Degradation and Quality of Life,M.Z.A. Khan Rawat Publication, Jaipur, 2016.
12. ओमप्रकाश सिंह : नगरीय भूगोल ।
13. बंसल, एस.सी. : नगरीय भूगोल ।



**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Third Semester**

**GEO-532: Industrial Geography**

**4**

**Unit-I :**Location factors in manufacturing, concept of optimum location. The Least Cost School and the Transport Cost School. The Market Areas School. The Marginal Location School. The Behavioral School.

**Unit-II :**The Reduction of weight of Materials. The Copper Industry. The Aluminum industry. The Pulp and paper industry. The Cement Industry. New Trends in Industrial Geography. Testing Location Theory, Empirical Studies. Significance of Enterprise and Firm.

**Unit-III :**Important Industrial regions of the World: select one each of U.S.A. and Federation of Independent states - Japan, Britain and West Europe. Important Industrial Regions of India. The Changing character of geographical concentration and impact of technological change, changing character of Industrial regions. Formation of Industrial Regions.

**Unit-IV :**Study of the following regions - 1. The Hooghly side Industrial Regions. 2. The Damodar Valley Industrial Region3. The Ruhr Basin Industrial Region 4. The Great Lakes Industrial Region.

**Unit-V :**Influence of power and Geographical Inertia in Manufacturing Industries. The Textile Industry. Multi-locational Industries-Iron and Steel, Aluminum, Oil Refining. Market Oriented Industries-Furniture, Textile Machinery. Footloose Industries-Automobile, Commercial Ship Building, Raw Material Oriented Industries. The Locational importance of reduction in materials.

**Books Recommended:**

1. Llyod & Dicken: Location in Space: A Theoretical Approach to Economic Geography.
2. M.C. Cart & Limberg Hodder & Lec: Economic Geography.
3. Smith, D.E. Cox & K.P. Man: Industrial Location, An Economic Geographic Analysis, Location and Behaviour - An Introduction to Human Geography.
4. Riley, R.C. - Industrial Geography, Chalto & Windus, London, 1973.

5. Alexander, J.W.- Economic Geography, Prentice Hall, New Delhi.
6. Boesh - A Geography of World Economy.
7. Estall, R.C. & Buchanan, R.O. - Industrial Activity & Economic Geography, Hutchinson Co., London.
8. Hoover, E.M. - The Location of Economic Activity, McGraw Hill Books Co., New – York.

**Dr. B.R. Ambedkar University of Social Sciences  
Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Third Semester**

**GEO-533: Bio Geography**

**4**

**Unit-I** :Meaning and scope of Bio- Geography, History of Zoo- Geography and Plant Geography, Ecology, Habitat and Climatic factors, Plant response to environment.

**Unit-II** :Barriers to distribution and means of dispersal of plants. Types of Plant and plant Communities in general. Factors controlling forest distribution. Characteristics and distribution of Equatorial and temperate forests and grasslands.

**Unit-III** :Climate change and their effect on the plant cover, condition of existence for animals. Barriers to distribution and means of dispersal of animals. Types of Isolation, effect of geographic Isolation. Distribution of animals.

**Unit-IV** :Zoo Geographical regions. Aquatic environment and life, marine and fresh water Fauna. Vegetation and floral regions of India, economic importance.

**Unit-V** :Conservation of wild life and forests, Soil erosion and conservation. Pollution and its effect on wild life and vegetation. National Parks and Sanctuaries of India. Biodiversity and its conservation.

**Books Recommended :**

1. Newbegin : Plant and Animal Geography
2. Cline : Foundation of Plant Geography
3. G. Ponald : The Geography of Flowering Plants.
4. Darlington : Zoo- Geography
5. Schimper : Plant Geography
6. S. L. Hora : Fundamental Conception of Zoo- Geography, N.G.S.I. Banaras
1. 7 S. L. Hora : Terrestrial Fishes and the Significance of their Distribution in
2. Geographical Studies, N.G.S.I. Banaras
7. H.S. Mathur : Bio- Geography
8. अग्रवाल, एल.सी.: जैव भूगोल, रोहिणी बुक्स, जयपुर।
9. शर्मा एवं शर्मा : पादपभूगोल, रोहिणी बुक्स, जयपुर।

**Dr. B.R. Ambedkar University of Social Sciences  
Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Third Semester**

**GEO-534: Agricultural Geography**

**4**

**Unit-I :** Agriculture - Concept, origin, dispersal and Development of agriculture through the ages in important agricultural areas of the world. Development of Agricultural Geography with special reference to India. Factors affecting Agriculture: Physical - relief, climate, soil, water, storage etc. Social -land ownership, land tenure and size of holdings. Economic - Input of human and animal power, irrigation and fertilizers, Mechanization etc. Others - Financial management, Market system, Transport, Trade etc.

**Unit-II :** Water -Water resources, quality of water for irrigation, water quality criteria, various methods of irrigation and their comparative advantages. Soil and water balance. Types of Agriculture - Shifting cultivation, Plantation agriculture, Mediterranean type, Collective and state farming, Extensive and Intensive agriculture, Contract Farming, Dry farming and their characteristics, Agriculture in the Rural Urban Fringe.

**Unit-III :** Agricultural Land Use: Concept, history, principles, objectives, policies and planning of land use surveys. Land Classification: need and basis of land classification - British pattern, American pattern, Indian pattern. Land Use Data: Sources, types, mapping and problems.

**Unit-IV :** Models in Agricultural Land Use: concept, need and principles. Von Thunen's Agricultural Location Theory. Preparation and planning of detailed Performa for land use surveys. Measurements of the Levels of Agricultural Development: Concept and methodology – Agricultural regionalization -Concept, methods of delimitation (Including statistical methods). Agricultural Regions of the World (Whittlsey). Agricultural Regions of India.

**Unit-V :** Crop ranking, Crop combination regions - meaning and methodology (Detailed study of Kendal's, Weaver's, Doi's and Prof. S.M. Rafi Ullah's method). Cropping intensity, Crop diversification – methods and deductions. Agricultural efficiency -concept, methods of measurement. Nutrition and balance sheet. Crop-land use and deficiency diseases.

### **Books Recommended:**

1. Sachchidananda- Social Dimensions of Agricultural Development, National Publishing House, Delhi.
2. Noor Mohammed- New Dimensions in Agriculture, Concept, New Delhi, 1991.
3. Stamp, L.D. - Land of Britain - Its Use and Misuse.
4. Kostowicki - World Types of Agriculture, Polish Academy, Warsaw.
5. Shafi, M. - Land Use in Eastern U.P., Aligarh University Press.
6. Misra, V.C., Ayyar, N.P. Kumar - Applied Geography, Ali Memorial Number, University Press, Agra.
7. Singh, J. - An Agricultural Atlas of India: A Geographical Analysis, Vishal Publications, Kurukshetra.
8. Singh, J. - An Agricultural Geography of Haryana, Vishal Publications, Kurukshetra.
9. Singh, J & Dhillon, S.S.- Agricultural Geography, Tata McGraw Hill, New Delhi.
10. Noor Mohammed - Agriculture Land Use in India, Inter-India Publication, Delhi.
11. Ali Mohammed - Situation of Agriculture, Food and Nutrition in action Rural India, Concept Publishing, Delhi.
12. Ali Mohammed- Dynamics of Agriculture Development in India, Concept Publication Co., Delhi.
13. Symon, Leslie- Agricultural Geography, G. Bell & Sons Ltd., London, 1967.
14. Singh, R.L. (ed.)- Applied Geography, B.H.U. Press, Varanasi.
15. Kostrowicki- Agricultural Typology ; Polish Academy, Warsaw.
16. प्रमिला कुमार—कृषि भूगोल, मध्य प्रदेश हिन्दी ग्रन्थ अकादमी।
17. ब्रजभूषण सिंह—कृषि भूगोल, गोरखपुर।

**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Third Semester**

**GEO-535: PRACTICAL**

**4**

**Unit-I** :History of remote sensing: Development of aerial photography (pre-1960 period);  
Development of satellite based remote sensing (post-1960 period); Remote Sensing in  
India.

**Unit-II** :Basic principles of remote sensing; electromagnetic energy; energy source; energy and  
radiation principles; energy interactions in the atmosphere and with earth surface  
features; spectral reflectance; spectral signatures; methods of recording spectral  
reflectance's (photographic and digital), Remote Sensing Systems(classification).

**Unit-III** :Air photos and photogrammetry: Elements of photographic system-types, scales and  
ground coverage, resolution, radiometric characteristics, films, filters, aerial cameras,  
photograph geometry (vertical)Vertical aerial photogrammetry: relief displacement,  
image parallax, stereoscopic viewing and measurements. Aerial photographic  
interpretation: elements of aerial photographic interpretation- shape, size, pattern, tone,  
texture, shadows and site

**Unit-IV** :Satellite Remote Sensing: RS Satellites- Polar sun-synchronous, geo-stationary;  
satellite platforms-LANDSAT, SPOT, IRS, INSAT, Principles and geometry of scanners  
and CCD arrays; Satellite RS data products: Imageries, computer compatible media  
(CCTs, CDs, Floppies etc.), MSS, TM, SPOT-PLA,SPOT-MLA, LISS-I, LISS-II, LISS-III.

**Unit-V** :Application: Air photo and image interpretations and mapping, forest and wild life,  
mines and Geology. Land use and land cover, Soil, land evaluation, weather studies,  
water resources; Urban studies and hazard management and environmental management.

GIS - Introduction, definition and scope, its application in various fields and planning. GPS.

**Suggested Readings:**

1. American Society of Photogrammetry: *Manual of Remote Sensing*, ASP, FallsChurch,  
V.A., 1983.

2. Barrett E.C and L.F. Curtis: *Fundamentals of Remote Sensing and Air Photo Interpretation*, Mcmillan, New York, 1992.
3. Gibson, Paul J. 2000. *Introductory Remote Sensing- Principles and Concepts*. London & New York: Routledge.
4. Hord R.M. :*Digital Image Processing of Remotely Sensed Data*, Academic, New York, 1989.
5. Pratt W.K. *Digital Image Processing*, Wiley, New York, 1978.
6. Rao D.P. (eds.): *Remote Sensing for Earth Resources*, Association of Exploration Geophysicist, Hyderabad, 1998.

**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Fourth Semester**

**GEO-541: Political Geography**

**4**

**Unit-I** :Definition and scope of political geography: its relation with other social sciences.

Geopolitics and German School of Thought, Concepts of Mackinder, Spykman, Meinig, Hoosan, DeSeversky, World's Geostrategic regions, Geo-politics and conflict zones of the world. Recent Advances in Political geography.

**Unit-II** :The functional approach and Unified Field Theory in Political Geography, The Elements of the state: Territory, Population, Organization & power, The Heart of the State: Core Areas, The Focus: Capital City.

**Unit-III** :Frontiers, Boundaries and Buffer Zones., Classification of Boundaries, changing concept, The concept of Territorial Sea and Maritime Boundaries, Landlocked States: Problems of access.

**Unit-IV** :Growth of Nations and Disintegration of Empires: Unitary and Federal States, The Dying Colonialism and Resurgent Nationalism., Supranationalism: from State to Blocks, Study of Federation of Independent States and U.S.A. as Power, Emergence of Third World Block, Politico-geographical study of India.

**Unit-IV** : The Politics and transportation, The geography of foreign aid and economic development, The politico-geographical implications of space research, Electoral Geography - Importance, Concepts, Electoral studies of elections and Gerrymandering.

**Books recommended:**

1. Alexander, L.M. : World Political Patterns. John Murray and Co., London.
2. Boggs, S.W. : International Boundaries, Columbia.
3. Bowman, I. : The New World Problems in Political Geography, World Co. Younkers, On Hudson.
4. East, W.G. & Moodies, A.E.: The Changing World, George G. Harrap & Co., London.



5. East, W.G. & Spate, O.H.K. :The Changing Map of Asia, Methuen & Co., London.
6. Frigreiv. J. : Geography & World Power, University of London Press, London.
7. Fawcer, C.B. : Frontiers - Study in Political Geography, Oxford University Press, Oxford.
8. Fizgiddeon, R.H. : Global Politics, University of California Press, Parkaley.
9. Horradin, J.F. : An Outline of Political Geography, Affred A. Knob, New York.
10. Moodie, A.E. : Geography Behind Politics, Hutchinson's University Library, London.
11. Pearch, C.E. et al : World Political Geography, Thomas, Y. Crowell Co., New York.
12. Valkenburg, S.V. & Suz. C.L.: Elements of Political Geography, Second Edition, Eastern Economy Edition, Prentice Hall & Co. Ltd., New York.
13. Stranz, R.H. : Geopolitics - The Struggle for Space and Power, G.P. Pitman's& Sons, New York.
14. Spykman, N.J. : The Geography of Place, Harcour Brace, New York.
15. Wegert, A.W. : Principles of Political Geography, Appletion Century Craft Inc.,New York.
16. Weigert, H.W., Stefansov, : New Compass of the World McMillan & Co., New York.V. & Harrison, R.E.
17. Whittlesey, D. : The Earth and State, Henry Holt & Co., New York.
18. W.A. Douglass Jackson: Politics & Geography Relationship, Prentice Hall, New York.
19. S.B. Cohen : Geography and Politics & Geography Relationship, Prentice-Hall, New York.
20. Crone : Background to Political Geography.
21. H.J. Blij. :Systematic Political Geography, John Willey & Sons, New York.
22. Bergman, Edward E. : Modern Political Geography, W.M.C. Brown Company Publishers.
23. Dikshit, R.D. : Political Geography : A Contemporary Perspective, Tata McGraw-Hill Publishing Co. Ltd., New Delhi.
24. Sukhwal, B.L . : India - A Political Geography, Allied Publishers, New Delhi.
25. सक्सेना, एच.एम. राजनीतिक भूगोल, रस्तोगी पब्लिकेशन्स, मेरठ

**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Fourth Semester**

**GEO-542: Cultural Geography**

**4**

**Unit-I :**Meaning and nature of cultural geography, Components of culture, cultural traits, complexes and systems. Basic cultural processes. Fundamental themes in cultural geography: Concepts of cultural region, cultural diffusion, cultural ecology, culture integrations and cultural landscape.

**Unit-II :**Cultural diversity: Language, religion and tribal groups, Linguistic culture region, Language pattern in India, Linguistic diffusion, Linguistic ecology, Linguistic cultural integration, Linguistic landscapes. Religious culture region, Major religions of the world, Religious diffusion, Religious ecology, Religious cultural integration, Religious landscapes. Major tribal groups of the world and India.

**Unit-III :**Folk and Popular geography. Folk culture regions, Folk culture diffusion, Folk ecology, Folk architecture in the cultural landscape, Folk dwellings: house types, structural and functional elements of a house. Popular culture, popular culture regions, popular culture diffusion, the ecology of popular culture, landscapes in popular culture.

**Unit-IV :**Human Settlements, significance of settlement studies, place names versus settlements, Meaning, scope and approaches of settlement geography, Types and patterns of settlements, Causes of diverse types of rural settlements.

**Unit-V :**Cultural geography of the Himalaya, The cultural patterns, Hindu, Lamaist-Buddhism, Islamic, Indo-Mongolid and Nepalic culture areas. Major communities of the Himalaya.

**Suggested Readings:**

1. Jackson, W.A.D. (1986) The shaping of Our World, New York: John Wiley and Sons.
2. Jorden, T.G. and Rowntree, L. (1990) The Human Mosaic, New York: Harper and Row.
3. Karan, P.P. (1984) “A Cultural Geography of Himalaya”, in ed. Eidt, R.C. Singh, R.B. and Singh, K.N. ed., Man Culture and Settlement, New Delhi: Kalyani Publishers, pp.24-30.

4. Mitra, Asok, Mukherjee S. and Bose, R. (1980) Indian Cities, New Delhi: Abhinay Publications.
5. Rubenstein, J.M. (1989) The Cultural Landscape, Columbus: Merrill Pub. Com.
6. Singh,R.L. (1993) India: A Regional Geography, Varanasi: National Geographical Society ofIndia.
7. Singh, R.L. and Singh, K.N. (1975) Readings in Rural Settlement Geography, Varanasi: NGSI.
8. Spencer, J.E. and Thomas, W.L. (1978) Introduction to Cultural Geography, New York: JohnWiley and Sons.
9. Stoddart, R.H. Wishart, D.J. and Blouct, B.W. (1989) Human Geography: People, Places andCultures, New Jersey: Prentice Hall.
10. Wagner, P.L. and Mikesell, M.W. (1962) Readings in Cultural Geography, Chicago: The University of Chicago Press.

**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Fourth Semester**

**GEO-543 (A): Geography of Contemporary Issues 4**

**Unit-I** :Concept of hazards and disaster: Natural, quasi-natural and man-made hazards, Seasonal climatic hazards: Flood, and drought—mechanism, Occasional climatic hazards: Hailstorm, Hurricane and tornadoes- mechanism, Biotic hazards: Deforestation and loss of bio-diversity-impact and conservation of biotic resources, Climatic and Biotic Hazards in the Indian Sub –continent.

**Unit-II** :Terrestrial Hazards in the Indian Sub-continent, Edaphic hazards: Salinization and Desertification-mechanism, impact and management, Geomorphic hazards: Landslide, River bank erosion and Coastal erosion-Tsunami mechanism, impact and management, Tectonic hazards: Earthquake--impact and precautionary measures, Water related hazards: Contamination of ground water and fall of piezometric level. Components of disaster reduction and management.

**Unit-III** :Human Development in the Third World, Concept of development and under development; Basic indicators of economic development, Economic disparity as constraint of development: per capita income, purchasing power and standard of living, Poverty: Absolute & Relative Poverty, Poverty line, Unemployment, Dependency ratio, Work participation and Poverty alleviation, Economic impact of globalization.

**Unit-IV** :Basic indicators of human and gender development, Social inequality as constraint of development: Caste and Religious Fundamentalism; Gender Inequality, Index, Progress and Efforts in India.

**Unit-V** :Demographic constraint: Population growth, Malnutrition, Food security and Hunger, Morbidity and Mortality, Sustainable development.

**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Fourth Semester**

**GEO-543 (B): Research and Quantitative Techniques in Geography 4**

**Unit-I :**Measures of Central tendency: Mean median and mode. Measures of Central locations in spatial situation: Mean centre, median point, point of minimum aggregate travel distance.

**Unit-II :**Measures of dispersion: Mean deviation, standard deviation, coefficient of variation, index of spatial dispersion, median distance, standard distance, Lorenz curve and nearest neighbour analysis.

**Unit-III :**Probability: Classical and relative frequency approaches to probability, calculation of probability: Law of addition, law of multiplication. Probability distributions: normal and binormal. Sampling: Basic concept, sampling frame, different sampling designs.

**Unit-IV :**Measuring the strength of relationship: Scatter diagram, Spearman's rank correlation, Karl Pearson's product moment correlation coefficient, co-efficient of variation and determination.

**Unit-V :**Regression analysis: Fitting a regression line by semi-averages and least square methods, coefficient of regression; residual from regression; analysis of variance (ANOVA).

**BOOKS RECOMMENDED**

1. Cole, John P. and Cuchlainea. M. King (1968): Quantitative Geography, Techniques and Theories in Geography, John Wiley and Sons Ltd., London.
2. Taylor, Peter J. (1977): Quantitative Methods in Geography, An Introduction to Spatial Analysis. Houghton Mifflin Company, Boston, USA.
3. Hammond, R. and Patrik McCullagh (1974): Quantitative Methods in Geography, Clarendon Press, Oxford.

4. Smith, David M. (1975): Patterns in Human Geography, An introduction to Numerical Methods, Crane Russak & Company, Inc New York.
5. Frank Harry and Steven C. Althoen (1994): Statistics Concepts and Applications, Cambridge University Press.
6. Elhance, D.N. (1972): Fundamentals of Statistics, Kitab Mahal, Allahabad.

**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Fourth Semester**

**GEO-544: PRACTICAL**

**4**

**Unit-I** :Role of Field methods and techniques in modern Geographical research, Historical development of Field investigation, the structure of Modern Field Research, Training in Field Geography, Geographic Field Instruction.

**Unit-II** :Base Map for Field Survey, use topographic maps, Aerial photographs and Satellite Imageries for Field Survey, Use of Brunton Compass and Abney Level, Global Positioning System (GPS), Selection of Mapping Techniques

**Unit-III** :Methods of Data collection: Primary/ Secondary, Observation Method, Census and Sampling, Types of Spatial Sampling, Questionnaire Design, Administration of the questionnaire

**Unit-IV** :Basic phases of Field Research Design, The Problem Statement, Hypothesis Formulation, Project Timing and Management, Importance of Research Design, Mechanics of writing a report.

**Unit-V** :Field trip to the selected station (s) shall be compulsory to all the students. They will make study of physico-cultural milieu of the selected station (s) through personal observations and questionnaire methods. On the basis of data collected from the field the students shall prepare a field report on the allotted subject/ topic and will make use of tables, figures and photo-plates.

**Suggested Readings:**

1. Lunsbury J.F. and Aldrich, F.T (1979) Introduction to Geographic Field Methods and Techniques, Charles E. Merrill Publishing Company, Columbus.
2. Association of American Geographer (1965) Field Training in Geography, Technical Paper No.1.
3. Anderson, Jonathan et.al. (1970) Thesis and Assignment Writing, Wiley Eastern United, New Delhi.

4. Panneerselvam, R. (2004) Research Methodology, Prentice Hall of India Pvt. Limited, New Delhi.
5. Kothari, C.R. (2004) Research Methodology, New Age International (P) Limited Publishers, New Delhi.



**Dr. B.R. Ambedkar University of Social Sciences**

**Dr. Ambedkar Nagar, Mhow (M.P.)**

**Syllabus  
M.A. – Geography**

**Fourth Semester**

**GEO-545 : Dissertation**

**18**