

D.D.U. Gorakhpur University, Gorakhpur  
**Department of Geography**  
 M.A. in Geography, CBCS Programme  
2022

The M.A Curriculum in Geography consists of four semesters spread over two years. In addition to core paper, few elective papers are offered in each semester. There shall be five Theory papers in each semester, along with internal assessment in each paper. Besides, there shall be one practical and one project in each semester.

**Programme Specific Outcomes**

After going through this programme, students should be able to:

- Understand the theoretical and applied aspects of geography as a branch of Knowledge.
- Establish Spatio-temporal analysis of geographical phenomena and analyse man environment relations in a better way.
- Develop their field observations, data gathering and interpretations skill.
- Comprehend key methodological and different approaches to interpret geographical facts.
- Enhance their practical skill through field visits and firsthand experience of tools/equipment.
- Familiarize with the applied aspects in different sub branches of geography
- Identify frontier area of research and sub-branches of geography for further research.
- Broaden their job prospects in qualifying various competitive examinations and join various industries and research institutes like Tourism, Rural Development, Disaster Management, Environmental Planning, and Cartography to pursue a bright career.

## M.A. in Geography, CBCS Programme

Paper Code	Paper Title	Course	Credit
<b>Semester VII</b>			
MGEC401	Geographical Thought: Concepts and Issues	Theory - Core	4+0
MGEC402	Principles of Geomorphology	Theory - Core	4+0
MGEC403	Principles of Economic Geography	Theory - Core	4+0
MGEC404	Physical and Economic Geography of India	Theory - Core	4+0
MGEL405	Cartography: Projections & Cartograms	Practical	0+4
MGEP406	Socio-Economic Survey	Research Project	0+4
MGEM407	Marketing Geography *	Minor Elective	4+0
<b>Semester VIII</b>			
MGEC411	Advanced Geomorphology	Theory - Core	4+0
MGEC412	Cultural Geography	Theory - Core	4+0
MGEC413	Statistical Methods in Geography	Theory - Core	4+0
MGEL414	Geological Maps and Morphometric Analysis	Practical	0+4
MGEP415	Report Based on Secondary Data Sources	Research Project	0+4
MGEE416	Geography of Tourism#	Elective	4+0
MGEE417	Political Geography#	Elective	4+0
MGEE418	Urban Geography#	Elective	4+0
MGEE419	Rural Development#	Elective	4+0
MGEE420	Regional Analysis#	Elective	4+0
<b>Semester IX</b>			
MGEC421	Climatology	Theory - Core	4+0
MGEC422	Regional Geography of India	Theory - Core	4+0
MGEL423	Surveying	Practical	0+4
MGEP424	Tour Based Project Report	Research Project	0+4
MGEP425	Remote Sensing#	Elective	4+0
MGEE426	Industrial Geography #	Elective	4+0
MGEE427	Agricultural Geography #	Elective	4+0
MGEE428	Social and Gender Geography with special reference to India#	Elective	4+0
MGEE429	Environmental Studies #	Elective	4+0
MGEE430	Transport Geography#	Elective	4+0
<b>Semester X</b>			
MGEC431	Oceanography	Theory - Core	4+0
MGEC432	Research Methodology	Theory - Core	4+0
MGEL433	System Analysis	Practical	0+4
MGEP434	Survey Camp and Project	Research Project	0+4
MGEP435	Population Geography#	Elective	4+0
MGEE436	Regional Planning#	Elective	4+0
MGEE437	Heritage Geography#	Elective	4+0
MGEE438	Geographical Information System and GPS#	Elective	4+0
MGEE439	Environmental Hazards and Disaster Risk Reduction#	Elective	4+0
MGEE440	Resource Appraisal & Management#	Elective	4+0

\*Minor Elective can be opted by the students of another Faculty.

#Select any one elective in II Semester, any two electives in III Semester and two electives in IV Semester

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Yashraj  
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**Code: MGEC402**

**Course: Theory - Core**

**Title of the Paper: Principles of Geomorphology**

**Credits 4+0**

Units	Topics	Sub Topics	Periods
1	Fundamentals of Geomorphology and Tectonism	Meaning & Scope, Evolution of Geomorphology Fundamental Concepts of Geomorphology, Earth Movements–Epeirogenesis and Orogenesis,	15
2	Geomorphic Processes	Association of Plate Tectonics - Mountain Building, Vulcanicity, Earthquakes, Palaeomagnetism Rock Formation Mass Movement, Types & Resultant Landforms.	15
3	Processes and landforms	Denudation-Weathering & Erosion, Geomorphic Cycle & Landforms by Karst, Arid, Coastal, Glacial,& Periglacial	15
4	Structural Geomorphology	Polycyclic Landforms; Erosional Surfaces, Uniclinal Structures & Landforms	15
Continuous Internal Assessment			

### Course Outcomes

- Appraise the students as scientific study of landforms
- Able to explain the formation of physical features through the grand theory of plate tectonics
- Comprehend the morphometric analysis of relief.

### Reference Books:

1. Anhert, F. (1996): Introduction to Geomorphology, Edward Arnold, London.
2. Bloom. A.L. (1979): Geomorphology, Prentice Hall, New Jersey, USA.
3. Chorley, R. J., Schumm, S.A. and Sugden, D.E. (1984): Geomorphology, Methuen, London.
4. Dayal, P. (1987): Geomorphology (in Hindi), Patna.
5. Dikshit, K.R. et.al. (1994): India Geomorphological Diversities, Rawat Pub. Jaipur.
6. Fairbridge, R.W. (1968): Encyclopaedia of Geomorphology, Reinholdts, New York.
7. Kale, V.S. and Gupta, A. (2001): Introduction to Geomorphology, Orient Longman, Hyderabad.
8. King, C.A.M. (1968): Techniques in Geomorphology, Edward Arnold, London.
9. Melhorn, W.N. & Flemal, R.C. (1981): Theories of Landforms Development, George Allen Unvin, London.
10. Miller, A. A. (1953): The Skin of the Earth, Methuen and Co. Ltd., London
11. Ollier, C.D. (1981): Tectonics and Landforms, Longman, London.
12. Sharma, H.S. (1987): Tropical Geomorphology, Concept Publishing company, New Delhi.
13. Sharma, H.S. and Kale, V.S. (2009): Indian Geomorphology, Rawat Pub. Jaipur.
14. Singh, Savindra (2005): Geomorphology, PrayagPustakBhawan, Allahabad. (Hindi & English)
15. Small, R.J. (1976): The Study of Landforms, Cambridge University Press, Cambridge.
16. Sparks, B.W. (1988): An Introduction to Geomorphology, Longman, London.
17. Steers, A. (1958): The Unstable Earth, Methuen, London
18. Strahler, A.H. and Strahler, A.N. (1992): Modern Physical Geography, John Wiley, New York
19. Strahler, A. N. (1964): Quantitative Geomorphology of Drainage Basins and Channel Networks, In: Handbook of Applied Hydrology, VenTe Chow, Ed., Section 4-II, McGraw-Hill Book Company, New York

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**Code: MGEC403**

**Course: Theory- Core**

**Title of the Paper: Principles of Economic Geography**

**Credits 4+0**

Units	Topic	Subtopic	Periods
1	Introduction	Nature and scope, Recent Trends in Economic Geography Fundamental Concepts of Economic Geography	15
2	Application & Relevance of Location and Economic Theories	Location Theories-Von-Thunen, Industrial Location Theory- Weber, Hoover and Losch Central Place Theory	15
3	Economic Development	Rostow Stages of Development Theories of Economic development-Growth Pole Theory, Myrdal's Cumulative Causation Theory. Changing concept of development Sustainable development.	15
4	International Trade	Factors influencing the international trade, Ricardian Theory of International trade, Emerging Trends of World Trade Pattern, Regional Trade Blocks: SARC and ASEAN	15
Continuous Internal Assessment			

#### Course Outcomes

- Introduces nature, scope, methods, approaches and recent trends in economic geography
- Impart knowledge on different locational theory
- Able to explain changing concept of development, world trade patterns and theory on International trade.

#### Reference Books:

1. Alexander, J.W. (2012): Economic Geography, Prentice Hall of India, New Delhi.
2. Berry, B.J.L. et al. (1976): Geography and Economic Systems, Prentice Hall, Englewood Cliff.
3. Boyce, R.D. (1990): Bases of Economic Geography, Holt Rinehart & Winston, New York. Cliffs, N.J. Prentice.
4. Dreze, J. and Sen, A. (1996): Economic Development and Social Opportunity. Oxford University Press, New Delhi.
5. Haggett, P. (1966): Locational Analysis in Human Geography, St. Martin's Press, New York.
6. Hanink, D.M. (1997): Principles and Applications of Economic Geography, Economy,
7. Hartshorne, T.A. & Alexander, J.W. (1994): Economic Geography, Prentice Hall of India, New Delhi.
8. Hodder, B.W. & Lee, R. (1996): Economic Geography, Methuen, London.
9. Janaki, V.A. (1985): Economic Geography, Concept Publishing Co., New Delhi.
10. Jones & Dicken (1960): Economic Geography, New York.
11. Knox, P. and J. Agnew (1998): The Geography of the World Economy. Arnold, London.
12. Lloyd, P. And P. Dicken (1972): Location in Space: A theoretical approach to Economic Geography, Harper and Row, New York.
13. McCarty, H.H. and J.B. Lindberg (1966): A preface to Economic Geography, Englewood, New York.
14. Rostov, W.W. (1960): The Stages of Economic Growth, Cambridge Univ. Press, London.
15. Singh, K.N and Siddiqui, A (2012): Economic Geography, PrayagPustakBhawan, Allahabad
16. Singh, K.N. & Singh, J. (1996): ArthikBhoogolKeMoolatva, GyanodayaPrakashan, Gorakhpur.
17. Smith, G.H. (2000): Conservation of Natural Resources, John Wiley, New York.

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**Code: MGEC404**

**Course: Theory- Core**

**Title of the Paper: Physical and Economic Geography of India**

**Credits 4+0**

Units	Topics	Sub Topics	Periods
1	Geology & Relief	Geological Evolution– Origin of Himalayas, Origin of River Systems of India. Delimitation & Characteristics of Physiographic Regions	15
2	Climatic Characteristics	Mechanism and Recent Trends of the Indian Monsoon; Climatic Regions; Agro-Climatic Regions.	15
3	Resource Base	Population growth and distribution Population Resource Regions; Role of Green Revolution, Agricultural Regions & New Trends in Indian Agriculture; Mineral Resource Regions	15
4	Industrial Development	Industrial Policies & Trend of Industrialization; Industrial Regions, Impact of Globalization on Indian Economy; Regional Development and Disparities, Problems & Prospects of Industrially Backward	15
<b>Continuous Internal Assessment</b>			

### Course Outcomes

- Introduces physical aspects of the Indian sub-continent
- Appraise the climatic characteristics and resource base of India
- Discuss the pattern and level of development in India

### Reference Books:

1. Bansal, S.C. (1999): Advanced Geography of India, Meenakshi Publication, Meerut.
2. Chauhan P.R. (2001): Bharat Ka Vrihat Bhoogol, Vasundhara Prakashan, Gorakhpur.
3. Deshpande C.D (1992): India: A Regional Interpretation, Northern Book Centre, New Delhi.
4. Gautam, Alka (2001): Geography of India, Sharda Pustak Bhawan, Allahabad.
5. Govt. of India : Economic Survey, Ministry of Finance, New Delhi (Different Issues)
6. Hussain, Majid (2008): Advance Geography of India, Tata McGraw Hill, New Delhi.
7. Johnson, B.L.C. (1983): Development in South Asia, Penguin Books, Harmondsworth.
8. Khullar, D.R. (2006): India: A Comprehensive Geography, Kalyani Pub., New Delhi.
9. Krishnan, M. S. (1968): Geology of India and Burma, 4<sup>th</sup> edition. Higgin Bothams Private. Ltd., Madras.
10. Nag, P. and Gupta S. S. (1992): Geography of India, Concept Publishing. Company, New Delhi.
11. Sharma, T. C. (2003): India: Economic and Commercial Geography, Vikas Publication., New Delhi.
12. Singh, J. (2003): India: A Comprehensive and Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
13. Singh, R. L. (ed.) (1971): India. A Regional Geography, National Geographical Society of India, Varanasi.
14. Spate, O.H.K. & Learmonth, A.T.A. (1954): India & Pakistan, Methuen, London.
15. Tiwari, R. C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad
16. Wadia, D. N. (1959): Geology of India. MacMillan and Company, London and Madras.

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**Code: MGEL405**

**Course: Practical**

**Title of the Paper: Cartography: Projections and Cartograms**

**Credits 0+4**

Units	Topic	Sub topic	Periods
1	Projections	Meaning, Classification, and Characteristics of Projections; Construction with mathematical methods: Lambert's Conical, Polyconic, Galls', Equatorial Zenithal Projection: Gnomonic, Stereographic and Orthographic Cases; Mollweide & Sinusoidal: Simple and Interrupted	30
2	Cartograms	Climatic Diagrams, Water Budget; Ergo-graph – Climatic and Circular; Multiple Dot & Spherical map	30
Continuous Internal Assessment			30
Assignment/ Presentation/Exercises/Field Work			

#### Course outcomes

- Impart drawing skill on map projections, various maps and diagrams
- Imparting the skills to understand and draw cartograms

#### Reference Books:

1. Chauhan P.R. (2014): Prayogatmak Bhoogol, Vasundhara Publications, Gorakhpur
2. Davis, R.E. and Foote, F.S.: Surveying - Theory and Practices, Tokyo.
3. Kanetkar, T.P. & Kulkarni, S.V.: Surveying and Leveling, Pune.
4. Mailing, D.H. (1973): Co-ordinate Systems and Map Projections. George Philip and Sons Ltd.
5. Misra, R.P. and Ramesh, A. (1999): Fundamentals of Cartography. Concept Publishing Company, New Delhi.
6. Monkhouse, F.J. and Wilkinson, H. R (1962): Maps and Diagrams, Methuen and Company Ltd. and Company Ltd., London.
7. Raisz, E. (1962): Principles of Cartography. McGraw Hill Books Company, Inc., New York.
8. Robinson (1991): Aerial Photography and Cartography, Mac Millan, London.
9. Robinson, A. H. H., Sale R., Morrison J. and Muehrcke, P. C (1984): Elements of Cartography, 6<sup>th</sup> edition John Wiley and Sons, New York.
10. Sahani, P.B. (1993): Advance Surveying, New Delhi.
11. Singh, J. et.al. (1990): Bhaumikiya Manchitra Ki Ruprekha, Vasundhara Prakashan, Gorakhpur.
12. Singh, L.R. (2001): Practical Geography, Sharda Pustak Bhawan, Allahabad.
13. Singh, R. L. and Singh, Rana P.B. (1993): Elements of Practical Geography. Kalyani Publishers, Ludhiana and New Delhi. (English and Hindi editions).
14. Tiwari, R.C. and Tripathi, Sudhakar (2001): Abhinav Prayogatmak Bhoogol, Prayag Pustak Bhawan, Allahabad.

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**Code: MGEP406**

**Course: Research Project**

**Title of the Paper: Socio-Economic Survey**

**Credits 0+4**

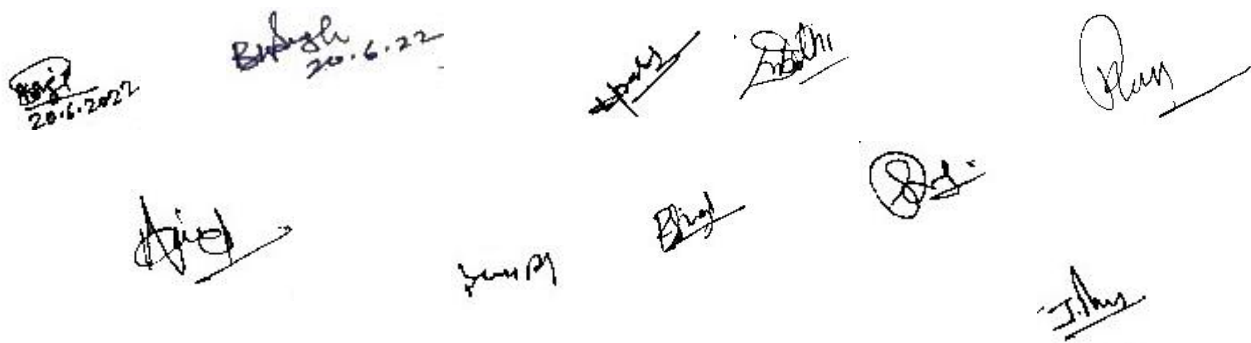
Units	Topic	Sub topic	Periods
1	Developing Survey Tool	Making questionnaire, Schedule Tabulation and Calculation	30
2	Surveying and Report Writing	Conducting survey in any Area (Rural/Urban) and Household Survey. Report Writing	30
Continuous Internal Assessment			

#### Course outcomes

- The paper introduces structuring the questionnaire based on pilot study and primary research appraisal.
- It enhances the knowledge of tabulation and calculation based on field data

#### Reference Books:

1. Chauhan P.R. (2014): Prayogatmak Bhoogol, Vasundhara Publications, Gorakhpur
2. Davis, R.E. and Foote, F.S.: Surveying - Theory and Practices, Tokyo.
3. Kanetkar, T.P. & Kulkarni, S.V.: Surveying and Leveling, Pune.
4. Maling, D.H. (1973): Co-ordinate Systems and Map Projections. George Philip and Sons Ltd.
5. Misra, R.P. and Ramesh, A. (1999): Fundamentals of Cartography. Concept Publishing Company, New Delhi.
6. Monkhouse, F.J. and Wilkinson, H. R (1962): Maps and Diagrams, Methuen and Company Ltd. and Company Ltd., London.
7. Raisz, E. (1962): Principles of Cartography. McGraw Hill Books Company, Inc., New York.
8. Robinson (1991): Aerial Photography and Cartography, Mac Millan, London.
9. Robinson, A. H. H., Sale R., Morrison J. and Muehrcke, P. C (1984): Elements of Cartography, 6<sup>th</sup> edition John Wiley and Sons, New York.
10. Sahani, P.B. (1993): Advance Surveying, New Delhi.
11. Singh, J. et.al. (1990): Bhaumikiya Manchitra Ki Ruprekha, Vasundhara Prakashan, Gorakhpur.
12. Singh, L.R. (2001): Practical Geography, Sharda Pustak Bhawan, Allahabad.
13. Singh, R. L. and Singh, Rana P.B. (1993): Elements of Practical Geography. Kalyani Publishers, Ludhiana and New Delhi. (English and Hindi editions).
14. Tiwari, R.C. and Tripathi, Sudhakar (2001): Abhinav Prayogatmak Bhoogol, Prayag Pustak Bhawan, Allahabad.


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**Code: MGEM407**

**Course: Minor Elective**

**Title of the Paper: Marketing Geography**

**Credits 4+0**

Units	Topics	Sub Topics	Periods
1	Introduction	Definition, Scope and Evolution of Marketing Geography, Spatial Organization of Markets	15
2	Spatio-temporal Characteristics of Markets	Typology of Markets Market Cycles, Development of Marketing System, Market Area Region, Vertical and Horizontal Relations of a Market.	15
3	Marketing and Rural Development	Role of Marketing in Rural Development, Christaller's Central Place Theory, Market as a Service Centre	15
4	Globalization & Marketing	Impact of Globalization on Marketing, Social Structure and Marketing. Marketing and Innovation Diffusion.	15
<b>Continuous Internal Assessment</b>			

#### Course outcomes

- The paper introduces the meaning and scope of marketing geography and spatial organization of markets.
- Explain market cycles, and development of markets, importance in rural development
- Student able to identify and analyse, impact of Globalization on Marketing, Social Structure and Marketing, Marketing and Innovation Diffusion

#### Reference Books:

1. Garnier, J. Beaujau & Delobez, A. (1979): Geography of Marketing, Longman, London.
2. Shrivastava, V.K. & Dixit, R.S. (1995): VipranBhoogol, Madhya Pradesh Hindi Granth Academy, Bhopal.
3. Bromley, R.J. (1979): Periodic Markets, Daily Markets and Fares : A Bibliography, Monash Pub.
4. Davies, R.L. (1977): *Marketing Geography* with Special Reference to Retailing Methun, London
5. Shrivastava, V.K. (1987): Geography of Marketing and Rural Development, Inter India Pub. New Delhi.
6. Saxena, H.M. (1984): Marketing Geography, Starling Publication, New Delhi.
7. Saxena, H.M. (1975): Geography of Transport & Marketing, S.Chand & Com., New Delhi.
8. Saxena, H.M. (1988): Rural Markets and Development, Rawat Publications, Jaipur.
9. Shrivastava, V.K. & Chauhan, P.R. (2001): Marketing of Agricultural Produce & Rural Development, Vasundhara Prakashan, Gorakhpur.
10. Shrivastava, Hari Om (1992): VipranBhoogol, Vasundhara Prakashan, Gorakhpur.
11. Berry, B.J.L. (1967): Geography of Market Centres and Retail Distribution, Prentis Hall, Englewood Cliff.
12. Alvater, E. (1992): The Future of the Markets, Verso, London.
13. Dixit, R.S. (2004): Agricultural Marketing in India, Shubhi Publications, Gurgaon.

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## Semester VIII

**Code: MGEC411**

**Course: Theory Core**

**Title of the Paper: Advanced Geomorphology**

**Credits 4+0**

Units	Topics	Sub Topics	Periods
1	Geological Time	Concept of time: cyclic, graded and steady state; Concept of morphogenetic region; Recent Trends in Geomorphology	15
2	Models in Geomorphology	Models of Landscape Development: W.M. Davis, W. Penk; Slope Evolution and Classification; Hill Slope Evolution Theories: Davis, Penk and King	15
3	Morphometry	Morphometric Analysis and its methods: Hypsometric, Altimetric Frequency & Clinographic Analysis. Methods of Stream Ordering; Frequency and Density of the Drainage	15
4	Applied Geomorphology	Application of Geomorphology in Mineral Exploration, Disaster Management and Civil Projects: Dams and Road Construction	15
<b>Continuous Internal Assessment</b>			

### Course Outcomes

- Introduces concept of time scale in Geomorphology
- Impart knowledge on different models of landscape development
- Explain its scope on applied aspects with respect to civil projects, disaster management, minerals and energy

### Reference Books:

1. Anhert, F. (1996): Introduction to Geomorphology, Edward Arnold, London.
2. Bloom. A.L. (1979): Geomorphology, Prentice Hall, New Jersey, USA.
3. Chorley, R. J., Schumm, S.A. and Sugden, D.E. (1984): Geomorphology, Methuen, London.
4. Dayal, P. (1987): Geomorphology (in Hindi), Patna.
5. Dikshit, K.R. et.al. (1994): India Geomorphological Diversities, Rawat Pub. Jaipur.
6. Fairbridge, R.W. (1968): Encyclopaedia of Geomorphology, Reinholdts, New York.
7. Kale, V.S. and Gupta, A. (2001): Introduction to Geomorphology, Orient Longman, Hyderabad.
8. King, C.A.M. (1968): Techniques in Geomorphology, Edward Arnold, London.
9. Melhorn, W.N. & Flemal, R.C. (1981): Theories of Landforms Development, George Allen Unwin, London.
10. Miller, A. A. (1953): The Skin of the Earth, Methuen and Co. Ltd., London
11. Ollier, C.D. (1981) Tectonics and Landforms, Longman, London.
12. Sharma, H.S. : (1987) Tropical Geomorphology, Concept, New Delhi.
13. Sharma, H.S. and Kale, V.S. (2009): Indian Geomorphology, Rawat Pub. Jaipur.
14. Singh, Savindra (2005): Geomorphology, PrayagPustakBhawan, Allahabad. (Hindi & English)
15. Small, R.J. (1976): The Study of Landforms, Cambridge University Press, Cambridge.
16. Sparks, B.W. (1988): An Introduction to Geomorphology, Longman, London.
17. Steers, A. (1958). The Unstable Earth, Methuen, London

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**Code: MGEC412**

**Course: Theory Core**

**Title of the Paper: Cultural Geography**

**Credits 4+0**

Units	Topic	Sub topic	Periods
1	Introduction	Concept of Culture, Nature Scope and Significance of Cultural Geography, Approaches and Development	15
2	Origin of Man & Races	Origin & Dispersal of Man, Types & Dispersal of Human Races; Racial Composition of India; Linguistic and Religious Structure of the World. Cultural Diffusion	15
3	Cultural Development	Domestication of Plants and Animals; Renewal and Dispersal Activities of Crops; Agricultural Practices and Innovations, Industrial and Technological Revolution and its impact on Culture, Globalization and Cultural Development	15
4	Cultural Realms and Ecology	Concept of Cultural Hearths; Major Cultural Realms and Regions of the World. Cultural Landscape and Cultural Ecology	15

#### Course Outcomes

- Introduces the students how culture play a key role in relationship between man and environment.
- Discuss about cultural landscape, origin of race, domestication of plans and animals, innovation and agricultural practices
- Able to explain how do culture impact on industrial and technological revolution

#### Reference Books:

1. Anderson, K., Domosh, M., Pile, S. and Thrift, N. (2003): Handbook of Cultural Geography, SAGE Publications, London
2. Blunt, A., Gruffudd, P., May, J., Ogborn, M. and Pinder, D. (2003): Cultural Geography in Practice, Edward Arnolds Limited, London
3. Carter, G.F. (1998) Man and the Land: A Cultural Geography, Rienhart, New York.
4. Coulborn, R. (1959): The Origin of Civilized Societies, Princeton University Press, Princeton, New Jersey.
5. Dicken, S.N. & Pitts, F.R. (1970): Introduction of Cultural Geography: A Study of Man and his Environment, Edwin & Co. Waltham, Massachusetts.
6. Dikshit, S.K. & Tripathi, R.D. (2001): Sanskrit Bhoogol, Vasundhara Prakashan, Gorakhpur.
7. Dohus, F.E. & Sommers, L.M. (ed) (1967): Cultural Geography – Selected Readings, Dunn – Donnally Publishing Corporation, New York.
8. Domosh, M., Neumann, R. P., Price, P. L. and Jordon-Bychkov, T. G. (2009): The Human Mosaic- A Cultural Approach to Human Geography, WH Freeman, New York
9. Duncan, J. S., Johnson, N. C., and Schein, R. H. (2004): A Companion to Cultural Geography, Blackwell Publishing Ltd, Oxford
10. Frazier, E.F. (1957): Race and Cultural Contacts in the Modern World; A.A. Knopf, New York.
11. Iaian, R. and Richards, P. (2003): Studying Cultural Landscapes, Oxford University Press, London
12. Jordon, G. (1995): Cultural Politics, Blackwell, Oxford
13. Mike, C. (1998): Cultural Geography, Routledge, London
14. Rostlund, F. (1988): Outline of Cultural Geography, California Book Co. Berkley.
15. Salter, C.L. (1971): The Cultural Landscape, Durbury Press, California.
16. Sopher, D.E. (1978): Geography of Religions, Prentice Hall, New Jersey.
17. Spencer, J.E. and Thomas, W.L. (1978): Introducing Cultural Geography, John Willey and Sons, New York.
18. Wagner, P.J. and Mikesell, M.W. (1962): Readings in Cultural Geography, University of Chicago Press.
19. Wagner, P.L. (1972): Environment of People, Prentice Hall, Englewood Cliffs

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**Code: MGEC413**

**Course: Theory Core**

**Title of the Paper: Statistical Methods in Geography**

**Credits 4+0**

Units	Topic	Sub topic	Periods
1.	Dispersion Probability and Sampling Theory	Random Variables; Normal Probability Distribution; Binomial and Poisson Distributions; Standard Error and Sample Size;	15
2.	Inferential Statistics	Hypothesis Concept and Testing: Goodness of Fit; Significance and Confidence Levels; Testing Errors; One and Two Tailed Tests; Chi-square Test, t Test	15
3.	Regression and Correlation Analyses,	Correlation Matrix, Partial and Multiple Correlation; Regression Analysis: Linear & Multiple Regression	15
4.	Multivariate Analyses	Principal Component Analysis; Factor Analysis; ANOVA (One-way)	15
<b>Continuous Internal Assessment</b>			

### Course outcomes

- Introduces different statistical methods
- Impart knowledge on quantitative measurement of spatial patterns and spatial techniques

### Reference Books:

1. Mahmood Aslam. Statistical Methods in Geographical Studies, Rajesh Publication. New Delhi. 2016.
2. Singh, R.L., Elements of Practical Geography. Kalyani, New Delhi. 1991.
3. Misra, R.P. & Ramesh A., Fundamentals of Cartography. Concept, New Delhi. 1989.
4. Bailey, T. and Gatrell, A. C. (1995): Interactive Spatial Data Analysis. Longman, Harlow.
5. Berry, B.J.L. & Marble, D.F. (1968) Spatial Analysis: A Reader in Statistical Geography, Prentice Hall, Englewood.
6. Chauhan P.R. (2014) Prayogatmak Bhoogol, Vasundhara Publications, Gorakhpur
7. Dorling, D. and Fairborn, D. (1997): Mapping. Ways of Representing the World. Longman, Harlow.
8. Duncan, O.D. et.al. (1961) : Statistical Geography, Free Press of Glen Co., New York.
9. Gregory, S. 1968) : Statistical Methods and Geographers, Longman, London.
10. Griffith, D. A. and Amehein (1997): Multivariate Statistical Analysis for Geographers. Prentice Hall, Englewood Cliffs, New Jersey.
11. Griffith, D. A. and Amehein (1997): Statistical Analysis for Geographers. Prentice Hall, Englewood Cliffs, New Jersey.
12. Haggett, P. & Chorley, R.J. (1969): Network Analysis, Edward Arnold, London.
13. King, L.J. (1969): Statistical Analysis in Geography, Longman, London.
14. Nag, P. (ed.) (1984): Census Mapping Survey, Concept Publishing Company, New Delhi.
15. Nair, N. B. (1996): Encyclopedia of Surveying, Mapping and Remote Sensing. Rawat Publications, Jaipur and New Delhi.
16. Pal S.K (1998) Statistics for Geoscientists, Concept Publications, New Delhi.
17. Rogerson, P.A. (2001): Statistical Methods in Geography, Sage, London.
18. Shaw, G. and Wheeler, D. (1994): Statistical Techniques in Geographical Analysis, Prentice Hall, Englewood Cliffs, New Jersey.

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**Code: MGEL414****Course: Practical****Title of the Paper: Geological Maps and Morphometric Analysis****Credits 0+4**

Units	Topic	Sub topic	Periods
1	Morphometric Analysis	Drainage: Density, Frequency, Dissection index Slope Analysis: Wentworth Method, Preparation of Hypsometric Curve, Altimetric Frequency Curve, Clinographic Curve through the use of Topographical Sheet of any Hilly and Plateau region	30
2	Geological Maps	Beds, bedding Plane, Strike lines, Outcrop Drawing of Cross Sections – Inclined, Folded, Faulted Strata and Unconformable Series; Interpretation of Geological History – Nature of Relief and Rock Structure and their Correlation	30
Continuous Internal Assessment			
Assignment/ Presentation/Exercises/Field Work			

**Course outcomes**

- Impart the skills of morphometric analysis based on various techniques
- Able to identify and interpret geological conditions of places

**Reference Books:**

1. Chauhan P.R. (2014): Prayogatmak Bhoogol, Vasundhara Publications, Gorakhpur
2. Davis, R.E. and Foote, F.S.: Surveying - Theory and Practices, Tokyo.
3. Kanetkar, T.P. & Kulkarni, S.V.: Surveying and Leveling, Pune.
4. Mailing, D.H. (1973): Co-ordinate Systems and Map Projections. George Philip and Sons Ltd.
5. Misra, R.P. and Ramesh, A. (1999): Fundamentals of Cartography. Concept Publishing Company, New Delhi.
6. Monkhouse, F.J. and Wilkinson, H. R (1962): Maps and Diagrams, Methuen and Company Ltd. and Company Ltd., London.
7. Raisz, E. (1962): Principles of Cartography. McGraw Hill Books Company, Inc., New York.

**Code: MGEP415****Course: Research Project****Title of the Paper: Report Based on Secondary Data Sources****Credits 0+4**

Units	Topics	Sub-topics	Periods
1	Data Collection and Processing	Identification of data sources, withdrawing the suitable data, calculation and representation of data with suitable maps and diagrams	30
2	Report Writing	Detailed Project Report based on the collected data through secondary data sources.	30

**Reference**

1. Kothari, C.R. (1982): Research Methodology in Social Sciences, Inter India Pub., New Delhi.
2. Mishra, H.N. & Singh, V.P. (2002): Research Methodology in Geography, Rawat Publications, Jaipur.
3. Misra, R.P. & Ramesh, A. (1999): Fundamentals of Cartography, Concept Pub. Co., New Delhi.
4. Misra, R.P. (1985): Research Methodology, Concept Publishing Co., New Delhi.
5. Stoddart, R.H. (1982): Field, Techniques and Research Methods in Geography, Kendall Hunt, Dubuque.
6. Tandon, B.C. (1997): Research Methodology in Social Sciences, Chaitanya Pub., Allahabad.
7. Warf, B. (Ed) (2006): Encyclopedia of Human Geography, SAGE Publications, London.

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**Code: MGEE416**

**Course: Elective**

**Title of the Paper: Geography of Tourism**

**Credits 4+0**

Units	Topic	Sub-topic	Periods
1	Introduction	Concept, Nature, Scope & Approaches, Elements of Tourism; Evolution of Tourism Studies; Types of Tourism, Cultural, Environmental, Socio-cultural & Economic Impact of Tourism.	15
2	Infrastructure	Role of Infrastructure in Promotion of Tourism – Transport & Communication, and Markets; Information Technology; Travel Agents & Tour Operators.	15
3	Tourist Circuits	Major Tourist Circuits of the World; Evolution & Growth of Tourism in India; Trend of Tourism in India, Major Tourist Circuits (India) & their Salient Features	15
4	Tourism Organizations	Tourist Organizations: Domestic and International; Problems & Prospects of Tourism in India; Planning & Management of Tourism.	15


**Course outcomes**

- Introducing relationship between geographical elements and tourism based on natural and cultural factors.
- Discuss about evolution of tourism studies in Geography and Role of infrastructure, information technology, transportation and communication in tourism promotion.



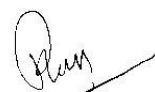
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Dr. P. S. Singh

**Code: MGEE416**

**Course: Elective**

**Title of the Paper: Geography of Tourism**

**Credits 4+0**

Units	Topic	Sub-topic	Periods
1	Introduction	Concept, Nature, Scope & Approaches, Elements of Tourism; Evolution of Tourism Studies; Types of Tourism, Cultural, Environmental, Socio-cultural & Economic Impact of Tourism.	15
2	Infrastructure	Role of Infrastructure in Promotion of Tourism – Transport & Communication, and Markets; Information Technology; Travel Agents & Tour Operators.	15
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4	Tourism Organizations	Tourist Organizations: Domestic and International; Problems & Prospects of Tourism in India; Planning & Management of Tourism.	15

#### Course outcomes

- Introducing relationship between geographical elements and tourism based on natural and cultural factors.
- Discuss about evolution of tourism studies in Geography and Role of infrastructure, information technology, transportation and communication in tourism promotion.

#### Reference Books:

1. Bhatia, A. K. (1991): International Tourism - Fundamentals and Practices, Sterling Publisher, New Delhi
2. Bhatia, A. K. (1996): Tourism Development: Principles and Practices, Sterling Publisher Ltd., New Delhi
3. C.Huster and H.Green: Tourism and the Environment: A Sustainable Relationship, Routledge, London, 1995.
4. C.M.Hall and S.J.Page: The Geography of Tourism and Recreation, Environment, Place and Space, Routledge, London, 1999.
5. D.Milton: Geography of World Tourism, Prentice Hall, New York, 1993.
6. D.S.Bhardwaj and M.Chaudhary (1997): Contemporary Issues in Tourism, Himalaya Mumbai.
7. Das, M. (1999): India: A Tourist Paradise, Sterling Publishers, New Delhi.
8. E.Inskeep: Tourism Planning: An Integrated and Sustainable Development Approach, Van Nostrand and Rein hold, New York, 1991.
9. G.Shaw and A.M.Williams: Critical Issues in Tourism: A Geographical Perspective, Blackwell, Oxford, 1994.
10. H.Robinson: A Geography of Tourism, Macdonald and Evans, London, 1976.
11. J. Lee: Tourism and Development in the Third World, Routledge, London, 1988.
12. N.K.Garg (1996): Tourism and Economic Development, Avishkan, Jaipur.
13. P.C.Sinha: International Encyclopaedia of Tourism Management, Vol.1-12, Anmol, New Delhi
14. Pearce, D. G. (1987): Tourism Today: A Geographical Analysis, Longman, Harlow.
15. R.K.Kaul: Dynamics of Tourism and Recreation, Inter India, New Delhi, 1985.
16. Ryan Cris (1991): Recreational Tourism: A Social Science Perspective, Routledge, London.
17. Smith, L. J. S. (2010): Tourism Analysis: A Handbook, Halstead Press, Sydney.

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**Code: MGEE417**

**Course: Elective**

**Title of the Paper: Political Geography**

**Credits 4 +0**

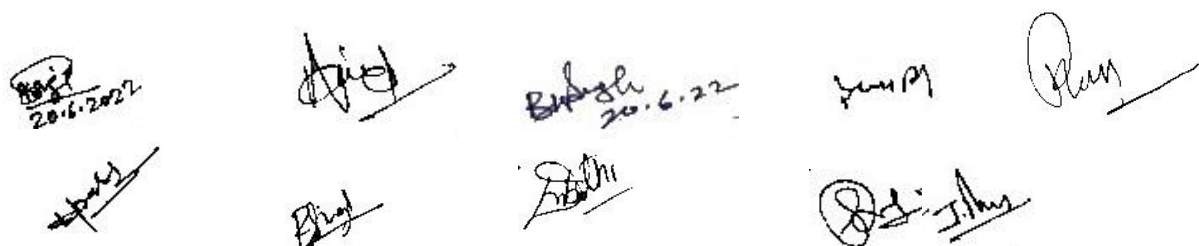
Units	Topics	Sub-topics	Periods
1	Introduction & Approaches	Nature & Scope, Evolution & Development of Political Geography; Contribution of German, British & American Scholars; Approaches to the Study of Political Geography in reference to Functional and Unified Field Theory	15
2	Nation and State	The Concept of Nation and State; Spatial Factors and Anatomy of State: Core Areas and Capitals; Frontiers and Boundaries. Evolution of Federalism, Origin and Success of Federalism in India	15
3	Strategic Views	Global Strategic Views with particular emphasis on the ideas of Mahan, Mackinder, Spykman and Deseveresky, Geopolitical Setting of India, Significance of Indian Ocean;	15
4	Spatial Organisation	Elements of Electoral Geography; Geopolitical Problems of India in Relation to its Neighbours; Contemporary Problems of India; Regional Co-operations – SAARC, ASEAN, European Union.	15

#### Course Outcomes

- To understand the scope and development of the subject matter with the understanding of the various approaches involved
- To develop the understanding on the concepts related to the anatomy of the state based on the current philosophy and established theories.
- To understand the spatial processes involved in the success of the federalism and electoral geography.
- To understand the Geopolitical Setting of India in relation to the neighbours and its significance in the world regional settings.

#### Reference Books:

1. Adhikari, S. (2005): Political Geography of India, SharadaPustakBhawan, Allahabad
2. Busteed, M.A. (1980): Developments in Political Geography, London.
3. Carlson, L. (1971): Geography and World Politics, Prentice Hall, New Jersey.
4. Chauhan, P.R. (1996): RajnitikBhoogol, VasundharaPrakashan, Gorakhpur.
5. Cox, K. (2002): Political Geography: Territory, State and Society, Wiley-Blackwell
6. Dikshit, R.D. (1989): Political Geography: A Contemporary Perspective, Tata McGraw Hill, New Delhi.
7. Dikshit, S.K. (2007): RajnitikBhoogolAvamBhurajni, VishwavidyalayaPrakashan, Varanasi.
8. Dwivedi, R.L. (1980): Political Geography, Chaitanya Publishing House, Allahabad.
9. Glassner, M.L. & Blij, H.J.de (1968): Systematic Political Geography, John Wiley, New York.
10. John, R. S. (2002): An introduction to Political Geography, Taylor & Francis.
11. Johnston, R.J. (1982): Geography and the State, Mac Millan, London.
12. Kasperson, R.E. & Minghi, J.V. (1971): Structure of Political Geography, London.
13. Pounds, N. J.G. (1977): Political Geography, McGraw Hill, New York.
14. Sinha, Manorama (1995): Political Geography, Horizon Publication, Allahabad.
15. Sukhwai, B.L. (1985): Modern Political Geography of India, Sterling Publication, New Delhi.
16. Taylor, P. (1985): Political Geography, Longman, London, 1985.


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**Code: MGEE418**

**Course: Elective**

**Title of the Paper: Urban Geography**

**Credits 4+0**

Units	Topic	Sub-topics	Periods
1	Introduction	Meaning & Scope; Development of Urban Geography in India Urban Growth in Ancient, Medieval, and Modern Period Megalopolis & Conurbation, Trends of Urbanisation in India.	15
2	Models in Urban Geography	Urban Growth Models: Concentric Zone, Sectoral, and Multi-nuclei Model, Concept of Rank Size Rule and Primate City	15
3	Urban Morphology	Concept of Urban Morphology, Functional Classification of Urban Centres, Concept of Umland Urban Fringe: Concept & Characteristics	15
4	Urban Policies & Planning	Problems of Cities Concept of Town Planning: Aims & Principles, Problems and Prospects of Town Planning in India Urban Policies & Smart Cities	15
<b>Continuous Internal Assessment</b>			

#### Course outcomes

- To know the scope and advancement of the Urban Geography as an established branch of the Geography as a subject
- To understand the spatial processes of urban growth and factors which affect the origin and development of urban settlements.
- To build the theoretical understanding based on certain models related to the processes of the urban morphology.
- To understand the theoretical and functional classification of the urban settlements and the related socio-economic problems and planning issues.

#### Reference Books:

1. Alam, S.M. (1965) Hyderabad-Secundrabad : A Study in Urban Geography, Allied Publishers, Mumbai.
2. Bansal, S.C. (2008) Urban Geography (in Hindi), Meenakshi Prakashan, Meerut.
3. Bose, A. (1980): India's Urbanisation, Tata McGraw Hill, New Delhi.
4. Carter, H. (1979): The Study of Urban Geography, Arnold Heinemann, London.
5. Gibbs, J. P. (Ed.), (1961): *Urban Research Methods*, Princeton.
6. Hall, T. (2006): Urban Geography, Routledge, London.
7. Karan, M.P. (1991) Urban Geography (in Hindi), Kitab Ghar Acharya Nagar, Kanpur.
8. Mandal, R.B. (2000) Urban Geography: A Textbook, Concept Publishing Company, New Delhi.
9. Mayer, H.M. & Kohn, C.F. (1967): Reading in Urban Geography, Central Book Depot, Allahabad.
10. Pacione, M. (2009): Urban Geography, Routledge, New York Press, New Delhi.
11. Ramchandran, R. (1997): Urbanization and Urban Systems in India, Oxford University.
12. Rao, B.P. and Sharma, N. (2000) Urban Geography (in Hindi), Vasundhara Prakashan, Gorakhpur.
13. Siddharth, K. and Mukherjee, S. (2013): Cities, Urbanization and Urban System, Kishalay Prakashan,
14. Singh, O.P. (1979) Urban Geography (in Hindi), Tara Publication, Varanasi.
15. Singh, R.L. (1955) Banaras: A Study in Urban Geography, Nand Kishore & Sons, Varanasi.
16. Singh, Ujagir (1974) Urban Geography (in Hindi), Uttar Pradesh Hindi Granth Academy, Lucknow.

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**Code: MGEE419****Course: Elective****Title of the Paper: Rural Development****Credits 4+0**

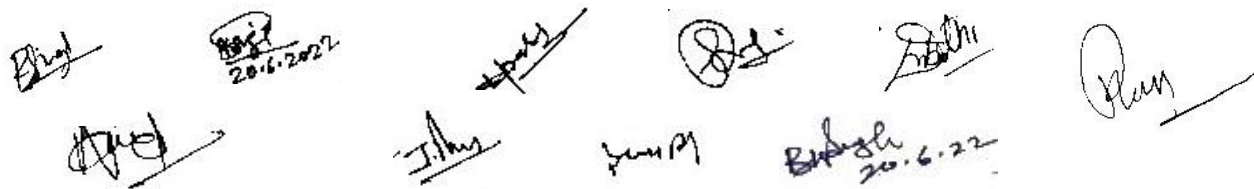
Units	Topics	Sub Topics	Periods
1.	Introduction	Concept of Rural Development, Approach of Rural Development. Need for Rural Development: Sectoral Imbalance in Rural Development	15
2.	Spatial Linkages	Panchayati Raj: Structure and Role in Rural Development Rural-Urban Divide and Continuum, Core and Periphery Relations. Backward and Forward Linkages of Rural Economy.	15
3.	Major Issues	Issues and Problems of Rural Areas, Causes & Consequences of Rural Population Migration in India. Transition of Rural Livelihood: Risk and Opportunities	15
4.	Policies & Programmes	Area Based Approach to Rural Development: DPAP, PMGSY, Target Group Approach to Rural Development: SJSY, MNREGA, Jan Dhan Yojna IRD, PURA,	15
<b>Continuous Internal Assessment</b>			

**Course outcomes**

- It introduces basic concept of rural development and its approaches.
- Appraise problems of rural areas and change in rural livelihood.
- Able to analyse policy planning and integrated rural development.

**Reference Books:**

1. Arora, R.C. (1999): Integrated Rural Development, S. Chand & Company, New Delhi.
2. Bhaduria, B.P.S. (1988): Rural Development Strategy and Perspective, Anmol Publication, Delhi.
3. Chauhan, P.R. (1996): Regional Disparities in the Levels of Development, AMGI, Gorakhpur.
4. Dak, T.M. (1987): Social Inequalities and Rural Development, National Publishing House, New Delhi.
5. Desai, Basant (1988): Rural Development VI Vols., Himalaya Publishing House, Mumbai.
6. Dubey, Bechan (1990): Integrated Rural Development (Hindi), Mishra Trading Company, Varanasi.
7. Mishra, R.P. (1987): Rural Development – Capitalist and Socialist Paths, Concept, New Delhi.
8. Misra, R.P. & Sundaram, K.V. (1988): Rural Area Development: Perspective and Approaches, Sterling Publishers, New Delhi.
9. Sharma, S.K. (1990): Integrated Rural Development: Approaches, Strategy and Perspectives, Abhinav Publication, New Delhi.
10. Singh, Katar (1990) Rural Development : Principles, Policies and Management, Sage Publications, New Delhi.
11. Singh, S.K. (2002): Rural Development Policies & Programmes, Northern Book Centre, New Delhi.
12. Srivastava, V.K., Sharma N. & Chauhan, P.R. (2002): Pradeshik Niyojan Avam Santulit Vikas, Vasundhara Prakashan, Gorakhpur.
13. Dikshit, S.K. (2012): Population and Regional Development, Radha Publication, New Delhi.


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**Code: MGEE420****Course: Elective****Title of the Paper: Regional Analysis****Credits 4+0**

Units	Topics	Sub Topics	Periods
1	Concepts	Regional Analysis: Concept and Needs, Development: Concepts, Identification of Indicators and Determinants	15
2	Development Sectors	Sectors of Development: Indicators of different Sectors, Methodology used in Measurement of different Sectors	15
3	Regional Pattern	Regional Pattern of Development in India: Agriculture, Education, Health, and Employment.	15
4	Approaches to Social & Human Development	Quality of life, Basic needs: Objectives and Subjective needs, Human Development Index, Capability Index, Gender Sensitive Index,	15
<b>Continuous Internal Assessment</b>			

**Course outcomes**

- Introduce meaning and concepts of regional analysis and development concepts.

**Recommended Books:**

1. Alonso, W. & Friedmann, E. (1970): Regional Development and Planning, Longman, London.
2. Bhat, L.S. (1973): Regional Planning in India, Statistical Publishing Society, Kolkata.
3. Chand, M. and Puri, V. K. (2003): Regional Planning in India, Allied Publishers Pvt. Ltd., New Delhi
4. Chandana, R. C. (2000): Regional Planning: A Comprehensive Text, Kalyani Publishers, Ludhiana
5. Dube, K. N. (1990): Planning and Development in India, Asia Publishing House, New Delhi
6. Dubey, K.K. & Singh. M.B. (1988): PradeshikNiyojan, Tara Publication, Varanasi.
7. Friedmann, J. and Alonso, W. (1967): Regional Development and Planning: A Reader, MIT Press, New York
8. Ginsburg, N.S. (1959): The Regional Concept and Planning, Regional Planning UNO, New York.
9. Glassen, John (1978): An Introduction to Regional Planning, Hutchinson, Educational, London.
10. Glasson, J. and Marshall, T. (2007): Regional Planning, Routledge, New York
11. Glikson, Arther (1985): Regional Planning and Development, London.
12. Govt. of India (1986): Regional Plan 2001: National Capital Region, NCRPB, Ministry of Urban Development, New Delhi
13. India Year Book (2014): Publication Division, New Delhi
14. Isard, W (1963) Methods of Regional Analysis: an Introduction to Regional Science, The MIT Press, Cambridge, Massachusetts.
15. Mishra, H. N. (2005): Regional Planning, Rawat Publication, Jaipur
16. Mishra, R. P. (2002): Regional Planning in India- Concept Publication, New Delhi
17. Mishra, R.P. (1992): Regional Planning: Concepts, Techniques, Policies and Case Studies, Concept Pub., New Delhi.
18. Mishra, R.P. et. Al. (1987): Regional Development Planning in India : A New Strategy, Vikas Pub., New Delhi.
19. Mishra, R.P. et.al. (1980): Multi Level Planning, Heritage Publishers.
20. Ojha, R.N. (1987): PradeshikNiyojan, Kitabghar Acharya Nagar, Kanpur.
21. Singh, J. (1981): Central Places & Integrated Development in a Backward Economy, Gorakhpur.
22. Smith, David M. (1977): Human Geography – A Welfare Approach, Edward Arnold Publishers Ltd., London

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## Semester IX

**Code: MGEC421**

**Course: Theory -Core**

**Title of the Paper: Climatology**

**Credits 4+0**

Unit	Topic	Sub-topics	Periods
1	Nature and Scope of Climatology	Definition and Scope of Climatology; Composition and Structure of the Atmosphere; Insolation, Heat Balance of the Earth; Distribution & Inversion of Temperature.	15
2	General Climatology	Air Pressure, Winds and general circulation models; Humidity; Mechanism of Monsoon – Recent Concepts;	15
3	Synoptic Climatology & climatic regions	Classification and Properties of Air Masses and Fronts; Tropical and Temperate Cyclones; Climatic Regionalisation and classification : Koppen & Thornthwaite;	15
4	Applied Climatology	Climate & Landforms, Climate & Vegetation; Agro-climatology; Climate and Human Health; Heat Islands. Weather Forecasting	15
<b>Continuous Internal Assessment</b>			

### Course outcomes

- Introduces the meaning, scope and development of modern climatology
- Critically examine the mechanism of monsoon and climatic regionalisation.
- Comprehend circulation of atmosphere, human impact on the climate and appliedclimatology.

### Reference Books:

1. Banerji, R.C. & Upadhyay, D.S. (1999): Mausam Vigyan, Rajasthan Hindi Granth Academy, Jaipur.
2. Critchfield, H.J. (2002): General Climatology, Prentice Hall of India, New Delhi.
3. Hobbs, J.E. (1983): Applied Climatology, Butterworths, London.
4. Kendrew, W.G. (1972): Climatology, Oxford Uni. Press.
5. Lal, D.S. (2001): Climatology, Chaitanya Pub. House, Allahabad.
6. Lockwood, J.G. (1974): World Climatology and Environmental Approach, Edward Arnold, London.
7. Mathur, J.R. (1974): Climatology: Fundamentals and Applications, Mc Hill Book Company, New York.
8. Negi, B.S. (1999): Climatology and Oceanography (in Hindi), Kedarnath Ramnath, Meerut.
9. Rob Van Den Berg (2009) Evaluating Climate Change and Development. Prentice Hall, Englewood Cliffs, New Jersey 0762, 1998
10. Sidhartha, K. (2002): Atmosphere, Weather and Climate, Kislay Pub. Pvt. Ltd., New Delhi.
11. Singh, Savindra (2005): Climatology, Prayag Pustak Bhawan, Allahabad.
12. Subrahmaniam, V.P. (1992): Contribution to Indian Geography Part – III – General Climatology, Heritage Publication, New Delhi.
13. Trewartha, G.T. (1954): An Introduction to Climate, McGraw Hill Series in Geography. New York
14. Upadhyay, D.P. & Singh, R. (2003): Climatology and Hydrology (in Hindi), Vasundhara Prakashan, Gorakhpur.

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**Code: MGEC422**

**Course: Theory-Core**

**Title of the Paper: Regional Geography of India**

Credits **4+0**











Units	Topics	Sub Topics	Periods
1	Region and Regionalization	Concept of Region and Regional Geography, Types of Region, Methods of Regionalization, Macro, Meso and Micro Regions of India. Attempts of Regionalization with reference to Stamp, Spate, & R.L. Singh	15
2	Regional Analysis of Problematic Regions	Kashmir Himalaya, North Eastern Region Tribal Regions: Central India Middle Ganga Plain	15
3	Problems and Prospects of Development- Case Studies	Chhotanagpur Plateau Malabar Coast Punjab Plain, Malwa Plateau,	15
4	Development Programmes of Specific Areas	Drought Prone Areas, Flood Prone Areas Desert Areas Hill Areas	15
<b>Continuous Internal Assessment</b>			

## Course outcomes

- It introduces the concept of region and regionalisation and regionalization of India
- Able to identify problems and prospects of development of different region of India
- Comprehend development programmes of specific areas.

### Reference Books:

1. Bansal, S.C. (1999): Advanced Geography of India, Meenakshi Publication, Meerut.
2. Chauhan P.R. (2001): Bharat Ka Vrihat Bhoogol, Vasundhara Prakashan, Gorakhpur.
3. Deshpande C.D (1992): India: A Regional Interpretation, Northern Book Centre, New Delhi.
4. Gautam, Alka (2001): Geography of India, Sharda Pustak Bhawan, Allahabad.
5. Govt. of India: Economic Survey, Ministry of Finance, New Delhi.
6. Hussain, Majid (2008): Advance Geography of India, Tata McGraw Hill, New Delhi.
7. Johnson, B.L.C. (1983): Development in South Asia. Penguin Books, Harmondsworth.
8. Khullar, D.R. (2006) India: A Comprehensive Geography, Kalyani Pub., New Delhi.
9. Krishnan, M. S. (1968): Geology of India and Burma. 4<sup>th</sup> edition. Higginbothams Private. Ltd., Madras.
10. Nag, P. and Gupta S. S. (1992): Geography of India. Concept Publishing. Company, New Delhi.
11. Sharma, T. C. (2003): India: Economic and Commercial Geography. Vikas Publication., New Delhi.
12. Singh, J. (2003): India: A Comprehensive and Systematic Geography. Gyanodaya Prakashan, Gorakhpur.
13. Singh, R. L. (ed.) (1971): India. A Regional Geography. National Geographical Society of India, Varanasi.
14. Spate, O.H.K. & Learmonth, A.T.A. (1954) : India & Pakistan, Methuen, London.
15. Tiwari, R. C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad
16. Wadia, D. N. (1959): Geology of India. MacMillan and Company, London and Madras.

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**Code: MGEL423**

**Course: Practical**

**Title of the Paper: Surveying**

**Credits 0+4**

Units	Topic	Sub topic	Periods
1	Surveying	Levelling and Plotting by Dumpy Level	20
2	Measuring	Measurement of Horizontal and Vertical Angle by Theodolite	20
3	Mapping	Area Map by Telescopic Alidade	20
Continuous Internal Assessment			

### Course outcomes

- Enable students to handle surveying instruments: Dumpy Level, Theodolite, and Telescopic Alidade

### Reference Books:

1. Chauhan P.R. (2014): Prayogatmak Bhoogol, Vasundhara Publications, Gorakhpur
2. Davis, R.E. and Foote, F.S.: Surveying - Theory and Practices, Tokyo.
3. Kanetkar, T.P. & Kulkarni, S.V.: Surveying and Leveling, Pune.
4. Mailing, D.H. (1973): Co-ordinate Systems and Map Projections. George Philip and Sons Ltd.
5. Misra, R.P. and Ramesh, A. (1999): Fundamentals of Cartography. Concept Publishing Company, New Delhi.
6. Monkhouse, F.J. and Wilkinson, H. R (1962): Maps and Diagrams, Methuen and Company Ltd. and Company Ltd., London.
7. Raisz, E. (1962): Principles of Cartography. McGraw Hill Books Company, Inc., New York.
8. Robinson (1991): Aerial Photography and Cartography, Mac Millan, London.
9. Robinson, A. H. H., Sale R., Morrison J. and Muehrcke, P. C (1984): Elements of Cartography, 6<sup>th</sup> edition John Wiley and Sons, New York.
10. Sahani, P.B. (1993): Advance Surveying, New Delhi.
11. Singh, J. et.al. (1990): Bhaumikiya Manচিতro Ki Ruprekha, Vasundhara Prakashan, Gorakhpur.
12. Singh, L.R. (2001): Practical Geography, Sharda Pustak Bhawan, Allahabad.
13. Singh, R. L. and Singh, Rana P.B. (1993): Elements of Practical Geography. Kalyani Publishers, Ludhiana and New Delhi. (English and Hindi editions).
14. Tiwari, R.C. and Tripathi, Sudhakar (2001): Abhinav Prayogatmak Bhoogol, Prayag Pustak Bhawan, Allahabad.

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**Code: MGEP424**

**Course: Research Project**

**Title of the Paper: Tour Based Project Report**

**Credits 0+4**

Units	Topic	Sub topic	Periods
1	Field Study*	Detailed field observation and interpretation with sample survey.	30
2	Report Writing	Preparation of a report using sketches, diagrams & photographs of visited area.	30
Continuous Internal Assessment			

**\*The field study must be conducted in the areas other than the Gangetic Plain. The TA/DA and other allowances for the tour in-charge of the field study will be withdrawn from the Lab Fund to respective Institution (All the responsibilities should be taken by Head of the Institution).**

**Reference Books:**

1. Alonso, W. & Friedmann, E. (1970): Regional Development and Planning, Longman, London.
2. Bhat, L.S. (1973): Regional Planning in India, Statistical Publishing Society, Kolkata.
3. Chand, M. and Puri, V. K. (2003): Regional Planning in India, Allied Publishers Pvt. Ltd., New Delhi
4. Chandana, R. C. (2000): Regional Planning: A Comprehensive Text, Kalyani Publishers, Ludhiana
5. Dube, K. N. (1990): Planning and Development in India, Asia Publishing House, New Delhi
6. Dubey, K.K. & Singh. M.B. (1988): PradeshikNiyojan, Tara Publication, Varanasi.
7. Friedmann, J. and Alonso, W. (1967): Regional Development and Planning: A Reader, MIT Press, New York
8. Ginsburg, N.S. (1959): The Regional Concept and Planning, Regional Planning UNO, New York.
9. Glassen, John (1978): An Introduction to Regional Planning, Hutchinson, Educational, London.
10. Glasson, J. and Marshall, T. (2007): Regional Planning, Routledge, New York
11. Glikson, Arther (1985): Regional Planning and Development, London.
12. Govt. of India (1986): Regional Plan 2001: National Capital Region, NCRPB, Ministry of Urban Development, New Delhi
13. India Year Book (2014): Publication Division, New Delhi
14. Isard, W (1963) Methods of Regional Analysis: an Introduction to Regional Science, The MIT Press, Cambridge, Massachusetts.
15. Mishra, H. N. (2005): Regional Planning, Rawat Publication, Jaipur
16. Mishra, R. P. (2002): Regional Planning in India- Concept Publication, New Delhi

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**Code: MGEP425****Course: Elective****Title of the Paper: Remote Sensing****Credits 4+0**

Units	Topics	Sub-topics	Periods
1	Basics of Remote Sensing	Definitions, Scope, potentials and limitations of Remote Sensing; Development in the world and in India, Stages of Remote Sensing, Principles and concept of Remote Sensing: Radiation and Resolution concepts	15
2	Platforms and Sensors	Types of Remote Sensing, Platforms and Sensors, LANDSAT And IRS Satellite System: Sensors, Characteristics	15
3	Satellite Remote Sensing	Principle of Electromagnetic Radiation, Interaction of EMR With water, soil, vegetation and Atmosphere	15
4	Aerial Photo and Photo grammetry	Introduction to Elements of Photographic System: Camera System, Film. Basic Geometry & Characteristics of Aerial Photograph, Scale, Image Parallax, Ortho Photo.	15
<b>Continuous Internal Assessment</b>			


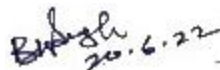
**Course outcomes**

- It gives an overview of remote sensing process
- It introduces aerial photo and photogrammetry and satellite remote sensing
- Enables image processing procedure and identify applications of remote sensing

**Reference Books:**

1. American Society of Photogrammetry (1983): Manual of Remote Sensing, Falls Church, VA.
2. Avery, T. E. and Berlin, G.L. (1992): Fundamentals of Remote Sensing and Air photo Interpretation, Mc Millan, N. York.
3. Barrett, E.C.& Curtis, L.F. (1992): Introduction to Environmental Remote Sensing, Chapman & Hall, New York.
4. Campbell, J. B. (2002): Introduction to Remote Sensing. 5<sup>th</sup> edition. Taylor and Francis, London.
5. Chaunial, D.D. (2001): Remote Sensing and G.I.S. (in Hindi), Sharda Pustak Bhawan, Allahabad.
6. Cracknell, A.P. and Hayes, L.W.B. (1993): Introduction to Remote Sensing, Taylor & Francis, London.
7. Curran, P.J. (1985): Principles of Remote Sensing, Longman, London.
8. Floyd, F. and Sabins, Jr. (1986): Remote Sensing: Principles and Interpretation, W.H. Freeman, New York.
9. George Joseph (2005): Fundamentals of Remote Sensing, New Delhi.
10. Guham, P. K. (2003): Remote Sensing for Beginners. Affiliated East-West Press Private Ltd., New Delhi.
11. Harry, C.A. (ed.) (1978): Digital Image Processing, IEEE Computer Society, California
12. Hord, R.M. (1982): Digital Image Processing of Remotely Sensed Data, Academic Press, New York.
13. Jensen, J.R. (2000): Remote Sensing of the Environment, Dorling Kundersley Publishing Inc. John Wiley and Sons, Singapore
14. Leuder, D.R. (1959): Aerial Photographic Interpretation: Principles and Application. McGraw Hill, New York.
15. Lillesand, T.M. and Kiefer, R.W. (2000): Remote Sensing and Image Interpretation. 4th edition. John Wiley and Sons, New York.
16. Nag, P. (ed.) 1992: Thematic Cartography and Remote Sensing, Concept Publishing. Company, New Delhi.
17. Sabins, F. F. (1996): Remote Sensing: Principles and Interpretation, W.H Freeman, New York
18. Sharma, H.S. (2003): Remote Sensing for Resource Survey, Concept Publication, New Delhi.
19. Spurr, R. (1960): Photogrammetry and Photo Interpretation, The Roland Press Company, London.
20. Survey of India, (1973): Photogrammetry, Survey of India, Dehradun.

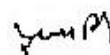

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**Code: MGEE426**

**Course: Elective**

**Title of the Paper: Industrial Geography**

**Credits 4+0**

Units	Topics	Sub Topics	Periods
1	Concepts	Meaning and Scope of Industrial Geography; Industrial Revolution and its Consequences; Factors of Location of Industries; Trends of Industrialization in India	15
2	Location Theories and Pattern	Theories of Industrial Location – Weber, Hoover, Losch; Distribution and Spatial Pattern of Iron & Steel, Textile Problems and Prospects of Industrial Sprawl.	15
3	Industrial Regionalization	Centralization and Decentralization of Industries, Linkages of Industries; Major Industrial Regions of World	15
4	Globalization & Industrial Development	Impact of Globalization on Industrial Development, Industrial Policies and their Implications in Industrialization in India, Sustainable Industrial Development.	15
<b>Continuous Internal Assessment</b>			

#### Course outcomes

- It introduces Meaning and Scope of Industrial Geography and trends of Industrialization in India
- Familiarize different location theories
- Identify spatial patterns of industrialization, globalization and industrial development

#### Reference Books:

1. Alexanderson, C. (1967): Geography of Manufacturing, Prentice Hall, India.
2. Chaudhary, M.R (1970): Indian Industries – Development & Location, Oxford & IBH Company.
3. Kuchhal, S.C. (1997): Industrial Economics of India, Chaitanya Publication, Allahabad.
4. Kumar, Pramila & Sharma, S.K. (1985): Industrial Geography (Hindi), M.P.Hindi Granth Academy, Bhopal.
5. Miller, A. (1962): Geography of Manufacturing, Prentice Hall, New Jersey. Publishing Co. Ltd., New Delhi
6. Seth, V.K. (1987) Industrialization in India: Spatial Perspective, Delhi Commonwealth Publication.
7. Sharma, V.N. (2001): Spatial Pattern of Industrial Development in M.P., Radha Publication, New Delhi.
8. Singh, J. and Dhillon, S. S. (1994): Agricultural Geography, Tata McGraw Hill
9. Sinha, B.N. (1987): Industrial Geography of India, Oxford Book House, New Delhi.
10. Smith, D.M.(1982) Industrial Location : An Economic Geographic Analysis, John Wiley & Sons, New York.
11. Symons, L. (1970): Agricultural Geography, G. Bell and Sons Ltd., London
12. Vaidya, B. C. (1997): Agricultural Land use in India, Manak Publications, New Delhi
13. Weber, Alfred (1957): Theory of Location of Industries, Chicago University Press.

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Code: MGEE427

Course: Elective

Title of the Paper: Agricultural Geography

Credits- 4+0

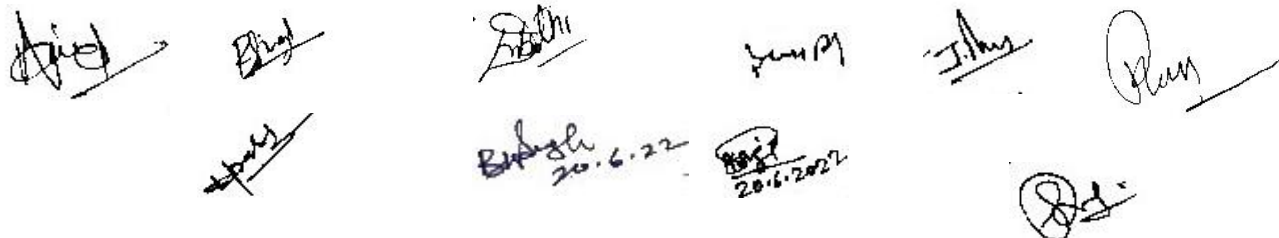
Units	Topics	Sub Topics	Periods
1	Introduction	Definition, Scope and Approaches of Agricultural Geography, Agriculture in Innovations & Diffusion	15
2	Land Use Analysis	Land Capability Classification with Special Reference to India, Land Use Classification with Special Reference to India. Carrying Capacity of Land, Kostrowicki's Classification of World Agriculture.	15
3	Measurement of Agricultural Efficiency	Methods of Agricultural Productivity; Measurement – Kendall's Ranking Coefficient Method, Weighted Ranking Coefficient Method; Regional Imbalances in the levels of Agricultural Productivity in India	15
4	Regionalisation of Agricultural Pattern and Development & Policies	Agricultural regions: Cropping Intensity and Diversification; Concept of Agricultural Development, Sustainable Agriculture, Agricultural revolutions & Recent Policies	15
<b>Continuous Internal Assessment</b>			

**Course outcomes**

- To analyse and understand complex classification of agriculture, land capability & land uses
- To understand the methods of agricultural productivity i.e. Kendal method etc.
- To introduce a systemic framework for issues, conservation and management in agriculturally backward region and their livelihood.
- To support and assimilate the information relating to the levels of agricultural development & policies, to check the disparities in levels of agricultural development.

**Reference Books:**

1. Giri, H.H. (1975): Land Utilization in Gonda District, Shivalaya Prakashan, Gorakhpur.
2. Grigg, D. (1995): An Introduction to Agricultural Geography, Routledge, London
3. Hussain, Majid (1998): Agricultural Geography, Rawat Publications, Jaipur.
4. Kumar, Pramila & Sharma, S.K. (1990) : Agricultural Geography (Hindi), M.P. Hindi Granth Academy, Bhopal.
5. Misra, R.P. (1968): Diffusion of Agricultural Innovation, Concept Publication, New Delhi.
6. Mohammad Ali (1977) Food and Nutrition in India, K.B. Publications,
7. Mohammad Ali (1978) Studies in Agricultural Geography, Rajesh Publishers, New Delhi
8. Mohammad, Noor (1980): Perspectives in Agricultural Geography (Vol. I-IV), Concept Pub. Co., New Delhi.
9. Negi, B.S. (1980): Agricultural Geography, Kdarnath Ramnath, Meerut.
10. Pandey, J.N. & Kamlesh, S.R. (2003) : Agricultural Geography (in Hindi), Vasundhara Prakashan, Gorakhpur.
11. Singh, B.B. (1979): Agricultural Geography (Hindi), Gyanodaya Prakashan, Gorakhpur.
12. Singh, Jasbir & Dillon, S.S. (1984): Agricultural Geography, Tata McGraw Hill Pub., New Delhi.
13. Singh, S.N. (1994): Agricultural Development in India, Kaushal Publications, Shillong.
14. Symons, L. (1970): Agricultural Geography, G. Bell and Sons Ltd., London
15. Tiwari, R.C. & Singh, B.N. (1994) : Agricultural Geography (Hindi), Prayag Pushtak Bhawan, Allahabad.
16. Vaidya, B. C. (1997): Agricultural Land use in India, Manak Publications, New Delhi


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**Course Code: MGEE428**

**Course: Elective**

**Title of the Paper: Social and Gender Geography with special reference to India**

**Credits 4+0**

Units	Topics	Sub Topics	Periods
1	Introduction and Peopling Process of India	Nature and scope of social geography The prehistoric and the historic scene - peopling of India, Social differentiation and region formation: India — unity in diversity	15
2	Geography of Caste and Tribe	Caste and morphology of settlements, Distribution of castes. Tribal Social Formation, Spatial Distribution of Tribes and Impacts of development	15
3	Language and Religion in Indian Society	Language and Dialect, Language classification and Geographical distribution. Religion: Elements of religious identity, Spatial distribution of religious groups, Minority and segregation	15
4	Gender, Society and Space	Social Construction of Gender, Gender Inequalities in reference to Education and Work. Constraints Related to the Women Integration into Development, Understanding of SDG-5 Gender Equality.	15
<b>Continuous Internal Assessment</b>			
Assignment/ Presentation/Exercises/Field Work			

#### Course outcomes

- To analyse and understand complex relationship of society and spatial components.
- To introduce a systemic framework for understanding on gender, society and space..

#### Suggested Readings:

1. AgarwalBina, 1994. A Field of One's Own: Gender and Land Rights in South Asia, Cambridge University Press.
2. Ahmed, A. 1999. Social Geography, Rawat publications, Jaipur.
3. Ahmed, A. 1993. (ed) Social Structure and Regional Development: A Social Geography Perspective, Rawat Publications, Jaipur.
4. Ali, S.M. (1969) The Geography of the Puranas, Delhi: People's Publishing House.
5. Singh, K.S. 1993. People of India Vol I to XI, Oxford University Press, New Delhi.
6. Raza, M. and Ahmed, A. 1990. An Atlas of Tribal India, Concept Publishing Co, Delhi.
7. Sopher, D. (ed.) 1980. An Exploration of India: Geographical Perspectives on Society and Culture, Cornell Press, New York.
8. Schwartzberg, J. 1978. A Historical Atlas of South Asia, University of Chicago Press, Chicago.
9. Crane Robert, I. 1973. Regions and Regionalism in South Asian Studies: An Exploratory Study, Duke University Durham.
10. Massey Doreen, 1994. Space, Place and Gender, University of Minnesota Press, Minneapolis.
11. Registrar General of India, 1972. Economic and Socio cultural Dimensions of Regionalization of India, Census Centenary Monograph No 7, New Delhi.
12. Pannikar, K.M. 1959. Geographical Factors in Indian History, Bharatiya Vidya Bhavan, Bombay.
13. Subba Rao, B. 1958. Personality of India, MS University Press, Baroda.

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**Code: MGEE429**

**Course: Minor Elective**

**Title of the Paper: Environmental Studies**

**Credits 4+0**

Units	Topic	Sub topic	Periods
1	Concept	Concept and elements of Environment, Approaches to study the Environment; Ecosystem: concepts and components. Environment and Society Environment and Development	15
2	Forms and Functions in Ecosystem	Energy availability & flow in trophic level, Ecological Pyramids, Bio Geo-Chemical Cycles: Carbon, Nitrogen. Oxygen Concept of Biodiversity: Depletion and conservation	15
3	Major Ecosystems & Human interactions	Forest, grassland and desert Ecosystem; Carrying Capacity of the Earth: Limits to Growth;	15
4	Environmental Degradation and its Management	Environmental Degradation, Environmental Pollution: types, causes and impact. Environmental Impact analysis, Environment Monitoring and Standard, Environmental policies and Legislations Environmental Management	15

#### Course outcomes

- The paper introduces meaning, elements and different approaches to study environment
- It familiarizes with the forms and functions of ecosystems.
- It enhances the knowledge on various legislation and act on environmental management with special reference to India

#### Reference Books:

1. Chandna, R. C. (2002): Environmental Geography, Kalyani, Ludhiana
2. Cunningham, W. P. and Cunningham, M. A. (2004): Principles of Environmental Science: Inquiry and Applications, Tata McGraw Hill, New Delhi
3. Goudie, A. (2001): The Nature of the Environment, Blackwell, Oxford
4. Mathur, H. S. (2003): Essentials of Biogeography. Pointer Publication, Jaipur.
5. Miller, G. T. (2004): Environmental Science: Working with the Earth, Thomson Brooks Cole, Singapore
6. MOEF (2006): National Environmental Policy-2006, Ministry of Environment and Forests, Government of India, New Delhi
7. Nag, P., Kumra, V.K. and Singh, J. (1990): Geography and Environmental Issues at Local, Regional and National Levels. (in 3 vols.), Concept Publishing Company, New Delhi.
8. Odum, E.P. (1975): Ecology. Rowman and Littlefield, Lanham USA.
9. Rajagopalan, R. (2005): Environmental Studies: From Crisis to Cure, Oxford University Press, New Delhi.
10. Reddy, M. A. (2004): Geoinformatics for Environmental Management. B. S. Publishers., Hyderabad.
11. Saxena, H. M. (1999): Environmental Geography. Rawat Publications., Jaipur and New Delhi.
12. Saxena, H. M. (2000): Environmental Management. Rawat Publications., Jaipur and New Delhi
13. Saxena, K.K. (2004): Environmental Studies. University Book House Private Ltd., Jaipur
14. Singh, D.N., Singh, J. and Raju, K.N.P. (eds.) (2003): Water Crisis and Sustainable Management, Tara Book Agency, Varanasi
15. Singh, J. (2001): Paryavaran Evam Samvikas. Gyanodaya Prakashan, Gorakhpur.

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**Code: MGEE430**

**Course: Elective**

**Title of the Paper: Transport Geography**

**Credits 4+0**

Units	Topic	Sub-topic	Periods
1	Introduction	Definition, Scope & Relevance to the study of Transport Geography, Historical Development of Transport System, Relative Importance of Different Modes of Transport. Concept of Spatial Interaction	15
2	Structure of Transport Network	Evolution of Transport network with special reference to Taffee , Morrill and Gould 's Model. Network analysis- Concept of accessibility and connectivity	15
3	Modes of Transport	Measures of connectivity-Graph theoretic measures – Cyclomatic, Alpha, Beta ,Gama & Detour Index State of Modes and Means of Transport in India – Rail, Road, Waterways and Air	15
4	Policy and Planning	Transport policy in India , Transport planning , Role of Transport in Regional development.	15
<b>Continuous Internal Assessment</b>			

**Course outcomes**

- It introduces meaning and Scope & relevance of the study of Transport Geography.
- Comprehend concept of spatial interaction and its base.
- Examine mode of transport and policy planning with special reference to India.

**Reference Books:**

1. Houle. B.S. (1973): Transport and Development, Mc Millan, London.
2. Hurst, Elliot (1973): Transport Geography – Readings and Comments, Mc Graw Hill Book Co. New York.
3. Jain, J.K. (1997): Transport Economics, Chaitanya Pub. House, Allahabad.
4. Kansky, J. (1963): Structure of Transport Network, University of Chicago, Deptt. of Geography.
5. Raza, M. & Agrawal, Y. (1986): Transport Geography of India, Concept Pub., New Delhi.
6. Robinson, H. & Banford, C. (1978): Geography of Transport, Mc Donald & Evans, London.
7. Singh, J. (1969): Transport Geography of South Bihar, N.G.S.I., B.H.U.
8. Singh, K.N. (1990): Transport Network in Rural Development in Eastern U.P., I.R.E.D., Gorakhpur.
9. Singh, K.N. (2005): ParivahanBhoogol, GyanodayaPrakashan, Gorakhpur.
10. Taffee, E.J. & Gauthier, H.L. (1973): Geography of Transportation, Prentice Hall.
11. White, H.P. & Senior, M.L. (1983): Transport Geography, Longman, London.

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## Semester X

**Code: MGEC431**

**Course: Theory -core**

**Title of the Paper: Oceanography**

**Credits 4+0**

Unit	Topics	Sub-topics	Periods
1	Introduction	Definition, Scope, and Historical development of Oceanography; Major relief features of ocean basins, Relief features of Indian Ocean.	15
2	Physical Property and Dynamics of Ocean	Distribution of temperature, salinity, density and Oceans Currents.	15
3	Marine Environment	Marine Deposits and its Distribution in Ocean; Marine resources; Coral Reefs and Atolls: Theories of their Formation. Marine Ecosystem.	15
4	Political and Economic Significance	Law of the Sea; Exclusive Economic Zone, Geopolitics of Indian Ocean Region, Anthropogenic Pollution, Sea Level Change and Coastal Erosion	15
<b>Continuous Internal Assessment</b>			

### Course outcomes

- The paper introduces physical environment and different oceanic circulations of the marine water.
- It enhances the knowledge regarding the deposits and resources available in marine water
- One can comprehend knowledge on geopolitics with special reference to Indian ocean

### Reference Books:

1. Garrison, T. (1993): Oceanography – An Invitation to Marine Science, Wadsworth
2. Gerald, S. (1985): General Oceanography: An Introduction, New York.
3. Gross, G. M. (1990): Oceanography, Macmillan Publication, New York
4. Joseph, W. S. and Parish, H. I. (1974): Introductory Oceanography, McGraw Hill, Tokyo
5. King, C.A. (1986); Oceanography, C.E. Arnold, London.
6. Lal, D.S. (2003): Oceanography, Sharda Pustak Bhawan, Allahabad.
7. Murrey, A.F. (1980): Applied Oceanography, Longman, London and New Jersey
8. Pinet, P. R. (2009): Invitation to Oceanography, Jones and Bartlett Publishers, Boston Publication Co., California
9. Sharma, R.C. & Vatal, Mira (1995): Oceanography for Geographers, Chaitanya Pub. House, Allahabad.
10. Singh, Savindra (2007): Oceanography, PrayagPustak Bhawan, Allahabad.
11. Stowe, K. S. (1979): Ocean Science, John Wiley and Sons, New York
12. Thurman, H. V. and Trujillo, A. P. (1997): Introductory Oceanography, Prentice Hall,
13. Thurman, H.B. (1983): Introductory Oceanography, Longman, London.
14. Upadhyay, D.P. & Singh, R. (2001): Oceanography (Hindi), Vasundhara Prakashan, Gorakhpur.

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**Code: MGE432**

**Course: Theory -core**

**Title of the Paper: Research Methodology**

**Credits 4+0**

Units	Topics	Sub-topics	Periods
1	Research in Geography	Concept of Research, Types of Research, Research Approaches, Need of Research Design	15
2	Methods and Sources of Data collection	Types and Sources of Data: Census, NSS, Aerial Photographs and Satellite Imageries Techniques of Data Collection: Observation, Questionnaire, Interview, & Schedule; Case Study. Sampling: Design, Methods, & Error	15
3	Research Process	Defining Research Problem: Identification of Problems, Specification of Objectives, and Review of Literature, Research Questions and Hypotheses. Research Plan. Collecting Data, Tabulation and Compilation of Data, Content Analysis	15
4	Research Report writing	Layout of the Research Report: Steps of Report Writing Mechanics of the Research Report: Citation, References, Bibliography, Precautions for writing Research Reports, Research Ethics	15
<b>Continuous Internal Assessment</b>			
Assignment/Presentation/Exercises/Field Work			

**Course outcomes**

- Can understand scientific research in Geography.
- Comprehends method and models
- Explain research process and know report writing.

**Reference Books:**

1. Davis, P.C. (1985): Data Description and Presentation, Oxford, London.
2. Flowerdew, R. et.al. (1997): Methods in Human Geography: A Guide for Students Doing a Research Project, Longman, Harlow.
3. Goudie, A. (Ed) (2004): Encyclopaedia of Geomorphology, Routledge, London,
4. Gregory, D., Johnston, R., Pratt, G., Watts, M. and Whatmore, S. (2009): The Dictionary of Human Geography, Wiley-Blackwell, Singapore
5. Kothari, C.R. (1982): Research Methodology in Social Sciences, Inter India Pub., New Delhi.
6. Mishra, H.N. & Singh, V.P. (2002): Research Methodology in Geography, Rawat Publications, Jaipur.
7. Misra, R.P. & Ramesh, A. (1999): Fundamentals of Cartography, Concept Pub. Co., New Delhi.
8. Misra, R.P. (1985): Research Methodology, Concept Publishing Co., New Delhi.
9. Stoddart, R.H. (1982): Field, Techniques and Research Methods in Geography, Kendall Hunt, Dubuque.
10. Tandon, B.C. (1997): Research Methodology in Social Sciences, Chaitanya Pub., Allahabad.
11. Warf, B. (Ed)(2006): Encyclopedia of Human Geography, SAGE Publications, London

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**Code: MGEL433**

**Course: Practical**

**Title of the Paper: System Analysis**

**Credits 0+4**

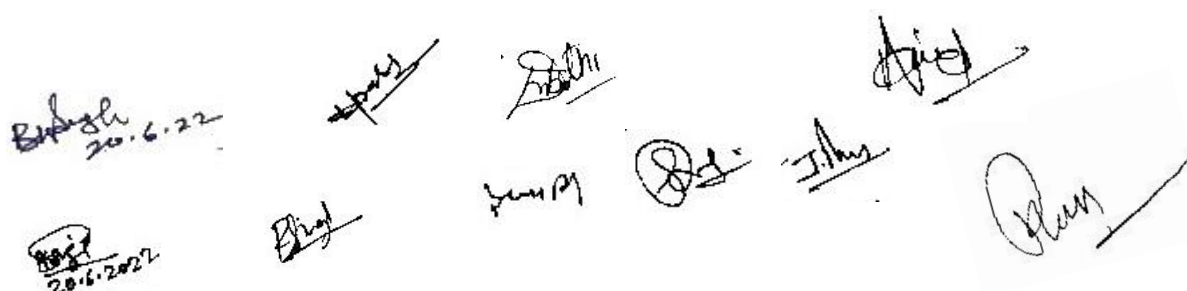
Units	Topic	Sub topic	Periods
1	Measurement of Inequality	Z score, Lorenz Curve and Gini Coefficient, Location Quotient, Coefficient of Localization & Localization Curve	30
2	Network Analysis	Nearest Neighbour Analysis, Network Analysis and Degree of Connectivity, Shape Analysis, Gravity Models, Retail Gravitation.	30
Continuous Internal Assessment			

### Course outcomes

- Introduces different statistical methods to measure inequality
- Impart knowledge on quantitative measurement of spatial patterns and spatial techniques

### Reference Books:

1. Alonso, W. & Friedmann, E. (1970): Regional Development and Planning, Longman, London.
2. Bhat, L.S. (1973): Regional Planning in India, Statistical Publishing Society, Kolkata.
3. Chand, M. and Puri, V. K. (2003): Regional Planning in India, Allied Publishers Pvt. Ltd., New Delhi
4. Chandana, R. C. (2000): Regional Planning: A Comprehensive Text, Kalyani Publishers, Ludhiana
5. Dube, K. N. (1990): Planning and Development in India, Asia Publishing House, New Delhi
6. Dubey, K.K. & Singh, M.B. (1988): PradeshikNiyojan, Tara Publication, Varanasi.
7. Friedmann, J. and Alonso, W. (1967): Regional Development and Planning: A Reader, MIT Press, New York
8. Ginsburg, N.S. (1959): The Regional Concept and Planning, Regional Planning UNO, New York.
9. Glassen, John (1978): An Introduction to Regional Planning, Hutchinson, Educational, London.
10. Glasson, J. and Marshall, T. (2007): Regional Planning, Routledge, New York
11. Glikson, Arther (1985): Regional Planning and Development, London.
12. Govt. of India (1986): Regional Plan 2001: National Capital Region, NCRPB, Ministry of Urban Development, New Delhi
13. India Year Book (2014): Publication Division, New Delhi
14. Isard, W (1963) Methods of Regional Analysis: an Introduction to Regional Science, The MIT Press, Cambridge, Massachusetts.
15. Mishra, H. N. (2005): Regional Planning, Rawat Publication, Jaipur
16. Mishra, R. P. (2002): Regional Planning in India- Concept Publication, New Delhi


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**Code: MGEP434**

**Course: Research Project**

**Title of the Paper: Survey Camp and Project**

**Credits 0+4**

Units	Topic	Sub topic	Periods
1	Field Work	Surveying and Field Work of any given area (Outside of the Campus)	30
2	Contour Mapping	Calculation, Plotting and Contouring of given area (Outside of the Campus) Mapping: Area Map, Reading Map, Reduce level Map, Spot Height Map, Contour Map	30
Continuous Internal Assessment			

### Reference Books:

1. Chauhan P.R. (2014): Prayogatmak Bhoogol, Vasundhara Publications, Gorakhpur
2. Davis, R.E. and Foote, F.S.: Surveying - Theory and Practices, Tokyo.
3. Kanetkar, T.P. & Kulkarni, S.V.: Surveying and Leveling, Pune.
4. Mailing, D.H. (1973): Co-ordinate Systems and Map Projections. George Philip and Sons Ltd.
5. Misra, R.P. and Ramesh, A. (1999): Fundamentals of Cartography. Concept Publishing Company, New Delhi.
6. Monkhouse, F.J. and Wilkinson, H. R (1962): Maps and Diagrams, Methuen and Company Ltd. and Company Ltd., London.
7. Raisz, E. (1962): Principles of Cartography. McGraw Hill Books Company, Inc., New York.
8. Robinson (1991): Aerial Photography and Cartography, Mac Millan, London.
9. Robinson, A. H. H., Sale R., Morrison J. and Muehrcke, P. C (1984): Elements of Cartography, 6<sup>th</sup> edition John Wiley and Sons, New York.
10. Sahani, P.B. (1993): Advance Surveying, New Delhi.
11. Singh, J. et.al. (1990): Bhaumikiya Manchitro Ki Ruprekha, Vasundhara Prakashan, Gorakhpur.
12. Singh, L.R. (2001): Practical Geography, Sharda Pustak Bhawan, Allahabad.
13. Singh, R. L. and Singh, Rana P.B. (1993): Elements of Practical Geography. Kalyani Publishers, Ludhiana and New Delhi. (English and Hindi editions).
14. Tiwari, R.C. and Tripathi, Sudhakar (2001): Abhinav Prayogatmak Bhoogol, Prayag Pustak Bhawan, Allahabad.

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**Code: MGEP435**

**Course: Elective**

**Title of the Paper: Population Geography**

**Credits- 4+0**

Units	Topic	Sub-topics	Periods
1	Introduction	Nature & Scope of Population Geography Approaches of Population Geography, Sources of Population Data	15
2	Population Theories	Pre Malthusian Views, Malthusian Theory, Neo Malthusianism, Demographic Transition Theory, Optimum Population Theory, Social Theories of Population – Marx Biological Theories of Population – Herbert Spencer	15
3	Composition of Population	Distribution & Density of Population World Patterns of Population Growth and Distribution Population Explosion,	15
4	Contemporary Problems & Policies	Types of Migration, Causes and Consequences, Migration Theories: Lee and Ravenstein India's Population Policy, Population Planning with special reference to India.	15
<b>Continuous Internal Assessment</b>			
Assignment/ Presentation/Exercises/Field Work			

**Course outcomes**

- Introduces meaning, scope and approaches to study population geography
- It appraises different population theories
- Student may comprehend population scenarios, its composition and contemporary problems and policies.

**Reference Books:**

1. Agarwal, S. M. (1974): India's Population Problems, McGraw Hill Publishing Co. Ltd., New Delhi.
2. Beaujeu, Garnier (1978): Geography of Population, Longman, London.
3. Berelson, B. (1974): Population Policy in Developed Countries, MacMillan, London
4. Bhende, A. A. and Kanitkar, T. (2011): Principles of Population Studies, Himalaya
5. Chandana, R. C. & Sidhu, M.S (2013): Population Geography, Kalyani Publications, Delhi
6. Desoza, A. A. (1983): Indian Population Problem in Perspective and Social Action, Concept Publications, New Delhi
7. Hazel, B. R. (1994): Population Geography, Singapore Publishers Pvt. Ltd., Singapore
8. Hiralal (2000): JansankhyaBhoogol, Radha Publications, New Delhi.
9. Panda, B.P. (1991): Population Geography (in Hindi), Madhya Pradesh Hindi Granth Academy, Bhopal.
10. Sundaram, K.V. (1985): Population Geography, Heritage Publishers, New Delhi.
11. Trewartha, G.T. (1969): Geography of Population: World Patterns, John Wiley & Sons, New York.
12. Tripathi, R.D. (2008): JansankhyaBhoogolAvamJanakiki, VasundharaPrakashan, Gorakhpur.

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**Code: MGEE436****Course: Elective****Title of the Paper: Regional Planning****Credits 4+0**

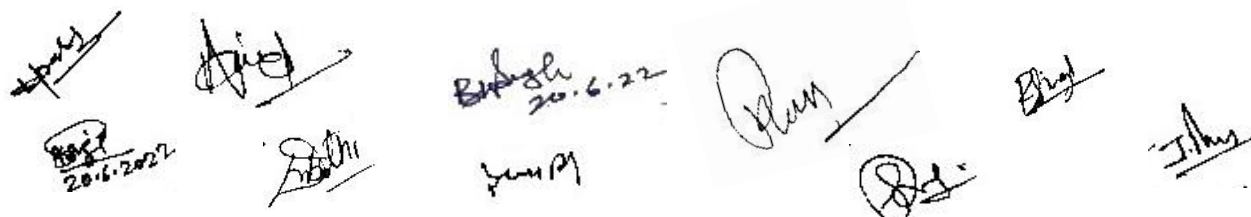
Units	Topic	Sub-topics	Periods
1	Concept	Concept and Scope of Regional Planning, Approaches to regional Planning Concept and Delimitation of Planning Regions;	15
2	Theories & Models	Central Place Theory, Concept of Growth Centres; Growth Centre Strategy for Regional Planning; Cumulative Causation Theory of Myrdal Core – Periphery Relation.	15
3	Planning Regions	Planning Regions of India: Attempts of their delimitation , Regional Planning for Rural Development with Special Reference to Eastern U.P. Regional Planning with special reference to South East Resource Region	15
5	Regional Planning as a Strategy of Development	Meaning and Types of Infrastructure and their role in Regional Development: Transport, Market, and Power	15
Continuous Internal Assessment			

**Course outcomes**

- It helps to understand the scope and based upon various theories it establishes the need of planning of a region.
- To understand the strategies of regional planning and involved the intricacies of delimiting a region and core-periphery relations.
- To understand the role of infrastructure in regional planning and to understand the importance of regional planning as a tool for the development strategy.

**Reference Books:**

1. Alonso, W. & Friedmann, E. (1970): Regional Development and Planning, Longman, London.
2. Bhat, L.S. (1973): Regional Planning in India, Statistical Publishing Society, Kolkata.
3. Chand, M. and Puri, V. K. (2003): Regional Planning in India, Allied Publishers Pvt. Ltd., New Delhi
4. Chandana, R. C. (2000): Regional Planning: A Comprehensive Text, Kalyani Publishers, Ludhiana
5. Dube, K. N. (1990): Planning and Development in India, Asia Publishing House, New Delhi
6. Dubey, K.K. & Singh. M.B. (1988): PradeshikNiyojan, Tara Publication, Varanasi.
7. Friedmann, J. and Alonso, W. (1967): Regional Development and Planning: A Reader, MIT Press, New York
8. Ginsburg, N.S. (1959): The Regional Concept and Planning, Regional Planning UNO, New York.
9. Glassen, John (1978) : An Introduction to Regional Planning, Hutchinson, Educational, London.
10. Glasson, J. and Marshall, T. (2007): Regional Planning, Routledge, New York
11. Glikson, Arther (1985): Regional Planning and Development, London.
12. Govt. of India (1986): Regional Plan 2001: National Capital Region, NCRPB, Ministry of Urban Development, New Delhi
13. India Year Book (2014): Publication Division, New Delhi
14. Mishra, H. N. (2005): Regional Planning, Rawat Publication, Jaipur
15. Mishra, R. P. (2002): Regional Planning in India- Concept Publication, New Delh
16. Mishra, R.P. (1992): Regional Planning: Concepts, Techniques, Policies and Case Studies, Concept Pub., New Delhi.
17. Mishra, R.P. et. Al. (1987): Regional Development Planning in India : A New Strategy Vikas Pub., New Delhi.
18. Mishra, R.P. et.al. (1980): Multi Level Planning, Heritage Publishers
19. Ojha, R.N. (1987): PradeshikNiyojan, KitabgharAcharya Nagar, Kanpur.
20. Sharma, N. (2012): PradeshikNiyojan Geography, DrishtikonPrakashan, New Delhi.
21. Singh, J. (1981): Central Places & Integrated Development in a Backward Economy, Gorakhpur.
22. Srivastava, V.K., Sharma N. & Chauhan, P.R. (2002): PradeshikNiyojanAvamSantulitVikas, VasundharaPrakashan, Gorakhpur.


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**Code: MGEE437****Course: Elective****Title: Geography of Heritage****Credits 4+0**

Units	Topic	Sub-Topic	Periods
1	Frame and Concepts	History of Heritage studies and Geography; definition; Concepts, Relevance and Scope; Sacredscapes, Heritagescapes, Ritualscapes; Pilgrimage and holy-heritage cities; Cultural Landscape, Historic Urban Landscape; Major approaches.	15
2	Typology and Cultural contexts	UNESCO's classifications, problems and limitations; Tangible and Intangible heritages; Spatial tradition, management, planning and conservation.	10
3	India's heritage and Heritage related Institutions	India's heritage: spatial tradition, management, planning and conservation, case studies from India; Distribution and characteristics of heritage sites, religious and pilgrimage contexts of sites. Role of UNESCO, World Bank Programme, and other Institutions; Indian context: history, functions and role of institutions.	20
4	Heritage Programme and Sustainable Development	Heritage and Cultural tourism; Heritage Contestation, Heritage at Risk and World Heritage Sites: Politics, Management, and Sustainable Development Goals (SDGs); Heritage Laws; Holy-heritage Cities of India with case studies; Inclusive Heritage Development.	15

**Reference Book:**

1. Bandarin, Francesco and van Oers, Ron 2012. *The Historic Urban Landscape: Managing Heritage in an Urban Century*. Wiley-Blackwell, Chichester U.K.
2. Bandarin, Francesco and van Oers, Ron (eds.) 2015. *Reconnecting the City: The Historic Urban Landscape Approach and the Future of Urban Heritage*. Wiley-Blackwell, Chichester U.K.
3. Edensor, Timothy; Kothari, Uma and Kalandides, Ares (eds.) 2020. *Routledge Handbook of Place*. Routledge, Taylor & Francis, London & New York:
4. Graham, Brian and Howard, Peter (eds.) 2008. *The Ashgate Research Compendium to Heritage and Identity*. Ashgate, Aldershot U.K.
5. Graham, Brian; Ashworth, Gregory J. and Tunbridge, John E. 2000. *A Geography of Heritage: Power Culture & Economy*. Hodder Arnold Publication, London.
6. Olsen, Daniel and Trono, Anna (eds.) 2018. *Religious Pilgrimage Routes and Trails: Sustainable Development and Management*. CABI Publishers, Wallingford, Oxon U.K.
7. Rodgers, Ana Pereira and Bandarin, Francesco (eds.) 2019. *Reshaping Urban Conservation: The Historic Urban Landscape Approach in Action*. Springer Nature, Singapore.
8. Shaw, Brian J. and Jones, Roy (eds.) 1997. *Contested Urban Heritage. Voices from the Periphery*. Ashgate, Aldershot UK
9. Silva, Kapila D. and Sinha, Amita (eds.) 2016. *Cultural Landscapes of South Asia: Studies in Heritage Conservation and Management*. Routledge, London and New York:
10. Silva, Kapila D. (ed.) 2020. *The Routledge Handbook on Historic Urban Landscapes of the Asia-Pacific*. Routledge, London and New York:
11. Silverman, Helaine and Ruggles, D. Fairchild (eds.) 2007. *Cultural Heritage and Human Rights*. Springer Science, New York.
12. Singh, Rana P.B. (ed.) 2011. *Heritagescapes and Cultural Landscapes*. Planet Earth & Cultural Understanding Series, Pub. 6. [10 essays]. Shubhi Publications, New Delhi.

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**Code: MGEE438****Course: Elective****Title of the Paper: Geographical Information & Positioning System****Credits 4+0**

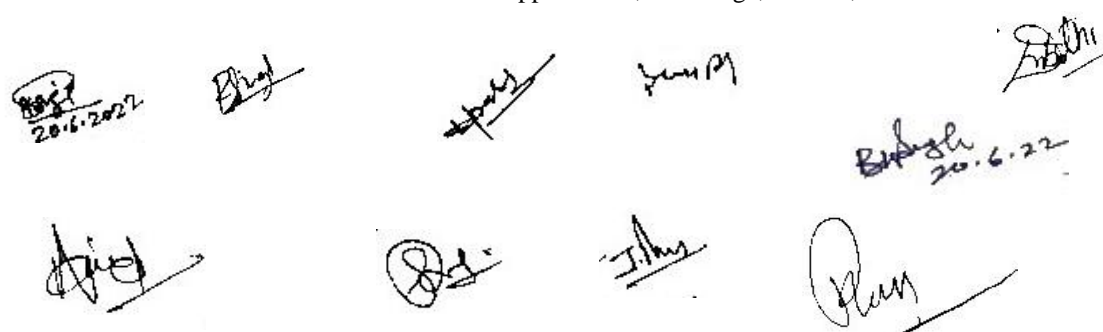
Units	Topic	Sub topic	Periods
1	Geographical Information System	Definition, scope and specific characteristics; its development in the world and in India; Relation of GIS with other collateral subjects like Cartography and Remote Sensing	15
2	Fundamental Concepts	Basic concepts and essential elements of GIS – Map concepts; geo-referencing; types of data involved in GIS; types of data structures, their characteristics, and merits-demerits; Components of GIS; Methods of inputting data in GIS.	15
3	Data Integration and Spatial Analysis	Spatial Hardware and Software components of GIS; Integration of remote sensing data with GIS; Digital terrain modeling (DTM) and its application in GIS; Spatial analysis in GIS - map overlay	15
4	Global Positioning System and DGPS	Global Positioning System (GPS) – basic concepts and applications; Segments of GPS; Errors in GPS; GPS operations and methods; Differential Global Positioning System (DGPS), GNSS and IRNSS	15
<b>Continuous Internal Assessment</b>			

**Course outcomes**

- Familiarize the basic concept and application of Aerial Photography.
- Introduced basic concept and process of remote sensing.
- Comprehend Geographical Information System (GIS) and Geographical Positioning System (GPS).

**Reference Books:**

1. डॉ. देवीदत्तचौनियाल (2010) सुदुरसंवेदनतथाभौगोलिकसुचनाप्राणाली, प्रकाशक : शारदापुस्तकभवन, नईदिल्ली।
2. Atiqur R. & Shahab A. Global Positioning System: Concept, Technique and Application, New Age International Publisher, New Delhi. 2017.
3. Ben L. & Lawrence H. GPS Systems: Technology, Operation, and Applications, Discover Net Publishing, Walnut Street, USA, 2016.
4. Michael, N. Demers. Fundamentals of Geographic Information System, Wiley India. New Delhi. 2015.
5. Lo C.P. & Yeung A.K.W., An Introduction to GIS, P.H.I/Pearson Edu., Asia, 2002
6. Heywoods, I., Cornelius, S and Carver, S., An Introduction to Geographical Information system. Prentice Hall, 2006.
7. Nag, P., Introduction to GIS, Concept India, New Delhi, 2008.
8. Agarwal N.K., Essentials of GPS, Spatial Networks, 2004.
9. Goutam, N.C., Fundamentals of GIS, Pink Pubs. 1993.
10. Lillesand, Thomas M. Remote Sensing and Image Interpretation. Wiley India, New Delhi. 2016.
11. Kraak M.J. & Ormeling F., Cartography: visualization of Geo-spatial Data, Pearson Education Asia., 2nd Ed., 2004.
12. Burrough P.A. & McDonnell R.A., Principles of GIS for Land Resource Assessment, OUP, 2nd ed. 1998.
13. Chrisman N., Exploring Geographic Information Systems, Wiley, 1997.
14. Geodetic Survey Division, GPS Positioning Guide, Govt. of Canada, 1995.
15. Martin D. GIS and their Socio-economic Applications, Routledge, 2nd ed., 1997.


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**Code: MGEE439**

**Course: Elective**

**Title of the Paper: Environmental Hazards and Disaster Risk Reduction**

**Credits 4+0**

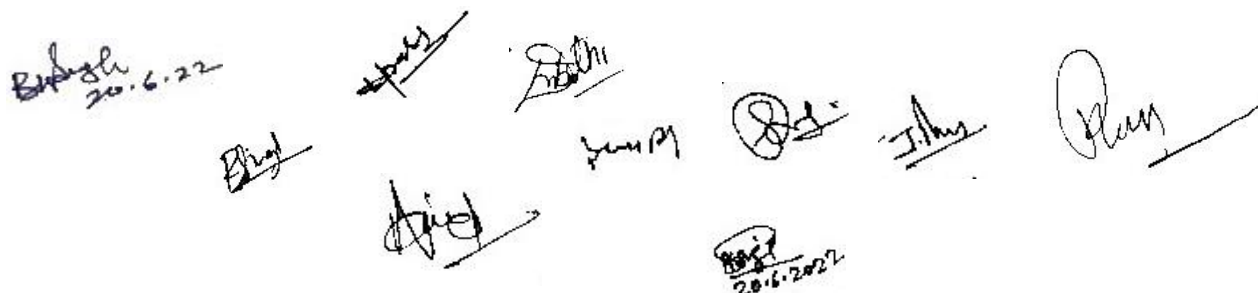
Units	Topic	Sub topic	Credit Hours
1	Introduction	Concepts of Environmental Hazards, Disaster & Risk; Types of Hazards; Concept Disaster Management.	15
2	Disaster Management techniques	Disaster Risk Reduction, Disaster Management Cycle; Risk assessment process; Hazard identification and mapping; Vulnerability Analysis.	15
3	Understanding Environmental Hazards	Characteristics, distribution, impacts and risk reduction measures of: Floods, Earthquakes, Tsunami, & Drought, Major hazards profile of India: Flood, earthquake & cyclones;	15
4	International and National Initiatives	International Decade of Natural Disaster Reduction (IDNDR) & International Strategy for Disaster Reduction (ISDR); National Disaster Management Authority (NDMA), India; Disaster management system in India.	15
<b>Continuous Internal Assessment</b>			

#### Course Outcomes

- Able to understand the fundamental and basics of Environmental hazards.
- Examine the theories and process of disaster risk reduction.
- Comprehend the national and international initiatives for disaster risk reduction programme.

#### Reference Books:

1. Alexander, D. (1993): Natural Disasters, Springer, Berlin
2. Bolt, B.A. et.al. (ed.) (1950): Geological Hazards, Springer, Verlay, New York.
3. Burton, I. et.al. (1978) Environment as Hazards, O.P.O., New York.
4. Goudie, A. (1990): Geomorphological Techniques, Unwin Hyman, London
5. Hart, M. G. (1986): Geomorphology: Pure and Applied, George Allen and Unwin, London
6. Kusky, T. (2012): Encyclopedia of the Hazardous Earth, Viva Books, New Delhi
7. Petak, W.J. and Atkinson, A.D. (1982): Natural Hazards Risk Assessment and Public Policy, Sprinager, Verlay, New York.
8. Roy, P.S. et.al. (2000): Natural Disaster and their Mitigation, ITC Publication.
9. Valdiya, K. S. (1987): Environmental Geology, Tata McGraw Hill, New Delhi
10. White, G.F. (ed) (1974): Natural Hazards, Local, National and Global, Oxford University Press, London.


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**Code: MGEE440**

**Course: Elective**

**Title of the Paper: Resource Appraisal & Management**

**Credits 4+0**

Units	Topic	Subtopic	Periods
1	Introduction	Concept of Resources , Classification of Resources , Attributes of resources , Natural resources-Definition, Concepts and Approaches of Resource management.	15
2	Utilization of Natural Resources	Distribution, Utilization and problems of natural resources with special reference to India. Mineral Resources: Iron Ore, Energy Resource: Coal, Petroleum, Wind, Solar and Nuclear	15
3	Problems of Resource Utilization	Population explosion and pressure on resources. Population Resource Regions of the World, Development and Environmental Issues, Natural hazards and Risk management with emphasis on Earthquake , Flood & Drought	15
4	Conservation And Management	Meaning, Principles and Approaches to conservation, Resource appraisal and management methods, Emerging issues. Sustainable Resource development Integrated Resource development –Ecological, Economic and Social aspects	15
Continuous Internal Assessment			
Assignment/ Presentation/Exercises/Field Work			

#### Course outcomes

- It introduces basic concept of resources, classifications and approaches to study resourcemanagement
- Appraise problems of resource utilization, conservation and management.
- Able to analyse policy planning and integrated resource development.

#### Reference Books:

1. Behra, Deepak Kumar (2000): Resource Management Through Indigenous Knowledge, New Delhi.
2. Berry, B. J.L. (1976): Geography of Economic Systems, Prentice Hall, Englewood Cliff
3. Boyce, R. D. (1974): Bases of Economic Geography, Holt, Rinehart and Winston, New York
4. Hartshorne, T. A. and Alexander, J. W. (2010): Economic Geography, PHI, New Delhi
5. Holechek, J.L. et.al. (2000): Natural Resources: Ecology, Economics and Policy, Prentice Hall, New Jersey.
6. Kellog, C.F. (1986): Food, Soil and People, The Manhattan Publishing Co. New York.
7. Rao, B.P. (2006): Resources and Environment, Vasundhara, Prakashan, Gorakhpur.
8. Siddhartha, K. (2000): Economic Geography: Theories, Process and Patterns,
9. Simmans, I.G. (1981): The Ecology of Natural Resources, Edward Arnold, London.
10. Singh, Jagdish (1998): SansadhanBhoogol, GyanodayaPrakashan, Gorakhpur.
11. Smith, D. M. (1971): Industrial Location: An Economic Geographical Analysis, John Wiley and Sons, New York.
12. Singh, K.N and Siddiqui, A (2012): Economic Geography, PrayagPustakBhawan, Allahabad
13. Smith, G.H. (ed.) (2000): Conservation of Natural Resources, John Wiley, New York.
14. Smith, J.R. (1987): Industrial and Commercial Geography, London.
15. United Nations (2007): Human Development Report, Oxford, UNDP.
16. Zimmermann, E.W. (1966): Introduction to World Resources, Harper & Row, New York.

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