



SNDT Women's University
1, Nathibai Thackersey Road, Mumbai- 400020

Syllabus
M.A. – Geography
(2020 – 2021)

SNDT Women's University
1, Nathibai Thackersey Road, Mumbai- 400020

M. A. Geography - 2020 - 21

Faculty Name:	Humanities
Name of the Programme:	M. A.
Total Credits:	80

Eligibility:

A student is being eligible for admission to M.A. in Geography as per the eligibility norms prescribed by the university.

Programme Specific Outcomes (PSOs)

- Clearly understanding of the concepts and applications in the discipline of Geography.
- Ability of making comprehensive analysis, interpret spatio- temporal problems, suggest proper solutions by using theoretical, methodological and instrumental knowledge of Geography.
- Awareness about the global to local environmental issues and enhancement of social sensitivity.
- Acquired skills that will be useful in personal and professional life.
- Development of research interest to solve critical and emerging issues related to Geography and surrounding environment.

General Instructions:

- The Duration of M. A. programme is of four semesters and of 80 credits. There are five courses per semester. Each course will be of 4 credits. Each semester is of 20 credits. (5 x 4 = 20 Credits)
- For the M. A., courses are classified into Core (compulsory) Courses, Elective (optional) courses and CBCS (Choice Based Credit System) courses.
- In Semester I, and Semester II, students have to study total five courses in each semester.
- In Semester III, if student selects 'Research Component' as elective course, then she has to complete 2 courses of Research Component i.e. total 8 credits.
- In semester IV, if student selects 'Internship Component' as elective course, then she has to complete 2 courses of Internship Component i.e. total 8 credits.
- Students from any disciplines can opt for CBCS courses.
- In semester I, II, III and IV, students have an option to choose CBCS course each of 4 credits.

Evaluation:

- For Geography, each course will have 25% Internal Evaluation (i.e. assignments, projects, seminar- papers, presentations, reports on field visits etc.) and 75% External Evaluation.
- Minimum 40% marks are required in Internal & External assessment separately for passing in each Course.

- Student needs to clear internal assessment to be eligible to appear for semester end (external) examination.

Syllabus Format

Scheme: Semester I

Sr. No	Code No.	Subjects	L	Cr.	P/T	D	TP (E)	Internal	P/V	T
Core Courses										
1	107001	Geomorphology	4	4	--	2.5	75	25	--	100
2	107002	Climatology	4	4	--	2.5	75	25	--	100
3	107201	Practicals in Physical Geography	4	4	--	2.5	--	25	75	100
Elective Course: (any one of the following)										
4	107101	Economic Geography	4	4	--	2.5	75	25	--	100
4	107102	Social and Cultural Geography	4	4	--	2.5	75	25	--	100
Elective Course/CBCS (any one of the following)										
4	107103	Population Geography	4	4	--	2.5	75	25	--	100
5	107104	Geography and International Relations	4	4	--	2.5	75	25	--	100
Total			20	20	--		250	125	75	500

Scheme: Semester II

Sr. No	Code No.	Subjects	L	Cr.	P/T	D	TP (E)	Internal	P/V	T
Core Courses										
1	207005	Research Methodology	4	4	--	2.5	75	25	--	100
2	207006	Statistical Techniques in Geography	4	4	--	2.5	75	25	--	100
3	207202	Practicals in Human Geography	4	4	--	2.5	--	25	75	100
Elective Course: (any one of the following)										
4	207101	Gender Geography	4	4	--	2.5	75	25	--	100
4	207102	Geography of Soils	4	4	--	2.5	75	25	--	100
Elective Course/CBCS (any one of the following)										
5	207103	Geography of Environment	4	4	--	2.5	75	25	--	100
5	207104	Geography of Maharashtra	4	4	--	2.5	75	25	--	100
Total			20	20	--		250	125	75	500

Scheme: Semester III

Sr. No	Code No.	Subjects	L	Cr.	P/T	D	TP (E)	Internal	P/V	T
Core Courses:										
1	307007	Regional Geography of India	4	4	--	2.5	75	25	--	100
2	307008	Geography of Rural Development	4	4	--	2.5	75	25	--	100
3	307203	Advanced Cartography (Practical)	4	4	--	2.5	--	25	75	100
Elective Course: (any one of the following)										
4	307666	Research Component (Writing Research Proposal & Review of Literature)	4	4	--	2.5	--	25	75	100
4	307105	Principles of Regional Planning	4	4	--	2.5	75	25	--	100
Elective Course/CBCS (any one of the following)										
5	307777	Research Component (Dissertation & Viva Voce)	4	4	--	2.5	--	25	75	100
5	307106	Tourism Geography	4	4	--	2.5	75	25	--	100
		Total	20	20	--		150/ 300	225	150/75	500

Scheme: Semester IV

Sr. No	Code No.	Subjects	L	Cr.	P/T	D	TP (E)	Internal	P/V	T
Core Courses:										
1	407001	Urban Geography	4	4	--	2.5	75	25	--	100
2	407002	Agriculture Geography	4	4	--	2.5	75	25	--	100
3	407204	Practicals in Remote Sensing	4	4	--	2.0	--	25	75	100
Elective Course: (one of the following)										
4	407888	Internship Component	4	4	--	2.5	--	25	75	100
4	407107	Geography of Health	4	4	--	2.5	75	25	--	100
Elective Course/CBCS (any one of the following)										
5	407999	Internship Component	4	4	--	2.5	--	25	75	100
5	407108	Geography of Resources	4	4	--	2.5	75	25	--	100
		Total	20	20	--		150/ 300	225	150/75	500

L = No. of Lectures / week, Cr. = Credits, P/T = Practical / Tutorial in hrs., D = Duration of Theory paper for Examination in hrs., TP (E) = Theory paper for Examination marks, Internal = Internal Assessment in marks, P / V = Practical / Viva Voce – marks, T = Total.

SEMESTER – I

Sr. No	Code No.	Subjects	L	Cr.	P/T	D	TP (E)	Inter nal	P/V	T
Core Courses										
1	107001	Geomorphology	4	4	--	2.5	75	25	--	100
2	107002	Climatology	4	4	--	2.5	75	25	--	100
3	107201	Practicals in Physical Geography	4	4	--	2.5	--	25	75	100
Elective Course: (any one of the following)										
4	107101	Economic Geography	4	4	--	2.5	75	25	--	100
4	107102	Social and Cultural Geography	4	4	--	2.5	75	25	--	100
Elective Course/CBCS (any one of the following)										
4	107103	Population Geography	4	4	--	2.5	75	25	--	100
5	107104	Geography and International Relations	4	4	--	2.5	75	25	--	100
		Total	20	20	--		250	125	75	500

M.A Part-I (Sem-I)
Title: Geomorphology

Credits: 4

Marks: 100

Code No: 107001

Hours: 60

Objective

- To sensitise the students towards the judicious use of natural resources and particularly the land resource which is most immobile in nature.
- To understand the development of geomorphic thought, as well as review of fundamental geomorphic processes and theories of evolution of earth.
- To know various geomorphic processes and resultant landforms.
- To understand and application of geomorphic knowledge for land resource management and planning.

Course Content

Unit-1: Nature and Scope of Geomorphology

Definition, Nature and scope of Geomorphology, History & development of Geomorphic Thoughts, Various Fundamental concepts, Approaches, Principle of Uniformitarianism, Recent Trends in Geomorphology

Unit-2: Earth Movements

Interior of the Earth. Sources of Knowledge, Endogenic Forces, Isostasy, Wegener's Continental Drift Theory, Sea Floor Spreading, Plate Tectonics

Unit-3: Geomorphic Processes:

Endogenetic and Exogenetic forces, denudational processes: Mass movement, Weathering, Erosion, Different Weathering Processes, Different Mass Movement Processes, Fluvial Processes, Aeolian Processes, Coastal Processes, Glacial Processes

Unit-4: Applied Geomorphology

Slope and models of slope development, Applied geomorphology, Terrain Evaluation, Geomorphic Mapping, Application of geomorphology in land resource management planning.

Suggested Reading

1. Allaby, Michael (2008): Oxford Dictionary of Earth Science, Oxford University Press, New York.
2. Bloom, A.L. (1991): Geomorphology, 2nd Ed Englewood Cliffs, M.J. Prentice Hall.
3. Brierley, G.J. & Fryirs, K.A. (2005): Geomorphology and River Management, Blackwell Publishing, Oxford UK.
4. Briggs, K. (1985): Physical Geography Process and System, Hodder and Stoughton, London.

5. Chorley, R.J. Schumm, S.A. & Sugden, D.E. (1985): *Geomorphology*, Methuen & Co. Ltd., London, New York.
6. Cook, R.U. & Doornkamp, J.C. (1974): *Geomorphology in Environmental Management, an Introduction*.
7. Fairbridge, R.W., ed. (1968): *Encyclopaedia of Geomorphology* Reinhold, New York.
8. Goudie A.S. et al (1990): (Edt) "*Geomorphological Techniques*", Routledge, London.
9. Goudie, A.S. (2004): (Edt). "*Encyclopedia of Geomorphology*", Routledge, London. London.
10. Hart, M.G. (1986): *Geomorphology Pure and Applied*, George Allen and Unwin, London.
11. Kale, V.S. and Gupta, A. (2001): "*Introduction to Geomorphology*", Orient Longman, Calcutta.
12. King C.A.M. (1967): "*Techniques in Geomorphology*", Edward Arnold Publishers Ltd.
13. Leopold, L.B. Wolman, M.G. & Miller, J.P. (1964): *Fluvial Processes in Geomorphology*, W.H. Freeman, San Francisco.
14. Lobeck, A.K. (1939): *Geomorphology*, McGraw Hill, New York. .
15. Moor, W.G. (1949): *A Dictionary of Geography*, Penguin Books, England.
16. Morgan, R.S. & Wooldridge S.W (1959): *Outline of Geomorphology the Physical basis of Geography*, Longmans Green, London.
17. Ollier, C (1981): "*Tectonics and Landforms*", Longman Group Ltd.
18. Robinson, Harry (1969): *Morphology and Landscape*, University Tutorial Press Ltd. London.
19. Selby M.J. (1986): "*Earth's Changing Surface*", Oxford University Press.
20. Singh Savindar (2002): "*Geomorphology*", PrayagPustakBhawan, Allahabad
21. Singh, Savindra (1991): *Environmental Geography*, PrayagPustakBhavan, Allahabad.
22. Sparks, B.W (1972): "*Geomorphology*", Longman Group Ltd.
23. Strahler, A.H and Strahler A.N (1992): "*Modern Physical Geography*", John Wiley and Sons (Asia) Pvt. Ltd.
24. Strahler, A.N (1969): *Physical Geography*. John Wiley & Sons Inc., New York.
25. Thornbury, W.D. (1960) : "*Principles of Geomorphology*", John Wiley and Sons, New York
26. Wadia, D.N. (1993): *Geology of India*, Tata McGraw Hill Edition, New Delhi.
27. Worcester, P. G. (1948): *Textbook of Geomorphology*, Princeton, D. Van, Norstrand.
28. Young A. (1975) : "*Slopes*", Longman publishing Group.

M.A Part-I (Sem- I)

Title: Climatology

Credits: 4

Marks: 100

Code No: 107002

Hours: 60

Objective

- The course aims at training students in basic principles of climatology
- To analyze Solar and Terrestrial radiation and Heat Budget.
- To understand vertical and horizontal distribution of temperature.
- To make Diagrammatic representation and explanation of Hydrological cycle
- To understand Mechanism of Indian monsoon
- To sensitize students about the climatic influence on society, emerging issues such as global climate change and its consequences

Course Content

Unit I: Nature and Scope

Climate, Weather, Sub-divisions of Climatology, Development of Modern Climatology.

Earth's Atmosphere: Vertical structure and chemical composition.

Insolation and Heat Balance: Solar Energy; Electromagnetic spectrum,; basic processes of heating and cooling (conduction, convection, radiation, absorption, reflection, scattering, transmission, advection), Factors affecting insolation, Latitudinal and Seasonal variation, Effects of Atmosphere, Albedo, Green house effect, Heat Balance of Earth- atmospheric systems.

Temperature

Heat and temperature, measurement and controls; Vertical temperature patterns (lapse rate and temperature inversions), horizontal distribution of temperature.

Unit II: Atmospheric Pressure and Wind

Pressure Measurement, Factors affecting air Pressure and Observed distribution of surface pressure

Wind observation and measurement, factors affecting wind (Pressure gradient , Coriolis force and frictional force), Geostrophic wind and Gradient wind, Local winds.

Circulation of the Atmosphere

Scales of Atmospheric Motion- Primary, Secondary, Tertiary. Local winds, Jet stream and it's effect on the surface weather conditions.

Unit III: Atmospheric Moisture

Humidity measurement, forms of precipitation (rain, freezing rain, Sleet, Drizzle, Snow, Hail) , types of precipitation (Convective, Orographic, Frontal, Convergent); hydrological cycle.

Atmospheric Stability

Stable and unstable atmosphere, Environmental lapse rate, dry and wet adiabatic lapse

rate and Absolute stability, Absolute instability, Conditional instability.

Unit IV: Air Masses: Source region, classification and modifications - (a) Mechanical (b) Thermodynamic; Fronts - Characteristics and Types.

Cyclones: Tropical and extra-tropical cyclones, life cycle, anticyclones.

Monsoon: Mechanism of Indian Monsoon, Monsoon and Indian economy.

Weather forecasting: Methods; Climate Change- global warming and its effects.

Suggested Readings

1. Barry, R. G. and Chorley P. J. (1998): Atmosphere, Weather and Climate, Routledge, London and New York.
2. Critchfield, J. H. (1993, Rep. 2010): "*General Climatology*", Prentice Hall, India, New Delhi.
3. Das, P. K. (2005): "*Monsoons*", Natinal Book Trust, New Delhi.
4. Fein, J.S. and Stephens, P.N. (1987): "*Monsoons*", Wiley Interscience.
5. India Meteorological Department (2011): "*Climatological Tables of Observatories in India*", Government of India.
6. Indian Weather Reports, (www.imdpune.gov.in)
7. Lal, D. S. (1986): "*Climatology*", Chaitanya Publications, Allahbad.
8. Lal, D. S. (Ed 2003): "*Climatology*", Sharda Pustak Bhawan ,11 , University road Allahabad.
9. Lutgens, Frederic K. & Tarbuck, Edward J. (2010): "*The Atmosphere: An Introduction to Meteorology*", Prentice Hall, New Jersey
10. Lydolph, P. E. (1985): "*The Climate of the Earth*", Rowman, 1985.
11. McKnight T.L., (1987): 'Physical Geogrphy: A landscape appreciation., Prentice-Hall, Inc., Englewood Cliffs., N.J.
12. Navarra J. G. Atmosphere, (1979): "*Weather and Climate: An Introduction to Meteorology*", W.B. Saunders Company.
13. Pant G. B. and Rupa Kumar K. (1997): "*Climates of South Asia*", John Wiley and Sons.
14. Robinson, P. J. and Henderson S. (1999): "*Contemporary Climatology*", Henlow.
15. Savindra Singh (Rep. 2011): "*Climatology*", Prayag Pustak Bhawan, Allahabad.
16. Thompson, R. D. and Perry, A (1997): (edt), "*Applied Climatology, Principles and Practice*", Routledge, London.
17. Triwanta Glenn T. (1943): "*An Introduction to Weather and Climate*", New York and London.

M.A Part-I (Sem- I)

Title: Practicals in Physical Geography

Credits: 4

Marks: 100

Code No: 107201

Hours : 60

Objectives

- To identify identification of types of slopes, micro-geomorphic features on the ground and their interrelationship.
- To get skills of climatic data representation, measurement of weather parameters and weather forecasting procedure.

Course Content:

Unit-I: Representation of Relief

Methods of relief representation, Profile- longitudinal profile, Cross profile, Superimposed and composite profile, Methods of slope analysis, Block diagrams

Unit-II: Interpretation of SOI and Foreign Topographical maps

Marginal Information, Index System, Interpretation of SOI sheets, Introduction to Foreign topographical maps

Unit-III: Representation of Climatic Data

Climograph, Simple and compound wind roses, Hythergraph, Koppen's classification of climate, Water Budget

Unit- IV: Indian Weather Reports

Analysis of Indian weather reports (based on online data)
Field visit or survey

Suggested Readings:

1. Crone, G. R. (1966) , “ *Maps and Their Makers*”, 3rd Edition, Hutchinson, London.
2. Goudie A.S. and et.al (1990): (Edt) “*Geomorphological Techniques*”, Routledge, London.
3. Indian Weather Reports, (www.imdpune.gov.in)
4. Kanetkar, T. P. and Kulkarni S. V. (2014), “ *Surveying and Leveling*”, Pune Vidyarthi Prakashan, Pune.
5. King, C. A.M (1966): “*Techniques in Geomorphology*”, Edward Arnold, London
6. Lutgens, Frederic K. & Tarbuck, Edward J. (2010) : “*The Atmosphere: An Introduction to Meteorology*”, Prentice Hall, New Jersey
7. Miller, Austin (1953) : “*The skin of the Earth*”, Methuen & Co. Ltd. London
8. Monkhouse, F. J. and Wilkinson, H. R., (1976) : “*Maps and Diagrams*”, Methuen & Co.

9. Rashid, S. M. , Ishtiaq M. (1974) : “ *Practical Geography*”, Jawahar Publishers and Distributors, New Delhi.
10. Robinson A., Sale R. , Morrison J. (1978) : “ *Elements of Cartography*”, John Wiley and Sons, U.S.A.,
11. Sarkar Ashis (1997) : “ *Practical Geography: A Systematic Approach*”, Orient Black-Swan.
12. Singh R. L. & Rana P. B. Singh (2005) : “ *Elements of Practical Geography*”, Kalyani Publisher, New Delhi.
13. Singh R. L. (1979) : “ *Elements of Practical Geography*”, Kalyani Publisher, New Delhi.
14. Tamaskar, B. G. (1974) : “*Geographical Interpretation of Indian Topographical Maps*”, Orient Logman.

M.A Part-I (Sem- I)
Title: Economic Geography

Credits: 4

Marks: 100

Code No: 107101

Hours : 60

Objectives:

- To comprehend the basic concepts in economic geography in the view of modernization of world economy.
- To understand theoretical models along with technological advancement and make their application for the economic development of lagging regions of the country and people therein.
- To understand the association between trade and transportation and its impact on economic development.

Course Content

Unit-I: Introduction to Economic Geography

Definition, Nature and Scope of Economic Geography; Approaches of Economic Geography ; Classification of Economic activities ; Economic Landscape; Economic System; Recent trends in Economic Geography

Unit II: Industrial Location Theory and Industrial Regions

Factors of Industrial Location ; Industrial Location Theory - Weber's and August Losch's Theory ; Industrial Region of the world and India

Unit III: Transportation and Trade

Transportation : Types of Transportation- Roadways, Railways, Waterways, Air ways and Pipelines; Variation in Transportation Cost

Trade : Types of Trade and Factors affecting International Trade; Trading Blocs

Problems and Prospects International Trade ; Ricardo's Trade Theory

Unit IV : Development : Concepts and Measurements

Concept of Growth and Development; Measurements of Development – Geographical, Economic, Social, Demographic Measures; Rostow's Model; Patterns and Problems of World Economic Development ; Impact of Pandemics (Covid-19) on Indian Economic Development

Suggested Reading

1. Goh cheng Leong, Gillian C. Moran (2009): "*Human and Economic Geography*", Oxford Uni.Press, Honk Kong Second edition.
2. Hanink, D.M. (1997): "*Principles and Applications of Economic Geography, Economy, Policy, Environment*", John Wiley and Sons, New York.
3. Janaki, V.A. (1985): "*Economic Geography*", Concepts Publishing Co.

4. K. Siddhartha, (2009): "*Economic Geography: Theories, Process and Patterns*", Kisalaya Publications Pvt. Ltd., Delhi.
5. Kanan Chatterjee (2015) : 'Basics of Economic Geography', Concept publishing Company Pvt. Ltd., New Delhi.
6. Knox P. and J. Agnew (1998): "*The Geography of the World Economy*"; Arnold, London.
7. Masjid Hussain, (2008): "*Models in Geography* ", Rawat Publications, New Delhi.
8. Masjid Hussain, (2018): "*Economic Geography* ", Rawat Publications, New Delhi.
9. Mitra, A (2002) : 'Resource Studies', Sreedhar publishers, Kolkata.
10. Ray, P. k. (1997) : '*Economic Geography*', New Central Book Agency (P) Ltd., Calcutta.
11. Saxena, H. M. (2013) : '*Economic Geography*', Rawat publication, Jaipur.
12. Shelar S. K. (2013) : '*Principles of Economic Geography*' Chandralok Prakashan, Kanpur.
13. Smith D.W.L.: "*A Geography and Industrial Location*", John Wiley, McGraw Hill Co. New York.
14. Truman A Hartshorn, John W. Alexander (2010): "*Economic Geography*" PHL Learning Private Limited, New Delhi.

M.A Part-I (Sem-I)

Title: Social and Cultural Geography

Credits: 4

Marks: 100

Code No: 107102

Hours: 60

Objectives:

- The course attempts to examine the impact of human society and culture on the earth's surface.
- It seeks to understand how places develop meaning for people, through the analysis of socio- cultural processes , landscapes and their identity.

Unit I Concept in Social Geography: Definition, scope and content of Social Geography, Evolution of Social Geography: recent methodologies. Measures of social well being (quantitative and qualitative methods)
Approaches- Possibilistic , Behavioral, Radical, Humanist, Positivism and Welfare approach
Concept of space and region, types of regions: functional and types.

Unit II Geography of social well being and Development: Nutrition and Health in India, Gender ratio, women equity and empowerment indicators & measures.
Urbanization as a socio- economic indicator, Migration slums and poverty. Social exclusion in rural India, Ageing in India & impact of globalization.
Indicators of development of the nations of the world : social, economic and demographic characteristics , Human Development Index (Nations of World & States of India)

Unit III Cultural Geography

Concept of culture in Geography; definition, scope and content of Cultural Geography. Methodologies and approaches.
Characteristics of culture , Cultural assimilation and diffusion , Cultural regions , Cultural areas and Cultural landscape ,
Globalisation: Socio – cultural change, Cultural identity and implications , case study one global and India.

Unit IV Mosaic of culture : Race, Religion and language :
Race and ethnic group, basis of racial classification, global Racial calcification (Mongoloids, Caucasians, Negroids and their sub groups), racial & ethnic groups in India. Evolution of religions of the world, their characteristics and distributions, religious and racial conflicts and its implications.
Language and their importance, language families and their distribution, Linguistic classification India. Socio – cultural regions in India.
Racial and religious conflicts and management.

Suggested Readings:

1. Aijazuddin Ahmad (1999): “*Social Geography*”, Rawat Publications, Jaipur
2. Atkinson David, et .al (2005): “*Cultural Geography*”, Rawat Publication, Jaipur
3. Carter John & Jones Trevor: “*Social Geography: An Introduction to Contemporary*

Issues”, Arnold, London

4. D.Stanley Etizen and Maxine Baca Zinn, (2000): “*Social Problems*”, (8th edition). Allyn and Bacon, Boston.
5. H. J.de Blij and Alexander. B.Murphy, (1999): “*Human Geography: Culture, Society and Space*”, (6th Edition), John Wiley and Sons Inc, Newyork.
6. Haq Mahbulul (2000): “*Reflections on Human Development*”, Oxford University Press, New Delhi.
7. Hussain Masjid, (2008): “*Human Geography*”, Rawat Publications, New Delhi.
8. John.A.Perry and Erna.K.Perry, (2000), “*Contemporary Society: An Introduction to Social Science*” (9th Edition), Allyn and Bacon, Boston.
9. Mohanty G S (ed) (2005): “*Social & Cultural Geography*”, Isha Books, New Delhi
10. Pain, Rachel et .al (2001): “*Introducing Social Geographies*”, Arnold, London.
11. Sawant et al Globalisation (2009): “*Issues and Challenges for India*”, Published by Indian Institute of Geographers and Smt. Parvatibai Chowgule College, Goa
12. Sen Amartya & Droze Jean, (1996): “*Indian Development: Selected Regional Perspective*”, Oxford University Press.

M.A Part-I (Sem- I)
Title: Population Geography

Credits: 4

Marks: 100

Code No: 107103

Hours : 60

Objectives

- To introduce the fundamental concepts of Population Geography.
- To explain determinants of population growth and distribution in spatio- temporal perspective
- To comprehend population dynamics and migration, issues and policies in developed and developing countries.
- To understand and analyse issues and challenges of population in the context of India.

Course Content

Unit I: Introduction to Population Geography

- a) Definition , Nature and Scope
- b) Historical development of Population Geography
- c) Approaches of Population Geography
- d) Sources of population data with special reference to India,
- e) Brief history of Census, census classification Overview of census of India 2011/2021.

Unit II: Population Growth and Distribution Characteristics

- a) Definition and influencing Factors of Fertility and Mortality, Demographic transition Model
- b) Overview of Population growth and Density Population explosion , Malthus and Karl Marx Theory of Population Growth
- C) Over population, under population and optimum population , Population Projections

Unit III: Population Migration

- a) Introduction to Migration, importance of migration, types of migration , causes and impacts of migration
- b) Human migration with special reference to India (forced & voluntary, internal and external)
- c) Migration Theories : Lee's theory , Zelinsky's Mobility transition model
- d) Recent issues related to Migration : COVID 19 & migration, Migration and Politics : Fiji Islands, reversal migration of brain drain to brain gain

Unit IV: Population Issues and Population Policies

- a) India : Population growth & Population Dividend
- b) India : Gender issues & equality (Sex ratio , literacy, health)
- c) Concept of Human Development Index : Global and national analysis
- d) National Population Policy (NPP) 2000 : Targets , achievements and challenges

Suggested Readings :

1. Bhende, A. and Kanitkar, T. (2006): Principles of Population Studies, Himalaya Publishing House, Mumbai.
2. Bose Ahish (2000): "*India Towards Billion Plus*", Vikas Publishing House.
3. Chandana, R.C. (2015) : Geography of Population: Concepts, Determination and Patterns, latest edition, Kalyani Publishers, New Delhi.
4. Clarke, J.I. (1992): Population Geography, Second Edition, Pergamon Press, Oxford England.
5. Crook, N. (1997): Principles of Population and Development, Pergamon, New York.
6. Daugherty, H.G., Kenneth C.W.K. (1998): An Introduction to Population (Second Edition), The Guilford Press, New York, London.
7. Garnier, B.J. (1970) : Geography of Population, Longman, London.
8. Hassan Mohammed (2005) : Population Geography, Rawat Publication, New Delhi
9. Lal Punna (2015) Population Geography Anmol Publications PVT. LTD , New Delhi
10. Majumdar P K (2013) : India's Demography: Changing Demographic Scenario in India, Rawat Publication, New Delhi
11. Mamoria C.B. (1981): India's Population Problems, Kitab Mahal, New Delhi.
12. Premi M.K. (1991): India's Population: Heading Towards a Billion, B.R. Publishing, New Delhi.
13. Roy Rajeshwar (2013) Handbook Of Population Geography, Anmol Publications PVT. LTD Anmol.
14. UNDP Report (2012): Oxford University Press, Oxford.
15. Verma L.N. (2006): "*Urban Geography*", Rawat Publications, New Delhi

M.A. Part-I (Sem-I)

Title: Geography and International Relations

Credits: 4

Marks: 100

Code No: 107104

Hours: 60

Objectives:

- To expose the student to geopolitical concepts and their impact on changing strategic order.
- To expose the student to understand changing nature of world strategic order.
- To encourage the student to explore the reasons behind the changing order.

Course contents:

Unit I : Geographic elements of state-Physical elements(Location, size, shape, topography, climate, natural resources etc.) and cultural elements (Economic, social, demographic etc.).Study of following concepts-state, nation and nation-state, geopolitics and geostrategy. Heartland and Rimland theories.

Unit II : Frontiers and boundaries: Classification of boundaries. Laws of the sea and maritime boundaries. Problems associated with international land and maritime boundaries. Transnational riparian disputes with reference to India.

Unit III : International relations-Meaning, significance and importance. Concepts of transnationalism, Balance of power and National power. Changing historical perspective since 1900 A.D.to the present.(Peak of British Empire, WW-I,WW-II, Cold War, Disintegration of USSR, Unification of Germany, Rise of China etc.)

Unit IV : Globalization and the new world order. Major international institutions and pacts.(including GATT,WTO and SAARC).Geopolitics of oil. India and adjacent countries with reference to national security. India and Indian Ocean.

Pedagogy:

1. The international relationship is a dynamic fact and student should be made aware about the factors responsible for this dynamism.
2. Student should be encouraged to participate in group discussion based on contemporary issues.

REFERENCES

1. Cohen (S L). (2010): "*Geopolitics: The Geography of International Relations*" Rowman and Littlefield, New York.
2. Dikshit R. D , (1994): "*Political Geography: The Discipline and its Dimensions*" Tata Macgraw Hill, New Delhi
3. Dikshit, R.D. (1996): "*Political Geography: A Contemporary Perspective,*" Tata McGraw Hill, New Delhi.
4. Dikshit, R.D. (1999): "*Political Geography: A Century of progress*", Sage, New Delhi.
5. Harm j. Di Blij, (1973): "*Systematic Political Geography*", John Wiley and Sons, New York.

6. Panikkar K.M. (1959): "*Geographical Factors in Indian History*", 2 Vols. Asia Publishing House, Bombay.
7. Peet Richard, Richard Peet, Paul Robbins, and Michael Watts (Ed) (2011): "*Global Political Ecology*". Routledge, 2 Park Square, Milton Park, Abingdon, Oxon.
8. Peltier Louis and G. Etzel Perarcy, (1981): "*Military Geography*", East West Publications, New Delhi
9. Presscot J. R. V, (1972): "*Political Geography*", Methuem and Co, London.
10. Stott , Philip and Sullivan S, (2000): "*Political Ecology: Science*", Myth and Power.
11. Sukhwal B. L, (1985): "*Modern Political Geography*", Sage Publication, New Delhi
12. Taylor P. J, (1895): "*Political Geography: World Economy, Nation Stae and Locality*", Longman, London.

SEMESTER – II

Sr. No	Code No.	Subjects	L	Cr.	P/T	D	TP (E)	Inter- nal	P/ V	T
Core Courses										
1	207005	Research Methodology	4	4	--	2.5	75	25	--	100
2	207006	Statistical Techniques in Geography	4	4	--	2.5	75	25	--	100
3	207202	Practicals in Human Geography	4	4	--	2.5	--	25	75	100
Elective Course: (any one of the following)										
4	207101	Gender Geography	4	4	--	2.5	75	25	--	100
4	207102	Geography of Soils	4	4	--	2.5	75	25	--	100
Elective Course/CBCS (any one of the following)										
5	207103	Geography of Environment	4	4	--	2.5	75	25	--	100
5	207104	Geography of Maharashtra	4	4	--	2.5	75	25	--	100
		Total	20	20	--		250	125	75	500

M.A. Part-I (Sem-II)

Title: **Research Methodology**

Credits: 4
Code No: 207005

Marks: 100
Hours: 60

Objectives:

- To make the students research oriented.
- To acquaint the students with the methods and techniques in Geographical research.
- To enable and encourage the students to undertake independent research work or dissertation of a selected area.

Course contents:

- Unit-I** Introduction to Research
Basic concepts, Research and its types Theories in research, Explanation in Geography, Recent Trends in Geographic research. Approaches to Geographical Research: -Interdisciplinary, trans –disciplinary and multi- disciplinary.,
- Unit-II** Research Methods and Geographical Data
Research Methods in Geography, Collection of data: sources, primary and secondary data, collection and classification, Sampling Methods: Techniques and types of sampling techniques, Hypothesis: Types, Characteristics, Formulation and testing
- Unit-III** Research design
Meaning of Research Design, its need, Formulation of research problem, analytical framework, designing of a questionnaire, Review of literature survey, its type and role of internet. Computer based analysis e.g. techniques of analysis spatio temporal changes etc.
- Unit-IV** Report Writing /Thesis Writing
Organization of a research report/ thesis. the preliminaries (Pre writing considerations)Format of report writing, Abstract Writing, Synopsis Writing, Techniques of writing a scientific paper, steps in report/thesis writing, Language and presentation (form and style)References and Bibliography, Use of computer/ internet in report/Thesis writing.

SUGGESTED READINGS

1. Basil Gomez and John Paul Jones, (2010): “*Research Methods in Geography: A Critical Introduction (Critical Introductions to Geography)*”, Wiley-Blackwell.
2. Davies Wayne K.D.(ed.), (1972): “*The Conceptual Revolution in Geography*”, University of London Press Ltd., London.
3. DydiaDeLyser, Steve Herbert, Stuart Aitken and Mike A Crang, (2009) : “*The SAGE Handbook of Qualitative Geography*”, Sage Publications Ltd.
4. Har Prasad,(1992): “*Research Methods and Techniques in Geography*”, Rawat Publications.
5. Harvey D., (1973): “*Explanation in Geography*”, Edward Arnold, London.

6. Iain Hay, (2010): "*Qualitative Research Methods in Human Geography*", Oxford University Press, USA.
7. Keith Hoggart, Loretta Lees and Anna Davies, (2002): "*Researching Human Geography*", Oxford University Press, USA.
8. Misra R. P., (1989): "*Research Methodology : A Handbook*", Concept Publishing Company, New Delhi.
9. Murthy, K.L.Narasimha (1999): ,*Geographical Research* , Concept Publishing copany
10. Nicholas Clifford, Shaun French and Gill Valentine,(2010): "*Key Methods in Geography*", Sage Publications Ltd.
11. Robert Kitchin and Nick Tate, (1999): "*Conducting Research in Human Geography: theory, methodology and practice*", Benjamin Cummings.

M.A Part-I (Sem-II)

Title: Statistical Techniques in Geography

Credits: 4

Marks: 100

Code No: 207006

Hours: 60

Objectives:

1. To understand the basic concept of descriptive statistics and its applications.
2. To get acquainted about statistical tools and techniques to be used in further research.
3. To develop the ability of Computer application to compute and interpret data statistically.

Unit I : Basics of Statistics

Definitions of statistics, Importance, use and applications of statistical techniques in geography, Sources of statistical data in geography; Scales of measurement: Nominal, Ordinal, Interval and Ratio; Frequency Distribution, Typical Patterns of Frequency Distribution.

Unit II : Statistical Measurements and assessment

Measurement of Central Tendencies - Mean, Median and Mode; Measurement of Dispersion - Variance, Standard deviation, Mean deviation, Quartiles; Normal Distribution Curve, Gaussian curve and its properties; Computation of Index of Skewness and Kurtosis, Concept of probability assessment, Probability assessment of discrete and continuous random variable.

Unit III : Hypothesis Testing

Concept of Population and sample, Sampling Methods, Testing of hypothesis, Hypothesis- Null hypothesis and Alternative hypothesis, Parametric and Non-parametric Tests, Student's 't' test and Chi square test .

Unit IV : Techniques of Bivariate Analysis :

Concept of covariance and correlation, Pearson's Product-moment Correlation Coefficient, Spearman's Rank Correlation Coefficient, Straight line regression equation, Demonstration and Use of Ms-Excel for all units.

Suggested Readings:

1. Alvi, Z. (1995): "*Statistical Geography: Methods and Applications*", Rawat Publications, Jaipur
2. David Ebdon (1989) : "*Statistics in Geography-A Practical Approach*", 2nd Edn., Blackwell Publishing.
3. Gupta, C.B. (1978) : "*An Introduction to Statistical Methods*", Vikas Pub.House, New Delhi.
4. Jog, S.R. and Saptharshi, Pravin (1980) : "*Sankhyki Bhugol*", Narendra Prakashan Pune.

5. John Matthews, (1981) : “*Quantitative & Statistical Approaches to Geography: A Practical Manual*”, Pergamon Press.
6. Karlekar Shrikant (2007): “*Statistical Methods in Geography*”, Diamond Publication, Pune.
7. Karlekar, Shrikant and Kale, Mohan (2006) : “*Statistical Analysis of Geographical Data*”, Diamond Publication, Pune.
8. King, L.J. (1991): “*Statistical Analysis in Geography*”, Prentice Hall, Englewood.
9. Mahmood, A.(1977): “*Statistical Methods in Geographical Studies*”, Rajesh Publications, New Delhi.
10. Mandal, R. B. (1981): “*Statistics for Geographers & Social Scientists*”, Rawat Publication.
11. Pal, Saroj K (1982): “*Statistical Techniques, A Basic Approach to Geography*”, Tata McGraw Hill Publishing Comp. Ltd. New Delhi.
12. Peter Rogerson: “*Statistical Methods for Geography*”, 3rd Edn. Sage Publishing New Delhi.
13. Rogerson P.A. (2001) : “*Statistical for Geography*”, SAGE publication, New Delhi.
14. Shaw G. & Wheller D. (1985) : “*Statistical Techniques in Geographical Analysis*”, John Wiley & Sons, New York.

M.A Part-I (Sem-II)

Title: Practicals in Human Geography

Credits: 4

Marks: 100

Code No: 207202

Hours : 60

Objective:

- To understand basic concepts, techniques and application of surveying.
- To explain various methods and data analysis techniques in human geography.
- To acquire the skill of data collection, analysis and report writing.

Course Contents:

Unit I : Surveying

Definition, History and Development in Surveying; Classification of surveying - Plane table and Prismatic compass; Introduction to Theodolite surveying, Tachometric Survey and contour plan / Interpolation; Importance and application of surveying in geography

Unit-II : Agriculture and Transportation

Crop Combination: Weavers and Thomas Methods; Agricultural Efficiency : Kendall's Method; Measures of Network Structure: Alpha, Beta and Gama; Lorenz Curve

Unit-III : Population and Settlements

Fertility : General Fertility Rate, Crude Birth Rate; Mortality : Infant Mortality Rate, Crude Death Rate; Child women ratio, Sex Ratio, Age sex pyramid; Population growth rate, Population projection; Rural Settlement Dispersion Methods - Demangeon and R. B. Mandal's Method and Rank size Rule

Unit-IV : Field work

Socio Economic survey – Village / City Survey and Report writing

Suggested Readings:

1. Alka Gautam (2012): *"Agricultural Geography"* Sharda Pustak Bhawan, Allahabad.
2. Bhaduri, S. (1992) : *"Transport and Regional Development: A Case Study of Road. Transport of West Bengal"*, Concept Publication, New Delhi.
3. Clarke, J.I. (1992): *"Population Geography"* Second Edition, Pergamon Press, Oxford England.
4. Crook, N. (1997): *"Principles of Population and Development"*, Pergamon, New York.
5. Daugherty, H.G., Kenneth C.W.K. (1998): *"An Introduction to Population"* (Second Edition), The Guilford Press, New York, London.

6. Grigg David (1995): "*An introduction to agricultural geography*", (second edition), Routledge, London and New York
7. H. J.de Blij and Alexander. B.Murphy, (1999): "*Human Geography: Culture, Society and Space*", (6th Edition), John Wiley and Sons Inc, Newyork.
8. Haq Mahbulul (2000): "*Reflections on Human Development*", Oxford University Press, New Delhi.
9. Hussain Masjid, (2008): "*Human Geography*", Rawat Publications, New Delhi.
10. Kanetkar, T. P. and Kulkarni S. V. (2014), "*Surveying and Leveling*", Pune Vidyarthi Prakashan, Pune.
11. Liendsor, J. M. (1997): *Techniques in Human Geography*, Routledge.
12. Perpillon A. (1966): "*Human Geography*", Longman, London.
13. Robinson, H. And Bamford, C.G. (1978): "*Geography of Transport*", London: Macdonald
14. Sarkar Ashis (1997) : "*Practical Geography: A Systematic Approach*", Orient Black-Swan.
15. Singh Jasbir and Dhillon S.S. (1994): "*Agricultural geography*", Tata McGraw Hill Publication, New Delhi
16. Singh R. L. & Rana P. B. Singh (2005) : "*Elements of Practical Geography*", Kalyani Publisher, New Delhi.
17. Singh R.L. et al (1975): "*Reading in Rural Settlement Geography*", National Geographical society of India, Varanasi.

M.A Part-I (Sem-II)
Title: Gender Geography

Credits: 4

Marks: 100

Code No: 207101

Hours : 60

Objectives:

- To Introduce the fundamental concepts of Gender Geography.
- To comprehend various variables of gender and its impact on the development.
- To explore how gender relations and geography are mutually structured and transformed spatially.
- To understand and analyse the gender inequality and bridging gender gap in the context of India.

Unit - I : Introduction to Gender Geography

Definition, nature and Scope of Gender Geography; Emergence of Gender Geography; Concept of interdependence between men and women; Approaches and trends in Gender Geography

Unit II : Gender Variables and Gender Development:

Historical Variables, Socio-Cultural, Demographic, Economic, Political, Administrative and institutional variables, Role of gender variables in development

Unit – III : Gender Gap

Concept of Gender Gaps , Parameters of Gender Gap, Gender Gap Analysis - Education , Education attainment, Health care and nutrition, Life expectancy, livelihood, participation in politics and enfranchisement; Global Scenario of Gender Inequality; Spatial Gender Inequality in India

Unit – IV : Bridging Gender Gap

Concept of Gender Audit, Role of Gender Budget in bridging Gender Gap; Bridging Gender Gap - Empowerment of women with education, economic opportunities, access to reproductive health services, involvement in decision making processes in various sectors

Suggested Readings:

1. Boserup, E. (1989) : “ *Women’s Role in Economic Development*” . Earthscan, London.
2. Dankelman, I. & Davidson, J. (1989) : “*Women and Environment in the Third World*” Earthscan, London.
3. Deblig, H. J. (1996) : “ *Human Geography-Culture, Society and Space*”, 5th ed., John

Wiley, New York.

4. Haraway, D. (1991) : “ *Simians, Cyborgs and Women*”, The Reinvention of Nature, Routledge, New York.
5. Johnston, R.J. et.al (eds.) (1996) : “ The Dictionary of Human Geography”, Blackwell, Oxford.
6. James K. S. (2010) : “ *Population , Gender and Health in India*”, , Academic Foundation Radiant Book.
7. Koblinsky, M. et.al (eds.) (1993) : “ The Health of Women-A Global Respective”, Westview Press, Boulder.
8. Lee, D. (1988) : *Women in Geography-A Comprehensive Bibliography*. Boca Raton, Florida.
9. Lewis, R. (1995) : “*Race, Feminity and Representation*”, Routledge, New York.
10. Momsen, J. H. & Townsend, J. (eds.) (1987) : *Geography of Gender in the Third World*, Albany, New York
11. Reagent, A.C. & Monk J.J. (eds.) (1982) : “ *Women and Spatial change*” Kendell & Hunt, Dubuque, Iowa.
12. Rhodda, A. (1991) : “ *Women and Environment*”, Zed, London.
13. Seager, J.& Olson, A.: “ *Women in the world - An International Atlas*”.
14. Sharma, K. L. (ed) (2001), “*Social Inequality In India*”, Berkeley, University of California Press.
15. Sivant, R.L.: *Women-A World Survey*. World Priorities Washington, D.C., 1985.
16. Skjelsback, I & Smith, D.: *Gender, Peace and Conflict*. Sage, London, 2001.
17. Sowell, T.: *Race and culture -A World View*. Basic Books, New York, 1994.
18. UNICEF: *The Lesser Child-the Girl in India*. United Nations, Geneva, 1990.
19. United Nations: *The World’s Women, 1970-1990*. United Nations, New York, 1991.
20. United Nations: *World Resources 1994-95*. Chapter 3: *Women and Sustainable Development*. United Nations, New York, 1995.

M.A Part-I (Sem-II)

Title: Geography of Soils

Credits: 4

Marks: 100

Code No: 207102

Hours: 60

Objectives:

- To understand the concepts and process of soil formation.
- To study the Plant-water-soil relationship
- To study the classification of soils and the distribution in India and Maharashtra. .
- To understand the physical, chemical and biological properties of soils and their significance in soil fertility and productivity.
- To sensitize the students with the issues, related to soil resources.
- To understand the significance of soil conservation and methods practiced in India with special reference to Maharashtra.

Unit I **Introduction:** Soil and Soil Science, Concept of land and soil; Plant-water-soil relationship; Importance of Soil and its conservation, Constituents of Soil- soil minerals, organic components, soil air, soil water, soil organism. Soil as a system of Dynamic Equilibrium in Nature; Soil and Land relationship.

Unit II **Soil Formation and Classification**
Soil formation factors - Physical: parent rock, time, topography and climate; Process of soil formation- weathering, humification, in-situ and transported soils; Soil Profile; Genesis and Classification of soils, Podsol, Chernozem and Laterite-their sub-types. Types of soils in India and Maharashtra,

Unit III **Soil Properties:**
Physical properties - colour, texture, pore space, bulk density, infiltration, moisture content; Chemical properties - pH, salinity, ion-exchange capacity; Biological properties - soil organisms, bacteria, fungi, algae, protozoa, earthworms; Soil organic matter - total organic matter, humus, effect of organic matter on physical and chemical properties of soil; Concept of soil fertility and plant productivity - Soil organisms and Micro-organisms and their relation with soil fertility; Role of physico-chemical properties in soil fertility and productivity.

Unit IV **Soils of India:** Problems and prospect of utilisation of different soils in India; Soils in Agro-climatic regions of Maharashtra: Soil-crop relationship in terms of Fertility, Productivity and Choice of crops; Soil Degradation- Factors, process and resultant forms in different parts of India.
Conservation of major soils of India with special reference to Maharashtra.

Suggested Readings:

1. Biswas, T.D., and Mukherjee, S.K. (1987). *Textbook of soil science*. New York: McGraw-Hill.
2. Boul, S.W., Hole, F.D., and McCracken, R.J. (1993). *Soil genesis and classification*. New Delhi: Affiliated East-West Press.
3. Brady, N.C., and Weil, R.R. (1996). *The nature and properties of soil*. London: Longman
4. Bridges, E. M. (1970): *World Soils*, Cambridge University Press, U.K.
5. Chapman, J.L., and Reiss, M.J. (1993). *Ecology: principles and applications*. Cambridge: Cambridge University Press.
6. Coleman, D.C., and Crossby, J. (1996). *Fundamentals of soil ecology*. San Diego: Academic Press.
7. Daji, J .A.(1970): A Text Book of Soil Science, Asia Publication House, Mumbai.
8. De, N.K. and Sarkar, H.K. (1993): *Soil Geography*, Sribhumi Publishing Company, Calcutta.
9. Dohahue, E.L., et. al., (1987): *Soils: An Introduction to Soil and Plant Growth*, Prentice Hall of India, New Delhi.
10. Foth, H.D. & Turk, L.M.(1972): *Fundamentals of Soil Science*, John Wiley & Sons, Inc., Canada.
11. Foth, H.D. & Schafer, F.W. (1980): *Soil Geography and Landuse*, John Wiley & Sons, Inc., Canada.
12. Khan T.O. (2013): *Soil: Principles, Properties and Management*, Springer, New York
13. Miller, R.W. et. al., (1995): *Soil in Our Environment*, Prentice Hall, U.S.A.
14. Myers, A.A., and Giller, P.S. (1988). *Analytical biogeography: an integrated approach to the study of animal and plant distributions*. London: Chapman and Hall.
15. Odum, E.P. (1997). *Ecology: a bridge between science and society*. Sunderland: Sinauer Associates Inc. Publishers.
16. Pitty, A.F. (1978): *Geography and Soil Properties*, Methuen and Co. Ltd., London.
17. Paton, T. R., Humphreys, G.S., Mitchell, P. B. (1995): *Soils: A New Global View*, U.C.L. Press, London.
18. Rajan, G.S.V. and Rao G.H.G. (1978): *Studies on Soils of India*, Vikas, New Delhi.
19. Raychaudhari, S.P. (1958): *Soils of India*, ICAR, New Delhi.
20. Sharma, P.D., and Sharma, P.D. (2010). *Ecology and environment*. UP:Rastogi Publications.
21. Steila, D. (1976): *The Geography of Soils*, Prentice Hall, New Jersey.
22. U.S. Department of Agriculture (1957): *Soil, The Year Book of Agriculture*, New York.

Websites:

Soil and Land Use Survey of India (<http://slusi.dacnet.nic.in/>)

National Bureau of Soil Survey and Land Use Planning (<https://www.nbsslup.in/>)

IIRS, Agriculture and Soils Department (<https://www.iirs.gov.in/agricultureandsoilsdepartment>)

Farmer's Portal, Govt. of India (<https://farmer.gov.in/>)

Department of Agriculture, Govt. of Maharashtra (<http://krishi.maharashtra.gov.in/1001/Home>)

M.A. Part-I (Sem-II)

Title: Geography of Environment

Credits: 4

Marks: 100

Code No: 207103

Hours: 60

Objectives:

- To provide students with a general understanding of the processes and spatial distribution of the Earth's primary physical systems
- To enhance students understanding about the ways in which humans interact with these systems.
- To develop a historical, geographical & humanistic foundation for understanding the environment & plethora of environmental issues at the regional, national & global levels.
- To make them aware about the need of environmental conservation and management.

Course contents:

Unit-I: **Concept:** Meaning, development, nature and scope of Environmental Geography, Recent Dimensions of Environmental studies in Geography; Major physical and cultural elements of environment; Functioning of environmental systems - role of biotic and abiotic elements; Biodiversity meaning, genetic, species and ecological diversity, factors influencing biodiversity.

Unit II: **Ecosystem Approach in Environmental Studies** - Ecosystem Structure and function, terrestrial and aquatic ecosystems; Principle of ecology; human ecological adaptation; influence of man on ecology and environment; bio-geo-chemical cycles. Energy flow in an ecosystem; food chain, food web and Ecological pyramids.

Unit III : **Environmental Degradation and Hazards:** Water, Air, Noise and Solid waste problems in urban-industrial Environment, Water and soil pollution in rural landscape (with reference to India), Major pollutants: types, sources and effects. Global issues- Climatic Hazards and Management, Social Response to Climatic Hazard, Human response to Flood, Drought, Landslide, Earthquake and Cyclone, Forest Fires. Impact of Green revolution

Unit IV: **Conservation and management of environment:** Environmental Perception, Environment Conservation and challenges in developing countries, Environmental Movements in India: *Bisnoi*, *Chipko*, Silent valley and Narmada. Environmental issues, policies and efforts in India, Concept of sustainable development, Significance of environmental laws, EIA (Environmental Impact Assessment).

Suggested Readings:

1. Agarwal, A. and Narain S. (Ed) (1999): *State of India's Environment. The Citizens Report*, Centre for Science and Environment, New Delhi

2. Agarwal, D.P. (1992): *Man and Environment in India through Ages*, Books & Books, New Delhi.
3. Arthur N. Strahler and Alan H. Strahler (1973 1st Ed): “*Environmental Geoscience – Interaction between natural systems and man*”, Wiley International Ed.
4. Balakrishnan, M., 1998: *Environmental Problems and Prospects in India*, Oxford & IBH Pub., New Delhi.
5. Barrow, C. J. (2003): *Environmental Change and Human Development*. Arnold Publication.
6. Bhaduri, S., and Basu, R. (2006): *Society Development and Environment*. Progressive Publishers.
7. Blowers, Andrews, (1993): “*Planning for a sustainable Environment,*” Earthscan Publication, London.
8. Botkin, D.B., and Keller, E.A. (2013): *Environmental Science*, Wiley, New Delhi
9. CSE. (2017): *Environment Reader for Universities*. New Delhi: Centre for Science and Environment.
10. Ehrlich, P.R. and Ehrlich, A.H. (1996): *Eco-science: Population, Resources and Environment*, W.H. Freeman and Company, San Francisco.
11. Goel R.S., (2000): *Environment Impacts Assessment of Water Resources Projects- Concerns, Policy Issues Perceptions and Scientific Analysis*, Oxford & IBH Publishing Co. Pvt. Ltd, New Delhi.
12. Gole, P., (2001): *Nature Conservation and Sustainable Development in India*, Rawat Pub., Jaipur
13. Goudie, A. (1986): *The Human Impact on the Natural Environment*, 2nd edition, Blackwell Pub. Co., London
14. Goudie, A. (20001): *The Nature of the Environment*, Blackwell Publishers, Oxford, U.K.
15. Hugget, R. And Cheesman, I.(2002): *Topography & The Environment*, Prentice Hill, New York, London.
16. Hussain, M., (ed. 1996): *Environmental Management in India*, Rawat Pub., Jaipur
17. J. Edwin Becht and L. D. Belzung (1975): “*World Resources Management*”, Prentice Hall, Inc., New Jersey.
18. Kates, R.W. & Burton, I (ed. 1986): *Geography, Resources and Environment*, Vol I & II, University of Chicago Press, Chicago,.
19. Lohani, B. N. (1997). *Environmental impact assessment for developing countries in Asia (Vol 1)*. Manila: ADB.
20. Mannion, A.M. (1995): *Agriculture and Environment Change*. John Wiley, London.

21. Marsh, W.M. and Grossa, J.M. (1996): *Environmental Geography: Science, Landuse and Earth Systems*, John Wiley and Sons Inc., New York.
22. Mitchell, B. (1997): *Resources and Environment Management*, Addison Wesley Lon~an Ltd., Harlow.
23. Quershi. S. (1989): *Regional Perspective on Dry Farming: Tribal Societies and Development through Environmental Regeneration*, Oxford, New Delhi.
24. Redcliff, M. (1987): *Development & the environmental crisis*. Methuen. London.
25. Savindra Singh (2004): *Environmental Geography*, Prayog Pustak Bhawan, Allahabad, India.
26. Smith, K. (2001): *Environmental Hazards: Assessing Risk and Reducing Disaster*, Routledge
27. Stahler, A.N. and Stahler A.N. (1997): *Geography and Man's Environment*, John Wiley and Sons, New York
28. Winin Pereira and Jeremy Sea Brook (1996): "*The spread of unsustainable development*" The Other India Press Mapusa 403507, Goa, India.
29. Wright, R.T. and Boorse, D.F. (2011): *Environmental Science: Toward A Sustainable Future*, PHI Learning Private Limited, New Delhi

M.A. Part-I (Sem-II)

Title: Geography of Maharashtra

Credits: 4
Code No: 207104

Marks: 100
Hours: 60

Objectives:

- To familiar the students with basic knowledge and to orient the physical and economic settings of Maharashtra.
- To create geographical interest in the state and motivate the students to carry out further study and research in these areas through field visits in Maharashtra.
- To aware the students with available natural resources and need of conservation and protection.
- To prepare students for NET, SET and competitive examinations.

Course contents:

- Unit-I Introduction to Maharashtra:** Geographical Setting Location: Relative and Absolute, Areal extent. Physical Divisions: Mountains, Plains and Plateaus, Geology and Mineral Wealth, Climate, River Drainage systems and lakes, Soil, Flora and Fauna
- Unit-II Human Resources/ Cultural:** History and creation of Maharashtra as State, Socio-Cultural Characteristics of Maharashtra. Administrative Divisions, Population Distribution, Density Age-sex structure, Literacy and Education, Rural- Urban composition, Migration, Occupational structure.
- Unit-III Resource and Development:** Power resources and its limitations (Hydel and Thermal), Water Resources and Irrigation Projects, Agricultural Resources, Role of water resources on agriculture, Transport and Communication Network, Industrialization, Tourism, Health care scenario, Educational attainments. Information Technology (IT)
- Unit-IV Regional Disparity and Regional Imbalance:** Disparities and types of disparities. Social, Economic and cultural disparities lead to regional imbalance. Identifications of regions of various disparities, Remedies/ strategies to overcome, Regional Imbalance, Socio-Economic Development and Regional imbalance in Maharashtra, causes and effects. Various measures and efforts to minimise regional imbalance and disparities. Contemporary issues like Environmental Pollution and Degradation, Natural Disasters

Suggested Readings:

1. Arunachalam B. (1967), Maharashtra - A Study in Physical and Regional Setting, A. R. Sheth and Co., Mumbai
2. Dasatane S. (1992), Glimpses of Maharashtra, Dastane Ramchandra and Co., Pune
3. Deshpande, C.D (1971) Geography of Maharashtra National Book Trust, India;
4. Didee Jaymala and et.al.(2002) Geography of Maharashtra Rawat Publications, New Delhi

5. Dikshit K. R. (1971), Maharashtra Region in India, A Regional Geography Singh R. H. (Ed.), Thinkers Library, Varanshi.
6. Dikshit, K.R (1981) Maharashtra in Maps Maharashtra State Board for Literature and Culture, Bombay
7. Dikshit K. R. (1981), The Western Ghats, A Geographic view in perspectives in Geography, Thinkers Library Allahabad
8. Gadgil G. and Deshpande A. (1988) Maharashtra, Problems, Potential and Prospects, Somaiya Publications Pvt. Ltd., Bombay.
9. Karve I. (1975), Maharashtra, Land and Its people, Maharashtra State, Gazetteer, Directorate of Government Printing, Stationery & Publication, Maharashtra State.
10. Savadi, A.B. (2012); The Mega State Maharashtra, Nirali Prakashan Pune

Websites

<http://mahervis.nic.in/>

<https://www.maharashtra.gov.in/>

<https://mahades.maharashtra.gov.in/>

<https://www.maharashtra.gov.in/> (Economic Survey of Maharashtra by Directorate of Economic and Statistics, Planning Department Government of Maharashtra ,Mumbai

SEMESTER – III

Sr. No	Code No.	Subjects	L	Cr.	P/T	D	TP (E)	Internal	P/V	T
Core Courses:										
1	307007	Regional Geography of India	4	4	--	2.5	75	25	--	100
2	307008	Geography of Rural Development	4	4	--	2.5	75	25	--	100
3	307203	Advanced Cartography (Practical)	4	4	--	2.5	--	25	75	100
Elective Course: (any one of the following)										
4	307666	Research Component (Writing Research Proposal & Review of Literature)	4	4	--	2.5	--	25	75	100
4	307105	Principles of Regional Planning	4	4	--	2.5	75	25	--	100
Elective Course/CBCS (any one of the following)										
5	307777	Research Component (Dissertation & Viva Voce)	4	4	--	2.5	--	25	75	100
5	307106	Tourism Geography	4	4	--	2.5	75	25	--	100
Total			20	20	--		150/ 300	225	150/75	500

M.A Part-II (Sem-III)

Title: **Regional Geography of India**

Credits: 4

Marks: 100

Code No: 307007

Hours: 60

Objectives:

- To understand India in terms of various regional divisions, their important characteristics, Intra-regional and inter-regional linkages
- to analyze the natural and human resource endowments, their conservation and management
- To sensitize the students with development issues and policies and programmes designed for regional development.

Course Content:

UNIT I Regionalization: Concept of regional personality and perception of regional issues. Elements of regional enquiry; **Physiographic Regions**, Drainage Systems, Climatic Characteristics, Natural Vegetation and Soil. Geopolitical conditions/characteristics

UNIT II Agriculture: nature, problems and prospects; Infrastructure: Irrigation, fertilizers, power, seeds, and farm technology; Green revolution and its socio-economic and ecological implications; Livestock resources and white revolution; Aquaculture; Sericulture; Apiculture and poultry; Agricultural regionalization; Agro-climatic regions; Agro-ecological zones.

UNIT III Industry: New industrial policy: Globalisation and liberalisation; Industrial complexes and industrial regions; Industrial houses and complexes including public sector undertakings; Industrial regionalization; Multi-nationals and liberalization, Special economic zones.

UNIT IV Population characteristics and composition (Age, Sex, Literacy, Sex, work structure, etc.); Population problems and policies. **Contemporary Issues:** Environmental Pollution and degradation, Natural Disasters – Pandemic, Regional Disparities, Globalization and Indian Economy.

Suggested Readings:

1. Alka Gautam (2009): *Geography of India*, Sharada pustak bhawan, University Road, Allahabad – UP.

2. Centre for Science & Environment (1988): *State of India's, Environment*, New Delhi
3. Deshpande, C.D. (1992): *India: A Regional Interpretation*, ICSSR & Northern Book Centre, New Delhi.
4. Dreze, J. & Sen A. (ed.) (1996): *India's Economic Development and Social Opportunity*, Oxford University Press, New Delhi.
5. Gautam, A. (2009): *Advanced Geography of India*, Second Edition, Sharada Pustak Bhawan, Allahabad.
6. Husain, M. (2008): *Geography of India*, Tata McGraw-Hill, New Delhi.
7. Khullar, D.R. (2009): *India: A Comprehensive Geography*, Kalyani Pub., New Delhi.
8. Kundu A. and Raza, M. (1982): *Indian Economy: The Regional Dimension*. Spectrum Publishers, New Delhi.
9. Majid Husain (2008): *Geography of India*, Tata Mc. Graw hill publishing co. ltd. N. Delhi.
10. Robinson, F. (1989): *The Cambridge Encyclopedia of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan & Maldives*, Cambridge University Press, London.
11. Pritivish Nag and Smita Sengupta (1992) *Geography of India*, Concept Publishing Company, New Delhi – 59.
12. Sharma TC and Coutinho O (2005): *Economic and Commercial geography of India*, Vikas Publishing House Ltd., New Delhi-14
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. (1967): *India & Pakistan*, Methuen, London.
15. Tirtha R. and Gopal Krishna, (1996): "*Emerging India*" Rawat Publications, Jaipur.
16. Tiwari, R.C. (2010): *Geography of India*, Prayag Pustak Bhawan, Allahabad.
17. India: Year Books- 2015-2020.

Websites

<https://knowindia.gov.in/>

<https://knowindia.gov.in/profile/>

<https://www.mapsofindia.com/>

M.A. Part-II (Sem-III)

Title: Geography of Rural Development

Credits: 4

Marks: 100

Code No: 307008

Hours : 60

Objectives:

- The course provides an overview of the Geography of Rural Development and the role of geography in rural development.
- It aims to shed light on the indicators and factors affecting the rural development, changing dimensions of the rural society and rural economy, and the problems of the rural areas and its planning.
- Besides, the course shall take account of rural development strategies in India.

Unit I: Introduction to Geography of Rural Development

- a) Definition, Nature, and Scope of Geography of Rural Development
- b) Concept of Rural, Development and Rural Development
- c) Indicators of Rural Development
- d) Role of Geography in rural development
- e) Approaches to rural development,
- f) Factors affecting rural development - Geographical, Economic, Demographic, Social, Government Policy, etc.

Unit II: Rural Society and Economy

- a) Concept of Rural Society and changing dimensions of the rural society
- b) Basic Rural services and Infrastructural facilities
- c) Contribution of Agriculture, Forestry, Animal Husbandry, Other Allied Agricultural Activities, etc. in Rural Development
- d) Changing Rural Economic Structure
- e) Role of Resource-Based Industries in Rural Development
- f) Post-COVID 19 Rural social and economic structure

Unit III: Major Rural issues and planning

- a) Issues related to fragmentation of land parcels and changing land-use patterns
- b) Issues related to agriculture, water, transport, poverty, health, etc.
- c) Rural Planning for rural development and types of rural planning
- d) Integrated Watershed Management for Integrated Rural Development
- e) Success stories of Rural Development - A Case Study of Ralegan Siddhi

Unit IV: Rural Development Strategies in India-

- a) Rural Development Approaches after independence
- b) Rural Development Programmes in 21st Century in India: Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Deen Dayal Upadhyay Grameen Kaushal Yojna: Swachhh Bharat Mission, Sansad Adarsh Gram Yojna,
- c) Applications of Remote Sensing and GIS in Rural Planning and Development

Suggested Readings :

1. Chaudhari Shankar R. (2018) : "Research Techniques and Applications in Rural Settlement Geography", Prshant Publications, Jalgaon.
2. Chaudhari C. B. (2015): "Geographical Study of Rural Service Centres in Ahmadnagar District of Maharashtra State, Unpublished thesis submitted to North Maharashtra University, Jalgaon.
3. Daniel, P. and Hopkinson, M. (1986): "*The Geography of Settlement*" Oliver & Byod, Edinburgh.
4. Grover, N. (1985) : "*Rural Settlements - A Cultural Geographical Analysis*", Inter-India Publication, Delhi.
5. Jha, Hetukar (1991) : "*Social Structure of Indian Villages: A Study of Rural Bihar*", New Delhi, Sage Publications.
6. Lalith, N. (2004) : "*Rural Development in India Emerging Issues and trends*", Dominant Publications, New Delhi.
7. M. V. Rao, V. Suresh Babu, K. Suman Chandra, Ravindra Chary, "*Integrated Land Use Planning for Sustainable Agriculture and Rural Development*" Apple Academic Press;
8. Madan, Vandana (ed.) (2002) : "*The village in India*" Oxford University Press.
9. Mandal R. B.(1978), "Introduction to Rural Settlements" Concept Publishing Company, New Delhi.
10. Mandal, R.B. (1989): 'Systems of Rural Settlements in Developing Countries', Concept Publishing Company, New Delhi.
11. Okore F.C., and Onokerhoraye A.G., (1994) : "*Rural Systems and land Resources Evaluation for Africa*", Benin, City Social Science for Africa University of Benin.
12. Patil Sardar A. (2015): "*Application of Geo-Spatial Technology for the Sustainable Rural Development: A Case study of Village Panutre*", An unpublished Minor Research Project Funded by the University of Mumbai during the academic year 2014-15.
13. Ramchandran, H.(1985): "*Village Clusters and Rural Development*", Concept Publication, New Delhi.

14. Rao, E.N. (1986): "*Strategy for Integrated Rural Development*". B.R. Publication Cor., Delhi.
15. Sandanshiv L.P. (2010) : "Levels of Economic Development Western Satpura region India", Unpublished thesis submitted to North Maharashtra University, Jalgaon.
16. Sharma, K. L. (ed) (2001), "*Social Inequality In India*", Berkeley, University of California Press.
17. Singh Katar (1986) "*Rural Development Principles and Policies and Management*", Sage Publication, New Delhi.
18. Srinivas, M.N. (1996), "*Village, Caste, Gender and Method*", Delhi, Oxford University Press.
19. Wanmali, S.(1983): "*Service Centres in Rural India*", B.R. Publication Cor., New Delhi.

M.A. Part-II (Sem-III)

Title: Advanced Cartography (Practical)

Credits: 4

Marks: 100

Code No: 307203

Hours: 60

Objectives:

- To explain basic concepts cartography, tools and techniques of geographical analysis.
- 1. To make student aware about the modern techniques like GIS.
- 2. To get acquainted hands on training of map making.

Course contents:

Unit-I : Cartographic Techniques

Definition of Cartography, History and Development of Cartography;
Representation of Statistical Data. One Dimensional figures: Line graphs.
Two Dimensional figures: Bar, Circle, Pie.

Unit-II : Computer Cartography

Isopleth, Choropleth, Choroschematic, Dot maps.
Three dimensional figures : Cube, Sphere Maps.
Representation of data and map making using computer (MS-Excel)

Unit-III : Introduction to GIS

Definition, History of GIS, Components of GIS, Computer Hardware,
GIS Softwares ; Sources of data : Maps, Images and other records;
Data and Data models

Unit-IV : Map Making

Georeferencing – Co-ordinate systems, Digitization;
GPS mapping; Applications of GIS

Suggested Readings :

- 1 Bernhardsen, Tor (1999): “*Geographic Information Systems: An Introduction*”, John Wiley and Sons.
- 2 Burroughs, P. A (1986): “*Principles of Geographical Information Systems for land Resources Assessment*”, Oxford University Press.
- 3 Chang, Kang-taung (2002): “*Introduction to Geographic Information Systems*”, Tata McGraw-Hill.
- 4 Clarke, Keith C. (1999): “*Getting Started with Geographic Information Systems*”, Prentice Hall.

- 5 Demers, Michael N. (2000): *“Fundamentals of Geographic Information Systems”*, John Wiley.
- 6 Environmental Systems Research Institute (1993): *“Understanding GIS: The Arc Info method”*.
- 7 Haywood, Ian (2000): *“Geographical Information Systems”*, Longman.
- 8 Sarkar Ashis (1997) : *“ Practical Geography: A Systematic Approach”*, Orient Black-Swan.
- 9 Singh R. L. & Rana P. B. Singh (2005) : *“ Elements of Practical Geography”*, Kalyani Publisher, New Delhi.
- 10 Training Course for GIS for resource management and development planning: Lecture notes, V1: *“GIS Fundamentals and Techniques”*, Government of India.

M.A. Part-II (Sem-III)

Title: Principles of Regional Planning

Credits: 4

Marks: 100

Code No: 307105

Hours: 60

Objectives:

- To understand and evaluate the concept of region in geography and its role and relevance in regional planning and development
- To identify the issues relating to the development of the region through the process of spatial organization of various attributes and their inter relationship.
- To identify the causes of regional disparities in development, perspectives and policy imperatives.

Unit I Introduction to Region

- a) Meaning of Area and Space
- b) Concept of Region
- c) Regions in Geography
- d) Type of Regions
- e) Delineation of Regions
- f) Methods of Regionalisation

Unit II Role of Geography in Regional Planning

- a) Concept and Need of Planning.
- b) Objectives of Regional Planning.
- c) Types and Hierarchy of Planning
- d) Planning Scenario in India and trend
- e) Concept of Planning region
- f) Role of Geographer in Regional Planning

Unit III Theories in planning and their application to India (Brief)

- a) Christaller's Central Place Theory
- b) Perroux's Growth Pole Theory
- c) Gunnar Myrdal's Cumulative Causation
- d) Hirschmann's Polarisation and Trickle Down Effects
- e) Friedmann's Core-Periphery Model

Unit IV Developmental Planning in India

- a) Concept of development: indicators and measurement of regional development, Development of underdevelopment
- b) Planning Regions of India: Need and Classification. Various Planned development in India e.g. Hilly Area, Tribal Area, Metropolitan Region, Rural – Urban Region, Drought -Prone Area
- c) Regional Disparities: Causes, effects and Appraisal with reference to above regions.

Suggested Readings:

1. Abler, R., et. al.: Spatial Organisation: The Geographer's View of the World, Prentice Hall, Englewood Cliffs, N.J., 1971.

2. Bhat, L.S. et al.: *Micro-Level Planning: A Case Study of Karnal Area, Haryana*, K.B. Publications, New Delhi, 1976.
3. Bhat, L.S.: *Regional Planning in India*, Statistical Publishing Society, Calcutta, 1973.
4. Chand, Mahesh and Puri, Vinay Kumar (1983) : *Regional Planning in India*, Allied Publishers Pvt. Ltd., New Delhi.
5. Chandana, R.C. (2000): “Regional Planning – A Comprehensive Text”, Kalyani Publishers, Ludhiana.
6. Chorley, R.J. and Hagget, P.: *Models in Geography*, Methuen, London, 1967.
7. Christaller, W.: *Central Places in Southern Germany*, Translated by C.W. Baskin, Prentice Hall, Englewood Cliffs, New Jersey, 1966.
8. Friedmann, J. and Alonso, W.: *Regional Development and Planning - A Reader*, M.I.T. Press, Cambridge, Mass, 1967.
9. Friedmann, J. and Alonso, W.: *Regional Development Policy- A Case Study of Venezuela*, M.I.T. Press Cambridge, Mass, 1966.
10. *Glasson, John An Introduction to Regional Planning: Concepts, Theory and Practice.* (University of California, Berkeley) Hutchinson, 1978
11. Glikson, Arthur: *Regional Planning and Development*, Netherlands Universities foundation for International Co-operation, London, 1955.
12. Gosal, G.S. and Krishan, G.: *Regional Disparities in Levels of Socio-Economic Development in Punjab*, Vishal Publications, Kurukshetra, 1984.
13. Government of India, Planning Commission: *Third Five Year Plan, Chapter on Regional Imbalances in Development*, New Delhi, 1961.
14. Hirschmann, A. O. (1958) : *The Strategy of Economic Development*, Yale University Press,
15. Indian Council of Social Science Research: *Survey of Research in Geography*, Popular Prakashan, Bombay, 1972.
16. Johnson, E.A.J.: *The Organisation of Space in Developing Countries*, Harvard University Press, Cambridge, 1970.
17. Kuklinski, A.R.(ed.): *Growth Poles and Growth Centres in Regional Planning*, Mouton, The Hague, 1972.
18. Kundu, A. and Raza, Moonis: *Indian Economy- The Regional Dimension*, Spectrum Publishers, New Delhi, 1982.
19. Losch, A.: *The Economics of Location*, University Press, Yale, New Haven, 1954.
20. Mishra, R.P. et. al. *Multi-Level Planning* Heritage Publishers, Delhi. 1980.
21. Misra, R.P. and Others (editors): *Regional Development Planning in India-A Strategy*, Institute of Development Studies, Mysore, 1974.
22. Misra, R.P.: *Regional Planning: Concepts, Techniques and Policies*, University of Mysore, Mysore, 1969.
23. Mitra, A.: *Levels of Regional Development*, Census of India, Vol.I, Part IA(I) and (ii), New Delhi 1965.
24. Myrdal, G.: *Economic Theory and Under-Development Regions*, Gerald Duckworth, London, 1957.
25. Nangia Sudesh, *Delhi Metropolitan Region* Rajesh Publication, Delhi, 1976.
26. Rangwal, S. C. (1989) : *Town Planning (Eighth Revised & Enlarged Edition)*, Charotar Publishing House, Anand-388 001, India.
27. Raza Moonis (editer) *Regional Development* Heritage Publishers Delhi. 1988.
28. Richardson, H.W.: *Regional Economics*, Weidenfeld and Nicolson, London, 1969.
29. Sundaram, K.V.(ed.): *Geography and Planning, Essays in Honour of V.L.S. Prakasa Rao*, Concept Publishing Co., New Delhi, 1985.
30. Tarlok Singh *India's Development Experience*, Mc Millan New Delhi, India, 1974.

M.A. Part-II (Sem-III)

Title: Tourism Geography

Credit : 4

Marks: 100

Code No: 307106

Hours : 60

Objectives :

- To know the fundamental concepts of Geography of Tourism.
- To understand new trend of sustainable tourism and its various types.
- To make aware the students about the impacts and contemporary issues of tourism, its planning and changing scenario in context of India.

Course contents:

UNIT-I : Basics of Tourism

Definition of Tourism, Nature, Scope of Tourism Geography, Approaches of Tourism Geography, Role of geography in tourism; Brief history of Tourism; Types of tourism and tourists; Factors affecting tourism; Role of Tourism in Indian Economy.

Unit II : New trends for Sustainable Tourism

Concept of Sustainable Tourism, Silent features of Sustainable Tourism, Sustainable Tourism- Ecotourism, Cultural Tourism, Agri-Tourism, Medical Tourism.

UNIT-II : Tourism Impacts

Impacts of Tourism – Positive and negative impact of Tourism, Economic, socio-cultural, Environmental impacts; Tourism Impact Analysis; Impact of Pandemics on International Tourism and Indian Tourism.

Unit-IV : Tourism Planning and Development

Concept of Tourism planning and Tourism Development, Strategic Tourism Planning and Tourism Policy Issues; Changing Scenario of Tourism Development in India ; Assessment of tourism potential and Development prospects in Maharashtra; Role of Tourism Information System (TIS) in Sustainable Development.

Suggested Readings :

1. Bhatia A.K. (1996): *“Tourism Development: Principles and Practices”*, Sterling Publishers
2. Bhatia, A.K. (1991): *“International tourism – Fundamentals and Practices”*, Sterling Publishers, New Delhi
3. Chawla Romila (2003): *“Tourism in 21st Century”*, Sonali Publication, New Delhi

4. Chawla Romila. (2002 1st ed.): *“Tourism research planning and development”*, Sonali publications New Delhi.
5. Hunter C and Green H (1995): *“Tourism and the Environment-A Sustainable Relationship”*, Routledge, London,.
6. Inskip. E (1991): *“Tourism Planning : An Integrated and Sustainable Development Approach”*, Van Nonstrand and Reinhold, New York,
7. Kaul R.K.; (1985): *“Dynamics of Tourism & Recreation”*, Inter-India, New Delhi.
8. Kaur J. (1985): *“Himalayan Pilgrimages & New Tourism Himalayan Books”*, New Delhi.
9. Lea J. (1988): *“Tourism and Development in the Third World”*, Routledge, London.
10. Lundberg, D.E. (1996): *The Tourist Business* cehners Books. Internationa, Boston. 6.
11. McLeod Donald VL (2006): *“Tourism globalization and cultural change”*, An island community perspective viva book private limited.
12. Milton D. (1993): *“Geography of World Tourism Prentice”*, Hall, New York,.
13. Mujumdar D. Mishra L. (2010): *“Contemperory Tourism Development- issues and challenges”*, Rajat publications, New Delhi.
14. Pearce D.G. (1987): *“Tourism To-day: A Geographical Analysis”*, Harlow, Longman.
15. Robinson, H.A. (1996): *“Geography of Tourism”*, Macdonald and Evans, London,
16. Sharma J.K. (2000): *“Tourism Planning and Development – A new perspective”*, Kanishka Publishers, New Delhi.
17. Sinha P.C. (1998): *“Tourism Impact Assessment”*, Anmol Publishers, New Delhi.
18. Wabah Salah, Pigram J.J.J (1997): *“Tourism and sustainability policy considerations Rutledge”* .
19. Williams Stephen (1998): *“Tourism Geography”*, Routledge, Contemporary Human Geography, London.

SEMESTER – IV

Sr. No	Code No.	Subjects	L	Cr.	P/T	D	TP (E)	Internal	P/V	T
Core Courses:										
1	407001	Urban Geography	4	4	--	2.5	75	25	--	100
2	407002	Agriculture Geography	4	4	--	2.5	75	25	--	100
3	407204	Practicals in Remote Sensing	4	4	--	2.0	--	25	75	100
Elective Course: (one of the following)										
4	407888	Internship Component	4	4	--	2.5	--	25	75	100
4	407107	Geography of Health	4	4	--	2.5	75	25	--	100
Elective Course/CBCS (any one of the following)										
5	407999	Internship Component	4	4	--	2.5	--	25	75	100
5	407108	Geography of Resources	4	4	--	2.5	75	25	--	100
		Total	20	20	--		150/ 300	225	150/7 5	500

M.A. Part-II (Sem-IV)

Title:Urban Geography

Credits: 4

Marks: 100

Code No: 407107

Hours: 60

Objectives:

- To acquaint the students with the spatial and structural characteristics of urban settlements.
- To bring about awareness of/on special issues related to urban settlements enabling them to research and understand the practical applications of the same.
- To acquire knowledge of, understand, and critique key paradigms and approaches in urban geography (e.g., industrial location, urban form, urban growth, neoliberalism, gentrification, inequality, etc.).
- To develop ability to evaluate critically different theories and analytical approaches in process of urbanisation

Course Content

Unit 1: Definition, nature and scope of urban geography – approaches, development of urban geography. Definition of urban places : Global, including UN and India: problem in defining an urban Place, Process of Urbanization, World Urbanization, Trends and patterns of urbanization in India.

Unit 2 : Site and situations of urban places, Functional classification of towns. Urban growth and theories. Central Place Theory of Christaller and Losch; Theories of Peroux and Boudeville

Unit 3 : Urban morphology and land use structure, Changing Landuse and relevance, Classic models of the city: Contemporary models of the city New urban order, gentrification and the inner city, Suburbanization and land use conflicts, Hierarchy of Urban settlements, City - Region concept, structure of city regions, Urban expansion, unland and periphery, Metropolitans : Case study of Mumbai

Unit 4 Contemporary urban issues: urban poverty, urban renewal, urban sprawl, slums; transportation, housing, urban infrastructure; urban finance; Urban environmental pollution (air, water, noise, solid waste,) urban crime, issues of Urban health. Trends of Urban Research in India. Smart cities and sustainability of cities Application of GIS and RS in Urban issues.

Suggested Readings:

1. ApteMadhusdhan(2013) Urban Growth Strategies : Mumbai Lessons, Leadstart Publishing Pvt Ltd, Mumbai –India
2. Carter: The Study of Urban Geography, Edward Arnold Publishers, London, 1972.

3. Chandana R C (2006): "*Regional Planning*", Kalyani Publication, New Delhi.
4. Doniwal H K (2009): "*Urban Geography*", Gnosis, Delhi.
5. Dutt Ashok, Misra H N And Chatterjee (2008): "*Explorations in Applied Geography*", Prentice Hall of India Private Limited , New Delhi.
6. Fyfe Nick & Kenny Judith (2005) The Urban Geography Reader , Routledge , Abindgon, UK
7. Jonas Andrew, McCann Eugene & Thomas Mary (2015) Urban Geography: A Critical Introduction , 1st Edition, Wiley-Blackwell, New Jersey, USA
8. Kundu A (1992): "*Urban Development and Urban research in India*",Khanna Publication, New Delhi.
9. Kundu, A. : Urban Development and Urban Research in India, Khanna Publication, 1992.
10. Mayer and Kohn (2000): "*Readings in Urban Geography*", University of Chicago Press, Chicago.
11. Meyor, H.M. Kohn C.F. (eds.) : Readings in Urban Geography, University of Chicago Press, Chicago, 1955.
12. Ramachandran R (2007): "*Urbanisation and Urban Systems in India*", Oxford University Press, New Delhi.
13. Rao V.L.S.P. : Urbanisation in India: Spaial Dimensions. Concept Publishing Co. New Delhi Concept, New Delhi.
14. Rao VL.S.P.: The Structure of an Indian Metropolis: A study of Bangalore Allied Publishers Bangalore,1979.
15. Schwanen Tim &Kempen Ronald (2019) Handbook of Urban Geography , Edward Elger Publishing , Cheltenham, UK
16. Sidhartha and Mukherjee (2007): "*Cities, Urbanisation and Urban System*",KisalayaPublications , New Delhi
17. Verma L N (2006): "*Urban Geography*", Rawat Publications, New Delhi

M.A. Part-II (Sem-IV)

Title: Agriculture Geography

Credits: 4

Marks: 100

Code No: 407002

Hours : 60

Objectives:

1. To familiarize the students with the concept, origin and development of agriculture.
2. To discuss physical, economic, technological and institutional factors and its impact on the agricultural sector with special reference to India.
3. To examine the characteristics of agricultural types, agriculture regionalization and the problems and prospects of Indian agriculture.

Course contents:

Unit I Introduction to Agriculture Geography

- a) Definition, Nature and Scope of Agriculture Geography,
- b) Development of agriculture geography,
- c) Approaches to the study of Agricultural Geography
- d) Significance of Agriculture in World Regions,
- e) Role of Agriculture in Indian Economy.

Unit II Determinants of Agriculture

- a) Factors influencing agriculture – a) Physical- Relief, Climate, Soil
- b) Economic-Landholding, marketing, Transport
- c) Technological factors- Irrigation, Seeds, Fertilizers, Power
- d) Institutional Factor- Land Reforms
- e) Von Thunen's Theory of Agricultural Location

Unit III World Agricultural Typology

- a) Shifting cultivation
- b) Intensive Subsistence Tillage
- c) Mixed farming
- d) Commercial grain farming
- e) Plantation agriculture

Unit V Agricultural regions, Problems and Prospects

- a) Regionalization : Concept and Criteria, Methods of regionalization,
- b) Agricultural regions of India,
- c) Problems and Prospects of Indian Agriculture.
- d) Emerging Perspectives in Agriculture and Government Initiatives for Sustainable agriculture
- e) National agriculture policy.

Suggested Readings:

1. Alka Gautam (2012): *“Agricultural Geography”* Sharda Pustak Bhawan, Allahabad.
2. Bryant, C.R., Johnston, T.R. (1992), *“Agriculture in the City Countryside”*, Belhaven Press, London.
3. Burch, D., Gross, J. and Lawrence, G. (eds.) (1999), *“Restructuring Global and Regional Agriculture”*, Ashgate Publishing Company, Burlington.
4. Cakmak, I. and Welch, R. M. (eds) (2009), *“ Impacts of agriculture on Human Health and Nutrition”*, EOLSS Publications, UK.
5. Ferroni, Marco (2013): *“ Transforming Indian agriculture- India 2040: Productivity, Markets and Institutions”* , Sage Publications, New Delhi.
6. Grigg David (1995): *“An introduction to agricultural geography”*, (second edition), Routledge, London and New York.
7. Illbery, B.W. (1985): *“Agricultural Geography, Social & Economic Analysis”*, Oxford University Press.
8. Mohammad, N. (1992): *“ New Dimension in Agriculture Geography”*, Vol. I to VIII, Concept Publishing Company, New Delhi.
9. Mohammad, N. and Rai, S.C. (2014) : *“ Agricultural Diversification and Food Security in the Mountain Ecosystem”*, Concept Publishing Company, New Delhi.
10. Randhawa, M.S. (1980) : *“An History of Agriculture in India”* , Vols. I, II, III,IV ICAR, New Delhi.
11. Roling, N.G., and Wageruters, M.A.E. (eds.) (1998): *“ Facilitating Sustainable Agriculture”*, Cambridge University Press, Cambridge.
12. Shafi, M. (2006): *“Agricultural Geography”*, Pearson Education, Delhi.
13. Sing Jasbir and Dhillon, S.S. (1994): *“Agricultural Geography”* Tata McGraw Hill, New Delhi.
14. Shrivastava, Sahay, Vidyarti and Singh (2010): *“Second Green Revolution Vs. Rainbow Revolution”*.
15. Tiwari, R. and Singh, B. (1994) : *“ Krishi Bhoogol”*, Prayag Pustak Bhandar, Allahabad. (Hindi). 15. White P. (2007) : *“ Emergence of agriculture: A global view”*, Routledge, London.
16. Wright J. (2009) : *“ Sustainable agriculture and food security in an era of oil scarcity”*, Earthscan, London.
17. Young, A. (1998): *“Landuse Resources: Now and for the Future”*, Cambridge University Press, Cambridge.

M.A. Part-II (Sem-IV)

Title: Practicals in Remote Sensing

Credits: 4

Marks: 100

Code No: 407204

Hours : 60

Objectives:

- To introduce to the students the basic principles of Remote sensing
- To indicate the methods of visual & digital interpretations of satellite images & Aerial photography.
- To outline the application value of Remote Sensing.

Course contents:

Unit-I: Remote Sensing

History and Development of Remote Sensing; Elements of RS- Solar energy, platform and sensor ; Solar Energy-EMS, (Electro – Magnetic - Spectrum) ; Interaction with Atmosphere and Earth surface; Types of satellite Remote sensing.

Unit-II: Platforms

Types of Platforms , Satellite orbits, Sensors; Aerial photographs – camera, film; Satellite Remote sensing – Types of Sensors, Sensors used in Indian Satellites
Image resolution and resolution types- Spatial, Temporal, Spectral and Radiometric

Unit-III: Elements of Aerial Photo photogrametry

Scale of Aerial Photo, Flight management, Image displacement, Errors in Aerial Photo, 3D visualization of Aerial Photos, Visual Interpretation of Aerial Photo (Area measurement)

Unit-IV: Image Analysis

Visual Analysis Interpretation, Data products, Application of Remote Sensing.

Suggested Readings :

- 1 Burroughs, P. A (1986): *“Principles of Geographical Information Systems for land Resources Assessment”*, Oxford University Press.
- 2 Guha P.K. (2003): *“Remote Sensing for the Beginner”*, Affiliated East-West Press Pvt. Ltd. New Delhi.
- 3 Lillesand T.M. and Kiefer R.W. (2010): *“Remote Sensing and Image Interpretation”*, John Wiley & Sons Pvt. Ltd.
- 4 Karlekar Shrikant (2007): *“DoorSamvedan”*, Daimond Publication, Pune.

M.A Part-II (Sem-IV)
Title: Geography of Health

Credits: 4

Marks: 100

Code No: 407107

Hours: 60

Objective:

- to acquaint the students with the role of geographical factors, viz., physical, demographic, social and economic, influencing the spatial distribution of diseases;
- to highlight the relation of health with nutrition, environmental degradation and urbanization;
- to decipher the causes of the changing disease pattern, and
- to make the students abreast of existing health-care facilities, so as to train them with better health care planning for the country.

Course Contents:

- Unit I** Introduction: Geography and Health, nature, scope and significance of geography of health. Development of this area of specialization; its distinction from medical science. Mapping of disease, Access, delivery and planning of health services. Health care delivery system in India.
- Unit II** Geographical factors affecting human health and diseases arising from them, viz.
(i) Physical factors- relief, climate, soils and vegetation.
(ii) Social factors- population density, literacy, social customs and poverty.
(iii) Economic factors- food and nutrition occupation and standard of living
(iv) Environmental factors- urbanization and congestion, water, air and noise pollution and solid waste, green spaces and disease.
- Unit III** Classification of diseases: genetic, communicable and non-communicable; occupational and deficiency diseases. WHO classification of diseases, Pattern of World distribution of major diseases. Rural urban deprivation in India with respect to health care.
- Unit IV** Ecology, etiology and transmission of major diseases: cholera, plague, malaria, dengue, tuberculosis, hepatitis, cardiovascular, cancer, AIDS, Swine Flu and Corona. Pandemics, Diffusion of diseases and causes for the same. Deficiency disorders and problems of mal-nutrition in India.

Suggested Readings:

1. Banerjee, B. and Hazra J. : Geo-Ecology of Cholera in West Bengal, University of Calcutta, Calcutta 1980.
2. Cliff, A. and Haggett, P. : Atlas of Disease Distribution. Basil Blackwell, Oxford,

1989.

3. Digby, A. and Stewart, L. (eds.) : Gender, Health and Welfare. Routledge, New York, 1996.

4. Hazra, J. (ed.): Health Care Planning in Developing Countries. University of Calcutta, Calcutta, 1997.

5. Learmonth A.T.A. : Patterns of Disease and Hunger. A Study in Medical Geography. David & Charles, Victoria, 1978.

6. May, J.M.: Studies in Disease Ecology, Hafner Pub., New York, 1961.

7. May, J.M.: Ecology of Human Disease, M.D. Pub., New York, 1959.

8. May, J.M.: The World Atlas of Diseases, Nat. Book Trust, New Delhi, 1970.

9. Mc. Glashan, N.D. : Medical Geography, Methuen, London, 1972.

10. Narayan, K.V.: Health and Development- Inter-Sectoral Linkages in India. Rawat Pub., Jaipur, 1997.

11. Phillips, D.R. : Health and Health Care in the Third world. Longman, London, 1990.

12. Pyle, G. : Applied Medical Geography. Winston Halsted Press, Silver Springs, Md, U.S.A., 1979.

13. Rais, A. and Learmonth, A.T.A.: Geographical Aspects of Health and Diseases in India.

Curriculum Development Committee in Geography 137

14. Shannon, G.M. et. al : The Geography of AIDS. Guilford Press, New York, 1987.

15. Smith, D. : Human Geography - A Welfare Approach. Arnold Heinemann, London, 1997.

16. Sochin, A.A: Fundamentals of Medical Geography, Dept. of Army Tran, M.J. 5264, Washington D.C, 1968.

17. Stamp, L.D.: The Geography of Life and Death. Cornell University, Ithaca, 1964.

M.A Part-II (Sem-IV)
Title: Geography of Resources

Credits: 4

Marks: 100

Code No: 407108

Hours: 60

Objectives:

- To understand the concepts and geography of resources
- To get acquainted with the changing perception about the resources with the stages of development of a region.
- To get comprehensive knowledge of natural resources available in the world and related crises.
- To analyse human resources, its strength and regional disparities.
- To design a plan for the conservation and management of the resources.

Course Contents:

Unit 1 Introduction:

Nature, scope and significance of the Geography of Resources, Definition and concept of Resources – Resource development and changing perception with stages of economic, technological and cultural development; Classification of Resources on the basis of biogenesis, renewability, availability and distribution condition.

Unit II Natural Resources:

- a) Land: Use and misuse: protective measures to check.
- b) Water resources: Domestic, agricultural and industrial use, hazards from pollution.
- c) Forest resources: Use and misuse; Ecological Implications.
- d) Mineral and energy resources: Availability and utilization, conservation and sustainability of mineral resources, conventional to non conventional sources of energy, Resource-value enhancement.

Unit III Human Resources: Concept; importance, Qualitative and quantitative aspects; Concept of Human Development and its measurement, Disparities between developed and developing regions with special reference to India.

Unit IV Conservation and Management of Resources:

- a) Meaning and methods of Conservation.
- b) Judicious use of land, water, forest, mineral and energy resources
- c) Concept of Sustainability and Development goals.
- d) Natural Resource Management in India, development Policy and Planning

Suggested Readings:

1. Adams, W. M. (1990): Green Development, Environment and Sustainability in the Third World, Routledge, London.
2. Beck, U. (1992): Risk Society: Towards a New Modernity, Sage, London.
3. Borton, I. and Kates, R.W. (1984): **Readings in Resource Management and Conservation**, University of Chicago Press, Chicago.
4. Bruce, M. (1989): **Geography and Resource Analysis**, John Wiley, New York.
5. Burton I & Kates R.W. (1978): “*Readings in Resources Management & Conservation*”, Mc Graw Halls, New York.
6. Ehrlich P.R., Ehrlich R.H. & holdlen J.P. (1998) : “*Eco science, Population, Resources & Development*”, Freeman & Company, San Francisco.
7. Elcome D (1998): “*Natural Resources: Their use and Abuse*”, Nelson Thomes.
8. Eliot Hurst, M.E. (1972): **A Geography of Economic Behaviour: An Introduction**, Duxbury Press, California.
9. Elliott, J.A. (1999): An Introduction to Sustainable Development, Routledge.
10. Guha, J.L. and Chattroj, P.R. (1994): **Economic geography- A Study of Resources**, The World Press, Calcutta
11. Harper, C.L. (2001): Environment and Society, Human Perspectives on Environmental Issues, Prentice Hall, New Jersey.
12. Holechek J.L. etal (2000) : “*Natural Resources, Ecology, Economics & Policy*”, Prentice Hall, New Jersey.
13. Martino, R.L. (1969): **Resource Management**, McGraw Hill, London.
14. Mather, A.S. and Chapman, K. (1995): Environmental Resources, Longman Scientific and Technical, London.
15. Mc Lavan D.J. & Skinnnet B.J. eds (1986): “*Resources & World Development*”, John Wiley & Sons New York
16. Mitchel Bruce (1979) : “*Geography & Resource Analysis*”, Longman Group, London.
17. Mitra A.(2000): “*Resource Studies*”, Shridhar Publishers, Kolkata
18. Negi, B.S. (2000): **Geography of Resources**, Kedar Nath and Ram Nath, Meerut.
19. Owen S. & Owens P.L. (1991): “*Environment Resources & Conservation*”, Cambridge University Press, New York.
20. Owen, O.S., (1971), **Natural Resource Conservation: A Ecological Approach**,
21. Peet, R. Watts, M. (eds.) (1996): Liberation Ecologies: Environment, Development, Social Movements, Routledge, London.
22. Potter, R.B., Binns, T. Elliott, J.A. and Smith, D. (1999): Geographies of Development, Longman.
23. Raja, M. (1989): **Renewable Resource Development**, Concept, New Delhi.
24. Ramesh, A. (1984): in **Resource Geography** (Ed.) R.P. Misra, Contribution to Indian

geography, Heritage Publishers, New Delhi.

25. Redicliff. M. (1987): Sustainable Development: Exploring the Contradictions, Melhuen, London.
26. Rees J (1988): “*Natural Resources: Allocation, Economics & Policy*”, Mathuen, London
27. Riccardo Petrella, Translated by Patrick Camiller, (2001): The Water Manifesto Arguments For A World Water Contract, Books for Change, Bangalore, India.
28. Robbias Paul, Hirtz J & Moore Sarah (2010) : “*Environment & Society : A Critical Introduction*”, wdey, Backwell
29. Roy, P. K (2001): Economic Geography, A Study of Resources, New Central Book Agency, Kolkata.
30. Sarre, P. and Blunder, J. (1995): An Overcrowded World Population, Resources and the Environment, the Open University, Oxford
31. Singh, A. and Raja, M. (1982): **Geography of Resources and conservation** (Hindi Edition) Pragati Parkashan, Meerut.
32. Zimmermann, E.W. (1951): **World Resources and Industries**, Harper, New Delhi.

Websites:

Mineral Resources Data System (MRDS) (<https://mrdata.usgs.gov/mrds/>)
Natural Resources Data Management System (<https://dst.gov.in/natural-resources-data-management-system>); Department of Land resources (<https://dolr.gov.in/>)
Ministry of Rural Development (Land resources) (<https://rural.nic.in/documents/policies-acts-bills/department-land-resources>); Ministry of Jalshakti Department of Water Resources (<http://mowr.gov.in/>); Water Resources Reports (<http://jalshakti-dowr.gov.in/annual-report>)
Indian Institute of soil and water conservation (<http://www.cswcrtiweb.org/>); Environment and Forest (<https://www.india.gov.in/topics/environment-forest>); Forest survey of India (<http://www.fsi.nic.in/>); Annual Report, MoE,F and CC (<http://moef.gov.in/wp-content/uploads/2019/08/Annual-Report-2018-19-English.pdf>); Ministry of Human Resource Development (<https://mhrd.gov.in/>)

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SNDT Women's University
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Certificate Course in Geoinformatics

Duration	: 04 Months (270 Hrs Theories and Practical)
Intake Capacity	: Minimum 10, Maximum 15
Credits	: 18 Credits
Course Fees/ Student	: 16,000
Eligibility	: B.A. with Geography subject or B.Sc. or equivalent degree

Objectives:

- To introduce to the students the basic principles of GIS and Remote Sensing.
- To provide hands on training and map making.
- To indicate the methods of visual and digital interpretation of satellite images and Aerial photography.

Course Content:

Courses	Topics	Hours	Total No. of Credits
Geographic Information system (Theory)	1.Introduction to GIS 2. Spatial data 3. Network analysis 4. Concepts of GPS	30	02
Geographic Information system (Practical)	1.Overview of the software 2. Spatial data input, Digitizing and Georeferencing 3. Map designing and symbology 4. Network analysis 5. GPS	60	04
Remote Sensing (Theory)	1.Introduction to Remote Sensing 2. Electromagnetic Radiation 3. Platforms, Sensors and Orbits 4. Aerial photography	30	02
Remote Sensing (Practical)	1.Basics of aerial photography 2. Aerial photo and image interpretation 3. Measurements	60	04
The Digital Image Processing (Theory)	1.Introduction to Digital Image Processing 2. Image enhancement techniques 3. Digital image classification	30	02
The Digital Image Processing (Practical)	1.Introductin to image processing system 2. Image enhancement techniques 3. Image classification 4. Accuracy analysis 5. Image analysis	60	04

Suggested Readings:

- Ahmed, E. L. Rabbany (2002): Introduction to Global Positioning Systems, Artech House, Boston
- Chang, K. T. (2008): Introduction to Geographic Information Systems, Avenue of the Americas, McGraw-Hill, New York
- Longley, P. A., Goodchild, M. F., Maguire, D. J., Rhind, D. W. (2002): Geographical Information Systems and Science, John Wiley & Sons, Chichester
- Burrough, P. A. and McDonnell, R. A. (2000): Principles of Geographical Information Systems, Oxford University Press, New York
- Lillesand, T. M., Kiefer, R. W. and Chipman, J. W. (2008): Remote Sensing and Image Interpretation, John Wiley & Sons, New Delhi
- Campbell, J. (2002): Introduction to Remote Sensing, Taylor & Francis, London
- Jensen, J. R. (2005): Introductory Digital Image Processing, Prentice Hall, New Jersey
- Lillesand, T. M., Kiefer, R. W. and Chipman, J. W. (2008): Remote Sensing and Image Interpretation, John Wiley & Sons, New Delhi
- Agarwal, C. S. Garg, P. K. (2000): Remote Sensing, Wheeler A. H., New Delhi
- Joseph, G. (2004): Fundamentals of Remote Sensing, Universities Press, Hyderabad, India
- Richards, J. A, Jia, X. (1999): Remote Sensing and Digital Image Processing, Springer, Verlag Berlin
- Nag, P. Kudrat, M. (1998): Digital Remote Sensing, Concept Publishing Company, New Delhi
- Sabins, F. F. (1996): Remote Sensing: Principles an Interpretation, W. H. Freeman Company, New York
- ERDAS (2010): ERDAS field Guide, ERDAS incorporation, Norcross, GA, USA
- Gupta, R. P. (2003): Remote Sensing Geology, Springer, Verlag Berlin
- Mitchell, A. (1999): The ESRI guide to GIS analysis, Redlands
- Chand, B., Majumdar, D. D. (2001): Digital Image Processing Analysis Prentice- Hall of India, New Delhi.

Detailed Course Content:

Title: Geographic Information System (Theory)		
No. of credits: 02		No. of lectures: 30 (Hrs)
Sr. No	Topics	Hrs.
1.	Introduction to GIS	04
2.	Spatial data	10
3.	Network analysis	10
4.	Concept of GPS	06
Title: Geographic Information System (Practical)		
No. of credits: 04		No. of lectures: 60 (Hrs)
Sr. No	Topics	Hrs.
1.	Overview of the software	04
2.	Spatial data input, Digitizing and Georeferencing	18
3.	Map designing and symbology	08
4.	Network analysis	18
5.	GPS	12
Title: Remote Sensing (Theory)		
No. of credits:02		No. of lectures:30 (Hrs.)

Sr. No	Topics	Sub-topic	Hrs.
1.	Introduction to Remote Sensing	Concepts, history, Development stages.	08
2.	Electromagnetic radiation	Definition, theories/laws of EMR, interaction of EMR with earth's atmosphere, spectral signatures.	10
3.	Platforms, Sensors and Orbits	Types of platforms, sensors and orbits.	05
4.	Aerial Photography	Introduction to aerial photography- Scale, flying height, stereo pairs and stereoscope.	07
Title: Remote Sensing (Practical)			
No. of credits:04		No. of lectures:60 (Hrs.)	
Sr. No	Topics	Sub-topic	Hrs.
1.	Introduction	Basics of aerial photography, Camera, film and resolution, scale and ground coverage of aerial photograph, relief displacement in aerial photographs and its characteristics.	12
2.	Aerial photo and Image interpretation	Interpretation of aerial images single and vertical stereo pairs, study and interpretation of satellite images for physical features, urban, forest and agricultural use.	30
3.	Measurements	Geometry of aerial photographs, determination of scale, height on aerial photograph.	18
Title: Digital Image Processing (Theory)			
No. of credits: 02		No. of lectures:30 (Hrs)	
Sr. No	Topics	Sub-topics	Hrs.
1.	Introduction to Digital Image Processing	Types of digital images, Sources of error, Image rectification.	10
2.	Image enhancement techniques	Contrast enhancement, Spatial filtering.	10
3.	Digital image classification	Types of classification, Supervised classification, Unsupervised classification, Classifier	10
Title: Digital Image Processing (Practical)			
No. of credits: 04		No. of lectures:60	
Sr. No	Topics	Sub-topics	Hrs.
1.	Introduction to image processing system	Loading of data, Identification of features.	06
2.	Image enhancement techniques	Linear and non-linear, contrast enhancement, edge enhancement, high pass and low pass filtering.	16

3.	Image classification	Supervised and Unsupervised classification.	20
4.	Accuracy analysis	Producer, user accuracy, mapping accuracy.	08
5.	Image analysis	Analysis of the images using different indices.	10

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CERTIFICATE COURSE IN SURVEYING

Credits	: 16 Credits
Duration	: 04 Months
Course Fees/ Student	: 15,000
Intake Capacity	: Minimum 10, Maximum 20
Eligibility	: HSC passed from any Discipline or above
	<ul style="list-style-type: none"> • To understand basic concepts of measurement and determination of boundaries, areas, shapes, location through traversing techniques. • To analyse and utilize appropriate survey methods in various sectors. • To enhance the survey skills to ensure employment generation. • To make the students to apply the innovative survey skills in planning and research field.

Course Contents

Courses	Modules	Hours	Total Credits
Fundamental Definitions and Concepts	1. History and Development in Surveying 2. Contribution of Human being /Local Participation 3. Basic concepts in Surveying 4. Principals of surveying 5. Classification of surveying 6. Importance of Technical Survey	15	1
Instruments and concepts in Surveying	1. Introduction to various surveying instruments and uses Definitions 2. Definitions of various Geographical concepts used in Cadastral surveys 3. Methods of Levelling 4. Levelling Instruments 5. Levelling Problems 6. Errors in Levelling	30	2
Traverse Survey	1. Introduction to Chain Survey 2. Use of tapes-open traverse, triangulation survey 3. Plane table; plan preparation, resection - one point and two point problem; three point problem; tracing paper method. 4. Prismatic compass: Open and closed traverse, elimination error 5. Field Survey with Plane Table and Prismatic Compass (02 each)	45	3

Dumpy level	<ol style="list-style-type: none"> 1. Introduction to Dumpy Level its parts 2. Concepts/Terminology used in Dumpy Level Survey 3. Instrument Method 4. Rise and Fall Methods 5. Surveying with above two methods 6. Plotting of Traverse Survey 7. Contour plan preparation. 8. Field Survey with Dumpy Level(03) 	60	4
Theodolite	<ol style="list-style-type: none"> 1. Introduction to Theodolite, various types and its parts 2. Concepts/ Terminology used in Theodolite Survey 3. Measurement of Horizontal and Vertical angle 4. Tachometric Survey 5. Sources of error in Theodolite survey 6. Contour plan preparation 7. Interpolation of Contours 8. Field Survey with Theodolite (04) 	75	5
Other smaller instruments	<ol style="list-style-type: none"> 1. The Sextant 2. Abney level 3. Indian clinometers 4. Application of smaller survey instruments in mapping 	15	1

Suggested Readings

- Clendinning , J. Principles and use of Surveying Instruments. 2nd edition, Blockie.A 1958.
- Clendinning ,J Principles of surveying 2nd edition 1960.
- Hotine, Major M.The re-triangulation of Great Britain. Empire survey review 1935.
- Mitra,R.P. and Ramesh A : Fundamentals of Cartography Revised Edition, Concept Publication, New Delhi.
- Monkhouse - Maps and diagrams Methuen 1971.
- Negi, Balbir Singh. Practical Geography Third revised Ed.Kedar Nath and Ram Nath, Meerut &Delhi, 1994-95.
- Sandover,J.A. Plane Surveying. Arnold 1961.
- Singh & Karanjta - Map work and Practical Geography Central Book Dept Allahabad 1972.
- Singh, R.L.and Dutt, P.K. Elements of Practical Geography, Kalyani Publication, New Delhi, 1979

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CERTIFICATE COURSE IN TRAVEL AND TOURISM

Credit and No. of Lectures : **16**
Duration : **04 Months**
Course Fees / Student : 15000 Rs.
Students Intake : Minimum 15 Students

Minimum Qualification : HSC passed from any Discipline or above

Objectives

- To acquaint the students with basic concepts of travel and tourism.
- To impart to the students up-to-date relevant knowledge of travel and tourism.
- To develop and promote travel and tourism to ensure employment generation.
- To develop skills to adopt economically, environmentally and culturally sustainable travel and tourism practices.
- To make the students aware various research opportunities in travel and tourism.

Course Content

Course Content	Modules	Hours	Total Credits
Tourism, Types and Forms	1. Concept of Tourism and Tourism Principles 2. History and development of Tourism, Tourism and its economic significance 3. Scope of tourism in rural and urban area 4. Inter-regional and intra-regional tourism, Inbound and Outbound tourism, Domestic, International tourism. 5. Forms of Tourism: religious, historical, social, agro, medical, sports and adventure.	30	02
Transportation, Travel Formalities and Accommodation	1. Role of Transportation in Tourism 2. Modes of Transport and Infrastructure- Air, Rail, Road and Water Transport. 3. Transportation Policies Passport, Visa, Health requirements, taxes, customs, currency, travel insurance, baggage and airport information. 4. Procedure for Domestic and International Hotel Reservations,	30	02

	5.Documentation related with Hotel Reservation/Configuration/Cancellation		
Tour Planning	1.Tourism services 2.Tour Plan schedule 3.Tour Planning and Costing 4.Training programmes to guides 5.Tour Packages and Tour Circuits	30	02
International Tourism	1.Concept of International Tourism 2. of International Tourism in Economic growth and development 3.International Tourism Organisations: Origin, location and functions of WTO, IATA, PATA, ASTA, UFTAA, and ICAO.	30	02
Recent Developments in Travel and Tourism	1.Sectoral changes and Development in Travel and Tourism. 2.Information Technology and Travel and Tourism 3.Online Platform in Travel and Tourism 4.Career Opportunities in Travel and Tourism 5.Use of GIS in Tourism Planning	30	02
Field Excursion	1.Field Excursion 2.CaseStudies: Mahabaleshwar, Ganapatipule, Raigad, Ajanta, Panchmadhi, Agra. 3.Report writing and presentation	15	01
Practical of Travel and Tourism			
Visit to Nearby Tour Agency and Tour Operators (Minimum 4)	1.Objectives, Functions 2.Silent Features of Tour Agency and Tour operators. 3.The Indian Travel Agents and Tour Operators – an overview.	15	01
Visits / Tour Projects	Field Visit – Short Tour or Long Tour Submission of Internship Report	30	02
Internship	Internship in Tour Agency / Planning or One Week Training Programme Submission of Internship Report	30	02

Suggested Readings:

1. Bhatia A.K. : Tourism Development: Principles and Practices. Sterling Publishers, New Delhi 1996.

2. Bhatiya, A.K.(1991), “ International Tourism - Fundamentals and Practices”, Sterling, New Delhi.
3. Chandra R.H.(1998), “ Hill Tourism: Planning and Development”, Kanishka Publishers, New Delhi.
- 4.Cooper, Fletcher et al, (1993), Tourism Principles and Practices, Pitman.
5. Hunter C. and Green H (1995), “Tourism and the Environment: A Sustainable Relationship”, Routledge, London, 1995.
6. Inskeep. E : Tourism Planning: An Integrated and Sustainable Development Approach, Van Nostrand and Reinhold, New York, 1991.
7. Kaul R.K. (1995), “ Dynamics of Tourism & Recreation”, Inter-India, New Delhi..
8. Kaur J. (1985),” Himalayan Pilgrimages & New Tourism”, Himalayan Books, New Delhi.
9. Lea J.(1988), “ Tourism and Development in the Third World, Routledge, London.
- 10.Mill and Morrison, (1992), The Tourism System: An Introductory Text , Prentice Hall.
- 11.Mill, R.C., (1990), Tourism: The International Business, Prentice Hall, New Jersey.
12. Milton D. (1993), “Geography of World Tourism Prentice”, Hall, New York.
13. Pearce D.G. (1987), “Tourism To-day: A Geographical Analysis, Harlow, Longman.
- 14.Seth, P.N., (1999) Successful Tourism Management (Vol 1 &2)
- 15.Sharma J.K. (ed.) : Tourism Planning and Development - A new perspective, Kanishka Publishers, New Delhi, 2000.
16. Sinha P. C. (1998), “ Tourism Impact Assessment”, Anmol Publishers, New Delhi.
17. Theobald W. (1994), “ Global Tourism: The Next decade, Oxford, Butterworth, Heinemann , Oxford,1994.
18. Indian Infrastructure Report, 2018.

Annexure IV

1. Geoinformatics

A.	Total Income: Fee Collection			
1	Tuition Fees	fees amount	No of students	Amount (Rs.)
1	Certificate Course in Geoinformatics	16000	15	240000

Certificate Course in Geoinformatics

Expenditure of the Proposed Fee Schedule (2019-20)

B.	Expenditure	
	Staff Payments & Benefits	Amount (Rs.)
1	Clock Hour Basis/Consolidated	72000
2	Temp Non-Teaching (Office Assistant & Accounting Work)	18000
3	Examination Remuneration	10000
4	Contingency	13000
5	Computer Laboratory (Hardware/ Software/ Meintaince)	100000
7	Books / Reading Material	20000
6	Miscileneous	7000
	Total	240000

2. Certificate Course in Surveying

A.	Total Income: Fee Collection		(Credit 16/240 hours)	
1	Tuition Fees	fees amount	No of students	Amount (Rs.)
2	Certificate Course in Surveying	15000	15	225000

Expenditure of the Proposed Fee Schedule (2019-20)

B.	Expenditure	
	Staff Payments & Benefits	Amout (Rs.)
1	Clock Hour Basis/Consolidated	96000
2	Temp Non-Teaching (Office Assistant & Accounting Work)	18000
3	Examination Remuneration	15000
4	Administrative & Genral Expenses	15000
5	Computer Laboratory	7500
6	Miscileneous	13500
7	Books / Reading Material	20000
8	Equipments Maintenance	40000
	Total	225000

A.	Total Income: Fee Collection			
1	Tuition Fees	fees amount	No of students	Amout (Rs.)
3	Certificate Course in Travel and Tourism	15000	15	225000

Expenditure of the Proposed Fee Schedule (2019-20)

B.	Expenditure	
	Staff Payments & Benefits	Amout (Rs.)
1	Clock Hour Basis/Consolidated	72000
2	Temp Non-Teaching (Office Assistant & Accounting Work)	18000

3	Examination Remuneration	15000
4	Administrative & Genral Expenses	15000
5	Computer Laboratory	7500
6	Miscellaneous	13500
7	Books / Reading Material	20000
8	Study Tour / Field Visit	60000
	Total	221000