TuljaramChaturchand College, Baramati

Autonomous College

Towyears degree programme in Geography

(Faculty of Science and Technology)

Revised Syllabus for

MA/MSc. Geography

ForTuljaramChaturchand College, Baramati

Choice Based Credit System Syllabus

To be implemented from Academic Year 2020-2021

M.A II - 2020-21

Workload: Four Periods per week per batch (12 Students per batch)

M.A. / M.Sc.- II			
Semester	**One set of the following according to specialization from CCTP***		
III	GEO:5301	Tropical Geomorphology	04
	GEO:5302	Practical in Geomorphology	04
	OR		
	GEO:5303	Urban Geography	04
	GEO:5304	Practical in Population and Settlement Geography	04
		Compulsory Papers	
	GEO:5305	Geoinformatics-II	04
	GEO:5306	Geographical Thoughts	04
	GEO:5307	Practical in Geoinformatics	04
	GEO:5308	Watershed Management	04
	RP: 01	Combine Projects	04
	CC:03	Certificate Course	02

- **Objectives:**
  1) To enable the students to use various scale and projections used to crate maps.
  2) To acquaint the students with basic of statistical data.
- **Outcome:**
  After study this paper students can able to identify any map scale and projection. They can also know which projection is suitable for given region.
- **Pattern of Examination:**
  Internal : 40 % Marks
  External : 60 % Marks

Course: GEO : 5301 Tropical Geomorphology

No. ofCredits:04 **No. of Periods**

Unit – 1: Introduction to Tropics **06**

1.1Tropical Environment –Definition
1.2Peculiarities of tropicalclimate
1.3Classification ofTropics
1.4Morphogenetic regions - Temperature,rainfall, humidity,vegetation

Unit – 2: Tropical Weathering **12**

2.1 Factors influencing the weathering - climatic, geomorphic, biotic, geologic, chronologicaland sitefactors
2.2 Solubility and Mobility of minerals inTropics
2.3 Weathering profile: Deep weathering profiles - nature, development and distribution
2.4 Tropical Soils: Process of soil formation in Tropics, Clayminerals

Unit – 3 :Duricursts and Laterites

3.1 Duricursts and Laterites – Definition
3.2 Indurated laterites - Properties andworld distribution
3.3Classification by site, Morphologyand chronology
3.4A complete account of various divisionof Lateritic Profile
3.5 Landform development onlaterites
3.6 Distribution of laterites inIndia
3.7Theories of origin of iron inlaterites

Unit – 4 :Denudation in Tropics **08**

4.1Mass movement: Types &Processes
4.2Slope wash
4.3Process of chemicaldenudation
4.4Tropical rivers - process of erosionand deposition

Unit – 5 :TropicalLandscape 08

5.1Tropical Terrain – Reliefcharacteristics
5.2 Slope and valleyforms
5.3 Domed and boulderinselbergs
5.4 Hillslopes andPediments
5.5 Tropicalcoasts

Unit – 6 :Tropical Planation08

6.1Formation and Types ofplanation surfaces
6.2Morphology of planationsurfaces
6.3Peneplains, Pediplains,Etchplains
6.4double surface ofplanation

Unit – 7 :Landform development in the tropics 08

7.1Role of tectonics and climaticchange
7.2Nature of changes during Quaternary changes in climate andvegetation

Reference Books:

1. Andrew Goudie, (1985): Duricrusts in tropical and subtropical landscapes, Allen Unwin, London.
2. Andrew Goudie, (1987): Environmental change.
3. Budel J. (1982) Climatic geomorphology, Princeton UniversityPress.
4. Douglas j. & Spencer, (1985): Environmental change & Tropical geomorphology, George Allen &Unwin.
5. FeniranA. 7 Jeje L.K. (1983): Humid tropicalgeomorphology
6. Thomas, M. F. (1994): Geomorphology in the Tropics, John Wiley and Sons,Chichester
7. Thomas M.F. (1974): Tropical geomorphology, McMillan,London.
8. Tricart J. (1972): Landforms of the humid tropics, forests and Savanna, Longman, London.

Course : GEO : 5302 Practical in Geomorphology

No. of Credits: 04 **No. of Periods**

Unit – 1: Geomorphological mapping **04**

(Use of symbols (Hert, 1986)

1.1 Chartshowingsymbols

1.2 Preparing ageographic map ofasmall area / basin –toposheets /field

1.3 Interpretation ofthemapin termsofforms and processes

Unit – 2: Hill slope Analysis **04**

Direct and indirect measurements

2.1 Using clinometers / profiles from toposheets,

2.2 Identification ofsegments

2.3 Dalrymple et al's nine- unit landsurface model- Understanding nature ofprocesses

Unit – 3: Field Survey **07**

Channel cross sections/ Beach/Hill slope profile Soil/sediment sample collection

3.1 Surveying and plotting of stream orgully channel cross–section or beach profile or slope profile.

3.2 Quadrat or Traverse surveyof sediment size on riverbedbeach.

3.3 Analysis of shape andsize ofcoarsesediment(Zingg's classification)

GPS survey

Preparation of beach, river channel mapsetc. using GPS

Unit – 4: Laboratory work **05**

Soil/Sediment analysis

4.1 Analysis of 1 sandy and1 Clayey sample

4.2 Plotting of data on probability graphpaperand

4.3 Estimation of grainsizeparameters

4.4 Interpretation ofresults

(Note : Fieldwork / Field Visit for a duration of not more than 5 days should be undertaken for the course selected)

Reference Books:

1. Aackombe, R. V. and Gardiner, V. (1983): Geomorphological FieldManual
2. Chorley, R. J., Schumm, S. A. and Sugden, D.E. (1984) : Geomorphology,Methuen, London
3. Goudie, A. (1990): Geomorphological Techniques, Unwin Hyman,London
4. Hart, M. G. (1986): Geomorphology, Pune and Applied George AllenandUnwin
5. Kale, V. S. and Gupta, A. (2001): Introduction to Geomorphology, OrientLongman, Culcutta
6. King, C.A.M. (1966): Techniques in Geomorphology, EdwardArnold,London George Allen andUnwin,London

Course : GEO : 5303 Urban Geography
No. of Credits: 04 **No. of Periods**

Unit – 1: Introduction to Urban Geography **07**
1.1 Nature of Urban Geography
1.2 Scope of Urban Geography
1.3 Significance of Urban Geography
1.4 Relation to other disciplines

Unit – 2: Urbanization **07**
2.1 Meaning of Urban settlementand urbanization.
2.2 Brief review of spatial- temporalvariations inurbanizationin theworld
2.3 Urbanizationcurve
2.4 Contemporary factors ofurbanization

Unit – 3: Urban Morphology **07**
Models of urban structure:
3.1 Park and BurgessModel
31.2 Homer HoyetModel
31.3 Harris and UllmanModel
3.4 Characteristics and demarcation ofCBD

Unit – 4: Urban Classification **04**
4.1 Criteria used forclassification
4.2 Functional classification of towns andcities

Unit –5: Urban Demography **08**
Characteristics of urban population:
5.1 Growth of Urbanpopulation
51.2 Density of population incities
5.3 Age, sex and occupationalstructure

Unit –6: City and its Region **04**
6.1 Concepts of city region andvarious synonymous termsused
6.2 Criteria used to demarcate the cityregion

Unit –7: Central Place **08**
7.1 Christaller's Central PlaceTheory
7.2 Rank-size relationship and rank- sizerule
7.3 Hierarchy of urbansettlements

Unit –8: Contemporary Urban issues **08**
8.1 Price of land and vertical and horizontal growth ofcities
8.2 Scarcity of housing and growth ofslums
8.3 Problems of civicamenities
8.4 Urban transportproblem
8.5 Urban Environmentalpollution

Unit –9: Urban policy and planning **07**
9.1 Urban development policy in India
9.2 Need &Element of cityplan
9.3 Use of GIS in UrbanPlanning

Reference Books:

1. Bhattacharya: Urban Development in India, Shreepublication
2. Brian, R.K. (1996): Landscape of Settlement Prehistory to present, Routledge,London
3. Careter (1972): Fourth edition: The study of Urban Geography, Arnold,London
4. Hall P. (1992): Urban and Regional Planning, Routedge,London
5. K. Siddharth and S. Mukherji : Cities, Urbanization and UrbanSystems
6. Kundu, A. (1992): Urban Development and Urban Research in India, Khanna Publication
7. Mayer and Kohan: Readings inGeography
8. Northam: UrbanGeography
9. Roy Turner: Indian's UrbanFuture
10. R.B Mandal-V.G A Textbook (Concept publishingCompany
11. Shah ManzooorAlam: Urbanization in DevelopingCountries
12. Singh.K.andSteinberg.F. (eds)(1998): Urban India in Crisis. New AgeInterns
13. Urban Geography: TimHall
14. Verma: Urban Geography, Rawat,Jaipur

Course: GEO : 5304 Practical in Population and Settlement GeographyNo. ofCredits:04
No. of Periods

Unit – 1: Population Geography **06**

Demographic indices:

1.1 Mean age at marriage andfertility

1.2 Measures of mortality,IMR&A.S.D.R Dependencyratio

Determinants of Demographic transition:

1.1 Demographic transition-appliedto Maharashtra
(birth rate and death rate)

1.2 Pull-push factors affecting volume of migration-
simple correlation matrix

1.3 Rural urban composition ofpopulation

Unit – 2: Settlement Geography **06**

2.1 Gravity model by W.J.Reilly and Zipf, its application (potential populationsurfaces)
Indices of C.B.D

2.2 Stages according to urbanization curve

2.3 Rank sizerule

2.4 Gini's Coefficient concentrationindex

Unit – 3: Village Survey/ Urban Survey **08**

3.1 Preparation ofquestionnaire

3.2 Collection of Population and settlementdata

3.3 Data analysis and preparation ofreport

Reference Books:

1. Economic and Political weekly-Special issue of populationsurvey
2. Liendzore J.M Techniques in HumanGeography
3. Martin Cad: Analytical UrbanGeography
4. Siddharth,K and Mukherjee,S (1999): Cities urbanization and urbansystems
5. Chandana,R,.C.Population,Geography
6. Yeats,M.H.(1978): An introduction to quantitative analysis in humanGeography.
7. Carter Harold: UrbanGeography
8. John R.Weeks: Population – an introduction to concepts andissues.

Course : GEO : 5305Geoinfoematics II
No. of Credits: 04 **No. of Periods**

Unit – 1: Introduction to Remote Sensing **05**
1.1 Remote Sensing: definition, conceptand principles
1.2 History and development of RemoteSensing in India
Unit – 2: EMR and EMS **10**
2.1 EM Radiation, EM Spectrum, Spectral Signature
2.2 Interaction of EMR withatmosphere
2.3 Interaction of EMR with Earth'ssurface
2.4 Black body radiation, Laws ofradiation
Unit – 3: Platforms and Satellites **15**
3.1 Platform: Types andcharacteristics
3.2 Satellites: Geo-stationary and Sun synchronous
3.3 Earth Resources Satellites:LANDSAT,
SPOT, IRS, IKONOS satellite series
3.4 Meteorological satellites: INSAT,NOAA, GOES
Unit – 4: Sensors **08**
4.1 Sensors: Across track (whiskbroom) and Along track (pushbroom)scanning
4.2 Optical mechanical scanners:MSS, TM,LISS,
WiFS, PAN
Unit – 5: Resolution **05**
5.1 SpatialResolution
5.2 SpectralResolution
5.3Resolution
5.4 RadiometricResolution
Unit –6: Image Interpretation Techniques **05**
6.1 Basic principles, types, stepsand elements of imageinterpretation
6.2 Techniques of visual interpretationand interpretationkeys
Unit – 7: Aerial Photography **12**
7.1 Aerial camera:Components
7.2 Aerial Photography: Definitionand characteristics
7.3 Types of aerial photographsTypes ofAerial Photographs Based on the
Position of the CameralAxis
7.4 Types of Aerial Photographs Based onScale
7.5 Geometry of an aerialphotograph

Reference Books:

1. Anji Reddy, M. (2004): Geoinformatics for environmental management.B.S.Publications
2. Campbell, J.B. (2002): Introduction to Remote sensing. TaylorPublications.
3. Chang.T.K. (2002): Geographic Information Systems. TataMcGrawHill
4. Drury, S.A. (1987): Image Interpretation in Geology. Allen andUnwin.
5. Francis Tar Bernhardsen. Geographical Information Systems. JohnWiley.
6. Gupta, R.P. (1990): Remote Sensing Geology. SpringerVerlag.
7. Heywood.I, Cornelius S, CrverSteve. (2003): An Introduction to Geographical Information Systems. PearsonEducation
8. Jensen, J.R. (2000): Remote Sensing of the Environment: An Earth resourcePerspective Prentice Hall.
9. Joseph George (2003): Fundamentals of remote sensing. UniversitiesPress.
10. Lillesand, T.M., and Kieffer, R.M. (1987): Remote Sensing and Image Interpretation,John Wiley.
11. Ram Mohan Rao. (2002): Geographical Information Systems. RawatPublication.
12. Sabbins, F.F. (1985): Remote sensing Principles and interpretation. W.H.Freemanand company
13. Skidmore A., (2002): Environmental modeling with GIS and Remote Sensing. Taylorand
14. Wise S., (2002): GIS Basics. Taylor Publications

Course : GEO : 5306 Geographical Thoughts
No. of Credits: 04 **No. of Periods**

Unit –1: Historical Development of Geographical Thought **20**

1.1 Greek contribution to Physicaland MathematicalGeography.
1.2 Roman: Contributions of Strabo,Ptolemy
1.3 Arab School: Contribution of AlBattani, Al Masudi, IbnKhaldun.
1.4 Contributions of Explorers and itsimpact
1.5 Contributions of Varenius and E.Kant
1.6 A brief account of differentschools:
a) German: Ratzel,Humboldt
b) French: Vidal de La blache, Jean Brunhes
c) British: H. Mackinder, H.Fleure:
d) American: Carl O Sauer, E.Huntington
1.7 Indian Schools ofthoughts

Unit –2: Dualism in Geography **06**

2.1 Determinism andPossibilism
2.2 Systematic versus RegionalGeography
2.3 Physical versus HumanGeography

Unit –3: Paradigms, approaches and Models in Geography **08**

3.1 Paradigms in Geography
3.2 Evolutionary approach and its impact on Geography
3.3 Types of Models used inGeographical Studies

Unit –4: A) Conceptual Development
B) MajorRevolutions: Theirimpacts **12**

4.1 Areal Differentiation, RegionalSynthesis, Locational and Spatial Analysis, System analysis.
4.2 Quantitative Revolution,Behavioural Revolution, Geo-informatics revolution: Their impacts

Unit –5: Trends in Geography **08**

5.1 Humanistic and WelfareGeography
5.2 MarxistGeography,
5.3 RadicalGeography,
5.4 Geography ofGender

Unit –6: Applied Geography **06**

Applied Geography: Definition, meaning and Significance; Examples
Geography and Public Policy

Reference Books:

1. Cooke, R. U. and Doornkamp, J. C. (1974): Geomorphology in Environmental Management, Clarendon Press,Oxford.
2. Coffey, W. J. (1981): Geography : Towards a general spatial systems approach, Mathuen, London
3. Dikshit, R. D. (1997): Geographical Thought: A Contextual History of Ideas, Pub. ByA.

K. Ghosh, Prentice – Hall of India Pvt. M 97, New Delhi.

4. Frazire, J. W. (1982): Applied Geography, Prentice Hall, EnglewoodCliffs.
5. Hertshone, R. (1959): Perspectives of Nature of Geography, Rand Mac Nally andCo.
6. Hussain, M. (1995) : Evolution of Geographical Thought, Rawat Pub.,Jaipur
7. Singh I. (2006): Diverse aspect of Geographical Thought, ALFA Publications, NewDelhi

Course : GEO : 5307 Practical in Geoinformatics

No. of Credits: 04 **No. of Periods**

Unit – 1: Aerial Photography **02**

Measurements and Interpretation

1.1 Scale and height (using parallaxbar)

1.2 Visual Interpretation of singleaerial photograph

1.3 Interpretation of stereo pair usingStereoscope

Unit –2: Satellite Images **02**

2.1 Visual interpretation of LISS,PAN, WiFS

2.2 Cartosat Data, IKONOS and Quick Bird

Unit – 3: Spatial Database **04**

LayerGeneration

3.1 Raster: Full Grid, Chain Codes andRun LengthCodes

3.2 Vector: Manual Digitization,Digitization Errors and TopologyBuilding

Unit – 4: GIS Operations **02**

4.1 Raster and vector overlay, map algebra (AND, OR) from a toposheetquadrant

4.2 Spatial interpolation from a toposheetquadrant

Reference Books:

1. Burrough, P.A. and R.A. McDonnell (2000): Principles of GeographicalInformation System, Oxford UniversityPress.
2. Chang Kang-tsung. (2002): Introduction to GIS, Tata McGraw Hill, NewDelhi.
3. C. P. Lo and Albert, K. W. Yeung (2002): Concepts and Techniques of Geographic Information System, 2002Prentice –Hall,India.
4. George Joseph (2003): Fundamentals of Remote Sensing, Universities Press,Hyderabad
5. Kang – Tsung – Chang, (2002): Introduction to Geographical InformationSystem, McGraw Hill.
6. J. R. Jensen, (2003) : Remote Sensing of Environment, An Earth ResourcePerspective, Pearson Education Pvt. Ltd., NewDelhi
7. P. A. Burrough and R. A. McDonnell, (2000): Principles of Geographical Information System, Oxford UniversityPress.
8. Paul A. Lonfley, Michel F. Goodchild, D J. Maguire and D.W. Rhind (2002):Introduction to Geographic Information Systems and Science, John Wiley and SonsLtd.
9. Vaidyanadhan, R. (1973): Index to a set of 70 aerial stereopairs, UGC, NewDelhi.

Course : GEO : 5308Watershed Management

No. of Credits: 04 **No. of Periods**

Unit – 1: Concept of watershed management **06**

1.1 Definition, concepts of watershed;watershed management, Principle of watershed management

1.2 Necessity of watershedmanagement

Problems in watershedmanagement

Unit – 2: Characteristics of watershed **06**

2.1 Delineation ofWatershed

2.2 Characteristics: Size , Shape , Physiography, Climate, Drainage, Land use, Vegetation, Geology and Soils, Hydrology, Socioeconomics

Unit – 3: Hydrological process in watershed **06**

3.1 Precipitation, interception, infiltration, evaporation, evapo-transpiration,surface runoff, ground water-flow, waterbudget

3.2 Hydrologicalcycle

Unit – 4: Water and soil conservation in watershed **06**

4.1 Water conservation: NalaBunding, Check dams, Farm ponds, Percolation tanks,Artificial recharge

4.2 Soil conservation- Contour Bunding,Gully plugging, Trench cum mound, Levelling

Unit – 5: Watershed development **06**

5.1 Application of Remote Sensing and GIS in watershedmanagement

5.2 Integrated watershed developmentplans

5.3 Importance of watershed management in nationaldevelopment.

Reference Books

1. Dhruvanarayana, V.V., Sastry, G., Patnaik, U.S.: WatershedManagement
2. Kakde, B.K.: Watershed Manual – A Guide for Watershed Development Practitioners and Trainers, BAIF Development Research Foundation,Pune.
3. Murthy, JVS: Watershed Management, New age InternationalPublishers.
4. Rajesh Rajora: Integrated Watershed Management- A Field Manual for Equitable, Productive and Sustainable Development, Rawat Publication,Jaipur.
5. Singh Rajvir: Watershed Planning and Management, 2nd Edition, Yash Publishing House, Bikaner,India.
6. Suresh,R.: Soil and Watershed Conversation Engineering, 2nd Edition, Standard Publication Distributors,Delhi.
7. Schwab,G.O. et al: Soil and Water Conservation Engineering, 4th Edition, John Wiley & Sons.