UNIVERSITY OF MUMBAI

Revised Syllabus for the M.A. & M.Sc.

Program: M.A. & M.Sc.

Course: Geography

(Semester IV)

(As per Choice based Credit System
with effect from the academic year 2017 2018)

Choice Based Credit System Syllabus, 2017-18
Total No. of Credits offered: 100
Electives offered in a particular academic year in each group could vary.
Semester is 15 weeks duration. Credits are defined for a semester

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Semester IV

Subject Code	Course Title	Credits	No. of Hours
401:A	**Compulsory Skill/ Enhancement Based Paper (any one)** 1. Digital Image Processing 2. Thematic Cartography 3. Application of Remote Sensing Techniques in Geographical Studies 4. Advanced Quantitative Techniques in Geography 5. Introduction to Programming Using Python 6. Geoinformatics for Urban and Regional Planning 7. Computer Cartography 8. Geographical Information System and Geographic Knowledge System 9. Geoinformatics and Health Care 10. Geospatial Technologies and Management	6	60+60+ 120
402: B	**Interdisciplinary/Cross-disciplinary paper (any one)** 1. Coastal Geomorphology 2. Micro-climatology 3. Geographical Perspective in Ocean Development 4. Geography of Water Resource Management 5. Geography of Soils with special reference to Tropics 6. Plant Geography with special reference to Tropics 7. Ecology and Environment 8. Spatial Perspectives in Environmental Planning and Management. 9. Maritime Studies with special reference to India 10. Geography of Contemporary Agricultural with special reference to India 11. Regional Planning and Development 12. Social Geography 13. Cultural Geography 14. Historical geography 15. Geography of Exclusion 16. Geography of Work Spaces 17. Geography of Media and Communications 18. Electoral Geography with special reference to India 19. Geography of Resources 20. Geography of Energy Resources 21. Geography of Hazards and Disaster Management 22. Globalizing Megacities with special reference to MMR 23. Geography of Knowledge and Power 24. Geography of Marketing and Consumption 25. Theoretical Geography 26. Development of Modern Geography	6	60+60+ 120
403	Dissertation	10	

Group III	(Data -based study on any branch of Geography)		100+100=200
Total		22	

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Paper: 401 A 1- Digital Image Processing
No. of Credits: 6 Teaching Hours: 60 + Notional Hours: 60= Total hours: 120

1: Introduction to Digital Image (Contact Hours 15)

1.1 Digital image data: Spectral reflectance and radiance, brightness value and digital number, signal to noise ratio, spectral sensitivity.
1.2 Vector data formats: binary and decimal numerical systems, data types ASCII, Binary, TIGER.
1.3 Raster data structures: header, data and trailer files, raster data compression types Lossless compressions: cell-by-cell encoding, Run-length encoding, Quad Tree; Lossy compressions JPEG, MrSID, PNG.
1.4 Formats of Digital Images: Band Interleaved by Pixel, Band Interleaved by Line, Band Sequential.

2: Digital image preprocessing /Types of errors and methods of correction (Contact Hours 15)

2.1 Sensor errors and corrections: random pixels, line/column dropouts, line start problem; correction methods: line (pixel) replacement, line average, adjusted line average.
2.2 Atmospheric errors and corrections: Absolute and relative corrections, de-hazing, normalisation within scene and between dates, Conversion of Digital Number to reflectance, reflectance to radiance, noise removal.
2.3 Geometric errors and corrections: types of errors - systematic, unsystematic corrections Georeferencing, registration (image to image), ortho-rectification, true ortho-rectification.
2.4 Re sampling techniques:Nearest Neighbour, Bilinear Interpolation, Cubic Convulution.

3: Image Enhancements and Transformations (Contact Hours 15)

3.1 Radiometric enhancements (Contrast stretching, histogram equalization, histogram matching, piece wise stretching).
3.2 Spatial enhancements: Convolutions, High pass, low pass and band pass filters, edge detection and edge enhancement filters.
3.3 Spectral enhancements: ratio images, Principal Component Analysis, Tasselled Cap, Change detection.
3.4 Image Indices: SAVI, NDSII, LWM, NDWI, NDMI.

4: Image Classification, Level of Classification. (Contact Hours 15)

4.1 Supervised classification: training sites, ground truthing, classifiers Minimum Distance to
Mean, Mahalnobis distance, Maximum likelihood.
4.2 Accuracy assessment, covariance matrix, feature space
4.3 Unsupervised classification: ISODATA, regrouping, iterations.
4.4 Image differencing with classified images.

References:

1. Cambell, J. B. (2002): 'Introduction to Remote Sensing', Taylor & Francis, UK.
2. Duda, R. O. and Hart, P. E. (1973): Pattern Classification and Scene Analysis

Wiley, New York.
3. Gibson, P. J. (2000): 'Introduction to Remote Sensing - Digital Image Processing and Applications', Routledge - Taylor & Francis.
4. Gibson, P. J. (2000): 'Introduction to Remote Sensing - Principles and Concepts', Routledge - Taylor & Francis.
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10. Sabins (Jr.) F. F. (1986), 'Remote Sensing - Principles and Interpretation', W. H. Freeman & Co., New York.
11. Sahu, K. C. (2008): Text Book of Remote Sensing and Geographical Information System, Atlantic Publishers and Distributors (P) Ltd., New Delhi.
12. Schowengerdt, R. A. (2006): 'Remote Sensing - Models and Methods for Image Processing', Elsevier India Pvt. Ltd., New Delhi.
13. Umbaugh, S. E. (2005): Computer Imaging: Digital Image Analysis and Processing, The CRC Press, Boca Raton, FL, January.
14. Umbaugh, S. E. (2011): Digital Image Processing and Analysis, 2nd Edition, The CRC Press, Boca Raton, FL, January.
15. IEEE: Transactions on Image Processing
16. IEEE: Transactions on Neural Networks
17. IEEE: Transactions on Geoscience and Remote Sensing
18. Photogrammetric Engineering and Remote Sensing
19. International Journal of Remote Sensing.

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Paper 401 A 2- Thematic Cartography
No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Introduction to Thematic Cartography (Contact Hours 15)

1.1 Historical perspective - Conceptual, technological and institutional changes from post World War-I period

1.2 History of Cartography in India: past, present and future developments

1.3 Conceptual bases of Cartography: map as miniature model of reality.

1.4 Elements of Cartography, Changing role of maps

2. Acquisition of data for mapping (Contact Hours 15)

2.1 Nature and sources of data

2.2 Sources of Data: Conventional

2.3. Sources of Data: Contemporary

2.4. Various GIS databases - Internet and World Wide Web.

3. Data processing and representation (Contact Hours 15)

3.1. Characteristics of data and levels of measurement

3.2. Concept of statistical surface, Statistical diagrams and maps interrelation.

3.3 Basic statistical and cartographic techniques of representing different features in thematic Maps.

4. Production of maps: (Contact Hours 15)

4.1 Techniques - Characteristics of map image -Drawing instruments, equipment and base materials

4.2. Map projections: properties and Choice, Map design and layout, principles of visualisation, visual variables.

4.3. Computer cartography and automation: development of digital computers

4.4. Geographical Information Systems - Nature, structure and components of GIS database Applications in cartography

Reference Books:

1. Crone, G. R. (1968): Maps and their Makers: An Introduction to the History of Cartography, Hutchinson University Library, London.
2. Cuff, D. J. and M.T. Mattson (1982): Thematic Maps: Their design and Production, Methuen and Company, New York.
3. Dickinson, G.C. (1977): Statistical Mapping and Presentation of Statistics, Edward Arnold limited, London.
4. Heywood, Ian etal (1998) .An Introduction to Geographical Information Systems, Addison Wesley Longman, Limited, England.
5. Keates. J S (1973): Cartographic Design and Production, 2 ndedn., Longman Group Limited, London.
6. Keates, J.S. (1996): Understanding Maps, 2na Edn., Longman Group Limited, London.
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8. McDonnell. P. W. Jr. (1979): Introduction to Map Projections, Marcel Dekker, Inc New York and Basel.
9. Monmonier, Mark S. (1982), Computer-Assisted Cartography Principles and Prospects, Prentice-Hall, Inc, London
10. Robinson, A.H. et al. (1995): Elements of Cartography, Vol.VI, John Wiley & Sons, New York.
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Paper: 401 A 3-Applications of Remote Sensing Techniques in Geographical Studies
No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Application of Remote sensing (Contact Hours 15)
1.1 Land Use/Land Cover and Wetland Mapping
1.2 Agriculture and Soil Mapping Applications
1.3 Water Resources Applications
1.4 Urban Planning Applications

2. Hyperspectral Remote sensing (Contact Hours 15)
2.1 Hyperspectral Imaging: Hyperspectral Concepts, data collection systems, normalization, Calibration techniques,
2.2 Data processing techniques; N-dimensional scatter plots, special angle mapping, Spectral Mixture analysis, Spectral Matching, Mixture tuned matched filtering
2.3 Classification techniques, airborne and space borne Hyperspectral sensors
2.4 Hyper-spectral satellite systems: Sensors, orbit characteristics, description of satellite Systems, data processing aspects, applications.

3. Aerial photography: (Contact Hours 15)
3.1 Introduction to aerial camera, factors affecting image quality,
3.2 Types of aerial photographs Photographic resolution and radiometric Characteristics.
3.3 Fundamentals of photogrammetry: Introduction and definition Simple geometry of
3.4 Vertical aerial photograph Relief and tilt displacement Stereoscopy, parallax Equation; flight planning Scale and height determination.

4 Principles and fundamentals of aerial photo interpretation (Contact Hours 15)
4.1 Image analysis Elements, Fundamentals of satellite images analysis: Types of Imagery, Visual image analysis, digital image analysis
4.2 Basic principles of thermal and microwave remote sensing.

Reference Books

1. Jenson, R.J. (2003): Remote Sensing of the Environment- An Earth Resources Perspective, Pearson Education Series
2. American Society of Photogrammetry (1983): Manual of Remote Sensing, ASP Falls Church, V.A.
3. Barrett, E.C. and Curtis, L.F.(1992): Fundamentals of Remote Sensing in Air Photo-interpretation, McMillan, New York.
4. Campbell, J. (1989): Introduction to Remote Sensing, Guilford, New York.
5. Curran, Paul, J. (1988): Principles of Remote Sensing, Longman, London.
6. Hard, R.M. (1989): Digital Image Processing of Remotely Sensed data, Academic Press, New York.
7 George Joseph,2005):Fundamentals of Remote Sensing , Universities press (India) Private Limited, Hyderabad.
8 Lillesand. T.M. and Kiefer R.W.(2002): Remote Sensing and Image Interpretation, John Wiley and sons Inc., New York.
9 Paul Curram P.J.,(2004) Principles of Remote Sensing , Longman, RLBS, 2003.

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Paper: 402 A 4 -Advanced Quantitative Techniques in Geography

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Scientific method in Geographical Explanation (Contact Hour 15)

1.1 What is explanation routes to explanation
1.2 Methods in geography
1.3 Data analysis in geography
1.4 Nature and characteristics of geographical data

2. Spatial Data Analysis (Contact Hour 15)

2.1 Defining Spatial sub disciplines- nature of spatial data- Obtaining spatial data data quality
2.2 Exploratory spatial data analysis conceptual models visualization methods numerical methods
2.3 Hypothesis testing and spatial auto correlation testing mean of the spatial data test of bivariate associations chi-square tests for contingency tables
2.4 Modelling Spatial Data a. descriptive model - model for representing spatial variations Hierarchical Bayesian models b. Explanatory models - classical approach econometric approach- applications of linear modelling of spatial data

3 Spatial applications of test results (Contact Hour 15)

3.1 Regression analysis
3.2 Analysis of variance- One way and two way ANOVA
3.3 ANCOVA
3.4 MANCOVA

4 Multivariate techniques of analysis and synthesis (Contact Hour 15)

4.1 Factor analysis: basic concepts, Derivation of factors and their labelling, Interpretation of factor extracts
4.2 Derivation of factor scores, Mapping and Interpretation of the scores
4.3 Cluster analysis: basic concepts, Derivation of clusters, Interpretation of cluster results
4.4 Mapping of clusters, Interpretation of the cluster maps

References:

1. Burt, J. E. and Barber, G.M. (1996): Elementary Statistics for Geographers , The Guilford Press, New York.
2. Clark, W.A.V. and Hosking, P.C. (1986): Statistical Methods for Geographers , John Wiley and Sons, New York.
3. Ebdon, D. (1977): Statistics in Geography , Basil Blackwell, London.53
4. Gregory, S. (1963): Statistical Methods and the Geographer , Longman Group Ltd., London.
5 Haining Robert (2003) Spatial Data Analysis: Theory and practice, Cambridge University Press, Cambridge

6. Killen, J. (1983): Mathematical Programming Methods for Geographers and Croom Helm, London.
7. Levin, J. (1973), Elementary Statistics in Social Research , Harper & Row, New York.
8. Mahamood, A. (1977): Statistical Methods in Geographical Studies , Rajesh Publications, New Delhi.
9. Norcliff, G. B. (1982), Inferential Statistics for Geographers , Hutchinson, London.
10 Sarkar Ashish (2013) Quantiative Geography: Techniques and presentation , Orient blackswan, New Delhi.
11. Taylor, P.J. (1977), Quantitative Methods in Geography , Houghton Mifflin Company, Boston.
12. Watson, G. and McGraw, D. (1980), Statistical Inquiry , John Wiley & Sons, New York.
13. Yeates, M. (1974), An Introduction to Quantitative Analysis in Human Geography , McGraw Hill, New York.
14. Cressie, N. (1991): Statistics for Spatial Data , John Wiley and Sons, New York.
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16. Hammerton, M.(1975): Statistics for the Human Sciences , Longman Group Ltd., Barlow.
17. Till, R. (1974): Statistical Methods for the Earth Scientist , The MacMillan Press Ltd., London.
18. Wicox, R. R. (2003), Applying Contemporary Statistical Techniques , Academic press, Amsterdam.
19. Wilson, A.G. and Bennet, R. J. (1985), Mathematical Methods in Human Geography and Planning , John Wiley & Sons, New York.

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Semester IV
Paper: 401 A 5- Introduction to programming using Python
No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Introduction to Programming and Python (Contact Hours 15)

1.1 The way of the program: Development of Python, Low-level language, Interpreter and Compiler, Types of errors, Formal and natural languages, The first Python program, Debugging. Python 2 / 3 differences [*Reading Chapter 1 from [1]*]

1.2 Variables, expressions and statements: Values and types, variables, variable names and keywords, operators and operands, expressions and statements, order of operations, string operations, comments, interactive mode and script mode. [Reading: Chapter 2 from [1]]

1.3 Conditional statements: Boolean expressions, Logical operators, Conditional execution, Chained and nested conditionals, [Reading: Chapter 5 from [1]]

1.4 Function: Definition, Parameters and arguments, Global and local variables, Composition and recursion, [Reading: Chapter 3 and 6 from [1]]. Iterations: While and for loop, break statement. [Reading: Chapter 7 from [1]].

2. Data Structures (Contact Hours 15)

2.1 Introduction to PYQGIS: Python console in QGIS, Using PyQGIS in scripts. Reading: [Chapter 1 from [3]].

2.2 Python Data Structures: Strings, Dictionaries, Tuple and Lists [Reading: Chapter 8, 10, 11, and 12 from [1]].

2.3 File Handling: Reading and writing in files. [Reading: Chapter 14 from [1]].

2.4 Classes and Objects: Objects and object-oriented programming, Classes, Operators overloading, Polymorphism, Inheritance. [Reading: Chapter 15, 17, and 18 from [1]].

3. Vector Data Processing with Python (Contact Hours 15)

3.1 Reading and writing vector data with OGR: Introduction to OGR, Reading vector data : accessing specific features, and displyaing data, writing vector data: Creating new data sources and new fields, Updating existing data. [Reading: Chapter 3 from [2]]

3.2 Filtering data with OGR: Attribute filters, Spatial filters, Using SQL to create temporary layers. [Reading: Chapter 5 from [2]].

3.3 Manipulating geometries with OGR: Working with points, lines, and polygons. [Reading: Chapter 6 from [2]].

3.4 Using spatial reference systems: OSR and pyproj. [Reading: Chapter 8 from [2]].

4. Raster Data Processing with Python (Contact Hours 15)

4.1 Reading and writing raster data with GDAL: Introduction to GDAL, Reading writing and Resampling raster data with GDAL. [Reading: Chapter 9 from [2]].

4.2 Working with raster data: Ground control points, Converting pixel coordinates, Histograms, Attribute tables, Virtual raster format. [Reading: Chapter 10 from [2]].

4.3 Map algebra with NumPy and SciPy [Reading: Chapter 11 from [2]].

4.4 Visualizing data with Matplotlib: Introduction to Matplotlib, Plotting vector data, Plotting raster data, Plotting 3D data. [Reading: Chapter 13 from [2]].

References:

1. Allen Downey. Think python. http://greenteapress.com/thinkpython/ thinkpython.pdf, 2012.
2. Chris Garrard. Geoprocessing with Python." Manning Publications ", 2016.
3. Fabrizio Roman. Learning Python , 2015 Packt Publishing, Birmingham-Mumbai
4. QGIS Community. Pyqgis developer cookbook.http://docs.qgis.org/2.14/pdf/ en/QGIS-2.14- PyQGISDeveloperCookbook-en.pdf, accessed 25-Feb-2017.
5. Shell Scott M. An introduction to numpy and scipypy. https://engineering.ucsb. edu/~shell/che210d/numpy.pdf, accessed 25-Feb-2017.
6. John VGuttag. Introduction to Computation and Programming Using Python, Prentice Hall of India
7. Sinan Kalkan. Introduction to Programming Concepts with Case Studies in Python , Springer Wien Heidelberg New York Dordrecht London
8. Erik Westra. (20130: Python Geospatial Development, Second Edition, Packt Publishing,

Web References:

1. Introduction to Computer Programming
2. http://cims.nyu.edu/~kapp/courses/cs0002fall2014/syllabus.php
3. Introduction to Computer Programming Spring 2017
4. https://www.cs.uky.edu/~keen/115/syllabus/root.html
5. For Errors: https://docs.python.org/release/3.0/contents.html
6. AUTOMATE THE BORING STUFF WITH PYTHON : https://automatetheboringstuff.com/
7. "Python Programming", http://en.wikibooks.org/wiki/Python_Programming,
8. https://docs.python.org/release/3.0/tutorial/index.html
9. Building a Basic GUI in Python with Tkinter and wxPython http://sebsauvage.net/python/gui/
10. Tkinter Python Interface to Tcl/Tk https://docs.python.org/2/library/tkinter.html
11. Python Scripting (PyQGIS) http://www.qgistutorials.com/en/index.html
12. PYQGIS DEVELOPER COOKBOOK http://docs.qgis.org/testing/en/docs/pyqgis_developer_cookbook/

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Paper: 401 A 6- Geoinformatics for Urban and Regional Planning
No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Introduction to Urban Planning (Contact Hours 15)

1.1 GIS in Urban Planning: Urban Planning stages and system, basic concepts and principles, GIS for decision support in urban planning and management.

1.2 Urban spatial data: scales of data (city-level, building level data), required attributes and types of remote sensing data, urban data updation with remote sensing techniques.

1.3 Spatial Database Organization for Urban Planning: Land record information, cadastral maps, development plans, master plans, GPS surveys, remote sensing data.

1.4 Integration of data from different sources: data warehousing, Web GIS, cloud computing and big data. Spatial data validation.

2. Geoinformatics and Urban Planning (Contact Hours 15)

2.1 Network Analysis: optimum route analysis, for planning of transpiration lines, pipelines and cables. location-allocation function distribution of facilities

2.2 Proximity Analysis, Nearest neighbor analysis, spatial autocorrelation, spatial interpolation.

2.3 Satellite image classification and change detection: urban landuse-landcover, levels of details of classification and types of images.

2.4 Site suitability analysis Spatial Multi-criteria Analysis for introducing new facilities, identification of suitable sites.

3. Urban challenges and Application of Geoinformatics (Contact Hours 15)

3.1 Land valuation: defining criteria for land value determination with GIS, gaps between actual and official value of land, mapping changes in land values and infrastructure, GIS modeling and simulation of various scenarios.

3.2 Urban housing: types of housing, standard of housing, vertical and horizontal expansion and related issues, building height determination digital aerial photographs, LIDAR data.

3.3 Urban safety and security: distribution of police stations and crimes; distribution of fire stations and population density, road connectivity.

3.4 Prediction of urban landuse-land cover :Marchov chain, regression model using remote sensing data; 3 D city modeling, E-governance and GIS.

4 Regional Planning and Geoinformatics (Contact Hours 15)

4.1 Regional Planning: Definition, objectives, scope and related issues, scale of planning, types of regions, delineation of regions , industrial , agro-climatic and city regions, special zones and corridors.

4.2 Tools of regional planning: spatial scale of planning, need for large, medium and small scale maps and images. Challenges of data integration.

4.3 Data sources and platforms : Digital data in public domain, National digital data portals, BHUVAN.

4.4 Regional planning in India: industrial regions, agro-climatic regions and city regions in India Case studies.

References:

1. Bernhardsen, Tor(2002): Geographical Information Systems: An Introduction (3rd Edition), John Wiley and Sons, Inc., New York.
2. Burrough, P.A. and McDonnell, R.A. (1998): Principles of Geographical Information System, Oxford University Press, New York.
3. Clarke, Keith C. (1998) : Getting Started with Geographic Information Systems, Prentice-Hall Series in Geogl.Info. Science, Prentice-Hall, Inc. N.J.
4. Deakin, M. (2013): Smart Cities, E-book, ISBN 9780203076224.
5. Fleming, Cory, (2005), The GIS Guide for Local Government Officials, International City/CountyManagement association(ICMA),ESRI Press, Redlands, California
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9. Martin, D. (1996): Geographical Information Systems: Socio-economic Applications, (2nd Edition), Routlege, London and New York.
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11. Morain, Star (1998): GIS Solutions in Natural Resource management: balancing the Technical-Political Equations, Onward Press, London.
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13. Nyerges, T. and Jankowaski, P. (2010): Regional and Urban GIS: A Decision Support Approach; Rawat Publication. ISBN: 9788131603697, 8131603695.
14. Obermeyer, Nancy J. and Jeffrey K. Pinto (1995): Managing Geographical Information Systems, The Guilford Press, New york.
15. Pamuk, Ayse, (2006), Mapping Global Cities: GIS Methods in Urban Analysis, ESRI Press, Redlands, California.
16. Pickles, John (Ed.) (1995): Ground Truth : The Social Implications of Geographical Information Systems, The Guilford Press, New York.
17. Scholten, H.J. and Stillwell, C.H. (Edts.): Geographical Information Systems for Urban and Regional Planning, ISBN: 978-90-481-4071-8 (Print), 978-94-017-1677-2 (Online).
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Semester IV
401:A 7- Computer Cartography
No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. An overview of development of digital computer systems (Contact Hours 15)

1.1 Progressive and adaptation of hardware and software for handling and display of spatial data

1.2 Principles of mapping: fundamental attributes of maps

1.3 Elements of map design and layout, scale, techniques of representation and Symbolization.

1.4 Map projections: properties and choice , Map as medium of communication

2. Data source and Basic analytic Geometry (Contact Hours 15)

2.1. Sources of data for mapping: traditional and modern sources -Integration of data from different sources

2.2. Cartesian coordinates, vector matrices

2.3. Spatial data structures, topology building, file structures, graphs and trees

2.4. Basic statistical techniques for processing and organisation of data Conversion into mappable form.

3. Data conversion and preprocessing (Contact Hours 15)

3.1. Conversion of spatial data into digital form
Characteristics of digital data, line and area encoding

3.2. Vector and raster formats: their implications for input, processing and storage

3.3. Manual, semi-automated and automated procedures for input of spatial data.

4. Processing, classification and trends (Contact Hours 15)

4.1. Processing and output of spatial data, computer assisted procedures for representation of point, line and area data

4.2. Linking of attribute data with corresponding objects

4.3. Recent trends in computer cartography -Impact of Geographical Information System

4.4. Dynamic and animated maps, three dimensional analytic geometry
Internet Web-based cartography Future potentials

References:

1.Clarke, K. C. (1998) : Analytical and Computer Cartography, Pearson Educational Company, New Jersey.

2. Harvey, F. (2009): Primer of GIS: Fundamental Geo. & Cartographic Concepts, Rawat Publications, Jaipur

3.Jones, C. B. (1997): Geographical Information Systems and Computer Cartography, Addison Wesley Longman Limited, England.

4. Kraak, M. J. and A. Brown (1996) : Web Cartography: Developments and Prospects, Addison Wesley Longman Limited, England.

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Semester IV
Paper 401 A 8- Geo-informatics and Health Care
No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1.Health care and Geoinformatics (**Contact Hours 15)**
1.1 Insight and scope of healthcare in Geoinformatics environment
1.2 Health care planning and Geo-Information, Global health policy
1.3 Spatial and non-spatial factors
1.4 Role of GIS and Remote Sensing for health care planners

2. Geoinformatics and database for health care (**Contact Hours 15)**
2.1 GIS data base for diseases- : spatial and non-spatial
2.2 Remote Sensing as a source for health related information
2.3 Vector and raster data for health care , techniques for analysis
2.4 GIS model for healthcare accessibility plume model , star model

3. GIS, healthcare, , technologies and surveillance (**Contact Hours 15)**
3.1 Public health and geo-information system
3.2. Health care and GIS and GPS
3.3 Socio-demographic determinants and GIS initiatives
3.4. GIS and spatial Epidemiology

4. GIS applications for health care (**Contact Hours 15)**
4.1. GIS and environmental risk factor analysis
4.2. Spatio-temporal approach and spatial statistics for creation of habitat suitability
4.3 Geoinformatics as a decision support system for prevention of epidemic disease
4.4. Web-based GIS for control of communicable diseases

References:

1.Bracken, I, and Webstar, C,(1990):Information Technology, Geography and Planning, Routledge, London and New York
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University of Mumbai
M.A./ M.Sc. Geography Syllabus Based on Credit Based Credit System (CBCS)
w.e.f. Academic Year 2017-2018
Semester IV
Paper: 401 A 9- Geo-spatial Technologies and Management
No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Introduction to Geospatial Technology: (**Contact Hours 15)**

1.1. Organisation and management of geospatial data, spatial data infrastructure, important geospatial technologies
1.2. Coordinates and coordinate systems, Datums and geodetic systems, Coordinate transformations
1.3. Datums and geodetic systems
1.4. Introducing the Global Positioning System, GPS signals and data

2. Photogrammetry and Remote Sensing (**Contact Hours 15)**

2.1. Definition and scope, history of Photogrammetry and Remote Sensing
2.2. Principle, Remote Sensing, data acquisition, Remote Sensing data analysis Methods and systematic organisation
2.3. Advantages and limitations
2.4. Digital Image processing

3. Geographic Information Systems (**Contact Hours 15)**

3.1. Geographic Information Systems (GIS) and science,
3.2. Geographic Information Systems, Geographic data structures, data validity and organisation
3.3. Geospatial data analytical techniques
3.4. Spatial data modelling, management

4. Applications of Geospatial Technology (**Contact Hours 15)**

4.1. Strategy for testing, evaluation and implementation- examples
4.2. Social and institutional context
4.3. Approaches to geographic measurement, contemporary techniques with examples
4.4. Geospatial technology for spatial decision support system and management

References:

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University of Mumbai
M.A./ M.Sc. Geography Syllabus Based on Choice Based Credit System (CBCS)
w.e.f. Academic Year 2017-2018
Semester IV
Paper - 402: B1- Coastal Geomorphology

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Morphodynamics of coastal systems (Contact Hours 15)

1.1 Meaning, Nature and Content of coastal geomorphology
1.2 Models in coastal geomorphology, feedback, thresholds and equilibrium
1.3 Coastal classification schemes of Johnson, Shephard; Hayes (1979), and Darlymple, Zaitlin and Boyd (1992).
1.4 Paleoenvironmental analysis and dating coastal landforms

2. Coastal processes (Contact Hours 15)

2.1 Ocean waves: Types, characteristics, propagation, refraction, and reflection; wave spectrum.
2.2 Wave induced near-shore currents and sediment movement.
2.3 Tides: Types and tide generating forces; tidal theories, tidal characteristics in open coasts, bays and estuaries.
2.4 Sea level variations: Causes and consequences; Pre-Quaternary and Quaternary, isostatic adjustments and present sea level trends.

3. Coastal morphology (Contact Hours 15)

3.1 Morphology of rocky coasts: Morphodynamic evolution of cliff and platform, polygenetic rocky coasts and the role of inheritance.
3.2 Morphology of sandy coasts: Changes in beach platform and profile, dune building phases, beach-dune interaction.
3.3 Morphology of muddy coasts: Morphodynamic evolution of tidal flats and salt marshes, tidal inlets and their role in sedimentation.
3.4 Morphology of deltaic and estuarine coasts: Morphodynamic evolution of deltas and estuaries, delta-front processes and estuarine hydrodynamics and their role in deltaic-estuarine sedimentation.

4. Anthropogenic impacts on coasts (Contact Hours 15)

4.1 Coastal erosion prevention structures: Classification and impacts.
4.2 Coastal pollution and saltwater incursion: Sources and management
4.3 Dune encroachment: Types and impacts.
4.4 Integrated coastal management plan: Implementation, monitoring and evaluation; Coastal Regulation Zones; Coastal reclamation and effects with special reference to Mumbai.

References:

1. Ahmed, E. (1972): Coastal Geomorphology of India, Orient Longmans, Delhi
2. Bird, E.C.F. (1984): Coasts An Introduction to Coastal Geomorphology, Australian National University Press, Canberra.
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14. Karlekar, S. N. (2009): Coastal processes and landforms, Aparna Publication, Pune
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17. Masselink G, Hughes M G (2003): Introduction to coastal processes and geomorphology, Arnold, London
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w.e.f. Academic Year 2017-2018
Paper: 402 B 2- Micro Climatology

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. **Microclimatology**: (**Contact Hours 15)**
1.1 Definition, scope and content
1.2 Relevance in applied climatology

2. **Factors affecting microclimate - Physical**: (**Contact Hours 15)**
2.1 Elevation, slope and aspect
2.2 Proximity to water body
2.3 Types of climate: mountain, valley, coastal - Indian examples.

3. Impact of vegetation: (**Contact Hours 15)**
3.1 Variations inlight, temperature, humidity, wind, rainfall
3.2 Microclimatic conditions of forests, grasslands, barren areas

4. Climate and man: (**Contact Hours 15)**
4.1 Urban areas urban temperatures heat island causes and effects, changes in humidity, precipitation, wind environments
4.2 Industrial centres pollution and its impact Issues and problems
4.3 Climatic approach to housing design - Surface and building materials and their impact
4.4 House-types in relation to climate

References:

1. Mather,J.R.(1974):Climatology: Fundamentals and Applications, McCraw Hill Book Co., U.S.A.
2. Matthews, W. H., Kellogg, W., Robinson, G.D. (1971): Man s Impact on Climate, M.I.T.Press Design Dept.U.S.A.
3. Rosenberg, N.J., Blad, B.L., Verma, S.B.(1983): Micro-climate Biological Environment, John Wiley & Sons, U.S.A.
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University of Mumbai
M.A./ M.Sc. Geography Syllabus Based on Choice Based Credit System (CBCS)
w.e.f. Academic Year 2017-2018
Semester IV
Paper: 402 B 3 - Geographical Perspective on Ocean Development

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. **Introduction** **(Contact 15 Hours)**
1.1 History of oceanography, Origin of earth s atmosphere and ocean
1.2 Morphology of Ocean basin- Pacific, Atlantic, Indian
1.3. Oceanic sediments-types and distribution
1.4. Ocean as a resource- fresh water ecology, fisheries, minerals, transport,

2. Ocean-Atmospheric system **(Contact 15 Hours)**
2.1. Energy transfer mechanisms, World energy balance
2.2. Circulation in major oceans: surface, subsurface and deep water circulation
2.3.Tides and waves: Types of tidal patterns, Tidal theory, Wave dynamics: Origin and characteristics
2.4. El-Nino, South Oscillation, L-Nina and their impacts

3. Biotic and Abiotic Environment of Ocean **(Contact 15 Hours)**
3.1. Biotic ocean resources: Flora and Flora
3.2. Ecological factors of productivity- Horizontal and vertical distribution
3.3. Energy resource: Tidal, thermal, Fossil fuel
3.4. Human impact of ocean environment: Overfishing- Pollution of oceanic waters- causes and impact - measures

4. Significance of Ocean **(Contact 15 Hours)**
4.1. Laws of sea: Territorial waters, exclusive economic zone, international waters, islands: continental and oceanic, their significance
4.2. Problems associated with island ecosystems
4.3. Geological and strategic importance of Oceans with special reference to Indian Ocean
4.4. Strategic and economic significance of Indian Ocean Islands

References:

1.Allan P Trujillo and Herold V Thurman (2012): Essentials of Oceanography, PHI learning Private Limited, New Delhi
2.Bhatt, J.J. (1978): Exploring the Planet Ocean, D. Von Nostrand Co., New York.
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5.Couper, A.D. (1972): Geography of Sea Transport, Hutchinson University Library, London.
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9. Rajgopalan, R. (ed)(1996): Voices for Oceans, A Report to the Independent World Commission on the Oceans, International Ocean Institute, Operational Centre, Madras, India.
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University of Mumbai
M.A./ M.Sc. Geography Syllabus Based on Choice Based Credit System (CBCS)
w.e.f. Academic Year 2017-2018
Semester IV
Paper: 402 B4-Geography of Water Resources Management

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Introduction (Contact Hours 15)

1.1. Water as a resource to human society- changing perspective in uses of water.
1.2. Source of water: hydrological cycle-catchment area of river basin methods of water storage
1.3. Human interference and climatic disturbances
1.4. Effects of droughts and floods-los**ses**

2. Water Availability and Water situation (Contact Hours 15)

2.1. Water uses in rural areas and associated problems
2.2. Water uses in urban areas and associated problems
2.3. Contemporary water wars Global and Indian context- water politics in Maharashtra-
2.4. Right to water - role of Government and NGO s in mitigating water conditions

3. Water Resource Management in India (Contact Hours 15)

3.1. Need and methods for conservation of water resources
3.2. Water Future: Challenges and Strategies Development I India
3.3. National water Policy- Integrated water resource development Action Plan
3.4. Urban Hydrological cycle, urban surface runoff models: Management and Quality Models.

4. **Application of Advanced Geographical Techniques for Water resources management and Development (Contact Hours 15)**

4.1. Spectral properties of water- Geoinformatics based site selection for river valley Projects, surface water harvesting structures: check dam, Nala bunds, subsurface dykes etc.
4.2. Application of remote sensing in hydro geomorphological interpretation for Ground water exploration, Water Quality monitoring through remote sensing.
4.3. Urban Hydrological cycle, urban surface runoff models: Management and Quality Models. GIS applications in water resources development and management.
4.4. Flood and Drought hazard assessment and risk analysis using RS and GIS

References:

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2. Mather, J. R. (1984): Water Resources Distribution, Use and Management, John Willey, Maryland.
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University of Mumbai
M.A./ M.Sc. Geography Syllabus Based on Choice Based Credit System (CBCS)
W.e.f. Academic Year 2017-2018
Semester IV
Paper: 402 B 5 - Geography of Soils with Special Reference to Tropics

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Pedology: (Contact hours 15)
1.1 Scope and content
1.2 Significance in geographical studies
1.3 Multidisciplinary nature
1.4 Relevance in environmental geomorphology

2. Process of Soil formation: (Contact hours 15)
2.1 Soil formers - Physical: parent rock, time, topography and climate
2.2 Role of biotic factors
2.3 Soil profile - idealized profile - soil profile of tropical soils
2.4 Concept of soil catena

3. Properties, characteristics and constituents of soils: (Contact hours 15)
3.1 Texture, structure, pore space, bulk density, tilth
3.2 Soil constituents - organic and inorganic matter, soil organisms, soil air and water
3.3-Soil fertility in tropics - nutrients, soil capability, suitability and productivity

4. Conservation and management of tropical soils: (Contact hours 15)
4.1 Soil degradation and erosion - causes and consequences
4.2 Methods of conservation
4.3 Trends in farming techniques Vermiculture , organic fertilizers, bio-pesticides, drip Irrigation.

References:

1. Bridges,E. M. (1970): World Soils, Cambridge University Press, U.K.
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w.e.f. Academic Year 2017-2018
Semester IV
Paper: 402 B 6-Plant Geography with Special Reference to Tropics

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Plant Geography as a discipline: (Contact Hours 15)
1.1 Evolution as a discipline, scope and content
1.2 Links with other disciplines
1.3 Relevance to Geography
1.4 Recent trends and need for phytogeographical research

2. Tropical vegetation (Contact Hours 15)
2.1 Distinguishing characteristics
2.2 Indigenous and exotic flora
2.3 Bio-diversity of the tropics

3. Major plant formations of the tropics: (Contact Hours 15)
3.1 Terrestrial - forests, grasslands, deserts
3.2 Marine and aquatic mangroves, coastal
3.3 Vegetation types of India

4. Conservation and Management of tropical vegetation: (Contact Hours 15)
4.1 Degradation and depletion of tropical vegetation
4.2 Need for conservation and management
4.3 Methods - protected area network effectiveness
4.4 Green belts and zones in urban areas

References:

1. Akin, W.E. (1991): Global patterns Climate, vegetation soils, University of Oklahama Press, U.S.A.
2. Ewusie, J.Y. (1980): Elements of Tropical Ecology, Heinemann Educational Books Inc. London.
3. Furley, P.A. and Newey, W.N. (1983): Geography of the biosphere, Butterworth & Co. Ltd., London.
4. Kellman, M.C. (1975): Plant Geography, Methuen & Co. Ltd., London.
5. Mani, M.S. (1974): Ecology and Biogeography in India. The Hague: Dr. W. Junk Publishers.
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University of Mumbai
M.A./ M.Sc. Geography Syllabus Based on Choice Based Credit System (CBCS)
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Semester IV
Paper: 402 B-7 Ecology and Environment

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1.Ecology: Concepts and Applications (Contact Hours 15)

1.1. Introduction to ecology: overview

1.2 Nutrient Cycling: Phosphorus, Nitrogen and carbon.

1.3 Energy Energy flows tropic levels- energy pyramids.

1.4 Life on land and water: Importance of Solar energy and Ocean water- Terrestrial and aquatic ecosystem of tropical/temperate/polar/ hot desert tropical/temperate/polar ocean/ lakes and ponds (any one from land and water each)

2 Environmental degradation (Contact Hours 15)

2.1. Factors responsible and consequences nature induced (one example from each related to tectonic / atmospheric/ oceanic)

2.2. Factors responsible and consequences - human induced primary/secondary/tertiary activities (any one example from each activity)

2.3. Global environmental problems.

2.4. Local environmental problems with special reference to Mumbai Metropolitan Region

3 Environmental Conservation and Sustainability (Contact Hours 15)

3.1. Need ecological equilibrium- stability- environmental sustainability

3.2. Principles of Environmental conservation

3.3. Global efforts for Environmental conservation

3.4. Role of Indian government towards Environmental conservation

4. Environmental Research: (Contact Hours 15)

4.1. Concept, objectives and scope.

4.2. Review of literature and research methodology

4.3. Study area: Focus on any one major environmental problem of area selected.

4.4. Findings, limitations, suggestions.

References:

1. Adams, W.M. (2001):: Green Development; Environment and Sustainability in the Third World, Rout ledge, London.
2. Basu, D. (ed.) (1995): Environment and Ecology - The Global Challenge, Printwell, Jaipur.
3. Calvert P.S. (1999): The South, the North, and the Environment, Printer, London and New York.
4. Odum, E.P.(1971): Fundamentals of Ecology , Third ed. W.B. Saunders Company,
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Semester IV
Paper - 402 B 8- Spatial Perspectives in Environmental Planning and Management

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Environmental planning and management: (**Contact Hours 15)**
1.1 Principles of environmental management - Protective, Adaptive, Integrative
1.2 Importance of environmental planning and management eco-friendly, soft technology
1.3 Environment Management System EMS standards: ISO

2. Institutional arrangements for conservation of resources: (Contact Hours 15)
2.1 Government policies and agencies
2.2 International organizations and Legislation
2.3 Protocols, treaties, conventions

3. Environmental Impact Assessment: (Contact Hours 15)
3.1 Aims and objectives
3.2 Basic concepts and framework of EIA
3.3 Methods of EIA
3.4 Merits and demerits

4. Environmental Planning and Environmental Protection in India: (Contact Hours 15)
4.1 Constitutional and legislative measures and their implementation
4.2 Environmental Policy environmental dimension in 5 year plans
4.3 Environmental education and awareness

References:

1. Adams, W.M.(2001): Green Development: Environment and Sustainability in the Third World, Routledge, London.
2. Agarwal, S.K. and Dubey, P.S. (2002): Environmental Controversies, A.P.H Publishing Corporations, New Delhi.
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4. Hay, P. (2009): Companion to Environmental Thought, RawatPubl, Delhi.
5. Rashid, et al. (2008): Environment, Resources & Sustainable Development, Rawat Publications, Delhi.
6. Srivastava, D. C. (ed) (2005): Readings in Environmental Ethics: Multidisciplinary Perspectives, RawatPubl, Delhi.
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8. Wathern, Peter (2002): Environmental Impact Assessment: Theory and Practice Routledge
9. Murthy D. B. N. (2005): Environmental Planning and Management, Deep & Deep Publications Pvt. Ltd. New Delhi.
10. Selman Paul (1999): Environmental planning: The Conservation and Development of Biophysical Resources, Sage Publications, London.
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14. UNFPA (1992): Population, Resources and Environment The Critical Challenges , United PopulationFund, London.
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M.A./ M.Sc. Geography Syllabus Based on Choice Based Credit System (CBCS)
w.e.f. Academic Year 2017-2018
Semester IV
Paper: 402 B 9- Maritime Studies with Special Reference to India

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Marine environment and resources: (**Contact Hours 15)**
1.1 Factors influencing the marine environment
1.2 Habitats within oceans horizontal and vertical ecosystems
1.3 Living and non-living marine resources exploitation and conservation
1.4 Pollution causes, sources and impact

2. Legislative framework: (**Contact Hours 15)**
2.1 Maritime laws, conventions and treaties with special reference to India
2.2 Problems and issues in implementation

3. Maritime security: (**Contact Hours 15)**
3.1 Threats and concerns
3.2 Disasters and their management

4. Maritime trade of India: (**Contact Hours 15)**
4.1 Ancient and historical linkages
4.2 Impacts, influences and interchanges
4.3 Present linkages
4.4 Ports of India past, present and future prospects

References:

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Semester IV
Paper -402: B 10 - Geography of Contemporary Agriculture

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Nature and Scope of Agriculture and its Geographical Structure (Contact Hours 15)
1.1. Global overview of Agriculture- Importance of Agriculture
1.2. Factors influencing agriculture agriculture areas of specialization - regional analysis
1.3. Impact of climate change on agricultural productivity- analysis with reference to major crop Area; Food insecurity - droughts and floods.
1.4. Dispersal of Agriculture Processes and Impact

2. Changing Perspective in Agriculture Teaching Hours (Contact Hours 15)
2.1. Colonialisation and exploitative structuring of agricultural regimes in the colonial world.
2.2. Export orientation agricultural production and dependency of the colonial countries on the Colonies;
2.3 Green Revolution- Need for Green Revolution- Production Performance -Problems In The Spread of Green Revolution- Effects of Green Revolution
2.4 Agricultural Innovation- New Methods of Cultivation- Cooperative Farming, Contract Farming, Corporate Farming, Precision Farming etc.

3. Contemporary Globalization in Agro-marketing (Contact Hours 15)
3.1. Globalization and Agriculture- Agricultural Competitiveness
3.2. Globalization and Changing Structure of Agribusiness- Structural Adjustment And Agricultural Export
3.3. Functioning Of Futuristic Commodity Markets, Food Supply Chains and FDI in Agro Marketing
3.4. WTO and Mobilization of Farmers' Protest at the Global Level

4. Agricultural Sustainability (Contact Hours 15)
4.1. Concept and Need for sustainable agriculture- Crisis in Indian Agriculture- falling prices of agricultural commodities, increasing debts, issues of intellectual property rights and patterns of farmers suicides.
4.2. Measures and its efficacy undertaken at Global level towards agricultural sustainability
4.3 Measures and its efficacy taken at National towards agricultural sustainability
4.4. Measures and its efficacy taken at State and Local level towards agricultural Sustainability

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2. Morgan, W. B. and Munton, R. J. C. (1977): Agricultural Geography Methuen, London.
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Semester IV
Paper: 402 B 11- Geography of Regional Planning and Development

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Introduction to Regional Planning and Development (Contact Hours 15)

1.1. Concept of region, types of region: physical, cultural, economic, administrative and planning region.
1.2. Relevance of regional concept in planning and development
1.3. Need for regional planning, regional disparity, factors responsible: physical, historical, socio-economic and political
1.4. Indicators of development- measurement of levels of development.

2. **Regional problems and planning strategies (Contact Hours 15)**

2.1. Identification of regional problems
2.2. Regional development strategies
2.3. Implementation of policies and plans
2.4. Efficacy of regional plans.

3. **Regional hierarchy and Planning for Development (Contact Hours 15)**

3.1. Concept of regional hierarchy
3.2. Need of regional hierarchy for planning and development
3.3. Applicability of spatial models to regional development
3.4. Changing perspectives in regional planning and current status in India.

4. **Regional Development in MaharashtraContact Hours 15**

4.1. Introduction physical regions resource regions and cultural regions
4.2. Connectivity and regional development- factors influencing
4.3. Levels of regional development in Maharashtra- regional disparity-factors responsible.
4.4. Regional development strategies and its efficacy in Maharashtra.

References:

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Semester IV
Paper: 402 B 12- Social Geography

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Society and Space: Perspective and approach (Contact Hours 15)

1.1. Key concepts in social thought and their relevance in social geography

1.2 Evolution of perspective in social geography.

1.3 Social relations, Spatial diversity and differenciation

1.4 Social processes and spatial form- Spatiality of society and economy.

2. Social groups, social identity and space (Contact Hours 15)

2.1 Social groups - Primary and secondary groups- Interaction, Processes and patterns of socialisation and segregation

2.2 Ethnicity, language and religion as basic parameters- social class- spatiality of social identity.

2.3 Towards a social geography of India Social differentiation and regional formations Caste and clan territories - Tribes and spatial variations.

2.4 Concept of social well-being - Indicators of social and economic well-being - Spatial pattern of well-being with special reference to India- age and gender as factors.

3. Social stratification and Urban Social Order (Contact Hours 15)

3.1 Social stratification and Urban Social Order- Urban space and polarisation in post-industrial cities-Globalisation and rise of network society.

3.2 Social geography of Contemporary Third World Cities- Impact of globalization-

3.3 Fragmentation, segregation and crisis of local and global Modernity- Post-modernity and related issues.

3.4 Concept of Social planning and politics of space- concept of social justice- Planning with a welfare approach - People's participation.

4. In Depth Study of any one of the following concepts (Contact Hours 15)

4.1 Slums Ethnic/ religious /linguistic identity and negotiation of economic and political space in Mumbai

4.2 Social spaces in Geography post graduate class

4.3 Reproduction, sexuality and contemporary gender issues- Role of media.

4.4 Malls as inclusive and/or exclusive spaces.

References:

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Semester IV
Paper: 402 B 13 -Cultural Geography

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. **Evolution and growth of cultural geography** **(Contact Hours 15)**
1.1. Evolution and growth of Cultural Geography
1.2. Significance of a spatial perspective in cultural studies
1.3. Attributes of culture- spatio-social context
1.4. Contemporary approaches- Cultural Turn in Geography

2. **Culture Hearths** **(Contact Hours 15)**
2.1.Evolution of culture hearths
2.2.Culture realms and regions
2.3. Early migration and interaction in culture realms
2.4. Convergence and divergence processes and Cultural changes.

3. Ethnicity, Language and Identity **(Contact Hours 15)**
3.1. Race and ethnicity - People as racial groups, classification and distribution, racial regions , process of acculturation.
3.2 Caste and structuring of cultural space in India- Identity politics based on caste
3.3. Cultural Geography of language, Language as a basis of nations and states - Language and Dialects. Diversity of language groups in India
3.4. Evolution of linguistic states -Cohesion and integration - Relevant issues.

4. **Culture, Knowledge and Production of Space** **(Contact Hours 15)**
4.1. Geography of religion , evolution of major world religions- Spatial spread
4.2. Religion and colonialism, role of religion in the formation of nations and states, Culture and religion.
4.3. Major and minor religious groups in India, distribution and spatial attributes, Multi- religious Diversity
4.4.Culture- Knowledge and politics in India -Contemporary issues- Political economy of culture , Patterns of dominance and dependence , India as a land of multiculture.

References:
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Semester IV
Paper: 402 B 14- Historical Geography

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

I Spatial bases of History- Evolution (**Contact Hours 15)**

1.1 Time space convergence - History as an aspect of geographical explanation.
1.2 Theory and Methodology in Historical Geography
1.3 Evolution of Civilisation, society culture - Origin and diffusion of technology
1.4 Society and space in ancient civilisations: selected examples.

2.Spatial organisation of medieval economy (Contact Hours 15)

2.1 Agriculture and society during feudalism - Growth of feudal towns and mercantile capital Discovery and explorations.
2.2 Transition from feudalism to capitalism -Mercantile capitalist period.
2.3 Industrial growth and industrial revolution - Growth of towns and cities
2.4 Emergence of colonial spatial organisation -Spatial shift and changing spatial order Transformation of settlement and urban systems

3. Indian urban history: A critical perspective (**Contact Hours 15)**

3.1 Towns in ancient India - Trade and commerce
3.2 Nature of spatial economic organisation - Urban growth in medieval India - Role of urban centres in regional and national economy.
3.3 Historical geography of the western coast of India- Pre-colonial economy and society -
3.4 Spatial organisation of the economy during Maratha Period - Space, society and economy during colonial period.

4. Urban history of Mumbai (Contact Hours 15)

4.1 Space and Society-Rise and fall of ancient trade centres - Pre- British relations
4.2 Colonial spatial organisation and emergence of Bombay Growth of a Colonial City
4.3 Evolution of Mumbai as an Industrial city Bi-polarity and the production of social space of Mumbai
4.4 The case study of heritage landscapes and the native communities of Mumbai: Any one
   a. The Fort and the Market Area: The dual city.
   b. Fishing hamlets and the Fishing community;
   c. The ancient temples, caves and the sculpture;
   d. Mill land and the industrial community of Mumbai

References: :

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Semester IV
Paper - 402: B 15 Geography of Exclusion

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Genesis of Process and act of exclusion (Contact Hours 15)

1.1 Envisioning differences between Self and Others feelings and their parameters-their grounding into place and space.
1.2 Alternative perspectives on the self- Theoretical approaches- Freudian psycho-analysis; Object relations theory; abjection- Relevance of the generalized Other ; Cultural representations of people and things- as constituted by places and space.
1.3 Images of differences- Stereotypes and their construction signifying Defiled Other interpreting Colour, disease, nature Verbal and visual images rooted in culture.
1.4 Border crossings contestation of boundaries- Boundary maintenance and social organization; Pollution, discrepancy and small group boundaries Boundary enforcement- inversions and reversals.

2. Mapping the Pure and the Defiled (Contact Hours 15)

2.1 Colonisation- Expansion of the European empires and mapping of the colonized as the Defiled Others Imaginative geographies of landscapes, architectural forms, paintings, advertisements and exhibitions depiction of residual population and places
2.2 Bounding Space Purification and Control Structuration theory and Spatial theory-Spatial purification as a key feature in organizing Social Space- The form of purified space and Exclusionary Space- Space and Social control.
2.3 Spaces of Exclusion and emplacement of power relations- Home as heaven as against a socially stratified space.
2.4 Locality and Otherness; National identities and alien others. Geopolitics and purified identities.

3. Knowledge, Power and Exclusion (Contact Hours 15)

3.1 The exclusion of Geographies- people, spaces and exclusion of knowledge Knowledge and Power Interrelations Production of Knowledge as a form of social practice- Differential power among practitioners.
3.2 Compartmentalization - Specializations of knowledge Monopolies and Control; Hierarchical structuring of knowledge and power in academia- Exclusion of folk knowledge.
3.3 Lost knowledge- Rejected knowledge and Forms of exclusion- deindustrialization and exclusion of the knowledge base and employment of workers Illustrative cases
3.4 Gender- politics and Power Production gendered spaces- Patriarchy and power relations- Social control Forms, patterns and terrains of Exclusion; Sexual violence, Control of resources, Property ownership, Control of body and reproduction, Political representations and participatory decision making.

4. Exclusion in India: Interpretations of Identities, Knowledge and Power Interrelations (Contact Hours 15)

1.1 Religion;
1.2 Caste,
1.3 Class,
1.4 Gender

References:

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Semester IV
Paper- 404 B 16 - Geography of Work Spaces

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Spatial context of Work, Workers and labour (Contact Hours 15)

1.1 Spatial divisions of labour and Social Relations Relevance of Geography of Work spaces.

1.2 Evolution of World economy restructuring capitalist mode of production-Comparison between Fordist and Post- Fordist Regimes flexibilising labour markets and economic spaces

1.3 Typology, Similarities and differences between work, workers, skills and management, wages and work-places and spaces- Situating labour in the capitalist production process.

1.4 Employment relations in the workplace- Problem of labour control and reproduction social regulation institutional framework- Segmented labour markets workers and workplaces.

2. Labour in an Interdependent World- Placing, Spacing and Scaling (Contact Hours 15)

2.1 Interdependence, porosity and permeability of workplace - Place-boundness of workers.

2.2 Territoriality of production- uneven and casual interrelations -Types of structure and links- Place, agglomeration and economic growth-

2.3 Worker- employer nexus- Local social relationships- Place and class identity and class action of workers.

2.4 Contextualising place and space interface of labour multiscalar connections Significance of scale and its social construct re/scaling and its implications- Geography of worker politics.

3. Agency of Labour and Organizing in Place (Contact Hours 15)

3.1 Replacing labour- mechanisms of labour control Hegemonic regime and scaling Role of the State- Illustrations from the Global South

3.2 Agency of labour and organizing in place- workers and local coalitions labour working in place with others From progressive to regressive localism- back again

3.3 Displacing labour labour migration- a geographical strategy- Economic- socio-cultural and political consequences

3.4 Up-scaling worker action- Transcending the local: national unionism- New internationalism-boarderless solidarity problems and prospects- Beyond workers-social movement politics- Progressive translocalism.

4. Indian Context (Contact Hours 15)

4.1 Workers and workplaces in India- A historical perspective- Growth of modern industry- Constraints- Bi-polarity and segmentation of labour markets- Regional disparity.

4.2 Globalisation- Deindustrialisation- Growth of Service Sector in India- Changing nature of work and workspaces in Indian metropolitan economies- Any one case study a. Textile Industry in Mumbai and Malegaon; b. Automobile Industry in Gurgaon Delhi; c. IT industry in Pune/ Bangalore; d. Tiffin carrriers of Mumbai

4.3 Work spaces and Gender dimensions Any one case study Women workers in a. Garment export industry; b. Electronic Industry; c. Women in Indian Civil Services; d. Vegetable selling in streets

4.4 Informal Work places in Dharavi/ Shivajinagar- Baiganwadi/ Bharatnagar- Kismatnagar- in Mumbai

References:

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Semester IV
Paper 404 B 17 - Geography of Media and Communication

No. of Credits: 6- Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Introduction (**Contact Hours 15)**

1.1 Basic concepts, components and definition
1.2 Evolution and growth of media and communication: A historical perspective
1.3 Significance of Media and Communication for society and nation (welfare society, imbibing ethical values through folk stories (malgudi days) /dance/music/songs (kirtan/bhajan/powda/ovi/) , educating in science and technology for economic activities etc.
1.4 Precautionary component of media and communication

2 Contemporary methods of media and communication and its significance (**Contact Hours 15)**

2.1 Types, spatial distribution of ownership, services (users) and regulations (*satellite types- weather phenomena/ agriculture/ forest/ Landuse change; * radio; **telephone/mobile; *** internet; / patent/cost of services.
2.2 Role in governance, defence and economy
2.3 Significance in disaster mitigation and management
2.4 Importance in planning and sustainable development

3 Topologies of communication flows: (**Contact Hours 15)**

3.1 Topologies of communication- network theory and geography- central places in network theory- a space of flows and power relations.
3.2 Boundaries in communication-media networks
3.3 Print and Electronic media their role in structuring of power relation- case Study
3.4 Role of Bollywood in structuring place and space identities across the Globe.

4 Geography of media and communication in environmental conservation: (**Contact Hours 15)**

4.1 Tourism sector- wild life sanctuaries- bird sanctuary- jungle safari- eco-parks-
4.2 Agriculture Programmes for farmers - news awareness
4.3 Forest protection prevention of illegal activities
4.4 Water resources- identifying polluted areas and sources of pollution

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Semester IV
Paper: 402 B 18 - Electoral Geography with special reference to India

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Spatio-temporal Context of Electoral Processes (Contact Hours 15)

1.1 Conceptualising Citizenship- Enlightenment, liberalism and democracy; Diffusion of democracy and citizenship- nature and typologies; Spaces and levels of citizenship

1.2 Defining electoral constituencies- structuration and delimitation- geographical bases- Representation systems and Political mobilization- Social production of electoral space.

1.3 Power structures, administrative hierarchies and delimitation of electoral constituencies; Fluidity, distortion and bias- Gerrymandering and malapportionment

1.4 Electoral Geographies - Development of thoughts, contemporary approaches: From Mapping of Voters Behaviour to Geographies of Representation

2. Electoral Geographies: the World View and Indian Experience (Contact Hours 15)

2.1 Electoral processes and voting behavior in the Globalised North and Globalising South: Case studies of USA, Great Britan, South Asian nation-states

2.2 Evolution of India s Electoral Space in Post-Independence Phase Indian constitution, citizenship, electoral mechanism and voting rights.

2.3 Centre-State relationship- array of Linguistic States and union Territories Size factor- Politics of electoral seats - North-South and east-west divide- Boundary issues.

2.4 India s Political Space Centrist, right and left wing party rule- from single party to the coalition governments Rise of regional political parties: Pre and post- emergency trends.

3. Production of India s Electoral Spaces: Regional and local dimensions (Contact Hours 15)

3.1 Identity politics and embededness of electoral spaces- Role of religion, caste, language and gender.

3.2 Reservation policies and spatiality of reserved electoral constituencies across the Indian states- Caste and Gender dimensions

3.3 democratisation - regional imbalances - insurgency, militancy and challenging electoral spaces- North Eastern and Central Indian States.

3.4 Spatial dynamics of urbanisation, migration and class differentiation Electoral spaces in Indian mega cities globalisation, denationalisation and impact on psyche of urban voters

4. Voting Behaviour and Geographies of Representation in India: A Multi-scalar analysis. (Contact Hours 15)

4.1 Spatio-social analysis of election results, the post 1990 trends: Electoral Issues and voting behavior in Parliamentary and assembly elections Illustrations from select Indian states

4.2 Issues of Local elections and voting patterns Rural- urban context: the case of Maharashtra and Mumbai

4.3 Pre and Post-election poll surveys and prediction of voting behavior Vote-seat Proportions- Recent illustrations - A Critical Analysis.

4.5 Tools and techniques of electoral Geography: Typology and nature and sources of data -Use of maps, Application of quantitative analysis and Geo-informatics.

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Semester IV
Paper: 402 B 19- Geography of Resources

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Resources - Links and Flows among Environment, Economy and Society
(Contact Hours 15)

1.1 Resource definitions - Changing perceptions - socio-spatial and political ecology perspective
1.2 Typology of Resources- Characteristics and interrelations- Scarcity and potentiality-
1.3 Resources as inputs Organization in economy and society- a historical perspective
1.4 Resource ownership and control- across diverse value systems and culture Role of market and the State - resource governance.

2. Resources, People and Development: Theoretical Framework (Contact Hours 15)

2.1 Resource ogranisation in pre-industrial society- Colonisation, trade and resource transfer.
2.2 Industrialsation, urbanization and growth- Classical and neoclassical approaches to resource organization.
2.3 Organised capitalism and stages of economic development -advances in technology, transport and communication
2.3 Structuring of spatial fixity and resource transfer- carrying capacity - Limits to growth.

3. Contemporary Patterns of Resource Distribution and Exploitation (Contact Hours 15)

3.1 Expansion of international capital - Globalisation- MNCs and restructuring of production - Gaps and imbalances
3.2 Issues and challenges in distribution and use of key resource types - Land / forests / water / energy/ minerals / ocean resources.
3.3 Related dynamics - implications on resource ownership, accessibility and patterns of livelihood
3.4 Resource organization - Structuring of world economy as core and periphery- imbalances in resource use

4. Resources Development Choices and Emerging Issues (Contact Hours 15)

4.1 Resource depletion, degradation and emerging crisis- Desertification, deforestation and losses in bio-diversity.
4.2 Politics of global warming - Increasing water scarcity and conflicts Indian examples
4.3 Energy crisis Issues of sharing, alternate sources- Resource conservation and creation. Challenges for the Global South .
4.4 Sustainable development and conservation of resources- Critical Perspective- Emergence of global environmentalism

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Semester IV
Paper: 402 B 20- Geography of Energy Resources

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Role of energy in society and economy and space (Contact Hours 15)

1.1 Sources of energy - Definition, and typology conventional and non-conventional- Changing perspective

1.2 Energy systems Evolution- Role of capital, technology, power structure trade links.

1.3 Commercial energy systems- structural components- Environmental, economic and spatio-social context.

1.4 Dynamics of energy and development- Aspects of mobilization, security and social well being

2. Production, Transfer and trading of energy resources (Contact Hours 15)

2.1 Uneven distribution and localization of energy resources- production and consumption of major types- multiscalar, spatio-social gaps

2.2 Organisation of energy production and flows Variation in volume and direction Examples of Conventional and non conventional energy resources-

2.3 Structuring of production and consumption spaces- footloose capital and Spatial fixity- Role of MNCs, and the State- WTO and the trade blocks.

2.4 Environmental andspatio-social implications- Energy profiles of the Global North and the South

3. Energy crisis (Contact Hours15)

3.1 Localisation impact - dominance and dependence- Sectoral links

3.2 Energy resources- capitalist development- conflicting demands- contestation in space- displacement and deprivation

3.3 Environmental concerns- pollution and global climate change- Carbon credits and trading- dilemma of the Global south

3.4 Energy security -Policies of conservation, renewal and sustainable use of energy

4. State of energy and power sector in India (Contact Hours15)

4.1 Resource types and evolution of energy systems - Impact of urban and industrial growth

4.2 Regional dimensions - Privatisation of energy production and power supply

4.3 Energy profile and security issues- Gaps in resource mobilisation

4.4 Critical issues of governance -Availability and use of sustainable energy resources Future trends.

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2. Guyel, N.B. (1971): Energy in the Perspective of Geography, Prentice Hall, Englewood Cliffs.
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Semester IV
Paper 402: B 21 - Geography of Hazards and Disaster Management

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Fundamentals of Disaster (Contact Hours 15)

1.1 Understanding Disasters, Definition & Terminology of Disasters, Causation of disasters
1.2 Understanding Natural Disasters Types, Causes and Effects
1.3 Understanding Man-Made Disasters Types, Causes and Impacts
1.4 Risk Assessment and Vulnerability Analysis

2. Environmental Hazards and Disasters. (Contact Hours 15)

2.1.Concept of Environmental Hazards, Environmental Risk and Environmental Disasters.
2.2. Human ecology geography and its application in geographical research in hazards and disasters.
2.3. Different approaches and relation with human ecology
2.4.Landscape Approach, - Ecosystem Approach, - Perception approach

3. Environmental Hazards & Disasters: Typology, Mitigation and Preparedness (Contact Hours 15)

3.1 Natural hazards and Disasters - Natural Disaster Reduction & Management
3.2 Man induced hazards & Disasters, Social Aspect, Economic Aspect
3.3. Prediction of Hazards & Disasters, Measures, Use of Technology in Disaster Management
3.4. Disaster Management- An integrated approach for disaster preparedness, mitigation & awareness

4. **Disaster Management Perspective: India and World (Contact Hours 15)**

4.1. Disaster Management in India, Global Perspective on Disaster Management
4.2. A regional survey of Cyclonic Disaster, Disaster in Hills, Urban Disaster with reference to India.
4.3. Environmental policies and programmes in India- Institutions, Environmental Legislations in India, Awareness, Conservation Movement, Education and training
4.4. Integrating Disaster Management and Development, Gender Perspective in Disaster Management

References.

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2. Gaur, Ramakant,(2006):Disaster Management
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Semester IV
Paper: 402 B 22- Globalising Mega Cities with special reference to MMR

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Introduction to Globalising Mega Cities (Contact Hours 15)

1.1 Trend of metropolitan urbanisation in advanced countries Meaning and Concept of New Centralism - Globalisation - emergence of megacities Megacities as engines of Growth

1.2 From World Cities to Global cities Overview of paradigmatic shift - Global city in global system - Global urban hierarchy Command and Control functions - Case studies of Global Cities from Global North

1.3 Megacities Advanced economic activities and urban transformation urban restructuring - built environment - local and global connections - Megacities as site and place

1.4 Global city making and Global South policy shifts Neoliberalism New urban policies Global cities different perspectives

2. New Regionalism and consequent urbanisation (Contact Hours 15)

2.1 Emergence of Mega-city regions and new regionalism Global urban regions concepts and salient characteristics Global city region making Urban Regeneration processes in Global North and Global South

2.2 Spatial restructuring in Mega city-regions - structure, processes and Patterns with special reference to Global South Case studies of Mumbai, Johannesburg, Sao Paolo and Shanghai

2.3 Urban planning experiments and visions smart city / edge city / SEZ / EPZ / entertainment legitimisation and deregulations and urban space - neoliberal urban governance cities for profit not for people

2.4 Consequences land conversions and changing landuse - spatial and social polarisation heterogeneity economic and cultural shocks formal or informal urbanism

3. Mumbai as megacity (Contact Hours 15)

3.1 Transition from Colonial city to global/globalising city spatio-temporal changes characteristic features issues in socio-economic and spatial organisation

3.2 Changing demography and patterns of socio-economic configuration inclusion and exclusion

3.3 Deindustrialisation and reindustrialisation - Urban Planning visions shifting policies and perspectives and associated spatial, economic and social development Transforming Mumbai visions verses implementation Critical assessment of JNNURM and AMRUT

3.4 Resultant urban space in Mumbai contestations and conflicts right to the city exclusion and polarisation

4. MMR global/globalising urban region (Contact Hours 15)

4.1 Placement of MMR vis-a-vis Mumbai in regional development context review of linkages between the Mumbai and MMR Planning perspectives on MMR Draft regional development plan 1972 and 1998 success and failure

4.2 Neoliberal planning perspectives and policies spatial restructuring land conversions and legitimisation logic of regional planning and development

4.3 Impact on economy, culture, society and environment - status of towns and cities in inner and outer peripheries transformation of rural hinterlands consequences and issues of development Future development Draft regional development plan 2016

4.4 Case study of SEZ at Uran, NAINA, Kharghar, Entertainment Hub at Marve, Madh and Manori , Pen and Alibaug Tehsil

References:

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Semester IV
Paper: 402 B 23- Geography of Knowledge and Power

No. of Credits: 6- Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Evolution of Geography of Knowledge and Power- A Critical Perspective (Contact Hours 15)

1.1 Imagined Geographies as knowledge forming process- Imagining body as space- imagining differences- Euro-centrism in production of knowledge regimes textualities of the world.

1.2 Orientalism as a subordinated ontology of knowledge and structuration of colonial power regimes- Differentiated discourses of the Orient- Critique.

1.3 European Enlightenment- separation of man and nature development of science and technology- academia and colonialism- Racism and Social Darwinism an apology to Imperial capitalism

1.4 Travellers tales and Exhibitioning World Distorted singular reconstruction of the diverse multiculturality of the Orient- Fractures in the representations.

2. Landscapes of Power and Power in Landscapes (Contact Hours 15)

2.1 Conceptualising power in landscapes Gazes of power and establishing knowledge of power through gazing the colonial landscapes- interpretations by Foucault- a Critical appraisal.

2.2 Geographers contribution towards cartography and maps as the creation of Abstract Spaces and strengthening imperial powers Lefebvre s concept on production of space and control of social reproduction- Colonial landscape, work and the body- Landscapes as homes.

2.3 Decolonisation process- Dialectics of knowledge transfer Motivations for a third alternative power structure- Tricontinentalism- Hybrid identities- the non-alignment movement; pan Africanism; Arab-nationalism as examples.

2.4 The New World Order- led by the USA- Marshall plan and Reconstruction of European economies Containment of the USSR- Modernisation and structuring of the Three Words.

3. Globalisation, Regulation Approach and the Politics of Scale (Contact Hours 15)

3.1 Contextualising Scale Internationalisation and destatisation The Regulation Approach- Separation of State and Capital- Aspatial context of regulation

3.2 Geographic division of labour Scale division of labour- The movement of Capital through successive stages of fixity and movement Beyond Internationalisation

3.3 Conceptualising relational space- Typologies-embodiment of action- actor s contextualization- embededness of space in social practice- Relationality and geographical knowledge.

3.4 Scalar confusion- flows and relational links Actor-network theory- Emergence-From actors to network Associated actions- Network space- Territorialisations of social

relations

4. Globalisation- Cultural Imperialism (Contact Hours 15)

4.1 Placing question of Scale A discourse of the diverse economy Cultural Imperialism- Consuming the Other Illustrations- Film; Fashion; Tourism

4.2 Geographies of Cultural Imperialism and Power Geometry Representation- Subjectivity and Power- Speaking for others ; Geographies of Understanding- Relevance of Hybrid identities.

4.3 Postcolonial Feminism- exploitations by patriarchy; global economic systems; race; class and caste Comparative significance of Geographic and culture specific situated knowledge

4.4 Dis/ Ordering Space The Case of Food- Spaces of Fast food- Spaces of slow food Networks and flows actors and action spaces- Spaces of Consumption - Risk and Relationality.

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2. Sharp Joanne (2009): Geographies of Postcolonialism Spaces of Power and representation , Sage.
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Paper: 402 B 24 -Geography of Marketing and Consumption

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Marketing and consumption Interrelations (**Contact Hours 15)**

1.1 Conceptualisation: Embededness Spatialities, Socialities, Subjectivities and Identities- Typologies Networks and flows, Inclusion and exclusion.

1.2 Evolution of modern marketing and consumption- Fordist and Post-Fordist forms and patterns Trends in Global north and south.

1.3 Theories of marketing and Consumption A Critical Review.

1.4 Marketing Geography and Geographies of Consumption- emerging areas of research and trends.

2. Spatio- Social Context **(Contact Hours 15)**

2.1 Space-Place and scale production of spaces and sites of marketing and consumption - Economic, political, social cultural dimensions- Typologies of sites and forms.

2.2 Segmented spaces of marketing and consumption Urban and rural, Formal and informal, Ethnic and community spaces, Mass and Niche spaces; Virtual, cyber-spaces.

2.3 Spaces of conspicuous and inconspicuous consumption- Holidays, Leisure and consumption of spaces- Deprivation and exclusion from consumption.

2.4 Display and Identity Formation in Marketing and consumption, aspects of positionality, embodiment and emplacement House and body as sites of consumption - Placing consuming identities-

3. Connections **(Contact Hours 15)**

3.1 Interdependency of spaces of work and consumption in the era of globalization-Role of the State, MNCs and Supranational Institutions - Commodity chains: the global, regional and local context.

3.2 Producer and buyer led commodity and service chains - typologies - Commodity circuits Actor-network structuration- Politics and Connectivities in marketing and consumption.

3.3 Structures, links and organization global commodity Chains- Examples of Nike and Wal-Mart- FDI policy and Retail trade in India.

3.4 Agribusiness and food bazaars as spaces of consumption Co-existence of weekly markets, street selling, green grocery shops and Malls in Indian cities

4. Commercial Cultures and Moralities: (**Contact Hours 15)**

4.1 Time and Space convergence, distanciation and compression- cultural imperialism and consumption -Americanisation of commercial spaces McDonaldisation of culinary cultures.

4.2 Creolization and hybridity of commercial cultures- a multiscalarphenomena- Spread of

Punjabi Dhabas, Udupi Restaurants and Chinese Food outlets Fusion in Indian music and dance.

4.3 Contradictions and moralities of Consumption - Tourism and Recreation and Commodification of Culture; Consumption of spaces in Goa- Networks and Spaces of Sex trade in Nepal.

4.4 Experiencing a mall in Mumbai; Inclusion and exclusion experiencing street food in slums of Mumbai

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Semester IV
Paper: 402 B 25- Theoretical Geography

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Geographical discourse (Contact Hours 15)

1.1 Social construction of the discipline - Geography as a situated knowledge Dichotomy and Exceptionalism - Areal differentiation, fragmentation and coherence.
1.2 Places of theory and geographical interest - Kuhn: paradigms and scientific revolutions- Foucault: truth and power - Habermas: power, knowledge and truth Therory and practice in geography.
1.3 Geography and society - Classical context and non-formal age - Advent of classical formal geography. - Cartography and exploration.
1.4 Institutionalised geography - Emergence of geography as an academic formal discipline.

2. Geography as an empirical analytical science (Contact Hours 15)

2.1 Analytical and phenomenological approaches in Geography
2.2 Systems and process- Logical positivism - Process and form in physical geography
2.3 Environment and regional geography -
2.4 Behaviorialism in geography - Approaches to systematic human geography.

3. Philosophy and Methodology (Contact Hours 15)

3.1 Significance of philosophy and its placement- Methodology and explanation systematic studies
3.2 Theory building in geography- Explanation, relevance and social origins of concern
3.3 Geography as historical- hermeneutic science - Phenomenology and geography coexistence of naturalism and historicity - dialectics and geography
3.4 Spatiality and Time - Dialectic of space and time geography Time-space and area Social construction of space and time - Towards a humanistic geography.

4. Geography and the production of knowledge (Contact Hours 15)

4.1 Radical geography and a structuralist alternative
4.2 Reality and realism in geography - Ideology and ethics
4.4 Post-structuralism and relational Space contributions by Lefebvre, Castells, Harvey
4.4 Geography as a critical science - Towards a critical geography.

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Semester IV
Paper: 402 B 26- Development of Modern Geography

No. of Credits: 6 Teaching Hours 60 + Notional Hours 60= Total hours 120

1. Development in Modern Geographical Thought (Contact Hours 15)

1.1. Philosophy of geography Evolution of early modern geography environmentalism, possibilism, neo-possibilism - Growth of geography as a spatial science quantitative revolution critical appraisal

1.2 Positivism in geography - Explanation and search for scientific routes - Existentiation phenomenology and humanistic geography

1.3 Welfare approaches in geography - Radical geography inductive, deductive and critical approaches

1.4 Marxism and Marxist geography -Political economic perspective in geography quantitative verses qualitative newer resources in research - ethnography and social research

2. New perspectives on Environment, Region and Geopolitics (Contact Hours 15)

2.1 Reality, process and the dialectical relation between man and environment contemporary models of environment and resources Resource management and natural hazards -Modern environmentalist concepts and challenges.

2.2 Reconstructing regional geography - New models of regional change - Economic, social and cultural dimensions Regional verses spatial controversy - New Regionalism

2.3 Regions and political life - Civil society, political systems and territorialisation of Power theoretical explanation international relations and regional cooperation - recent theories and praxis liberal and neoliberal dimensions

2.4 New models of geopolitical change - Post-cold war democracy and human rights UNCHR and politics of human rights in the era of globalisation - conventions, treaties and agreements

3. Gender Geography (Contact Hours 15)

3.1 Feminist geography and the concept of gender

3.2 Place, space identity and gender Production of gendered spaces and differentiation

3.3 Gender theories- Radical, Marxist, Poststructural- Cultural turn and Feminist politics.

3.4 Gender, nation and international relations- Globalisation and geographies of gender

4. Post-colonial and Postmodern Geography (Contact Hours 15)

4.1 Geography in the era of globalisation Globalisation, nationalisation or anti-globalisation trends theorising BREXIT

4.2 Crisis of modernity poststructuralism postmodernism and postmodern geographies

4.3 Deconstruction - creative destruction towards newer theoretical consolidations

4.4 Contemporary pedagogies and research frontiers in Geography

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W.e.f. Academic Year 2017-2018
Semester IV

Paper: 403 Group 3 Practical Based Dissertation Credit 10

(Data -based study on any branch of Geography)

Annexure I

Department of Geography

University of Mumbai

Two Year Degree Course of M. A./M.Sc. in Geography

As per Choice Based Credit System (CBCS) (With effect from the academic year 2017-2018)

Examination pattern for Semester IV

Semester IV:

a) Theory Paper: 100 marks for each paper (Total theory papers 2)

i) Internal examination: Total marks 40 (in each theory paper)
ii) External examination: Total marks 60 (in each theory paper) Duration: 2 $^{1/2}$ Hours

1) Total number of questions to be framed for theory paper in external examination is 6 of 15 marks each.
2) Out of total 6 questions, students are required to attempt **any four** questions.

b) Dissertation: 100 marks
1) Out of total 100 marks 20 marks for internal assessment and 80 marks by external examiner i.e. 60 marks for assessment and 20 marks for viva voce examination on dissertation.

c) Marking system:
1) Total marks for theory: 200 (6 Credits *2 theory papers =12 credits)
2) Total marks for practical: 100 (10 credits* 1 dissertation = 10 credits)
3) Grand Total for Semester IV= 300 marks : 22 credits