UNIVERSITY OF MADRAS

M.Sc. Degree

in

APPLIED GEOGRAPHY

Syllabus

Semester Pattern (CBCS)
CREDITS

All courses are standardized and the Credits (C) for each course are in accordance with the hours of teaching (L) / tutorial (T) practical (P) which includes lab or project work or internship or field visits or presentation in the form of report or / record or seminar or combination. Additionally, training with computers and in GIS / Spatial Information Systems directly or indirectly shall be the emphasis for an edge for employability.

CORE COURSES

Core courses are both basic and advanced subjects. All listed core courses are basic requirements for the award of the respective degree.

ELECTIVE COURSES

Electives are preferably taken from other departments one each for semester I,II and III as higher level courses. However, electives also can be taken from the same department. The electives offered in the department shall be learnt through lectures and tutorials. Since the fourth semester involves fieldwork and internship, no electives is offered for the Department students. However, if desires students are advised to take self-study courses which are offered at advanced level in third as well as fourth semester for extra credits.

SELF- STUDY COURSES

Self-study courses are higher level courses and shall be learnt through students’ own study. Self-Study shall have 5 units for which tutorials/lectures/hand worked/lab shall be facilitated for learning.

ELECTIVE COURSES FROM OTHER DEPARTMENTS

Elective courses shall be taken from other departments. The listed elective courses are therefore for the students of other departments.
PRACTICALS

Each practical is governed by One hour of instructions, One hour of tutorial and Four hours of lab (=2 credits) in every week. The assessment of practical shall be 20 marks for First sessional assessment; 20 marks for Second sessional assessment; 40 marks for End semester examination and 20 marks for the record. The first and second internal shall be the accumulation (average) of marks earned by the candidate at the end of the 5th and 10th week of lab work respectively.

TOUR-FIELD WORK AND REPORT

The students will go for a field work in the Second / Fourth semester, which is compulsory and on the basis of that, each student has to submit a field work report as part of the second and fourth semester course work containing (a) Plan and schedule of the work carried out (50 marks) and (b) Comprehensive report (50 marks).

PROJECT

Project shall be evaluated for (a) proposal presentation (20 marks) (b) final manuscript presentation (20 marks) (c) the report (40 marks) and (d) viva-voce (20 marks).

INTERNSHIP

The Internship is for M.Sc. Applied Geography course and carries 2 credits in the following manner. (a) Maximum of 25% marks for the candidate’s involvement as interns in which the organisation where the candidate has undergone as intern, awards the mark. (b) 25% of marks shall be awarded for the maintenance of work dairy and proposal and (c) The Internship report carries 50% of marks.

Each candidate has to spend at least 8 / 10 weeks in an Institution / industry / Education Institution/ Business House where Surveying / Mapping or GIS or Remote Sensing or combination of the above is the main activity which may also include marketing of such products. At the end of the internship the candidate has to produce an experience certificate and a report.

SOFT SKILLS

Soft Skill courses shall be selected for each semester from the list, which has been given in the university CBCS handbook.
### M.Sc Applied Geography

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<tr>
<th>Subject Code</th>
<th>Title of the Course</th>
<th>C/E/S/I</th>
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<tr>
<td>EAS C001</td>
<td>Cartography and visualisation</td>
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<td>Applied Geomorphology</td>
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<td>EAS C003</td>
<td>Climate, Climate change and adaptation</td>
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<td>Practical-I Techniques of Mapping and Map Analysis</td>
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<td>Geographic Information Science and Systems</td>
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<td>EAS C006</td>
<td>Remote Sensing and Survey Techniques</td>
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<td>EAS C007</td>
<td>Coastal and Oceanographic studies</td>
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<td>Practical (Lab) – II : Digital Cartography and GIS Analysis</td>
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<td>Field Survey and Mapping Techniques(Field Work)</td>
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<td>Theoretical Economic Geography</td>
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<td>Urban Environment and Sustainability</td>
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<td>EAS C012</td>
<td>Natural Resource Management and sustainable development</td>
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<td>EAS C013</td>
<td>Practical – III : Remote Sensing : Interpretation and Data Analysis</td>
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### ELECTIVE COURSES

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<td>Information System Management</td>
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<td>EAS E 003</td>
<td>Watershed Management</td>
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<td>Geographies of Crime and Justice</td>
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<td>EAS E 009</td>
<td>GIS Project Planning</td>
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<td>Geo-informatics for Sustainable Land Resources Management</td>
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<td>EAS E 011</td>
<td>India’s Development and Regional Planning</td>
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<td>EAS E 012</td>
<td>Physical Survey and Field Techniques</td>
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<td>EAS E 013</td>
<td>Web Cartography and Spatial Information delivery</td>
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<td>EAS E 014</td>
<td>Microwave Remote Sensing</td>
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<td>EAS E 015</td>
<td>Geography of Health Care</td>
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<td>Sustainable Urban Land Management</td>
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I SEMESTER

| EAS C001 | Cartography and visualisation | C | 2 | 1 | 1 | 4 |

1. Development of Cartography- Information age and mapping, Web Cartography, Cartography as language and communication

2. Shape of the Earth - Geographical Data, Geographic Coordinates, Map projections- Scale, Reference and Plane Coordinate System- Survey methods, Remote Sensing, Global Positioning System- accuracy and reliability

3. Compilation process- Generalization- Map Design and Symbolization: Map content, design and implementation- Pattern creation; feature attributes, point, line, areas and volumes; Qualitative and Quantitative symbols

4. Thematic Mapping-Layout and Display- Map elements- typography and lettering; portraying land surface form

5. Web mapping resources and mapping – spatial Visualization- cartography and spatial information policy

Text Books


References


Web resources

7. http://www.colorado.edu/geography/gcraft/notes/cartocom/cartocom_ftoc.html#3.0
1. Scope of Applied Geomorphology: Scale and landscape analysis – land systems and units for systematic analysis- terrain evaluation

2. Energy flow in geomorphic system: System concepts – availability of power – solar radiation-rotation of energy-heat, relative energy and surface processes-climatic and tectonic changes and impacts

3. Weathering, mass wasting and development of Hillslopes: Mechanical, chemical and biological weathering- structure, process and time in weathering- soil formation-mass wasting- causes and classes of mass wasting-hill slope evolution-Penk and Davisian views

4. Process geomorphology: Drainage basin, erosion, sedimentation and structural adjustments in the fluvial system; waves, evolution of shores and construction and destruction of coastal region; arid landforms and its evolution- karst and speleology; glacial process, erosion and depositional landforms

5. Methodological Issues: Mapping and statistical analysis; Morphometric, landscape and land evaluation, Hazard analysis

Text Books


References

1. Arthur L. Bloom (2002); Geomorphology – A Systematic Analysis to Late Cenozoic landforms; Prentice – Hall of India Pvt., Ltd., New Delhi.


Web resources


1. Atmosphere: Its composition (gaseous) and structure; Insolation and Radiation, heating of land and water; Temperature and pressure: variations in temperature and pressure; temperature zones, heat balance, and pressure belts

2. Global wind circulation: Tricellular meridional circulation; trade winds, easterlies and westerlies and polar winds; Air masses: Continental and maritime; fronts and their types; clouds; Precipitation: thunderstorms, cyclones (tropical and temperate) and anti-cyclones

3. Climatic classifications; Indian climates and climatic zones; micro climates, agro climates and urban climates; Global climate change; global warming and their likely impacts on human life on earth

4. Oceans: Ocean relief, temperature and salinity distribution; ocean deposits and their types; ocean currents: theories on movements; El Nino, La Nino.

5. Climate change case studies – effects of climate change – land use and land use planning-GIS for climate change –GIS based Action Plan - decision making, and application to climate science-comprehensive climate information system

References


1. Map Appreciation and interpretation: Thematic, topographic and atlas maps- Mapping and Analysis : Relative relief and slope maps; height and hypsometric curves; stream Analysis

2. Climate and Hydrology: Climo and climatograph; rainfall variability intensity maps temperature and rainfall profiles; dispersion deviation graph ; aridity and water balance

3. Population and Economic Data Mapping: Dot maps, density maps-colour and grey scale patterns; index of concentration and diversification; transport network analysis

4. Quantitative Symbolisation and Location Maps: Located representation of tourism and facilities; point and line pattern analysis; cartograms and 3D maps

5. Scanning-Digitization - Map preparation -Database creation- Base map preparation- - Selection of geographical co-ordinates-Symbolization-Map Design and Layout using GIS software

References


2. Worthington, B.D.R. and Robert Gent (1975): Techniques in Map Analysis, Ebenzer Baylis and Sons, USA.


Web resources

2. www.gisdevelopment.net/books/mapping/bmap0010.htm
II SEMESTER

<table>
<thead>
<tr>
<th>EAS C005</th>
<th>Geographic Information Science and Systems</th>
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1. Basic concepts of Spatial science and GIS: Geographic spaces, Spatial data and information, Reference systems and datums, GIS definition, Approaches and Components; History and Development of GIS

2. Data Models and Management: Spatial Data Models – Vector and Raster data models; Data Models – DBMS and GIS - data qualities

3. Data Capture and Geoprocessing: Sources of geographic data, capturing methods, topology, geometric Transformation, scales in GIS, precision and accuracy

4. Manipulation and Analysis: Basic spatial operations-vector and raster based point, line and area analysis; Digital Elevation Models

5. Geospatial Technology: GIS, Remote Sensing, GPS and Cartography for spatial modelling and applications

Text Books


References


Web Resources

1. http://www.gsd.harvard.edu/pbcote/courses/gsd6322/lectures.htm
2. http://www.soi.city.ac.uk/~dk708/part_1.htm
3. www.ncgia.ucsb.edu/education/curricula/giscc
1. Introduction to surveying: principles of surveying – measurement technology – traditional survey methods – automated survey systems.

2. Concepts of energy and radiation - principles, components of remote sensing systems, energy interactions, atmospheric windows; Interactions of earth surface features, spectral regions and principal methods of data acquisition, active and passive methods of sensing, concepts of resolutions

3. Platforms, sensors, radiation records, format of photographic, digital imagery and non-imagery data, Data Products and Limitations; Photographic system of sensing; Satellite system of sensing

4. Sensors and sensing, optical mechanical and electronic sensor systems, microwave sensing, thermal scanning

5. Interpretation basics and methodology; In-situ support, collateral; Digital Image Processing; Classification and maps; Measurements and Instruments - Remote Sensing Applications in Resources

References


1. Coastal Studies: Definitions, Meaning and Scope - Coastal zone as a Resource Base – Marine Living and Nonliving Resources - Components that concern us - Sustainable coastal zone management - Rivers to the Sea Concerns – Coastal Development Activities - Coastal Pollution

2. Coastal zone: land-water interface, international initiatives for coastal zone protection; international assessments of needs and priorities of coastal zone; UN Conventions; UNEP and national programmes for coastal zone – Fisheries and Aquaculture Management

3. Defence of the coastal areas and coastal zone management: principles, bases for decisions on coastal zone development; essential national and international linkages; Land use zoning on the land and in the coastal waters; use of land use planning principles in the coastal zone; difficulties and constraints.

4. Coastal habitats and community modifications: fisheries and other living resources; unsustainable exploitation of fisheries, coral reefs; Coastal Zone Analysis for sub-regional applications: Indian ocean scenarios and policy options – Wetland Ecosystems


References

1. Global International Waters Assessment (GIWA) Reports by UNEP and other International Organisations (www.giwa.net; info@giwa.net)


1. Digitization – creation of spatial data- Point, Line, Polygon features -Building topology – geo-referencing-measuring distance and area
2. Attribute data editing and integration, class interval selection, thematic mapping and output-labelling
3. Buffering, Overlay and Network analysis- 3D Analysis - TIN and DEM
4. Spatial interpolation- Thematic mapping-located bar diagrams- spatial modelling
5. Ground truth support: Use of GPS for siting and routing; GPS with field data attributes

Text books

References

Web Resources
4. www.ncgia.ucsb.edu/education/curricula/gisse

The students will submit report based on fieldwork in the second semester. This course work contains - Plan and schedule of the work carried out and comprehensive report on the fieldwork. The students will go for a field work in the second semester, which is compulsory and on the basis of that, each student has to submit a field work report as part of the second semester course work containing (a) Plan and schedule of the work carried out (50 marks) and (b) Comprehensive report (50 marks).
1. The principles of location, distance and resource utilisation are dealt with along side economic principles of demand, supply price and transaction

2. Basic concepts: location, distance, space, spatial analysis and spatial organisation; economic activity, interaction and economic landscape

3. Principles of demand, supply, market, economies of scale; Scale agglomeration, cost and price; The principles of heterogeneous landscape and resource variation


5. Pole of transport in spectral development; regional planning- concepts of growth centres, area and sectoral plans.

6. Data, mapping and GIS implementation in economic geography; Recent trends and scope of economic geography

Text Books


References


1. Urban system and Indian Urbanisation - objectives of urban development, national and international policies in urban planning-historical trends, patterns of growth of urban population and urban centres, Concept of Sustainability –Sustainability measurement – Indicators of Sustainability - Sustainability Application to cities and urban areas.

2. Environmental justice, social equity and social dimensions of sustainability: Urban sprawl and smart growth - Urban sprawl and smart growth – Definitions - Trends and Projections - Factors affecting and driving urban sprawl - Case studies of cities - Discussion about the social dimension of sustainability in cities. Environmental health risks and vulnerable populations, environmental justice, income, inequality, crime rates and trends

3. Green buildings and sustainable housing: Green building and housing-Green Building Rating System - Potential of green building in developing countries. Sustainable transportation: sustainable transportation systems and vehicles - Trends in transportation use and modes of transportation- developing countries learn from developed country experiences - The role of Intelligent Transportation Systems - innovative case studies in developing countries -The bus rapid transits system of India cities and public health-Past, current and projected trends in energy production and consumption.

4. Sustainable use of materials and waste management: Trends of material use and waste production - Factors affecting waste production - re-use and recycling - Introduction to eco-efficiency Sustainable water use: Differences in access to water in urban areas in developed and developing countries - Access to clean water and sanitation, water pollution and public health in urban areas

5. Urban areas, parks, public spaces and biological diversity - Rates of urbanization India and the world - sub - urban areas growth and replace natural areas - urban areas: biodiversity hotspots. Urban areas and global climate change: Global climate change and its impact on cities and urban areas - Sea level rise, extreme weather events and changes in temperature

References

1. Introduction to Resources: Concepts, classification and appraisal- Natural resources – natural resource economics - management of natural resources-Sustainability and resources

2. Resource Assessment-I : Land evaluation methods- land classification methods-soil and water conservation- land use and Land cover mapping- land use planning and sustainable development

3. Resource Assessment-II: sustainable water resource assessment- watershed analysis and management-coastal and ocean resources and management- fisheries management


5. Natural resource surveys and monitoring– strategies for sustainable natural resource management-millennium eco-system assessment project-resources utilization and conservation in India.

References


1. Spectral reflectance Profiles, features and wavelength regions; Interpretation of Photomorphic / image products: use of black/white, color, FCC, thermal, radar images.

2. Geometrical characteristics: scale and projection; Use of Instruments and equipment: stereoscopes, planimeter, stereometer and interpretation equipment.

3. Digital Image Manipulation: Raster data: display’ enhancement and filters; Raster map: overlay analysis and multi-image manipulation; Bit map studies and training sites; Supervised and unsupervised classification

4. Statistical Mapping: Graphs z scores, index construction, correlation, regression and residuals.

5. Geospatial analysis- Spatio-temporal analysis - Map modeling and Applications

References


IV SEMESTER

The students will submit report based on fieldwork in the Fourth semester. This course work contains - Plan and schedule of the work carried out and comprehensive report on the fieldwork. The students will go for a field work in the second semester, which is compulsory and on the basis of that, each student has to submit a field work report as part of the fourth semester course work containing (a) Plan and schedule of the work carried out (50 marks) and (b) Comprehensive report (50 marks).

The project can be taken highlighting any issue relating to geographic knowledge and analysis. The project is for addressing problems relating to spatial data gathering, mining, warehousing and or raster / vector analysis and modelling. Programming or script writing can also be theme for the project, If it involves spatial data handling or analysis or modelling or in combinations of all. All data analysis and survey related projects shall necessarily present in a series of thematic maps. The data analysis mapping and documentation shall be conducted in the Remote Sensing and Computer Applications Laboratory of the Department

Each candidate has to spend at least 8 weeks in an institution / industry /educational Institution/ business house where mapping or GIS or remote sensing or a combination of these above is the main activity which may also include marketing of such products. At the end of the internship the candidate has to produce an experience certificate and a report.
1. Intellectual Challenge and Philosophy of Geography: The urgency of teaching history and philosophy of geography; The Four Traditions in Geography; Dualism: geography as a science: ideographic and homothetic; against geography.

2. The Importance of Geographic Viewpoint: Why place and geography matter; paradigms and revolutions in geography; Approaches in geography: Determinism, Voluntarism, Possibilism, Probablism, Existentialism, Phenomenology, and Humanism.

3. Geography and Geographers: Values in Geography and Anne Buttimer; Diffusion and time geography and Torsten Hagerstrand; Models and modelling in geography and Peter Haggett; Indian geographers: S.P. Chatterjee, C.D. Deshpande; R.L. Singh; R.P. Misra; R. Vaidyanathan; A. Ramesh and little known geographers.

4. Geography and Theorising: Deduction, Induction and Paradeduction; Description, Explanation, Prediction and Prescription; Types of Explanation: Genetic, deductive, inductive and functional; Quantitative and Qualitative Revolutions in geography; Positivistic and humanistic methods.

5. Geographical Research and Future of Geography: Applied geography and applied research; interdependence and uniformity among social and other sciences; The future of geography and geographers.

References


1. Information Technology: Meaning, scope and developments in information technology; Information technology firms: What they are and how they do things; IT industries and development

2. Information Systems: Concepts and overview of information systems; A systematic framework for Information Systems; Components of information systems; Information systems design, analysis and management

3. Database Management Systems for Information Systems: Data resources, structure and functional aspects; graphic database, data storage and hypermedia; Data models

4. Internet and Information Management: Internet, Intranet, and Extranet; Electronic communication tools: electronic mail, e-conferencing, web-publishing and file transfers;

5. Information Systems – Management information systems: needs, design and action; library resource information systems; human information systems- Information decision support system: Knowledge-based search process; Artificial intelligences and Expert Systems.

References


1. Watershed: Philosophy and Concept of Watershed - Delineation and codification of watershed – Watersheds and administrative decisions.

2. Structure and functions: Geomorphic, meteorological and hydrological Parameters: Rainfall intensity, runoff characteristics, sedimentation rate and discharge rate, soil, landuse characteristics on runoff and infiltration.

3. Natural resources and human responses in watershed: soil, forest, water as natural resources and population interaction with them


5. Maintenance and We: Participatory Rural Appraisal in Watershed programme - Empowerment of Women and other gender issues - Equity issues in Watershed management – Financial management and Accounting procedures – Monitoring and Evaluation in Watershed

References

1. Crime and Geography Approaches to Psycho-geography of Crime: Ecological Approach

2. Environmental Criminology Approaches to Psycho-geography of Crime: Environmental Psychology


5. Geospatial technology and Crime mapping-Applications-Case studies

References

II SEMESTER - ELECTIVES

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2. Biotic resources use and misuse – ecosystem stability and disturbance; human impact – ecosystem and environmental pollution, managed and urban eco-system.

3. Distribution as a geographical quantity: Patterns of distribution in small territories – Patterns of distribution at continental scale – clustered and dispersed distributions – Comparison of regional and continental distribution – The Historical perspective


References


1. The Concept of Environment and Ecosystem: The Problem - Environmental Impacts of Human Actions - Environmental Changes Natural and Man Made - Environmental Impacts and the stage of Technological Development

2. Administrative Procedure: Designing Administrative Procedure – Sequence of Environmental Planning – Decision-making


5. Environmental Planning and Management: Concept of Environmental Management, Aspects and Approaches to Environmental Management

References


2. Andrew R.W. Jackson and Julie M. Jackson (1996); Environmental science – (The natural environment and human impact); Longman, London.

3. Gilbert M. Masters (1990); Introduction to Environmental Engineering and science; Prentice, Hall of India Pvt. Ltd., New Delhi.


1. Political Geography: Definition and scope of Political geography – Geo-politics – Global strategic views (Heartland and Rimland theories)

2. Concept of Nation, State and Nation-State – Boundaries and frontiers – Politics of world resources – Geography of Federalism

3. Political actions on social and economic conditions, and with the significance of geographical factors behind political situations, problems, and conflicts

4. Electoral Geography and Mapping techniques

5. Geopolitics and sustainable solutions- case studies

References

1. Glassner and Fahrer, Political Geography, 2004 (3rd ed.)
1. The Scientific Method: Alternatives of scientific research—inductive and deductive reasoning—paradigms, models and theories—strategies of descriptive, experimental and historical and problem solving research

2. Research Design: Problem identification and analysis—methods of acquiring knowledge—methods, techniques and tools in research—statement of objectives and hypothesis—data and measurements—sampling and data collection

3. Methods of Study and Analysis: Pilot surveys—case study methods—field work for socio-economic survey and tools—objectives of analysis—analysis design—hypothesis testing and reliability.

4. Report Writing and Publishing: Reports, seminar papers (short and long) and dissertations—style manuals for formatting and citations—presentation and use of computer and multimedia resources—basics of manuscript editing for the press

**References**


### III SEMESTER - ELECTIVES

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2. Spatial manifestations of choice process – locations and migrations; gaming simulation as a mechanism for illustrating the process of locational decision making – spatial choice process and migration decisions

3. Research Design and Qualitative and Quantitative Techniques in GIS research projects and implementation

4. Current and potential approaches to GIS project management-GIS and related spatial technologies in selected applications.-GIS data handling and spatial analysis

5. Diverse of application areas : business, health and social services, the environment, municipalities-GIS data handling and spatial-analysis

### References


1. Land Resources: Concept of land, land units and resources- land evaluation- land information requirements-land Management environmental and institutional perspectives- sustainability.


4. Assessment and Management: Land classifications, land use system, IT and Sustainable Management Model (SLM)- rural-urban sector – land use planning.

5. Sustainable Land Information Management: LIM, DSS for land use planning and land management- Approaches to problem solving-LIM programmes in national and international level–UN Organizations.

Text Books


References


Web Resources

1. www.worldbank.org/land
1. Resources are not, but they become’, the nature, resources and culture relations; Economic Development: meaning and principles; Indian development: one or several paths?; social organisation and technology mix in India: phases of economic development and positioning of India

2. The physical and Human environment of India: land, relief, structure, physiographic divisions; monsoons and climate, water resources, soils and vegetation -human resources, neighborhoods and communities; human competition and conflicts; human capacity building for development; urbanization

3. Land uses and land utilisation in rural and urban areas; Agricultural development in India; stages of development; problems and prospects: agriculture is a gamble on monsoon; land holds the future for India

4. Industrial development in India: factors and stages of development in select industries: cottage industries, textile and steel industries; Infrastructures: power, energy, irrigation, trade and transport development

5. Economic development and Planning in India: community economic development and regional development; integrated rural and urban development; Regional disparities: causes and consequences; towards bridging the gap; Development planning for agriculture, industry and infrastructures: what and how; where to put what and how; Sustainable development Planning for a sustainable India

References


2. Deshpande, C.D. 1988: A Regional Geography of India, New Delhi: ICSSR.


1. Objectivity in field surveys; Field work and surveys, measurement and recording

2. Field work design and sampling issues; Equipment in geomorphic and soil surveys; GPS for site fixing, routing and contouring

3. Hydrology and water quality data; Ground truth collection for remote sensing support

4. Village survey principles and methods; Urban land use surveys; Land system and land use surveys

5. Computer support for data management, interpretation and surface modelling; Data integration and GIS

References


IV SEMESTER - ELECTIVES

| EAS E 013 | Web Cartography and Spatial Information delivery | E | 2 | 1 | 0 | 3 |


2. Web map Publishing and Design: Basic publishing and web map functionality – web map design-colour-symbol design – placement of names-factors


4. Visual thinking and cyberspace: Visualization and exploratory data analysis- strategies-visualizing spatial data in the Web-spacial Visualization through Cartographic Animation

5. Web map and Decision Making: Web cartography and weather, road traffic and tourism - maps, GIS and the need for rule based cartography-on-line mapping resources and mapping - spatial information policy

References


4. Radar Applications in Geomorphology, Hydrology and Geology – Oceanography – Agriculture – Rural and Urban landuse


References


1. Approaches to Health Care Analysis: Medical Geography: Scope, Meaning and Developments; Contemporary Geography of Health Care: Approaches: Location, Social Indicator and Behavioural Approaches; Spatial Levels and Approaches.

2. Diseases and Health: Infectious, Degenerative, Chronic, Inherited, Genetic and Disorders; Disease Ecology and Epidemiology; Organic, Inorganic, Bacterial and Fungal Factors of Health.

3. Deficiencies and Health: Nutrition and Food Habits; Nutritional Deficiencies and Diseases; Disease Patterns in India and Tamil Nadu.

4. Society, Culture and Health: Sanitation, Modernisation, ways of Living and Emerging Health Issues in Indian Society and in Tamil Nadu; Food Habits, Family and Community Life, Tradition, Religion and Health.


References


1. Introduction: The study of Ekistics – Morphogenesis of urban centres – city structure and land use ecology and functional regions of cities- Urban Land Management
2. Landscape ecology – city landscape elements – Hierarchical format of city landscape – system approach to city landscape studies and Urban management.
3. Human components of the urban areas – people and housing patterns – basic and non-basic activities on city landscape – transportation network, city movement and commuting – social facilities and social welfare
4. Urban Public administration – urban revenue system – municipalities facilities and services – crime and police administration – entertainment and shopping – public health and health care system

References

1. System Approach and the City, Ed. M.D.Mesarovic, and A.Reisman, North Holland
2. Landscape Ecology and GIS, Ed. By Haines Y and David R. Green and Stephen H.Cousins, Taylor & Francus,
3. P.V.Indiresan, Managing Development, Sage Publications, New Delhi