

தமிழ்நாடு மத்தியப்
பல்கலைக்கழகம்



**CENTRAL
UNIVERSITY OF
TAMIL NADU**

तमिलनाडु केन्द्रीय
विश्वविद्यालय

ESTABLISHED BY AN ACT OF PARLIAMENT IN 2009

OPEN ELECTIVE COURSES

(Academic Year 2026-2027 onwards)

**Department of Geography
School of Earth Sciences
Central University of Tamil Nadu
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LIST OF OPEN ELECTIVE COURSES OFFERED
(TO OTHER DEPARTMENTS)

Sl. No	COURSES			ASSESSMENT	
	Code	Title	Credits	CIA	ESE
1	GEO26OE01	Basics of Geoinformatics	3	40	60
2	GEO26OE02	Fundamentals of Geography	3	40	60
3	GEO26OE03	Rural Development	3	40	60
4	GEO26OE04	Geography of Gender	3	40	60
5	GEO26OE05	Military Geography	3	40	60

NOTE:

Any one/two of the above listed courses will be offered for every semester depending upon the preference and availability of the faculty-in-charge.

The course will be offered only if the total number of students opts for the specific course is equal or more than five.



Credits: 3

Course Code: UGEO26OE01

BASICS OF GEOINFORMATICS

Learning Outcomes:

Upon completion of the course, the students will be able to

- 1. Gain knowledge of the basics of Geoinformatics and appreciate the amalgamation of science*
- 2. Understand the fundamental concepts of remote sensing, geographic information systems and Global navigational satellite system*
- 3. Understand spatial processes and explore the spatial relationships between each component*
- 4. Identify the potential of RS, GIS, and GPS in solving various spatial problems*
- 5. Students will be able to apply these technologies in managing and monitoring natural and material resources.*

Unit - I

Remote Sensing: Electro Magnetic Radiation & Spectrum, Types of Remote Sensing based on types of platforms - Ground-Based, Airborne and Spaceborne; Based on types of sensors: Active and Passive; Satellite orbits, Resolution and its types: Spatial, Spectral, Radiometric and Temporal

Unit - II

GIS: Definition; Components and Elements of GIS, Representation of geographic data; Nature of geographic data: Spatial and Attribute Data, Concept of vector and raster-based models; Geodatabase, Spatial analysis,

Unit - III

GNSS: Fundamentals of GNSS, Basic principles of GNSS, Components of the global positioning system, Factors affecting GNSS accuracy, GNSS surveying methods, and accuracy, GNSS survey instruments.

UNIT - IV

Introduction to Geoinformatics- Concepts, Components, Latest Developments in Remote Sensing, GIS GNSS, and AI Hands-on Training to handle RS data in GIS software, GPS instruments.

UNIT - V

Applications of Geoinformatics in Various sectors, Applications in day-to-day activities, Group projects on applications of Geoinformatics in Agriculture, Forestry, Urban, Water, Health, and other natural resource management.



REFERENCES:

1. Burrough, P.A., and McDonnell, R.A., (1998): Principles of Geographic Information Systems, Oxford University Press, Oxford.
2. Environmental Systems Research Institute (ESRI) –GIS concepts
3. Jensen, J.R., (2004): Remote Sensing of the Environment: An Earth Resource Perspective, Pearson Education.
4. Joseph, G. (2004): Fundamentals of Remote Sensing, Universities Press, Hyderabad, India
5. Lillesand, T. M., Kiefer, R. W. and Chipman, J. W. (2008): Remote Sensing and Image Interpretation, John Wiley & Sons, New Delhi
6. Longley, P.A., Goodchild, M.F., Maguire, D.J. and Rhind, D.W., (2001): Geographic Information Systems and Science, Wiley, Chichester.
7. Spatial Technologies for Natural Hazard Management. Proceedings of ISRS National Symposium, Nov. 21-22, 2000, IIT, Kharagpur.
8. User Manual of DGPS, Total Station
9. Web resources, Published reports

Mapping of Program Outcomes with Course Outcomes:

	PO1	PO2	PO3	PO4	PO5
CO1		x	x	x	x
CO2	x	x	x	x	
CO3		x	x	x	x
CO4		x	x	x	x
CO5		x	x	x	x



Credits: 3

Course Code: UGEO26OE02

FUNDAMENTALS OF GEOGRAPHY

Learning Outcomes:

By the end of this course, students will able to

- 1. understand the basic concepts in geography and provide essential background for competitive exams and further geographical studies*
- 2. explain what is happening to Earth systems in real time and analyze how variations in topography and climate affect human population and settlements*
- 3. evaluate the characteristics of major geographical regions and comprehends the geography of India*

UNIT - I

Introduction to Geography: Themes of geography - Geographer's tools – Spatial approach - Geological time scale

UNIT - II

Physical Geography: Interior of the earth - Bodies of water and landforms - Dynamic earth: internal forces - external forces - Seasons and weather - Climate - World climate regions - Soils and vegetation

UNIT- III

Human Geography: Elements of Culture - Population Geography - Political Geography - Urban Geography - Economic Geography - Depletion of Resources

UNIT - IV

Regional Geography: Major Natural Regions: characteristics, economic base and human adaptation

UNIT - V

Geography of India: physical setting, drainage, climate, soils, natural vegetation, minerals and energy resources, agriculture, industries, and population distribution



REFERENCES:

1. Arreola, D.D., Deal, M.C., Petersen, J.F. and Sanders, R., (2007): World Geography, McDougal Littell.
2. Christopherson, R. W. and Birkeland, G. H., (2012): Geo-systems: An Introduction to Physical Geography (8th edition), Pearson Education, New Jersey.
3. Douglas, L. J. Haarmann, V., Johnson, M. L., and Clawson, D.L. (2010): World Regional Geography, 10th edition, Pearson Education Inc, New Jersey.
4. Goh Cheng Leong & Morgan, G.C. (1982): Human and Economic Geography, 2nd Edition, Oxford University Press, New Delhi.
5. Khullar, D.R. (2014): India: A Comprehensive Geography, Kalyani Publishers, New Delhi.
6. Knox, P. & Marston, S. (2013): Human Geography: Places and Regions in Global Context, 6th Edition, Pearson Education, New Delhi
7. Waugh, D. (2005): Geography: An Integrated Approach, Nelson Thornes, Cheltenham.

Mapping of Program Outcomes with Course Outcomes:

	PO1	PO2	PO3	PO4	PO5
CO1	x			x	x
CO2	x	x			
CO3			x	x	x



Credits: 3

Course Code: UGEO26OE03

RURAL DEVELOPMENT

Learning Outcomes:

Upon completing this course, students will be able to:

- 1. Understand the concept of rurality and rural economic structure.*
- 2. Identify the need and significance of rural development in India*
- 3. Acquaint with the efforts on rural development in India.*

Unit - I

Introduction to Rural Development: Defining rurality and rural development - Need for rural development, rural problems, rural demographic dynamics.

Unit - II

Rural Development strategies: Rural development strategies and approaches in India, pre-independence rural development schemes/programs in India, Gandhian concept of rural development.

Unit - III

Rural Economy: Agriculture and allied sectors, seasonality, historical progress and need for expanding non-farm activities, provision of infrastructure and services, access to elementary education, primary health care, marketing and micro credit, watershed management, rural tourism.

Unit - IV

Rural Governance: Rural governance and administration in India, experiences, 73rd constitutional amendment, Panchayat raj, people's political participation.

Unit - V

Rural Development Schemes and Programs: Post-Independence rural development strategies in India; CDP, green revolution, drought prone area development program, PMGSY, integrated rural development programme, MGNREGS etc., skill development programmes and schemes, recent developments in rural development.



REFERENCES:

1. Gilg, A. W., (1985): An Introduction to Rural Geography, Edwin Arnold, London.
2. Krishnamurthy, J. (2000): Rural Development - Problems and Prospects, Rawat Publications, Jaipur.
3. Lee, D. A. and Chaudhri D. P. (Eds.), (1983): Rural Development and State, Methuen, London.
4. Misra, R. P. and Sundaram, K. V. (Eds.), (1979): Rural Area Development: Perspectives and Approaches, Sterling, New Delhi.
5. Misra, R. P. (Ed.), (1985): Rural Development: Capitalist and Socialist Paths, Vol. 1, Concept, New Delhi.
6. Palione, M. (1984): Rural Geography, Harper and Row, London.
7. Ramachandran, H. and Guimaraes J. P. C. (1991): Integrated Rural Development in Asia – Learning from Recent Experience, Concept Publishing, New Delhi.
8. Robb, P. (Ed.), (1983): Rural South Asia: Linkages, Change and Development, Curzon Press.
9. Yugandhar, B. N. and Mukherjee N. (Eds.) (1991): Studies in Village India: Issues in Rural Development, Concept Publications. Co., New Delhi.

Mapping of Program Outcomes with Course Outcomes:

	PO1	PO2	PO3	PO4	PO5
CO1	x				x
CO2	x	x	x		x
CO3	x		x	x	x



Credits: 3

Course Code: UGEO26OE04

GEOGRAPHY OF GENDER

Learning Outcomes:

Upon completing this course, students will be able to:

- 1. Understand the relationship between gender, space, society, culture, economy and development at different spatial scales.*
- 2. Analyze gender inequalities using demographic, social, economic, environmental and spatial indicators.*
- 3. Apply gender geographical concepts and analytical tools to examine the spatial patterns of gender inequality across different regions and sectors.*
- 4. Develop fundamental skills to interpret gender-disaggregated data and apply spatial perspectives for gender-sensitive planning and research.*

Unit - I

Introduction to Gender Geography: Nature, scope and significance of Gender Geography - Sex, gender, patriarchy and gender relations; Feminism - Gender, space and place: public, private and everyday spaces - Gendered identities, power relations and spatial experience

Unit - II

Gender, Population and Society: Sex ratio, literacy, gender roles in household, marriage and care relations; Gender and migration - Gender, nutrition, reproductive health and access to health services - Social exclusion, marginality, violence and vulnerability - Spatial patterns of gender inequality in developed and developing societies

Unit - III

Gender, Economy and Development: Gender division of labor and work participation - Women in agriculture, informal sector, industry and services - Unpaid care work; Gendered dimensions of poverty - Gender and development indicators: GDI, SDG related measures

Unit - IV

Gender, Environment, Resources and Spatial Planning: Gendered access to land, water, forest and common resources - Gender dimensions of climate change, disasters and resilience; sustainable development - Gender and urban space: safety, mobility, transport and public infrastructure

Unit - V

Contemporary Issues: Community participation, local governance and gender-responsive resource management - Gender inequalities in India: regional patterns and major determinants - National Policy for empowerment of women



REFERENCES:

1. Datta, A. (2012). The Illegal City: Space, Law and Gender in a Delhi Squatter Settlement. Ashgate, Farnham.
2. McDowell, L. (1999). Gender, Identity and Place: Understanding Feminist Geographies. Polity Press, Cambridge.
3. Massey, D. (1994). Space, Place and Gender. University of Minnesota Press, Minneapolis.
4. Momsen, J. H. (2010). Gender and Development. Routledge, London.
5. Seager, J. (2018). The Women's Atlas. Myriad Editions, Brighton.
6. Kabeer, N. (1994). Reversed Realities: Gender Hierarchies in Development Thought. Verso, London.
7. Agarwal, B. (1994). A Field of One's Own: Gender and Land Rights in South Asia. Cambridge University Press, Cambridge.
8. Chant, S. & McIlwaine, C. (2016). Cities, Slums and Gender in the Global South. Routledge, London.
9. International Institute for Population Sciences. National Family Health Survey Reports, Mumbai.
10. UN Women. Progress of the World's Women Reports, New York.
11. <https://nfhsindia.org/>
12. <https://hdr.undp.org/>
13. <https://www.unwomen.org/>
14. <https://sdgs.un.org/goals/goal5>
15. <https://www.worldbank.org/en/topic/gender>

Mapping of Program Outcomes with Course Outcomes:

	PO1	PO2	PO3	PO4	PO5
CO1	x	x	x		x
CO2	x	x		x	x
CO3	x	x	x	x	x



Credits: 3

Course Code: UGEO26OE05

MILITARY GEOGRAPHY

Learning Outcomes:

Upon completing this course, students will be able to:

- 1. understand the definitions, scope, and foundational geopolitical theories that shape military geography.*
- 2. analyze the influence of physical geography on land, sea and air warfare operations and command structures.*
- 3. evaluate the legal and strategic nuances of territorial frontiers, maritime boundaries and contested lines.*
- 4. apply geographical analysis to specific Indian frontier sectors and conflict zones.*
- 5. examine the critical role of logistics, strategic resources and maritime strategy in national security.*

Unit - I

Introduction of Military Geography and Geo-strategic Space: Meaning, Concept and Definitions of Military Geography - Types, Scope, Significance and Uses of Military Geography - Evaluation of Geo-political/Geo-strategic Thoughts: Friedrich Ratzel, Rudolf Kjellen, A.T. Mahan, and Alford Mackinder - Beginning of the era of geopolitics - Factors of Geo-strategy: Size and Shape, Location, Climate, Boundaries, Resources, Manpower – Meaning, Concept and Problems of landlocked/buffer states

Unit - II

Role of Geography in Warfare and Operational Environment: Meaning, concept and factors affecting Land warfare: relief, slope, and drainage – Meaning, concept, factors and role of Geography in Maritime and Air warfare - Meaning and Concept of Grand Strategy, Strategy and Tactics - Command Structure: Tri-services command, Strategic command and Defence Space Agency command and concept of strategic reserve.

Unit - III

Geopolitics of Territorial Borders and Maritime Zones: Territorial Concepts: Frontiers and Boundaries - Maritime Boundaries: Territorial waters, continental shelf, Contiguous zone, Exclusive Economic Zone - Line of Control and Line of Actual Control - Geo-Strategic position and importance of specific territories: Israel, Afghanistan, Kuwait, Diego Garcia, Antarctica.

Unit - IV

Applied Military Geography of Indian Frontiers: India's Western land frontiers: Gujarat sector, Rajasthan sector, Punjab sector - Jammu and Kashmir sector (LOC/POK) – Northern land sectors: Ladakh, Himachal Pradesh, Uttarakhand, Nepal - Eastern sector: Sikkim, Bhutan, Arunachal Pradesh - Eastern and Southern Neighbours - Contested Areas and Strategic Points.



Unit - V

Logistical Geography and Strategic Resources: Significance, scope, and resource of Logistics - Factor and function of Logistics supply chain - Importance of land mobility and Sea Lines of Communication - Maritime Trade and Merchant fleet - Types and Uses of Strategic Minerals and resources - Importance of Oil-Petroleum, Natural gas - The Geopolitics of the Water Crisis – Geo-strategic importance of India's maritime boundaries - Scope and Significance of India's Maritime Strategy – Role of India in Indian Ocean security.

REFERENCES:

1. Black, J. (1996). Cambridge illustrated atlas, warfare: Renaissance to revolution 1492-1792. Cambridge University Press.
2. Chandler, D. D. (1996). Atlas of military strategy, the art, theory and practice of war, 1618-1878. Arms and armor.
3. Das, S. T. (1985). Geostrategies. Kitab Mahal, Allahabad
4. Dayal, P. (1996). A textbook of geomorphology. Shukla Book Depot.
5. Earle, E. M. (1948). Makers of modern strategy: Military thought from Machiavelli to Hitler. Princeton University Press.
6. Khullar, D. R. (2012). Physical geography. Kalyani Publishers.
7. Lal, D. S. (2005). Climatology. Sharda Pustak Bhawan.
8. Puleston, W. D. (1939). The life and work of Alfred Thayer Mahan. United States Naval Institute.
9. Sharma, R. C., & Vatal, M. (1970). Oceanography for geographers.

Mapping of Program Outcomes with Course Outcomes:

	PO1	PO2	PO3	PO4	PO5
CO1	x				x
CO2	x	x	x		x
CO3	x	x	x		x
CO4	x		x		x
CO5	x	x	x	x	x