M. Sc. Geography

Syllabus

AFFILIATED COLLEGES

Program Code: 32Q

2025 – 2026 onwards

BHARATHIAR UNIVERSITY

(A State University, Accredited with "A" Grade by NAAC,
Ranked 13th among Indian Universities by MHRD-NIRF,
World Ranking: Times - 801-1000, Shanghai - 901-1000, URAP - 982)

Coimbatore - 641 046, Tamil Nadu, India

Program Educational Objective (PEOs)	
The main qualification descriptors for the M.Sc., geography students are to develop the critical evaluation and understanding.	
PEO1	Appreciate the significance of geographical knowledge to everyday life.
PEO2	Communicate mastery of geographic data, theories, philosophies, and concepts in oral, written, and visual forms, with ethical engagement and respect for diversity of individuals, groups, and cultures.
PEO3	Demonstrate the skills in using geographical research tools including spatial statistics, cartography, remote sensing and GIS.
PEO4	Students have to demonstrate their geographical knowledge acquired in the class and apply the same in real world.
PEO5	Based on the field knowledge and advanced technologies, the students should be able to understand the on-going geographical problems in different regions and levels with appropriate pragmatic solutions.

Program Specific Outcomes (PSOs)	
After the successful completion of Geography program, the students are expected to	
PSO1	Understand the relevance of geographical knowledge to everyday life.
PSO2	Getting the ability to communicate geographic information utilizing both lecture and practical exercises.
PSO3	Inculcate the ability to evaluate geographical problems effectively.
PSO4	Recognize the skill development in Geographical studies programme as part of career avenues in various fields like teaching, research and administration.
PSO5	Display an ability to read and understand maps and topographic sheets to look at the various aspects on the space.

Program Outcomes (POs)	
On successful completion of the M. Sc. Geography program	
PO1	Compare and contrast the theories, philosophies, and concepts in the discipline of geography, including unifying themes of spatial patterns and structures, the interrelationship between people and places, and the interactions between nature and society.
PO2	Recognize the skill development in Geographical studies programme as part of career avenues in various fields like teaching, research and administration. Cultivate ability to evaluate critically the wider chain of network of spatial aspects from global to local level on various time scales as well.
PO3	An understanding of landscape at different levels needsto be discussed and understood for a thorough knowledge of spatial dimensions. To comprehend the dynamic dimensions of human and ecosystem relationships.
PO4	Field based knowledge is essential to understand the ground reality, spatial patterns and processes. Use of statistical tools and techniques is essential for precise and objective geographic analysis and interpretation of complex phenomena.
PO5	Identification of the critical problems and spatial issues form the core of the modern geography for various applications and decision making, including Resources, Environment & Disaster Management, Land Use Planning, and Urban and Regional Development together with Climate Change Mitigation and Adaptation, etc.
PO6	Communication through models, maps, images and other geographical tools form the sound base for the dissemination of geographical information.
PO7	Learning human perception behavior to acquire the geographical knowledge evolved over time is essential to improve decision making process.
PO8	Demonstrate an advanced understanding of and ability to differentiate among the Various methodologies used in geographic research.
PO9	Use of statistical tools and techniques is essential for precise and objective geographic analysis and interpretation of complex phenomena.
PO10	There is a need to understand the specificities of the problems in specific areas for their in-depth comprehension and solution.

BHARATHIAR UNIVERSITY: COIMBATORE 641 046
M. Sc. Geography Curriculum (University Affiliated colleges)

(For the students admitted during the academic year 2025 – 2026 onwards)

Scheme of Examination

Course Code	Title of the Course	Credits	Hours		Maximum Marks		
			Theory	Practical	CIA	ESE	Total
FIRST SEMESTER							
13A	Core I - Geomorphology	4	6	-	25	75	100
13B	Core II - Oceanography	4	6	-	25	75	100
13C	Core III - Geography of India	4	6	-	25	75	100
13D	Core IV - Cartography	4	6	-	25	75	100
1EA	Elective - Paper I: Remote Sensing and its Applications in Geography	4	6	-	25	75	100
	Total	**20**	**30**		**125**	**375**	**500**
SECOND SEMESTER							
23A	Core V - Climatology	4	5	-	25	75	100
23B	Core VI - Environmental Studies and Management	4	5	-	25	75	100
23C	Core VII - Geographical Thought	4	5	-	25	75	100
23P	Practical I - Techniques of Terrain Mapping	4	-	5	40	60	100
23Q	Practical II - Mapping of Quantitative and Qualitative Data	4	-	5	40	60	100
2EA	Elective - Paper II: Digital Image Processing	4	5	-	25	75	100
	Total	**24**	**20**	**10**	**180**	**420**	**600**
THIRD SEMESTER							
33A	Core VIII - Research Methodology in Geography	4	6	-	25	75	100
33B	Core IX - Urban Geography	4	6	-	25	75	100
33C	Core X - Agricultural Geography	4	6	-	25	75	100
33D	Core XI - Geography of Population	4	6	-	25	75	100
3EA	Elective - Paper III: GIS and GPS	4	5	-	25	75	100
	Health and Wellness @	1	1	-	25	-	25
	Total	**21**	**30**	**-**	**150**	**375**	**525**

FOURTH SEMESTER							
43A	Core XII - Quantitative Techniques	4	6	-	25	75	100
43B	Core XIII - Disasters Mitigation and Management	4	6	-	25	75	100
43C	Core XIV- Regional Planning and Development	4	6	-	25	75	100
43P	Practical III - Methods of Data Analysis	4	-	6	40	60	100
4EP	Elective Practical - Practical in Geo-informatics	4	-	6	40	60	100
47V	Project Work	6	-	-	-	150	150
	Total	**26**	**18**	**12**	**155**	**495**	**650**
	Grand total	**91**	**98**	**22**	**610**	**1665**	**2275**

* Project report -120 marks; Viva-voce –30 marks, @ No University Examinations. Only Continuous Internal Assessment (CIA)

Guidelines for Project Report:

Phase I - Presentation of the project proposal with the aims, objectives, hypothesis, methodology, study area and chapterisation. This has to be presented which carries 40 marks.

Phase II – Includes Data source, Collections, Techniques to be adopted etc. to be presented carries 40 marks.

Phase III – Presentation of final report carrying 30 marks.

NOTE: The syllabus for the following papers furnished below to be followed for the candidates admitted from the Academic Year 2022-2023 onwards.

List of Elective papers (Colleges can choose of the paper as Electives)	
Elective – I	Elective – Paper I: Remote Sensing and its applications in Geography
Elective – II	Elective – Paper II: Digital Image Processing
Elective – III	Elective – Paper III: GIS and GPS
Elective – IV	Elective Practical – Practical in Geo-informatics

SCHEME OF VALUATION	
CORE PAPERS	**ELECTIVE PAPERS**
CREDITS – 4; MARKS – 100	CREDITS – 4; MARKS – 100
Marks Distribution:	**Marks Distribution:**
Internal – 25 Marks	Internal – 25 Marks
External – 75 Marks	External – 75 Marks

SCHEME OF VALUATION
CORE PRACTICAL SUBJECT
CREDITS – 4; MARKS – 100
Marks Distribution:
Internal – 40 Marks
External – 60 Marks

First Semester

Course code	13A	GEOMORPHOLOGY	L	T	P	C
Core/ Elective/ Supportive		Core-I	0	6	0	4
Pre-requisite		To understand the morphological changes	Syllabus version		2025 - 2026	

Course Objectives:

To understand about Landforms its origin and evolution.
To learn about the Geomorphic features in details.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Understand the effect of rotation of revolution the Earth, Understand Theory regarding of Origin of Continents and oceans	K2
CO2	Understand interior structure of the earth, Study the formation of Rocks	K1
CO3	Understand the work of internal and external forces and their associated Landforms.	K3
CO4	Study the erosional and depositional land forms of Rivers and Sea Waves.	K3
CO5	Understand the concept of mass Wasting Understand the Application of Geomorphology	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Geological Time Scale.	18 hours

Geomorphology – Definition – Nature and Scope – Development – Concepts in Geomorphology – Geological time scale – Recent trends.

Unit- II	Origin of the Earth	18 hours

Origin of the earth – Internal structure of the earth – Rocks – Types; igneous – sedimentary and metamorphic; Continental drift – Sea floor spreading- Plate tectonics.

Unit- III	Geomorphic Process	18 hours

Geomorphic process – Endogenic – Diastrophism – Folds – Faults – Earthquake – Volcanism – Seismic and Volcanic zone; Exogenic process – Weathering – Mass wasting – Types.

Unit- IV	Gradational Process	18 hours

Gradational process – Erosional and depositional landforms of Fluvial – Glacial – Aeolian – Coastal – Karst; Landforms evolution: Fluvial cycle, Arid cycle.

Unit- V	Climate and Landforms	18 hours

Climate and landforms – effect of climate on land forms – Ice ages. Application of Geomorphology in Mineral exploration – Hydrology – Land use and regional planning.

	Total lecture hours	90

Text Books:

1. Thornbury, W.D., (1984). Principles of Geomorphology, John Wiley and Sons, New York.

Books For Reference:

1. Strahler, A.N. and Strahler A.H., (1992). Modern Physical Geography, John and Wiley Sons, New York.
2. Dayal, P., (1995). Text Book of Geomorphology, Shukla Book Depot, Patna.
3. Savindra Singh, (2002). Geomorphology, Prayag Pustak Bhawan, Allahabad.

4	Das Gupta, A and Kapoor, A.N., (2001). Principles of Physical Geography, S.C. Chand & Company Ltd, New Delhi.
5	Sharma, V.K., (1986). Earth Surface Process and forms, Tata McGraw Hill Publishing Company Ltd, New Delhi.
6	Bloom, Arthur L. (1998), Geomorphology, Pearson Education Pvt. Ltd. Singapore.

Related Online Contents:	
1	https://study.sagepub.com/sites/default/files/01_Gregory_Lewin(web)_Ch-01%20_1.pdf
2	https://en.wikipedia.org/wiki/Geomorphology.
Course Designed By: Dr. Sunilkumar	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	M	S	S	S	S	M	S	S
CO3	S	M	S	S	L	S	M	S	S	S
CO4	M	S	S	M	S	M	S	S	M	L
CO5	S	S	S	S	S	S	S	S	S	S

S- Strong: M- Medium: L- Low

Course code	13B	OCEANOGRAPHY	L	T	P	C
Core/ Elective/ Supportive		Core-II	0	6	0	4
Pre-requisite		Oceanography is the study of all aspects of the ocean	Syllabus version		2025 - 2026	

Course Objectives:

To understand the marine life and ecosystems to currents and waves, the movement of sediments, and seafloor geology.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Understand the meaning, nature and scope, modern trends in Oceanography	K2
CO2	Understand the ocean floor and relief of the ocean bottom.	K1
CO3	Understand the properties like temperature, density, salinity of ocean water.	K4
CO4	Understand the characteristics and properties of factors affecting on formation of sea waves.	K4
CO5	Get knowledge about distribution of lithogenous, biogenies, and hydrogenous sediments on Ocean floor.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Scope of Oceanography	18 hours

Oceanography: Nature and Scope – Distribution of Land and Sea – Hypsometric Curve, Surface Configuration of the Ocean floor – Major features of Ocean basins: Continental shelf – slope – margin – rise – canyons – ridges – trenches – abyssal plains.

Unit- II	Temperature and Salinity of Sea Water	18 hours

Bottom relief features of Pacific, Atlantic and Indian Ocean - Atlantic, Pacific and Indian Ocean – Horizontal and Vertical Distribution of Seawater Temperature, Salinity: Factors affecting Salinity and Distribution.

Unit- III	Ocean Currents	18 hours

Ocean currents: Direct and indirect forces acting on sea waters, surface currents, Coriolis effect, Ekman spirals, geostrophic currents, upwelling, sinking, circulation, El-Nino, La-Nina, significance of major ocean currents of the world.

Unit- IV	Waves and Tides	18 hours

Wave theories, Classification; progressive waves, shallow water waves, Seismic Sea waves (Tsunami), wind waves, stationary waves, sea and swell, deep and shallow water waves, storm surges, Beaufort scale, spilling and breaking waves, Tides and tide generating forces, type of tides, tidal currents, rip currents.

Unit- V	Marine deposits	18 hours

Coral Reefs: Classification and distribution – Conditions for the growth – Coral Reefs types and theories Classification of sediments - Lithogenic sediment, biogenic sediments, hydrogenic sediment.

	Total lecture hours	90

Text Books:

1 King, C.A.M. 1962. Oceanography for Geographers

Books For Reference:	
1	Davis Richard J.A. 1986: — Oceanography - An Introduction to the Marine Environment.
2	Duxbury, C.A and Duxbury B. 2nd ed. 1996: An Introduction to the world's Oceans - C. Brown. Iowa Curriculum Development Committee in Geography 91
3	Gross, M. Grant, 1987: Oceanography, a View of the earth, Prentice - Hall Inc. New Jersy.
4	Sharma, T.C., (2003), India – An Economic & Commercial Geography, Vikas Publishing House Pvt. Ltd., New Delhi.
5	King, C.A.M. 1962. Oceanography for Geographers
6	Sharma, R.C. 1985.— The Oceans — New Delhi.
Related Online Contents:	
1	https://en.wikipedia.org/wiki/Oceanography
2	https://en.wikipedia.org/wiki/Physical_oceanography
Course Designed By: Dr. Panneerselvam	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	M
CO2	S	S	M	S	S	S	S	M	M	S
CO3	S	M	S	S	L	S	M	L	S	S
CO4	M	S	S	M	S	M	S	S	M	S
CO5	S	S	M	S	L	S	S	M	S	M

S- Strong: M- Medium: L- Low

Course code	13C	GEOGRAPHY OF INDIA	L	T	P	C
Core/ Elective/ Supportive		Core - III	0	6	0	4
Pre-requisite		To understand the physical division in India	Syllabus version		2025 - 2026	

Course Objectives:

To understand about the Location and extent - Physical features and Climate of India.
To obtain about Agriculture, Mineral, Industries and Population aspects in India.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Understand the about the physiographic division of India.	K2
CO2	Examine and understand the types of vegetation of India	K1
CO3	Understand the India Drainage system of India Rivers.	K3
CO4	Understand the variation in industrial development in India.	K3
CO5	population distribution variation and growth in India	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Location and Extent	18 hours

Location, extend and Significance – Physiographic division, Soil, Climatic, Drainage, Natural vegetation.

Unit- II	Agriculture	18 hours

Agricultural and Water resources – Food crops – Paddy – Wheat – Cash crop – Cotton – Sugarcane – Tea – Coffee – Tobacco. Role of green revolution in Indian agriculture. Water resources: Irrigation – types and Multipurpose projects.

Unit- III	Minerals	18 hours

Mineral and Industrial resources – Classification of Mineral resources – Distribution of Iron ore, Mica, Manganese, and Bauxite – Power resources – Coal and Petroleum Industries – Iron and steel, Sugar, Cotton Textiles, Cement, Engineering and Chemical industries.

Unit- IV	Population	18 hours

Population: Growth, Distribution, Density and Growth – Population problems and policy, Transport: Land, Water and Air – Trade: India's foreign trade.

Unit- V	Scientific Technology	18 hours

Development of Scientific Technology in India. – India as an Emerging Economic Power – India's role in Asia and world – SAARC, G77, N-5, G15, NAM.

	Total lecture hours	90

Text Books:

1	Gopal Singh, (1970), A Geography of India, Atnaram & sons, New Delhi.
2	Khullar, D. R., (2010), India – A Comprehensive Geography, Kalyani Publishers, New Delhi.

Books For Reference:	
1	Majid Hussain (2008), Geography of India, Tata McGraw Hill Publishing company Ltd., New Delhi.
2	Pal, Saroj K. (2003), Physical Geography of India – A study in Regional Earth Sciences, Orient Longman Pvt. Ltd. Kolkata.
3	Singh, R.L., (1977), India - A Regional Geography, NGSI, Varanasi.
4	Sharma, T.C., (2003), India – An Economic & Commercial Geography, Vikas Publishing House Pvt. Ltd., New Delhi.
5	Krishnan, M.S. (1982), Geology of India and Burma, CBS Publishers, New Delhi.
6	Mathur, S.M. (1982), Physical Geology of India, National Book Trust, India, New Delhi.
Related Online Contents:	
1	https://en.wikipedia.org/wiki/Geography_of_India
2	https://www.cs.mcgill.ca/~rwest/wikispeedia/wpcd/wp/g/Geography_of_India.htm
Course Designed By: Dr. J. Ganesan	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	M
CO2	S	S	M	S	S	S	S	M	M	S
CO3	S	M	S	S	L	S	M	L	S	S
CO4	M	S	S	M	S	M	S	S	M	S
CO5	S	S	M	S	L	S	S	M	S	M

S- Strong: M- Medium: L- Low

Course code	13D	CARTOGRAPHY	L	T	P	C
Core/ Elective/ Supportive		Core -IV	0	6	0	4
Pre-requisite		To analyze the map making techniques	Syllabus version		2025 - 2026	

Course Objectives:

The course provides the basic concepts, techniques of cartography. After completion of course the students will understand the art and science of map making.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Read and prepare the maps.	K2
CO2	Comprehend location and spatial aspects of the earth surface.	K1
CO3	Use and importance of maps for regional development and decision-making.	K3
CO4	Understand the types of maps and uses.	K3
CO5	Development of the cartography knowledge form the yearly period.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Scope of Cartography	18 hours

Meaning and scope of Cartography – Historical development – Maps – Types – Base map – Compilation and Generalization of maps.

Unit- II	Map design and layout	18 hours

Map design and layout – Lettering and Toponomy – Tools and Techniques – Map construction and reproduction – Developing process – Photographic and printing.

Unit- III	Symbolization	18 hours

Symbolization and processing data – Statistics database- Cartometry – use of diagram on maps – Point – Line and Area, Volume symbols – Qualitative and Quantitative maps.

Unit- IV	Mapping data	18 hours

Mapping the geological structure and relief and terrain data – Mapping the climatological and Hydrological data – Mapping the socio-economic data.

Unit- V	Computers cartography	18 hours

Recent development in the field of Cartography – Computers in Cartography – Digital Cartography – 3D Cartography.

	Total lecture hours	90

Text Books:

1. Misra, R.P. and Ramesh, A., (2002), Fundamentals of Cartography, Concept Publication Company, New Delhi.
2. Robinson, A.H., (1984), Elements of Cartography, John Wiley, London.

Books For Reference:

1. Monkhouse, F.J. and Wilkinson, H.R., (1989), Maps and Diagrams, B.I.Publications, New Delhi.
2. Sethu Rakkayi, S., (2014), Puvippadaviyaloor arimugam, Sree Meenakshi Offsets, Madurai.
3. Keates, J. S., (1982), Understanding Maps, Longman, London and New York.
4. Erwin Raiz, (1948), General Cartography, McGraw Hill Company., New York
5. Lawrence, G.R.P., (1979), Cartographic Methods, Methuen, London.

Related Online Contents:	
1	https://en.wikipedia.org/wiki/Cartography
2	https://en.wikipedia.org/wiki/Cartographic_design
Course Designed By: S. Ravichandran	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	M	S	M	S	S	M	L	M
CO3	S	M	S	S	S	M	M	S	S	S
CO4	M	S	S	M	S	S	S	S	M	S
CO5	S	S	S	S	L	S	M	S	S	M

S- Strong: M- Medium: L- Low

Course code	1EA	REMOTE SENSING AND ITS APPLICATIONS IN GEOGRAPHY	L	T	P	C
Core/ Elective/Supportive		Elective- I	0	6	0	4
Pre-requisite		Basic knowledge in satellite system	Syllabus version		2025 - 2026	

Course Objectives:

To understand about the history and types of remote sensing.
To obtain about aerial, satellite remote sensing and recent developments.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Appreciate the development and uses of aerial and satellite remote sensing system and navigation satellite systems in India and other nations;	K2
CO2	Understand the basics of EMR and energy interaction in atmosphere and on earth surface features;	K1
CO3	Importance of satellite types and functions	K3
CO4	Understand Indian satellite remote sensing development and achievement.	K3
CO5	Understand the remote sensing application and its uses.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Over view of Remote Sensing	18 hours

Over view of Remote Sensing and its Systems – EMR – Interaction of EMR with Atmosphere and Earth features – Atmospheric Windows – Types of Remote Rensing – Platforms – Sensors – Errors and Corrections – Ground Truth Verification.

Unit- II	Aerial Remote Sensing	18 hours

Aerial Remote Sensing: History – Aerial Cameras – Films – Photographs – Elements of Photographs: Marginal Information and Scale – Measurement of Scale - Stereo Model – Relief Displacement – Measurement of Height – Elements of Photo Interpretation.

Unit- III	Remote sensing satellites	18 hours

Remote Sensing Satellites: LANDSAT – SPOT – ERS – JRS – IKONOS – QUICK BIRD – Orbiting Characteristics – Resolution and Sensor Characteristics – Other Remote Sensing Satellites.

Unit- IV	Remote Sensing in India	18 hours

Indian Remote Sensing satellites – Resolution and Scanning Characteristics - Satellite Data Products.

Unit- V	Applications of Remote Sensing	18 hours

Applications of Remote Sensing in Geography: Geomorphology – Land use / Land cover – Agriculture – Water Resources – Coastal – Urban Planning – Environmental Assessment.

	Total lecture hours	90

Text Books:

1	Lillesand, T.M. and Ralph W. Keifer (2002), Remote Sensing and Image Interpretation, John Wiley & Sons, Inc., New York.
2	Sabins, Jr. (1978), Remote Sensing: Principles and Interpretation, Freeman and Co, San Francisco.
3	Curran, P.J., (1985), Principles of Remote sensing, English Language book society Longmans, London.

Books For Reference:	
1	Anji Reddy, M., (2004), Geoinformatics for Environmental Management, BS Publications, Hyderabad.
2	Chanrda, A.M. and S.K. Ghosh (2006), Remote Sensing and Geographical Information System, Narosa Publishing House, New Delhi.
3	Joseph, George (2003), Fundamental of Remote Sensing, University's Press (India) Pvt. Ltd., Hyderabad.
4	Kumar, S., (2003), Basics of Remote sensing and GIS, Laxmi publications, New Delhi.
Related Online Contents:	
1	https://tudip.com/blog-post/what-is-remote-sensing-and-its-applications/
2	https://www.slideshare.net/RashmiYadav45/remote-sensing-and-its-application
Course Designed By: A. Suresh	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	M	S	S	S	S	M	S	S
CO3	S	M	S	S	M	S	M	S	S	M
CO4	M	S	S	M	S	M	S	S	M	S
CO5	S	S	S	S	L	S	S	M	S	S

S- Strong: M- Medium: L- Low

Second Semester

Course code	23A	CLIMATOLOGY	L	T	P	C
Core/ Elective/ Supportive		Core- V	0	5	0	4
Pre-requisite		Basic knowledge of daily weather report observations	Syllabus version		2025 - 2026	

Course Objectives:

To understand about Atmosphere and its properties and Functions
To learn about the Atmospheric Pressure, Wind, Cloud and Classification.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Understand the elements of weather and climate and its impacts at different scales.	K2
CO2	Understand heat balance.	K1
CO3	Understand the climate change and monsoon conditions of the world.	K3
CO4	Understand the foundational concepts of climate change and its impacts.	K3
CO5	To understand the climatic changes from the world.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Climatology	18 hours

Nature and Scope – Structure and composition – Insolation – Heat budget – Processes of Heat energy transfer – Temperature distribution – Horizontal and Vertical – Factors controlling temperature distribution – Thermal inversion.

Unit- II	Atmospheric Pressure	18 hours

Atmospheric pressure – pressure belts – distribution of pressure: Horizontal and Vertical distribution – Wind systems – General circulation – Planetary winds – Seasonal and Local winds – Jet stream – Monsoon – Concept of its origin – Local winds – Geostrophic wind – Gradient wind – La-Nino and El-Nino.

Unit- III	Humidity and Precipitation	18 hours

Humidity: Relative, absolute, and specific humidity – Dew point – Evaporation – Condensation and its types – Clouds and its types – Precipitation – Forms and Types – Atmospheric equilibrium – Adiabatic process.

Unit- IV	Airmasses and Cyclones	18 hours

Air masses – Characteristics – Source regions – Classification – Fronts: Types and characteristics – Atmospheric disturbances – Cyclones: Tropical and Temperate cyclones – Western distribution – Antic cyclone and its types – Characteristics of Cyclone

Unit- V	Climatic Classification	18 hours

Climatic Classification: Empirical and generic climatic classification – Koppen and Thornthwaite World Climatic regions – Climatic change – Process of weather forecasting – Heat Island – Air pollution – Green house effects – Ozone depletion – Human comfort zones.

	Total lecture hours	90

Text Books:

1	Lal, D.S., (1990). Climatology, Chaitanya Publishing House, Allahabad.
2	Trewartha, G.T., (1980). Introduction to Climate, Tata McGraw Hill, New York.
3	Critch field, H.J., (1987). General Climatology, Prentice Hall of India Pvt. Ltd, New Delhi.

Books For Reference:

1	Siddhartha, K., (2005). Atmosphere, Weather and Climate, Kisalaya Publications Pvt. Ltd., New Delhi.
2	Richmond W. Longley (1970). Elements of Meteorology, John Willey & sons Inc., New York.

3	Savindra Singh, (2002). Physical Geography, Prayag Pustak Bhawan, Allahabad

Related Online Contents:	
1	https://en.wikipedia.org/wiki/Climatology
2	https://www.environmentalscience.org/climatology
Course Designed By: B. Sasikumar	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	M	S	S	S	S	M	S	S
CO3	S	M	S	S	M	S	M	S	S	M
CO4	S	S	S	M	S	S	S	S	L	S
CO5	S	S	S	S	L	S	M	S	S	M

S- Strong: M- Medium: L- Low

Course code	23B	ENVIRONMENTAL STUDIES AND MANAGEMENT	L	T	P	C
Core/ Elective/Supportive		Core-VI	0	5	0	4
Pre-requisite		Basic knowledge in Environmental problem	Syllabus version		2025 - 2026	

Course Objectives:

To develop a world population that is aware of and concerned about the environment and its associated problems and which has the knowledge, Skills, attitudes, motivations and commitment to work individually and collectively towards solutions of current problems and prevention.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Understand the dynamic interactive relationship between man and environment.	K2
CO2	Have sound understanding on distribution, utilization and management of natural Resources at global level.	K1
CO3	Assess of different aspects of flora and fauna provinces.	K3
CO4	Familiarize the dynamics of climate and related theories.	K3
CO5	Understand of Vegetation as an index of climate.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Scope of Environmental Studies	18 hours

Nature and Scope of Environmental studies – Man and Environment relationship – Changing nature of the concepts – Determinism – Possibilism – Marxian view on environment – Concept of Ecosystem.

Unit- II	Ecosystem	18 hours

Ecosystem – structure – Classification – Biomass – Functioning of the ecosystem – food web – food pyramid – nutrient cycles – natural disruptions of the ecosystem – natural hazards – floods, drought and others – human interference on ecosystem – population growth and its impact.

Unit- III	Green Revolution	18 hours

Man's modification of the biosphere – agriculture – Green revolution – HYV and pesticides – man's impact on land – mining – soils – coastal areas.

Unit- IV	Industrial Environments	18 hours

Human settlements and environments – industrial environments – emerging environmental problems – Urban environment – Pollution. Environmental degradation – emerging environmental issues – environment and health.

Unit- V	Environmental Policy	18 hours

Eco cries – Environmental management and planning – Environmental quality – Environmental law and protection – Environmental impact assessment – need for interdisciplinary approach.

	Total lecture hours	90

Text Books:

1. Odum.E.P. (1971), Fundamental of Ecology, W.B. Sunders Co, Philadelphia.
2. Peter Hagett (2001), Geography - A. Modern Synthesis, Prentice Hall, London.
3. Savindra Singh (1991), Environmental Geography, Kalyan Publications, New Delhi.

Books For Reference:	
1	Paul R. Ehrlich, Anne H. Ehrlich, and John P. Holdren (1977), Eco science: Population, Resources, Environment, Edition3, W. H. Freeman Publishers.
2	Batel, B. (1980) Management of Environment, Wiby Eastern Ltd., New Delhi
3	Savindra Singh Environmental Geography, Kalyan Publications, New Delhi
4.	Saxena Environmental Geography.
5.	Strabler, J. Man's environment, Hamilton publication Co California.
Related Online Contents:	
1	https://ncert.nic.in/ncerts/l/jesc116.pdf
2	https://www.ugc.ac.in/oldpdf/modelcurriculum/env.pdf
Course Designed By: P. Umasankar	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	M	S	S	S	S	M	S	S
CO3	S	M	S	S	L	S	M	S	S	M
CO4	M	S	S	M	S	M	S	S	M	S
CO5	S	S	S	S	S	S	S	L	S	S

S- Strong: M- Medium: L- Low

Course code	23C	GEOGRAPHICAL THOUGHT	L	T	P	C
Core/ Elective/ Supportive		Core- VII	0	5	0	4
Pre-requisite		To understand the geographical ideas	Syllabus version		2025 - 2026	

Course Objectives:

Understood in the discipline of geography encompasses the development of geographic knowledge in particular places, times, and contexts.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Understand the historical development of geographical thought according to Greek, Roman, Indian, German, French, British and American school.	K2
CO2	Understand the dualisms in geography such as determinism and possibilism, systematic Vs regional and physical Vs human geography	K1
CO3	Understand recent trends, scientific methods, quantitative revolution and computer application in geography.	K3
CO4	Understand the definition, need, and signification of applied geography	K3
CO5	As commonly understood in the discipline of geography encompasses the development of geographic knowledge in particular places, times, and contexts.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Pre-history of Geographical Thoughts	18 hours

Pre-history of Geographical thoughts – Greeks, Roman and Arab. Impacts of exploration and discoveries in Geographical development.

Unit- II	Traditions in Geography	18 hours

Four traditions in Geography: Man – Land. Area studies, Spatial and Earth sciences.

Unit- III	Geographical Thoughts	18 hours

Major Geographical thoughts: America – Davis – Bowman – Hortshone, British – Mackinder, Herbertson, Roxby. German – Humbolt, Ritter, Penck. France Vidal de la Blache, Jean Brunches, Albert Demangeon. Indian R.L. Singh, R.P. Mishra. A. Ramesh, R. Vidhyananthan,

Unit- IV	Dualism in Geographical Studies	18 hours

Determinism Vs possibilism, 2. Physical Vs Human, 3. Systematic Vs Regional, 4. Ideographic VS Nomothetic, 5. Quantitative Vs Qualitative, 6. Visual Vs Digital.

Unit- V	Trends in Geography	18 hours

Recent trends in Geography; Quantitative revolution paradigms in Geography – Systems approach – interdisciplinary research and GIS.

	Total lecture hours	90

Text Books:

1	Majid Husain (2011) Evolution of Geographical Thought.

Books For Reference:	
1	Freeman. R (1970) Hundred year of Geography, Hutchinson. London.
2	Harvey (1969) Explanations in Geography, Edward Arnold Publications, London.
3	Wayne, Davis K.D. (1972) Conceptual Revolution in Geography, University of London press, London.
4	Hussain. M Evolution of Geographical Thought.

Related Online Contents:	
1	https://www.sciencedirect.com/topics/earth-and-planetary-sciences/geographical-thought
2	https://lotusarise.com/evolution-of-geographical-thought-notes/
Course Designed By: G. Lisha	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	M	S	M	S
CO2	S	S	M	S	S	S	S	M	S	S
CO3	S	M	S	S	M	S	M	S	S	M
CO4	S	S	S	M	S	S	S	S	M	S
CO5	S	S	S	S	L	S	S	S	S	L

S- Strong: M- Medium: L- Low

Course code	23P	TECHNIQUES OF TERRAIN MAPPING	L	T	P	C
Core/ Elective/ Supportive		Practical-I	0	0	5	4
Pre-requisite		To understand the different methods, include contours, slope, aspect, hill shade and view shed.	Syllabus version		2025 - 2026	

Course Objectives:

To understand about the map scale and Statement and Representative Fraction.
To learn about Enlargement and Reduction of Maps, Contours, Slope and Drainage Basin.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Topographical Information; - International Series, South East Asia Series, Indexing, Classification and interpretation of topographical sheets, profiles	K2
CO2	Morphometric Analysis; - Hypsometric curve, Altimetric curve, histogram, Clinograph, Slope Analysis, Wentworth's Method	K1
CO3	Analyze the real-world physical features form the toposheets.	K3
CO4	Construction of the elevation of the mountain prepares toposheets.	K3
CO5	Graphs and Diagrams; -Triangular Diagram, Ergograph, Rainfall, dispersion diagram Proportional Circle, Spheres and Cubes	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	**Profiles**	**18 hours**

Representing relief – Profiles – Simple, Serial, Superimposed projected and Composite profiles.

Unit- II	**Slope Analysis**	**18 hours**

Slope analysis – Wentworth, Smith, Robinson methods.

Unit- III	**Frequency Curve**	**18 hours**

Drawing of altimetric frequency curve –Histogram – Hypsographic, Clinographic curve.

Unit- IV	**Drainage Basin Analysis**	**18 hours**

Drainage Basin Analysis – Morphometry – Stream orders – Bifurcation ratio, drainage density, Shape of the basin.

Unit- V	**Record**	**18 hours**

Record – 20 Marks

	Total lecture hours	**90**

Text Books:

1	Monk house, F.J. and Wilkinson, H.R., (1989), Maps and Diagrams, B.I. Publications, New Delhi.
2	Sethu Rakkayi, S., (2014), Puvippadaviyaloor arimugam, Sree Meenakshi Offsets, Madurai.
3	Singh, R. L., (2005), Elements of Practical Geography, Kalyani Publishers, New Delhi.
4	Gopal Singh, (1996), Map work and practical geography, Vikas Publishing House Pvt. Ltd.,

Books For Reference:

1	Khullar, (1997), Practical Geography, Educational Publishers, New Delhi.
2	Goudie Andrew (1976) Geomorphological Techniques George Alien and Unwin. Boston.
3	Pijushkanti Saha and Partha Basu, (2010), Advanced Practical Geography, Books and Allied Pvt. Ltd, Kolkata.

Related Online Contents:	
1	https://www.sciencedirect.com/topics/earth-and-planetary-sciences/terrain-analysis
2	https://saylordotorg.github.io/text_essentials-of-geographic-information-systems/s12-04-surface-analysis-terrain-mappi.html
Course Designed By: Dr. J. Ganesan	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	L	S	S	S	S	M
CO2	S	S	M	S	S	S	S	M	M	S
CO3	S	M	S	S	L	S	M	S	S	M
CO4	M	S	S	M	S	M	S	S	M	S
CO5	S	M	M	S	L	S	S	M	S	S

S- Strong: M- Medium: L- Low

Course code	23Q	MAPPING OF QUALITATIVE AND QUANTITATIVE DATA	L	T	P	C
Core/ Elective/ Supportive		Practical-II	0	0	5	4
Pre-requisite		To understand the mapping techniques and prepare the map for suitable data	Syllabus version		2025 - 2026	

Course Objectives:

To understand about the map scale and Statement and Representative Fraction.
To learn about Enlargement and Reduction of Maps, Contours, Slope and Drainage Basin.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Post graduate student to prepare the scale and mapping knowledge.	K2
CO2	To understand the student, learn map prepare and modify the scale.	K1
CO3	Analyze the real-world physical features form the toposheets.	K3
CO4	Construction of the elevation of the mountain prepares toposheets.	K3
CO5	To understand the scale divisions and toposheet knowledge.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Data	18 hours

Data – Source types of data – Sampling types – Qualitative and Quantitative symbols.

Unit- II	Graphs	18 hours

Preparations of graphs – Simple graph semi log – Triangular graph – Lorenz curve.

Unit- III	Maps	18 hours

Distributional maps – Isopleths, Choropleth, Chorochromatic map and Choroschematic map – flow map.

Unit- IV	Agricultural and Land Use Data	18 hours

Mapping of agricultural and Land use data – Crop concentration and Diversification – Ranking of Crops by Quantitative and Qualitative symbols – Crop combination.

Unit- V	Record	18 hours

Record – 20 Marks

	Total lecture hours	90

Text Books:

1. Monk house, F.J. and Wilkinson, H.R., (1989), Maps and Diagrams, B.I. Publications, New Delhi.
2. Sethu Rakkayi, S., (2014), Puvippadaviyaloor arimugam, Sree Meenakshi Offsets, Madurai.
3. Singh, R. L., (2005), Elements of Practical Geography, Kalyani Publishers, New Delhi.
4. Gopal Singh, (1996), Map work and practical geography, Vikas Publishing House Pvt. Ltd.,

Books For Reference:

1. Khullar, (1997), Practical Geography, Educational Publishers, New Delhi.
2. Goudie Andrew (1976) Geomorphological Techniques George Alien and Unwin. Boston.
3. Pijushkanti Saha and Partha Basu, (2010), Advanced Practical Geography, Books and Allied Pvt. Ltd, Kolkata.

Related Online Contents:	
1	https://www.edrawmind.com/article/understanding-quantitative-vs-qualitative-research-with-mind-maps.html
2	https://www.esri.com/about/newsroom/arcuser/understanding-statistical-data-for-mapping-purposes/
Course Designed By: Dr. Sunilkumar	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	L	S	S	S	S	M
CO2	S	S	M	S	S	S	S	M	M	S
CO3	S	M	S	S	L	S	M	S	S	M
CO4	M	S	S	M	S	M	S	S	M	S
CO5	S	M	M	S	L	S	S	M	S	S

S- Strong: M- Medium: L- Low

Course code	3EA	Digital Image Processing	L	T	P	C
Core/ Elective/ Supportive		Elective-II	0	0	5	4
Pre-requisite		To analyze the satellite images processing for various objects in earth surface	Syllabus version		2025 - 2026	

Course Objectives:

Objective of image processing is to transform an image into digital form and perform certain operations on it in order to obtain specific models or to extract useful information from the image.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Understand the need for image transforms different types of images transforms and their properties.	K2
CO2	Develop any image processing application.	K1
CO3	Learn different techniques employed for the enhancement of images.	K3
CO4	Understand the need for image compression and to learn the spatial and frequency domain techniques of image compression.	K3
CO5	learn different feature extraction techniques for image analysis and recognition.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Image Processing	18 hours

Introduction to digital image processing – data encoding and decoding – digital image formats – characteristics – software – raster and vector file formats.

Unit- II	Image Pre-processing	18 hours

Image Pre-processing: radiometric correction and geometric correction – noise removal – Image enhancement techniques: Contrast manipulation – grey level threshold – level slicing and linear and non-linear contrast stretching.

Unit- III	Image Transformation	18 hours

Image transformation: Spatial ratioing - PC transformation – HIS Transformation – NDVI, PVI, and TC etc., filtering: low pass, high pass, and edge Enhancement and detection filters and Fourier domain filtering.

Unit- IV	Image Classification	18 hours

Image Classification: Unsupervised classification – Supervised classification - classification stages – minimum distance to means classifier, Gauss maximum likelihood classifier – classification accuracy

Unit- V	Digital Elevation Model and Data Processing	18 hours

Digital Elevation Model – Satellite stereo image generation – 3D visualization techniques – microwave data processing – hyper spectral data processing.

	Total lecture hours	90

Text Books:

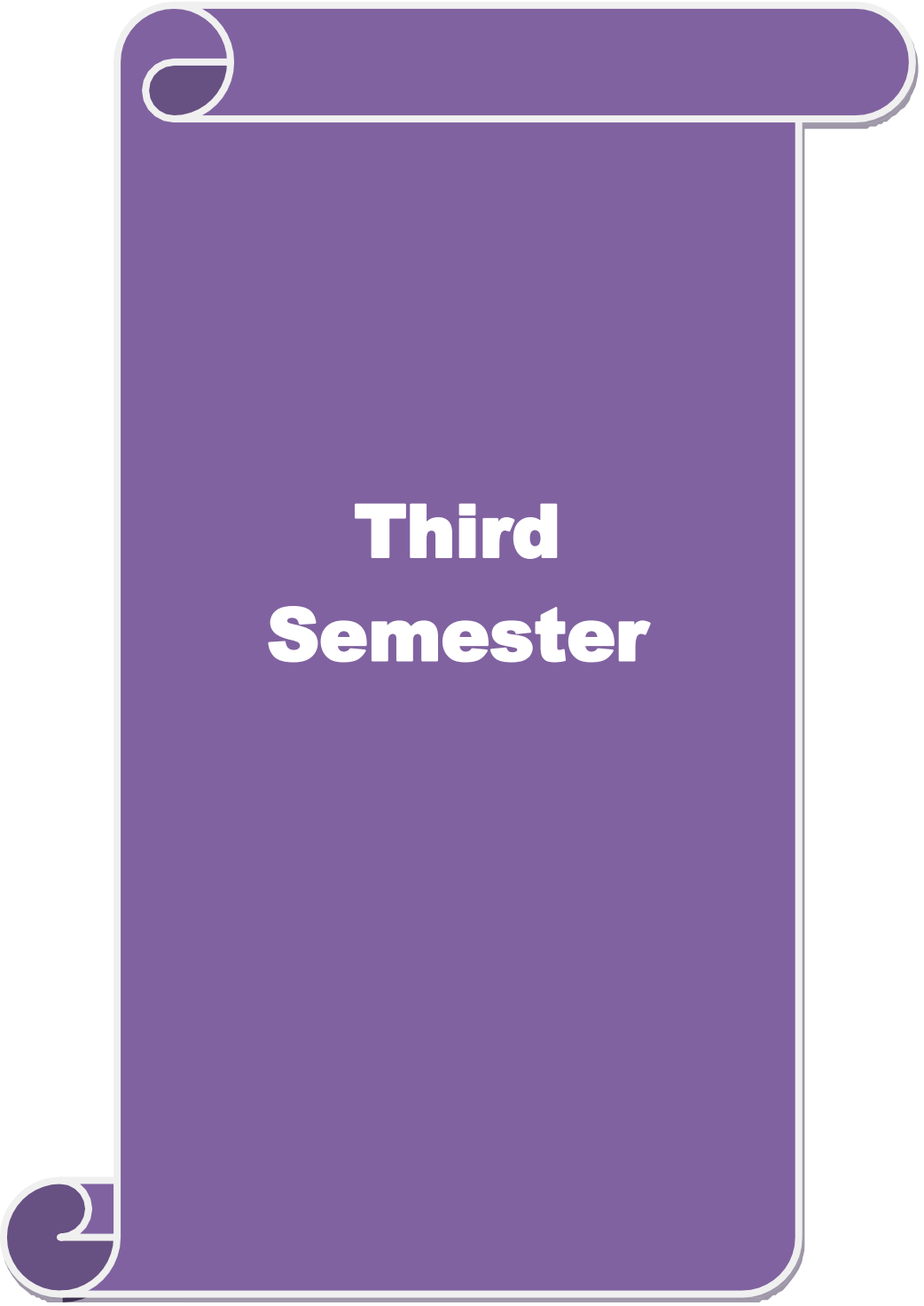
1	Lillesand, T.M., (1994): Remote Sensing and Image Interpretation, John Wiley and Sons, New York.
2	R. C. Gonzalez, R.E. Woods," Digital Image processing", Pearson edition, Inc3/e,2008.
3	A.K. Jain," Fundamentals of Digital Image Processing", PHI,1995

Books For Reference:	
1	Jenson, John R., (1986): Introductory Digital Image Processing, Prentice Hall, New Jersey.
2	Schowengerdt R.A., (1997): Remote Sensing – Models and Methods for Digital Image Processing, Academic Press, Chestnut hill, (U.S.A).
3	R.C. Gonzalez & R.E. Woods; "Digital Image Processing with MATLAB", Prentice Hall, 2003.

Related Online Contents:	
1	https://www.bharathuniv.ac.in/colleges1/downloads/courseware_ece/course_outcome/core_elective_3/BEC007%20-CO-%20DIGITAL%20IMAGE%20PROCESSING.pdf
2	https://www.mmit.edu.in/images/CourseObjectives/E-TC/BE/ETC_BE_SEM-I_DIP.pdf
Course Designed By: A. Suresh	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	L	S	S	S	S	M
CO2	S	S	M	S	S	S	S	M	M	S
CO3	S	M	S	S	L	S	M	S	S	M
CO4	M	S	S	M	S	M	S	S	M	S
CO5	S	M	M	S	L	S	S	M	S	S

S- Strong: M- Medium: L- Low


Third
Semester

Course code	33A	RESEARCH METHODOLOGY IN GEOGRAPHY	L	T	P	C
Core/ Elective/ Supportive		Core-VIII	0	6	0	4
Pre-requisite		To understand the feature problems, analyze in geographical field	Syllabus version		2025 - 2026	

Course Objectives:

To gain up knowledge of a phenomena or to accomplish new experiences into it. Discover the solution of the problems.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Examining the introduction of research, motivation in research, types of research, significance of research, research process and criteria of good research.	K2
CO2	To understand the research problems, selecting research problems, literature review and to study the hypothesis, its types, sources, formation of hypothesis and utility of hypothesis in scientific research.	K1
CO3	To understand the research design, need, features basic principle and developing of research plan, and sampling design and its basic types, steps, characteristics of sampling design.	K3
CO4	Study about type's data and methods of data collection and study the processing and analysis of data using different statistical methods.	K3
CO5	Understand the interpretation and report writing, techniques, precaution of interpretation, layout of research report, types of reports and oral presentation mechanics of writing a research report.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Geographical Research	14 hours

Geographical Research: Objectives – Need - Significance – Types and Methods of Research – Conceptual Models.

Unit- II	Research Planning	14 hours

Research Planning: Selection of the Problem – Hypothesis: Types and Testing - Logic in Research: Facts, Themes, Concepts, Theories and their implications.

Unit- III	Research Design	15 hours

Research Design: Need, Importance and Features – Major concepts – Literature Review – Sampling: Types and Techniques – Data Collection: Methods and Techniques.

Unit- IV	Process of Data	14 hours

Process of Data: Preparation - Editing – Coding – Tabulation – Classification – Statistical Analysis - Maps and Diagrams.

Unit- V	Report Writing	15 hours

Report Writing: Types and Planning - Organization of the Thesis: Preliminaries - Text - Foot notes - References and Bibliography – Appendices - Drafting and Final. evaluation – Preparation of Abstract, Research Papers and Publication - Research Proposals –Role of Information Technology – Plagiarism.

	Total lecture hours	72

Text Books:

1	Research Methodology in Geography Hardcover – 1 January 2014
2	Research Methods in Geography: A Critical Introduction: 7 (Critical Introductions to Geography) Paperback – 13 April 2010 by John Paul Jones III (Editor), Basil Gomez.

Books For Reference:	
1	Research Methodology in Geography, K.L. Narasimha Murthy
2	Research Methodology in Geography: (a Text Book) Front Cover K. L. Narasimha Murthy.

Related Online Contents:	
1	https://www.indeed.com/career-advice/career-development/research-methodology
2	https://gradcoach.com/what-is-research-methodology/
Course Designed By: Dr. Panneerselvam	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	M	S	S	S	S	M	S	S
CO3	S	M	S	S	M	S	M	S	S	M
CO4	S	S	S	M	S	S	S	S	L	S
CO5	S	S	S	S	L	S	M	S	S	M

S- Strong: M- Medium: L- Low

Course code	33B	URBAN GEOGRAPHY	L	T	P	C
Core/ Elective/ Supportive		Core -IX	0	6	0	4
Pre-requisite		To understand the urban development and land functions in cities	Syllabus version		2025 - 2026	

Course Objectives:

Urban studies are based on the study of the urban development of cities. This includes studying the history of city development from an architectural point of view, to the impact of urban design on community development efforts.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Nature and scope of urban geography approaches	K2
CO2	Bases and process of urbanization.	K1
CO3	Urban expansion, Umland periphery [fringe]	K3
CO4	Understand political systems, states, territory, and borders. Understand the basic elements of culture. Understand the types and levels of economic activities. Understand urban structure and development.	K3
CO5	Economic, political and social aspects within cities are also important in urban geography.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Urbanization	15 hours

Nature – Scope and development of Urban Geography – Urbanization factors of Urban growth – world urbanization – urbanization in India.

Unit- II	Urban demography	15 hours

Urban demography – Population density models – age and sex structure – Occupational structure – Economic base – Basic and Non basic function – Functional classification.

Unit- III	Urban land use	14 hours

Urban land use – Types – Models – Social area analysis – CBD delimitation – Urban ecology – Quality of urban life.

Unit- IV	Urban expansion	14 hours

Urban expansion – Vertical and horizontal – urban sprawl – Rural urban fringe – Suburbs – City region – Umland demarcation.

Unit- V	Hierarchy of urban centers	14 hours

Hierarchy of urban centers – rank size rule – Christaller's central place concepts – Urban problems – Slums – Pollution – Water supply, transport planning.

	Total lecture hours	72

Text Books:

1	Urban Geography A Textbook Paperback – 1 January 2008 by R.B. MANDAL (Author)
2	Urban Geography Hardcover – Illustrated, 30 November 2006 by L.N. Verma

Books For Reference:	
1	Northam R.M (1975) Urban Geography, John Wiley Sons, New York.
2	Carter. H. (1972) The study of Urban Geography, Edward Arnold, London.
3	Urban Geography Hardcover – Illustrated, 30 November 2006 by L.N. Verma
4	Misra R.P & K.V. Sundaram (1971) Regional planning and Development, University of Mysore, Mysore.
Related Online Contents:	
1	https://en.wikipedia.org/wiki/Urban_geography
2	https://www.tandfonline.com/toc/rurb20/current
Course Designed By: S. Ravichandran	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	S	S	S	M	S
CO2	M	S	M	S	L	M	S	M	S	M
CO3	S	M	S	S	L	S	L	S	S	M
CO4	M	S	S	M	S	M	S	S	M	S
CO5	S	M	S	S	S	S	M	S	S	S

S- Strong: M- Medium: L- Low

Course code	33C	AGRICULTURAL GEOGRAPHY	L	T	P	C
Core/ Elective/ Supportive		Core-X	0	6	0	4
Pre-requisite		Analyze the spatial variations, distribution and location of agricultural activities on the earth's surface and the factors responsible for them.	Syllabus version		2025 - 2026	

Course Objectives:

Agricultural geography is defined as the study of the geographical and location attributes, patterns, and processes of crop and animal farming, and related subjects such as farm land, farm-associated human geographers, environmental issues, and theoretical works on the location of agricultural activities.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Understand about the introduction to agriculture, nature, scope, significance and Development of agriculture geography, study approaches applied in agriculture.	K2
CO2	Understand the influence of physical, Economic and Technological factors on agriculture patterns.	K1
CO3	To understand the agricultural system its meaning and concept, Whittlesey's classification of agricultural system, types of agricultural, study the types of agricultural in respect of area, salient features and their problems.	K2
CO4	Understand the agricultural regionalization and modes in agricultural geography and their classification of agricultural models and some theories.	K2
CO5	Understand definition and characteristics of arid and semi-arid regions and study about droughts and famines, role of irrigation and dry farming.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Agricultural Systems of the world's	18 hours

Scope and content – Approaches – origin and Development of Agriculture major agricultural Systems of the world's (Whitlessey).

Unit- II	Determinants of agriculture	18 hours

Determinants of agriculture – Physical, Socio, Economic, Institutional and technological determinants; models in agricultural Geography; Von Thunen's model, O.L. of Jonsasson's model.

Unit- III	Agricultural data	18 hours

Agricultural data sources and analysis; sources – types of data – land use survey – sampling and land use data – remote sensing in land use studies.

Unit- IV	land capability classification	18 hours

Rationalization and classification: land capability classification – crop region – concentration and diversification, crop combination regions – Weaver, Doi and Rafiullah methods.

Unit- V	Agricultural productivity	18 hours

Agricultural productivity – Green revolution – Salient features and impact on land use – agricultural regions of India.

	Total lecture hours	90

Text Books:

1	An Introduction to Agricultural Geography Paperback – Import, 5 January 1995 by David Grigg.
2	Systematic Agricultural Geography (English, Paperback, Husain Majid)

Books For Reference:	
1	Husain. M (1979) Agricultural Geography, Inter India publication, New Delhi.
2	Mohammad N. (1981) Perspective Agricultural Geography, Vol 1. Concept Publishing Company, New Delhi.
3	Morgan, W.B. & Munton R.J.C (1971) Agricultural Geography, Methuen, London.
4	Agricultural Geography (Perfect Binding, Dr. Mukesh Mishra)
5	Agricultural Geography 2nd ed. Paperback – 1 January 2021 by Husain Majid.

Related Online Contents:	
1	https://en.wikipedia.org/wiki/Agricultural_geography
2	https://www.studysmarter.co.uk/explanations/human-geography/agricultural-geography/
Course Designed By: Dr. J. Ganesan	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	M	S	M	S	S	M	L	M
CO3	S	M	S	S	S	M	M	S	S	S
CO4	M	S	S	M	S	S	S	S	M	S
CO5	S	S	S	S	L	S	M	S	S	M

S- Strong: M- Medium: L- Low

Course code	33D	POPULATION GEOGRAPHY	L	T	P	C
Core/ Elective/ Supportive		Core-XI	0	6	0	4
Pre-requisite		To understand the Population geography is a division of human geography that focuses on the study of people, their spatial distributions, their characteristics, and their density.	Syllabus version		2025 - 2026	

Course Objectives:

It is the study of the ways in which spatial variations in the distribution, composition, migration, and growth of populations are related to the nature of places.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Examine and understand the various factors responsible for World Population growth and Distribution.	K2
CO2	To understand the fundamental Concepts Related to Population such as density, over, Optimum & under population, fertility, mortality and population for future Perspectives.	K1
CO3	Demography and population studies focus on human populations, especially on births (fertility), deaths (mortality), and movements between territories (migration).	K2
CO4	Employment or Human Power: Population census helps the government to know the rate or level of unemployment in a particular area or country.	K4
CO5	The scope of population education can be divided into demography, determines of population change, consequences of population growth, human sexuality, planning for the future.	K4

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Population Geography	18 hours

Population Geography; Scope and Development of Population Geography – sources of population data and problems.

Unit- II	Population distribution	18 hours

Population distribution; density and growth – theoretical issues; classical and modem theories in population growth – Malthus, Optimum theory, Ricardo and demographic transition world patterns and their determinants; India – population distribution, density and growth profile, concepts of under population and over population.

Unit- III	Population composition	18 hours

Population composition; age and sex; family and households; literacy and education; religion, caste and tribe; rural and urban; urbanization; occupational structure; gender issues; population composition of India.

Unit- IV	Population dynamics	18 hours

Population dynamics; measurements of fertility and mortality. Migration – causes and consequences – national and international patterns.

Unit- V	Population and development	18 hours

Population and development; population policies in developed and less developed countries; Human Development Index and its components; India's population policies; population and environment; implications for future.

	Total lecture hours	90

Text Books:

1	Population Geography Tools and Issues, Fourth Edition k. Bruce new bold.

2	A Geography of Population, World patterns, John Wiley & sons. New York.

Books For Reference:	
1	Beaujeau Garnier. J (1966), Geography of Population, Longman Group, London.
2	B.N. Ghosh (1985), Fundamentals of population geography, sterling publishing, New Delhi.
3	Chandhana, R.C (1986), A Geography of population, Concepts, patterns, Kalyani publishers, New Delhi.

Related Online Contents:	
1	https://en.wikipedia.org/wiki/Population
2	https://en.wikipedia.org/wiki/Population_density
Course Designed By: P. Umasankar	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	M	S	S	S	S	M	S	M
CO3	S	M	S	S	S	S	M	S	S	S
CO4	M	S	S	M	S	M	S	S	L	M
CO5	S	S	M	S	L	S	S	S	S	S

S- Strong: M- Medium: L- Low

Course code	3EA	GIS AND GPS	L	T	P	C
Core/ Elective/ Supportive		Elective-III	0	6	0	4
Pre-requisite		To analyze the maximize the efficiency of decision making and feature planning.	Syllabus version		2025 - 2026	

Course Objectives:

Global Positioning Systems or GPS are used to find the exact location of things.
Geographic Information Systems or GIS are used to record information on to maps. Both GPS and GIS are useful in managing land in the high country.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Improved Communication through the creation of rich maps and hi-tech communication systems, GIS has greatly assisted in improving communication	K2
CO2	Improved Decision Making.	K1
CO3	GPS uses satellites that orbit Earth to send information to GPS receivers that are on the ground. The information helps people determine their location.	K3
CO4	GIS stands for Geographical Information System. GIS is a software program that helps people use the information that is collected from the GPS satellites.	K3
CO5	Geographic information system (GIS) is a computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	GIS	18 hours

Geographic Information System – development – fundamentals – scope – Components – spatial data – attribute data – data structures – data input and Editing – data management – methods of data output.

Unit- II	Spatial entities	18 hours

Spatial entities – raster and vector data models – characteristics – merits and Demerits – compact data structures – linking spatial and attribute data - database management – GIS database application and development.

Unit- III	Data analysis	18 hours

Data analysis: measurements – queries – reclassification – buffering and neighbourhood analysis – overlay analysis – surface and network analysis – spatial modeling. GIS and GPS data integration – basics – latest developments – integration of GIS data and remote data: principles and applications.

Unit- IV	GPS	18 hours

Principles of GPS – GPS segments – satellite constellation – receivers – Measurements – errors and biases – GPS surveying – application of GPS.

Unit- V	GIS and GPS	18 hours

GIS and GPS data integration – basics – latest developments – integration of GIS data and remote data: principles and applications.

	Total lecture hours	90

Text Books:

1	Basic Concept of Remote Sensing, GPS and GIS Paperback – 1 January 2020 by Shivam Pandey (Author)
2	Textbook of Remote Sensing and Geographical Information Systems Paperback – 29 July 2022 by Kali Charan Sahu (Author)

Books For Reference:	
1	Remote Sensing: Principles and Applications Paperback – 1 January 2008 by B C Panda (Author)
2	Physical Principles of Remote Sensing Hardcover – Illustrated, 29 November 2012 by W. G. Rees (Author)
3	Basics Of Remote Sensing And Gis Paperback – 1 January 2016 by S. Kumar (Author)

Related Online Contents:	
1	https://en.wikipedia.org/wiki/Geographic_information_system
2	https://en.wikipedia.org/wiki/Global_Positioning_System
Course Designed By: A. Suresh	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	M	S	S	S	S	M	S	M
CO3	S	M	S	S	S	S	M	S	S	S
CO4	M	S	S	M	S	M	S	S	L	M
CO5	S	S	M	S	L	S	S	S	S	S

S- Strong: M- Medium: L- Low

Course code		HEALTH AND WELLNESS	L	T	P	C
Core/ Elective/ Supportive		Supportive	1	0	0	1
Pre-requisite			Syllabus version		2025 - 2026	

Course Objectives:

To teaching about the elements of physical, mental, emotional, social, intellectual, environmental well-being which are essential for overall development of an individual.
To address the dangers of substance abuse and online risks to promote emotional and mental health.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Demonstrate proficiency in sports training and physical fitness practices.	K2
CO2	Improve their mental and emotional well-being, fostering a positive outlook on health and life.	K3
CO3	Develop competence and commitment as professionals in the field of health and wellness.	K4
CO4	Create awareness on drug addiction and its ill effects.	K4

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Introduction to Holistic Well-being	3 hours

Introduction to Holistic Well-being – Wellness Wheel Exercise – Breaking Bad Habits – Physical Well-being: Fitness – Nutrition, Yoga, Meditation, Brain health, Heally lungs, Hygiene and Grooming.

Unit- II	Emotional and Social Well-being	3 hours

Emotional Well-being: Stress Management, Importance of saying 'No', Body positivity and self-acceptance – Social Well-being: Practicing Gratitude, Cultivating Kindness and Compassion, Practicing Forgiveness, Celebrating Differences, Digital Detox.

Unit- III	Intellectual and Environmental Well-being	3 hours

Intellectual Well-being: Being a lifelong learner, Digital literacy, Transfer of Learning – Environmental well-being: Definition – Factors – People's behavior, crime, pollution, political activities, infra-structure, and family situation– Mental well-being: Self-reflection, Meditation Practices.

Unit- IV	Developing Life Skills	3 hours

Situational Awareness: Being Street Smart (General first aid procedure, CPR procedure, handling emergency situations like fire, flood etc.), Digital Awareness: Cyber security, Digital privacy and Fraud detection.

Unit- V	Contemporary Issues	3 hours

Understanding Addiction: Impact of substance abuse; Alcohol, Tobacco and Drugs – Adverse health conditions, Social isolation, Ruined future, Hidden financial loss and damaging the family reputation.

	Total lecture hours	15

Text Books:

1	Park's Text books of preventive and social medicine.
2	Food and Nutrition by L. Swaminathan.
3	

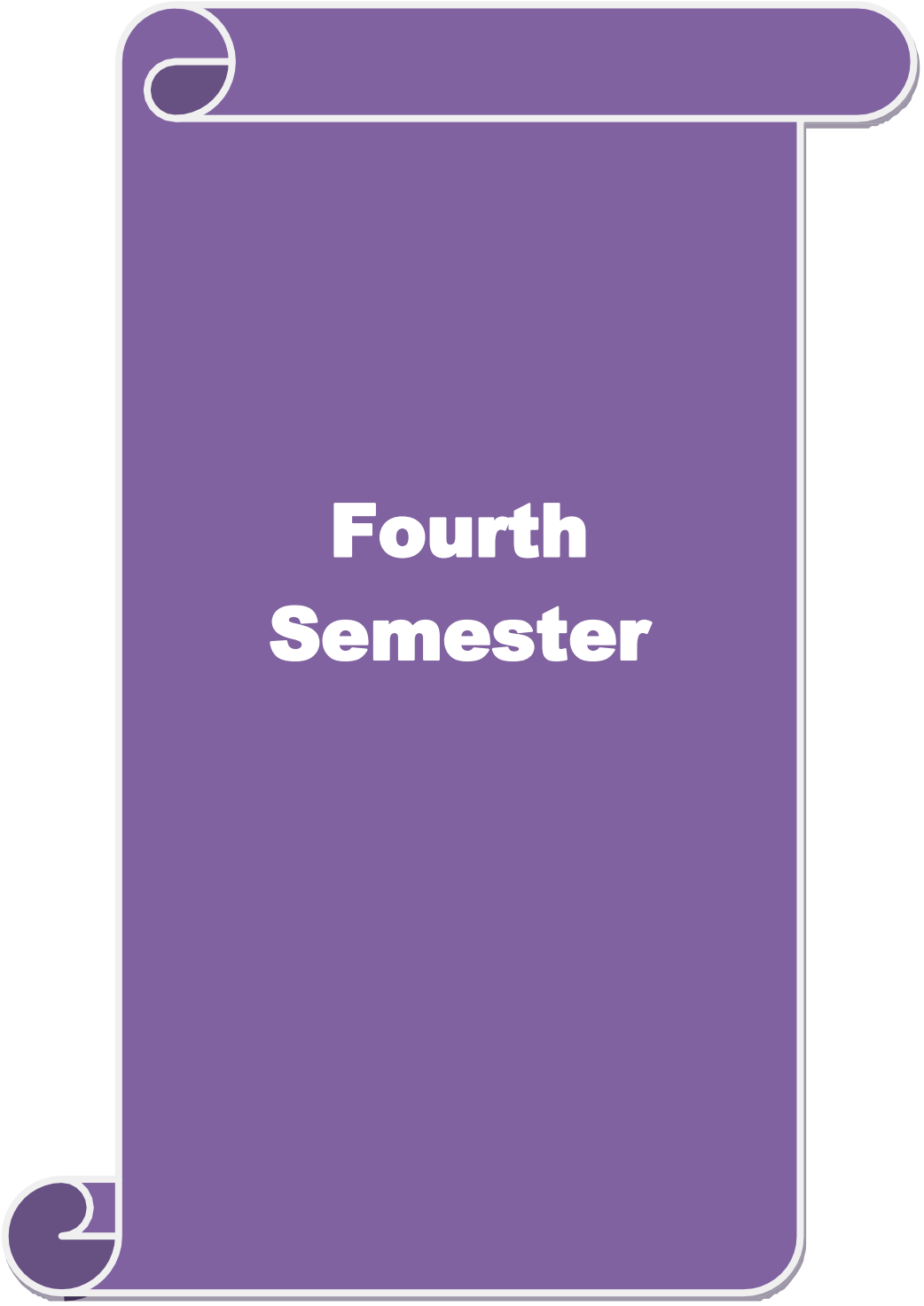
Books For Reference:

1	Dietics by Srilakshmi.

Related Online Contents:	
1	https://www.youtube.com/watch?v=_5F9yTs7Al0
2	https://www.youtube.com/playlist?list=PLwdnzlV3ogoVhUuHDwFHzCj325BtEGZei
3	https://www.edx.org/learn/healthcare
4	https://open.umn.edu/opentextbooks/textbooks/662
Course Designed By: Dr. P. Thangavelu & A. Suresh	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	M	M	M	L
CO2	S	S	S	S	M	M	M	L	L	L
CO3	S	M	S	S	S	L	M	M	M	L
CO4	S	S	S	S	S	S	L	S	M	L

S- Strong: M- Medium: L- Low


Fourth
Semester

Course code	43A	QUANTITATIVE TECHNIQUES IN GEOGRAPHY	L	T	P	C
Core/ Elective/ Supportive		Core-XII	0	6	0	4
Pre-requisite		The purpose of quantitative research is to attain greater knowledge and understanding of the social world.	Syllabus version		2025 - 2026	

Course Objectives:

Quantitative Methods in Geography will be composed of lectures, discussions and exercises and is designed as an undergraduate level introduction to spatial analysis and the application of statistical methods in a spatial context.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	The quantitative revolution made geography closer to science as it introduced mathematical tools in geography that developed objectivity and reduce the over descriptive.	K2
CO2	Those techniques which provide the decision makes a systematic and powerful means of analysis, based on quantitative data.	K1
CO3	All the techniques are firmly based on empirical observations and are readily verifiable.	K3
CO4	They help in reducing a multitude of observations to a manageable number of factors.	K3
CO5	They allow the formulation of structured ideas and theories which can be tested under the assumed conditions.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Quantification	18 hours

Need for Quantification – Quantitative revolution in Geography – Geographical data – Spatial data and non-Spatial data – types, sources and classification.

Unit- II	Sampling techniques	18 hours

Sampling techniques: Definition – types – size of sampling – Merits and Demerits – uses in Geographical analysis – field techniques – local Geography.

Unit- III	Primary data	18 hours

Primary data – methods of collection – problems – secondary data – sources – problems. Data Analysis: tabulation – frequency distribution – curves.

Unit- IV	Central tendency	18 hours

Measures of central tendency – measures of location – Centro graphic measures – Standard distance – Dispersion – nearest neighbor analysis – analysis of variance.

Unit- V	Correlation	18 hours

Analysis of relationship: Simple correlation – Pearson's product moment – correlation – Rank correlation – Scatter diagram – regression – residual mapping. Hypothesis – testing of hypothesis – T test, F test, Chi square.

	Total lecture hours	90

Text Books:	
1	Quantitative Techniques in Geography: An Introduction Paperback – 9 November 1978 by R. Hammond (Author), Patrick S. McCullagh (Author)
2	Quantitative Techniques In Geography: An Introduction Robert Hammond, Patrick McCullagh

Books For Reference:	
1	Quantitative Geography Techniques And Presentations 1st Edition (Paperback, Sarkar A)
2	Hammond, R. & McCullagh, Patrick S., 1978. "Quantitative Techniques in Geography: An Introduction," OUP Catalogue, Oxford University Press, edition 2.
Related Online Contents:	
1	https://www.rawatbooks.com/geography/quantitative-methods-in-geography
2	https://orca.cardiff.ac.uk/59957/1/report-130906041556-.pdf
Course Designed By: Dr. Sunilkumar	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	S	S	S	S	S	S	S	S	M
CO2	S	S	M	S	M	S	S	M	S	S
CO3	S	M	S	S	S	S	M	S	S	S
CO4	M	S	S	M	L	M	S	S	M	M
CO5	S	S	S	S	S	S	S	M	S	L

S- Strong: M- Medium: L- Low

Course code	43B	DISASTERS MITIGATION AND MANAGEMENT	L	T	P	C
Core/ Elective/ Supportive		Core-XIII	0	6	0	4
Pre-requisite		The knowledge and understanding of the disaster phenomenon.	Syllabus version		2025 - 2026	

Course Objectives:

Disaster management aims to reduce, or avoid the potential losses from hazards, assure prompt and appropriate assistance to victims of disaster, and achieve rapid and effective recovery.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Reduce, or avoid, losses from hazards	K2
CO2	Assure prompt assistance to victims	K1
CO3	Achieve rapid and effective recovery	K2
CO4	Disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore, to the achievement of sustainable development.	K2
CO5	Prevention. Actions taken to avoid an incident, Mitigation, Preparedness, Response. Recovery.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Disasters	18 hours

Disasters – Meaning and Types – Need for study – Natural Hazards - Risk – vulnerability. Disaster Management- Preparing for natural disasters – role of government agencies, NGOs and individuals.

Unit- II	Seismic zones	18 hours

Seismic zones regions of the world. Impact of Earthquakes and Tsunamis. Earthquake mitigation and management Volcanic zones of the world. Impacts of volcanic activity. Disaster management in volcanic zones.

Unit- III	Mass movements	18 hours

Mass movements- mitigation and management Global Warming- climate change – Storm prone regions of the world - Impact of Storms - disaster management during storms. Floods - Flood prone regions of the world - Mitigation and management of floods.

Unit- IV	Global Warming	18 hours

Global Warming – climate change - Drought and Famine prone regions of the world- Mitigation and management of drought and famine Forest Fire – its mitigation and management.

Unit- V	Manmade disasters	18 hours

Manmade disasters - types - Impact of Man-made disasters. Management and mitigation of manmade disasters.

	Total lecture hours	90

Text Books:

1	Natural Disasters by Partick L. Abbott., WCB WM.C. Brown Publishers.

Books For Reference:	
1	The Changing Earth-Exploring Geology & Evolution by James S. Monore &Reed Wicander BROOKS / COLE.
2	Natural Disasters: A guide for Relief Workers (1980) JAC Adhyatma Sadhana Kendra, Mehrauli, New Delhi – 110 030.
3	Disaster Planning: The Preservation of Life and Property, Harold D. Faster (1980) Springer Verlag, New York.
4	Disasters Management, Shailendra K. Singh, Subash C. Kundu & Shobu Singh (1998) Mittal Publications, New Delhi.
5	Natural Disaster Reduction, Girish K. Mishra & Mathur. G.C. (1993), Reliance Publishing House, New Delhi.

Related Online Contents:	
1	www.gisdevelopment.net
2	https://en.wikipedia.org/wiki/Disaster
Course Designed By: S. Ravichandran	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	S	S	S	M	S
CO2	M	S	M	S	S	S	S	M	S	S
CO3	S	M	S	S	M	S	M	S	S	M
CO4	M	S	S	M	S	M	S	S	M	S
CO5	S	M	S	S	L	S	S	M	S	S

S- Strong: M- Medium: L- Low

Course code	43C	REGIONAL PLANNING AND DEVELOPMENT	L	T	P	C
Core/ Elective/ Supportive		Core-XIV	0	6	0	4
Pre-requisite		To understand the urban planning development	Syllabus version		2025 - 2026	

Course Objectives:

Regional planning may be defined as the integrated management of the economic, social, and physical resources of a spatially bounded area.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Regional planning also helps in reducing the conflicts and competition for resources between cities in a region.	K2
CO2	Planning and development of buildings, parks, streets, understanding the use of resources, land, and environment.	K1
CO3	Strategic thinking, analysis, architecture, designing are the areas of strengths that are developed.	K3
CO4	It seeks the development of all sectors of economy along with advancement of all segments of society.	K3
CO5	Effective and efficient delivery of urban services to raise the quality to living of people residing in urban areas.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Regional Planning	18 hours

Geography and Regional Planning: Basic concepts – Geographic space and regions. – Concept of regions – growth pole and growth center – regional units – types of regions – goals and objectives of regional planning process – inter disciplinary nature of regional planning Nationalization and sectionalism.

Unit- II	Approaches	18 hours

Approaches to regional planning analysis: Systems concept; Geographic matrix – Spatio-temporal dimensions – grouping of dimensions in regional analysis – regional science – Methods of Indian regional problems.

Unit- III	Planning in India	18 hours

Planning in India; Historical development – appraisal of five-year planning and annual plans – dimensions – grouping of dimensions in regional analysis – regional imbalances – development program; command area, drought prone, metropolitan, river valley, tribal and hill area.

Unit- IV	Regional planning in Tamil Nadu	18 hours

Regional planning in Tamil Nadu: Evaluation of regional planning – planning regions – backward area development – Metropolitan, rural planning – local planning authorities – 73rd and 74th amendments of constitution of India – powers and functions of Nagar Panchayat, Municipal council and Municipal Corporation.

Unit- V	Town planning	18 hours

Town planning: Basic concepts of town planning need of town planning – functions of town planning – town planning activities in Tamil Nadu.

	Total lecture hours	90

Text Books:

1	Regional Planning in India Paperback – 1 March 2012
2	City and Regional Planning by Richard Le Gates copyright Year 2022

Books For Reference:	
1	Misra R.P. (1971) Regional Planning: Concepts Techniques. Politics and case studies. University Mysore, Mysore.
2	Misra. R.P, Sundram, K.V and V.L.S Prakasa Rao (1974); Regional development in India, Vikas publishing House, New Delhi.
3	Prakasa Rao V.L.S (1963) ; Regional Planning, Asia Publishing House, Kolkata.

Related Online Contents:	
1	https://gacbe.ac.in/pdf/ematerial/18MAG41C-U1.pdf
2	http://www.dspmuranchi.ac.in/pdf/Blog/Regional-Planning-All_Part-Conc.pdf
Course Designed By: Dr. J. Ganesan	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	M
CO2	S	S	M	S	S	S	S	M	M	S
CO3	S	M	S	S	S	S	M	S	S	L
CO4	M	S	M	M	S	M	S	S	M	S
CO5	S	M	S	S	L	S	S	S	S	M

S- Strong: M- Medium: L- Low

Course code	43P	METHODS OF DATA ANALYSIS	L	T	P	C
Core/ Elective/ Supportive		CORE PRACTICAL -III	0	0	6	4
Pre-requisite		To analyses the image and air photos	Syllabus version		2025 - 2026	

Course Objectives:

Satellites looking toward Earth provide information about clouds, oceans, land and ice. They also measure gases in the atmosphere.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	Satellite imagery and elevation data at 30 M resolution are readily available for most of the Earth via Landsat and other sources.	K2
CO2	Satellite images are one of the most powerful and important tools we have for monitoring the earth.	K1
CO3	They track the physical environment (water, air, land, vegetation) and the changing human footprint across the globe.	K3
CO4	How is satellite imagery used for development? Satellite image data is highly useful for creating or updating base maps and detecting major changes in urban land cover and land use	K3
CO5	satellites images can help you monitor what is happening in any location, assess environmental impact, analyze historical data and report on what is happening today,	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Spatial Analysis	18 hours

Spatial Analysis – nearest neighbor analysis – Centro graphic analysis mean center – weighted mean – Median center – Standard distance.

Unit- II	Transport network analysis	18 hours

Transport network analysis – Topology – Connectivity – alpha – beta – gamma indices – accessibility measures – shortest path and binary index and detour index.

Unit- III	Aerial photo interpretation	18 hours

Aerial photo interpretation: Stereovision test – Marginal information – Interpretation of aerial photos.

Unit- IV	Satellite image interpretation	18 hours

Satellite image interpretation: Marginal information – Visual interpretation imagery.

Unit- V	Field trip	18 hours
	Field trip for one week (Minimum).	
	Total lecture hours	90

Text Books:

1	Monhkose & Wilknson (1976) Maps and Diagrams Mathew London.
2	Lillesand T.M & R.W. Kifer (1986) Remote Sensing and Image Interpretation, John Wiley Sons, New York.
3	Sabins F.F. Jr. (1986) Principle of Remote Sensing, English books society Long Man.

Books For Reference:

1	Peter Toyne Techniques in human Geography
2	Hammond R. An introduction Quantitative technique in Geography, McGraw Hill, Company, London.

Related Online Contents:	
1	https://www.satimagingcorp.com/applications/engineering-and-construction/urban-and-land-development/
2	https://en.wikipedia.org/wiki/Transport_network_analysis
Course Designed By: Dr. Sunilkumar	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	M	S	S	S	S	M
CO2	S	S	M	S	S	M	L	M	S	S
CO3	S	M	S	S	L	S	M	S	S	M
CO4	M	S	S	M	S	S	S	S	M	S
CO5	S	S	M	S	M	S	S	M	S	S

S- Strong: M- Medium: L- Low

Course code	4EP	PRACTICALS IN GEOINFORMATICS	L	T	P	C
Core/ Elective/ Supportive		Elective Practical - IV	0	0	6	4
Pre-requisite		Mapping knowledge of GIS	Syllabus version		2025 - 2026	

Course Objectives:

Geoinformatics is a branch of science that deals with issues of geosciences, cartography, geography and other streams related to science, engineering and technology.

Course Outcomes:

After the completion of course, the students will have ability to:

CO1	The primary job of geographic information systems (GIS) professionals is to use appropriate technology to map the digital data that has been obtained and then reduce information out of the compiled data.	K2
CO2	The primary requirement of this job is to analyse the data that is available.	K1
CO3	This is one sector that has a tremendous scope of employment both in the government sector as well as that in the private.	K3
CO4	The typical office setting of a GIS expert involves working on multiple computers at the same time.	K3
CO5	Broadly speaking, there are a very few things in the modern world that are not under the reigns of geoinformatics.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit- I	Computer mapping	18 hours

Basics of computer mapping and GIS: digitization and scanning – editing – import and export – registration.

Unit- II	Stereoscopic vision test	18 hours

Stereoscopic vision test – use of pocket stereoscope and mirror stereoscope – visual interpretation of aerial photographs – measurement of height using Parallax bar.

Unit- III	Marginal information	18 hours

Marginal information of satellite imagery – visual interpretation – image processing techniques – image enhancement techniques – classification techniques.

Unit- IV	GIS data creation tools and techniques	18 hours

GIS data creation tools and techniques: building polygons – topology and Attribute data- creation of base map – raster data layers – vector data layers – data analysis – overlay analysis – buffering and network analysis.

Unit- V	Surveying with GPS	18 hours

Surveying with GPS – lines, points and polygons – editing – geo-referencing - GIS and GPS data integration.

	Total lecture hours	90

Text Books:

1	Fundamentals of Geographic Information Systems" by Michael N DeMers.
2	The Fundamentals of HumanFactorsDesign for Volunteered Geographic Information (Springer Briefs in Geography)" by Christopher J Parker.
3	Map Framework: A Formal Model of Maps as a Fundamental Data Type in Information Systems" by Mark McKenney and Markus Schneider.
4	

Books For Reference:	
1	Fundamentals of Geographic Information Systems" by Michael N Demers.
2	Fundamentals of Geographic Information System" by Rabi N Sahoo and Debashis Chakraborty.
3	Fundamentals of Remote Sensing" by George Joseph.
4	Geographic Information Systems (GIS) for Disaster Management" by Brian Tomaszewski.
Related Online Contents:	
1	https://en.wikipedia.org/wiki/Geoinformatics
2	https://en.wikipedia.org/wiki/Geographic_information_system
Course Designed By: Dr. J Ganesan	

Mapping with Program Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	M	S	S	S	S	M
CO2	S	S	M	S	S	M	L	M	S	S
CO3	S	M	S	S	L	S	M	S	S	M
CO4	M	S	S	M	S	S	S	S	M	S
CO5	S	S	M	S	M	S	S	M	S	S