

PG DEPARTMENT OF GEOGRAPHY

M.Sc., Geography Programme

Choice Based Credit System and Outcome Based Education
Course Structure and Course Work Manual

For the candidates admitted during 2022 - 2023 and onwards



Kunthavai Naacchiyaar Government Arts College for Women (Autonomous)

Re-Accredited by NAAC with 'B' Grade

Thanjavur, Tamil Nadu, India - 613 007

Affiliated to Bharathidasan University, Tiruchirappalli

PG DEPARTMENT OF GEOGRAPHY

VISION

To Impart Quality Education in Geography to Rural and Economically Weaker Students with Professional Competence and Confidence.

MISSION

- ◆ To provide excellent teaching-learning environment with its focus on progressing education using latest technology.
- ◆ To enhance students to acquire the core knowledge of the syllabus.
- ◆ To encourage students to develop analytical and logical thinking.
- ◆ To graduate qualified students with skills and employability.
- ◆ To inculcate ethical and moral values.

PROGRAMME OUTCOME (PO) - M.Sc., GEOGRAPHY

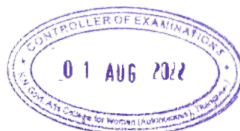
After completing the M.Sc., Programme the students will be able to

- PO.1 Demonstrate the knowledge of concepts, theories and laws to understand the physical world and human society.
- PO.2 Evaluate, the past events influenced physical and human environment at local and global level.
- PO.3 Understand human-environment and nature-society interactions as well as various global environmental challenges.
- PO.4 Appreciate and interpret topographic sheet, aerial photographs and remote sensing images.
- PO.5 Apply the analytical skills obtained in practical geography to address real world problems.
- PO.6 Acquire the ability in handling geospatial tools and techniques.
- PO.7 Conduct independent research in their field of interest with ethics.
- PO.8 Present the research outcome in both written and oral form.
- PO.9 Understand how to achieve Sustainable Development Goals (SDGs)
- PO.10 Work as Cartographer, Researcher, Teacher/Professor, GIS specialist, Climatologist, Town / Regional planner and Surveyor.



Kunthavai Naacchiyaar Govt. Arts College for Women (Autonomous), Thanjavur - 7.
M.Sc. Geography Course Structure under CBCS
(For the candidates admitted from the academic year 2022 - 2023 onwards)

Sem.	Course	CODE	Title of the Paper	Inst. Hrs.	Cre.	Exam. Hrs.	Marks		Total
							Int.	Ext.	
I	CC 1	22KP1G01	Principles of Geomorphology	6	5	3	25	75	100
	CC 2	22KP1G02	Principles of Climatology	6	5	3	25	75	100
	CC 3	22KP1G03	Oceanography and Hydrology	6	5	3	25	75	100
	CC 4 (P)	22KP1G04P	Lab I -Terrain Mapping and Climatic Data Analysis	6	4	3	40	60	100
	MBE 1	22KP1GELG1:1	Advanced Surveying	6	4	3	25	75	100
		22KP1GELG1:2	Disaster Management						
				30	23				500
II	CC 5	22KP2G05	Geographical Thought	6	5	3	25	75	100
	CC 6	22KP2G06	Geoinformatics	6	5	3	25	75	100
	CC 7	22KP2G07	Geography of India	7	5	3	25	75	100
	CC 8 (P)	22KP2G08P	Lab II: Map Appreciation and Interpretation	7	4	3	40	60	100
	NME 1	22KP2GEL01	Environmental Geography	4	3	3	25	75	100
	ECC 1	22KP2ECCG1:1	Water and Soil Resource Management						
		22KP2ECCG1:2	MOOC (Value Added)						
	ECC 2	22KP2ECCG2	Add on Course		4				
				30	22				500
III	CC 9	22KP3G09	Research Methodology in Geography	7	5	3	25	75	100
	CC 10	22KP3G10	Urban Geography	7	5	3	25	75	100
	CC11 (P)	22KP3G11P	Lab III : Geospatial Techniques and Applications	12	5	3	40	60	100
	MBE 2	22KP3GELG2:1	Internship*		4	-	50	50	100
		22KP3GELG2:2	Internal Internship / Field work *						
	NME 2	22KP3GEL02	Geography of Tourism	4	3	-	25	75	100
	ECC 3	22KP3ECCG3:1	Geography of Social Wellbeing (Value Added)	-	3	3	-	-	100
22KP3ECCG3:2		MOOC (Value Added)							
				30	22				500
IV	CC 12	22KP4G12	Regional Planning	6	5	3	25	75	100
	CC 13	22KP4G13	Biogeography	6	5	3	25	75	100
	CC14	22KP4G14P	Lab IV: Data Analysis in Geography	6	4	3	40	60	100
	MBE 3	22KP4GELG3:1	Agricultural Geography	6	4	3	25	75	100
		22KP4GELG3:2	Population Geography						
	Project	22KP4G15PW	Project work	6	5		-	100	100
				30	23				500
* For 4 weeks started during I year summer vacation (Apr-May) & Completed before the commencement of III Semester				120	90				2000



Signature

SEM I	CC I	PRINCIPLES OF GEOMORPHOLOGY	CODE 22KP1G01	Ins.Hrs. 6	Credits 5
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Course Objectives:

*To introduce the concepts in Geomorphology; to understand the earth and its dynamics
To assist in problem solving; helps multidisciplinary panels in decision making*

Course Outcomes: After the completion of this course, students should be able to

COs	STATEMENTS
CO1	Explain the definition, key concepts of Geomorphology, age of earth and tectonic plates.
CO2	Analyze the different landscape evolution theories
CO3	Discuss the endogenetic forces like volcanoes and earthquakes that work within the earth's interior and their impacts on man.
CO4	Describe the exogenetic processes as a landform shaping factor over the earth's surface.
CO5	Formulate the applications of geomorphology in fieldwork and exploration.

UNIT I: Introduction to Geomorphology: Definition, Nature, Scope, Branches - Key Concepts - Geological Time Scale - Determination of Ages: Relative and Absolute - Trends in Geomorphology.

UNIT II: Theoretical Geomorphology: Continental Drift - Geosynclinal Orogen, Plate Tectonic: Plate margins and types - Sea Floor Spreading and Magnetism- Concept of Slope development - Elements of Slope: Theories of Slope development.

UNIT III: Earth Movements: Endogenetic Forces: Diastrophic movements, Types, Intrusive and Extrusive Landforms, Global Volcanic Belt; Global Seismic Zones.

UNIT IV: Exogenetic Forces: Denudation: Weathering and Mass movement, Agents and Landforms: Fluvial, Glacial, Aeolian, Coastal and Karst - Cycle of Erosion by W.M.Davis, W.Penck – Pediplanation by L.C.King.

UNIT V: Applications of Geomorphology: Mineral exploration, placer mining, engineering projects, watershed management.

Current contour (Not for the semester exam): Tetrahedral hypothesis - Springs and Wells – Types of Islands & Coasts – NMDC, ONGC, National Geomorphology and Lineament Mapping by ISRO & GSI.

References:

1. Dayal, P. (1990). *A Text Book of Geomorphology*. Patna: Shukla Book Depot.
2. Hussain, M. E. (1994). *Geomorphology, Perspective in Physical Geography Series*. New Delhi: Anmol Publications Pvt.Ltd.,.
3. Thornbury, W. D. (1958). *Principles of Geomorphology*. London: John Wiley and sons.
4. Singh, S. (2002). *Geomorphology*. Allahabad: Prayag Pustak Bavan.
5. Dasgupta, A., & Kapoor, A. N. (1988). *Principles of Physical Geography*. Ram Nagar New Delhi: S.Chand.

CO-PO Mapping for Principles Of Geomorphology CODE: 22KP1G01

CO/PO	1	2	3	4	5	6	7	8	9	10
1	3	-	-	-	-	-	-	-	-	-
2	-	3	-	-	-	-	-	-	-	-
3	-	-	3	-	-	-	-	-	-	-
4	-	3	-	3	-	-	-	-	-	-
5	-	-	-	-	-	3	-	-	-	3

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM I	CC 2	PRINCIPLES OF CLIMATOLOGY	CODE 22KP1G02	Ins. Hrs 6	Credits 5
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Course Objectives:

To enrich the students in the field of climatology,
To recognize the system of climatic elements, area of applications and climate change.

Outcomes: On completing this course students will be able to

CO	STATEMENT
1	Define the subject with the significance of atmosphere and temperature parameters
2	Recognize spatial and temporal pattern of atmospheric pressure and wind system.
3	Distinguish forms of air moisture, process of precipitation and depressions.
4	Elaborate system of climatic classification and applied aspects of the subject.
5	Interpret cause and effects of climatic change and organizations of interest. .

Unit 1: Nature, scope and trends of climatology – Atmosphere: Origin, composition and structure – Insolation, processes of heat energy transfer and heat budget – Distribution of temperature: horizontal and vertical.

Unit 2: Atmospheric pressure and winds: Pressure gradient, vertical, horizontal variation and global pressure pattern – Winds: forces, gradient and geostrophic winds – General circulation, Primary, secondary and tertiary winds – Monsoon and jet stream: Mechanism, characteristics and significance.

Unit 3: Humidity, Evaporation and Precipitation: Factors, formation and Types - Clouds: stratification and weather significance - Air masses and Fronts: source regions, classification and significances – Atmospheric equilibrium and stability - Tropical and extra tropical cyclones: Development, morphology and intensity categorization.

Unit 4: Climatic classification methods - Schemes of Thornthwaite, Trewartha and VPS & ARS - Applied Climatology: Methods and techniques of weather forecasting - Agricultural meteorology and Crop calendar – Urban and rural climate - Human comfort Zone.

Unit 5: Paleoclimate and Climatic Change: Variables, indicators, impacts and vulnerability - Mitigation and adaptation - Role of UNEP, EU, WMO and IMD - Regional Impacts – Climate negotiations - Developed and developing nations.

Current contour (Not for Examination): SST, Teleconnections, Madden-Julian Oscillation, cyclone models and naming, weather sensors and satellites, climate tips, 'F' gases and GWP,

References:

1. Gupta, K.R. (2010). *Climate change (vol.1 & 2)*. Atlantic Publication.
2. Howard J. Critchfield (1995). *General Climatology*, New Delhi: Prentice Hall of India Pvt. Ltd., Keith Smith. (1988). *Applied Climatology*, New York: Macro Hill Pub.
3. Lal, D.S. (1998). *Climatology*, Allahabad: Chaitanya Publishing House.
4. Roger G. Berry & Richard J. Chorley (1998). *Atmosphere, Weather and Climate*, Routledge London & New York.
5. Strahler, A. H. and Strahler, A. N. (2001). *Modern Physical Geography*, John Wiley and Sons, Inc.
6. Thornthwaite C.W. (1948). *An Approach toward a Rational Classification of Climate*. Geography Review.

7. Trewartha, G.T. (1954). *An Introduction to Climate*, McGraw-Hill.
https://ec.europa.eu/clima/index_en
<https://www.unep.org/about-un-environment/funding-and-partnerships/european-commission>

CO-PO Mapping for Principles Of Climatology CODE: 22KP1G02

CO/PO	1	2	3	4	5	6	7	8	9	10
1	3	1	2	-	1	-	2	2	1	1
2	-	-	3	-	-	-	-	3	3	2
3	1	-	2	-	-	-	-	3	1	2
4	1	1	2	-	1	-	2	3	2	3
5	1	2	2	-	2	3	2	2	3	-

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM I	CC 3	OCEANOGRAPHY AND HYDROLOGY	CODE 22KP1G03	Ins.Hrs 6	Credits 5
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Course Objectives:

To unfold the secrets of oceans and render a thorough knowledge on the physical and chemical properties of oceans, Hydrological cycles and sub cycles.

To acknowledge about marine resources and promote research and management skills.

Course Outcomes: After the completion of this course, students should be able to

COs	STATEMENTS
CO1	Understand the origin of ocean basins, major relief features of oceans and different zones on ocean surface.
CO2	Differentiate and classify ocean waves, currents and tides.
CO3	Discover the marine resources and involve in research programmes.
CO4	Understand about hydrological cycle, sub cycle, elements, ground water hydrology and the human interference.
CO5	Validate the hydrological units with different approaches.

Unit I: Origin and arrangements of the Ocean basins: Tetrahedral hypothesis – Hypsometry - Major relief features of Pacific, Atlantic and Indian Ocean - Maritime zones: Territorial sea, Exclusive Economic Zone and High Sea.

Unit II: Physical Property of the sea water: Temperature, Salinity and Density - Horizontal and vertical distribution – Controlling factors – Movements of ocean water: Ocean waves –Ocean currents –Currents of Pacific, Atlantic and Indian oceans–Tides.

Unit III: Marine Resources: Biotic, Abiotic and Commercial - Conservation - Coral Reefs – Conditions of growth – Types - Coral reefs in India –Marine Deposits- Ocean Research Programmes in India: ICMAM, COMAPS and IARP – Mangrove nodules – Shale gas – Placer deposits – Coastal management – Coastal reference zone.

Unit IV: Hydrology: Hydrological cycle and sub cycles – Elements and significance - Water Balance - Ground water Hydrology: Aquifer types –Occurrences, Recharge – Water quality - – Human impact on hydrological cycle.

Unit V: Surface water Hydrological units: Delineation, Hierarchy and Characterization - Watershed Management and Approaches: Physical, Social and integrated - Lakes - Types, Conservation – Water level - Soil erosion and Land use Planning.

Current Contour (Not for the Examination): *Marine farming - Ocean ranching and manufactured water -Water quality standards (Indian) -Watershed Prioritization - Groundwater Potential mapping.*

References:

1. Rahgunath, H. (1997). Hydrology- Principles, analysis, Design. New Delhi: New Age International Pvt. Ltd.
2. Savindra, S. (2002). Physical Geography. Allahabad: Prayag Pustak Bavan.
3. Sharma, R., & Vital, M. (1995). Oceanography for Geographers. Allahabad: Chaitanya Publishing House.

4. Todd, D.(1959). Ground Water Hydrology.New York: John Wiley and Sons.

5. Thurnman H.B., (1984). Introductory Oceanography. New York: Charles Webber Merrill Publishers.

CO-PO Mapping for Oceanography and Hydrology

CODE: 22KP1G03

CO/PO	1	2	3	4	5	6	7	8	9	10
1	1	3	-	-	-	-	-	-	-	-
2	1	3	-	-	-	-	-	-	-	-
3	-	-	2	-	1	-	1	-	-	1
4	3	-	1	-	-	-	-	-	-	-
5	2	-	-	-	1	1	-	-	-	2

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEMI I	CC4 (P)	Lab I Terrain Mapping and Climatic Data Analysis	CODE 22KP1G04P	Ins.Hrs 6	Credits 4
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Course Objectives:

To learn and apply various techniques of terrain analysis

To comprehend different methods of climatic data analysis

Course Outcomes: *Upon completion of the course, students will be able to*

COs	Statements
CO1	Analyze the terrain with respect to gradient and visibility
CO2	Generate slope maps and identify the stage of erosion
CO3	Find out different morphometric parameters of a given watershed
CO4	Apply various techniques to analyze rainfall and temperature data
CO5	Able to prepare water balance and aridity index map

Unit I

- 1.1 Gradient Analysis
- 1.2 Profiles
- 1.3 Intervisibility
- 1.4 Thalweg

Unit II

- 2.1 Slope Analysis: Wentworth method
- 2.2 Relative Relief Analysis: Smith method
- 2.3 Clinographic Curve
- 2.4 Hypsometric Analysis

Unit III

- 3.1 Stream ordering & Bifurcation Ratio
- 3.2 Stream length and Length Ratio
- 3.3 Drainage density and Drainage frequency
- 3.4 Basin Circularity Ratio and Form factor

Unit IV

- 4.1 Rainfall Dispersion diagram
- 4.2 Climatic graph
- 4.3 Climograph
- 4.4 Climatograph

Unit V

- 5.1 Hyetograph
- 5.2 Water Balance graph
- 5.3 Ombrothermic graph
- 5.4 Aridity Index

References:

- 1.Khullar, D. (2019). *Essentials of Practical Geography*. Jalandhar: New Academic Publishing Co.
- 2.Misra, R., & Ramesh, A. *Fundamentals of Cartography*. New Delhi: Concept Publishers.
- 3.Monkhouse, F., & Wilkinson, H. (1963). *Maps and Diagrams: Their Compilation and Construction*. London: Methuen and Co.
- 4.Saha, P., & Basu, P. (2010). *Advanced Practical Geography*. Kolkatta: Books and Allied (P), Ltd.,.
- 5.Singh, R., & Dutt, P. (1978). *Elements of Practical Geography*. Allahabad: Students and Friends.

CO-PO Mapping for Terrain Mapping and Climatic Data Analysis

Code: 22KPIG04P

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	-	-	-	-	3	-	-	-	-	3
CO2	-	-	-	-	3	-	-	-	-	3
CO3	-	-	-	-	3	-	-	-	-	3
CO4	-	-	-	-	3	-	-	-	-	3
CO5	-	-	-	-	3	-	-	-	-	3

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM I	MBE 1	ADVANCED SURVEYING	CODE 22KP1GELG1:1	Ins.Hrs. 4	Credits 3
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Course Objectives:

To appreciate the preparation of various thematic maps with the application of various techniques.
To read weather map for forecasting and decision making.

Course Outcomes: Upon completion of the course, students will be able to

COs	Statements
CO1	Comprehend the reference and coordinate systems for the Earth
CO2	Understand the concept of Astronomical Surveying
CO3	Recognize various photogrammetric surveying methods
CO4	Appreciate the role of Total Station in modern surveying
CO5	Survey using hand-held GNSS receiver

Unit I: Introduction to Surveying: Concepts and Methods – Understanding Reference System, Reference frame and Coordinate System for the Earth – Coordinate and Datum Transformations – Projected Coordinate System.

Unit II: Astronomical Surveying: Astronomical Terms and Definition – Motion of Sun and Stars – Celestial Coordinate System – Time System – Nautical Almanac – Apparent Attitude and Corrections – Field Observations and Determinations of Time, Longitude, Latitude and Azimuth by Attitude and Hour Angle Method.

Unit III: Aerial Surveying: Introduction – Vertical, Stereo and Analytical Photogrammetry - Photogrammetric Products – Image Matching – Fundamentals of LiDAR and RADAR – Hydrographic Surveying.

Unit IV: Total Station Surveying: Classification – Basic Measuring and Working Principles of an Electro-Optical and Microwave Total Station - Sources of Errors – Trilateration – Applications.

Unit V: GNSS Surveying: Basic Concepts – Space, Control and User Segments – Satellite Configuration – Signal Structure – Orbit Determination and Representation – Antispoofing and Selective Availability – Hand Held and Geodetic Receivers – Field Work Procedure – Data Processing Applications.

Current Contour (Not for semester examination): Reconnaissance – Rout surveys for highways, railways and waterways - Tunnel alignment and setting out – Settlement and Deformation studies – Drone Surveying.

References:

- 1.Arora, K. (2010). Surveying (Vol. 2). New Delhi: Standard Book House.
- 2.Chandra, A. (2015). Higher Surveying. New Delhi: New Age International Publishers.
- 3.Duggal, S. (2013). Surveying (Vol. 2). New Delhi: Mc GrawHill Education.
- 4.Lu, Z., Qu, Y., & Qiao, S. (2014). Geodesy: Introduction to Geodetic Datum and geodetic Systems. Berlin: Springer-Verlag.
- 5.Punmia, B., Jain, A. K., & Jain, A. K. (1990). Surveying (Vol. 3). New Delhi: Lakshmi Publications.
- 6.Torge, W. (2001). Geodesy (3rd Edition ed.). New York: Walter de Gruyter Berlin.

CO-PO Mapping for Advanced Surveying

Code 22KPIGELG1:1

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	-	-	-	-	-	-	-	-	-
CO2	1	-	-	-	1	-	-	-	-	-
CO3	-	-	-	3	3	-	-	-	-	-
CO4	-	-	-	-	-	3	-	-	-	3
CO5	-	-	-	-	-	3	-	-	-	3

SEM I	MBE 1	DISASTER MANAGEMENT	CODE 22KP1GELG1:2	Ins.Hrs. 4	Credits 3
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Course Objectives:

To understand about the natural disasters ,its causes and consequences.

To create awareness on Disaster Management and Mitigation methods

Course Outcomes: After the completion of this course, students should be able to

COs	STATEMENTS
CO1	Understand about the types of disasters and about management.
CO2	Examine hazard risk reduction and analysis techniques.
CO3	Express disaster mitigation strategies and warning systems
CO4	Evaluate disaster preparedness plan and logistics management
CO5	Validate rehabilitation, reconstruction and recovery processes and management institutions

Unit I: Hazards, Risks and Disasters – Meaning and Types - Natural Disasters, Human Induced Disasters, Environmental emergencies, Complex emergencies, Pandemic emergencies -Causes and Consequences.

Unit II: Hazard Risk Reduction and analysis Techniques - Vulnerability Identification and Analysis - Social Factors, Economic Factors - Strategies for Survival - Resource Analysis and Mobilisation.

Unit III: Disaster Mitigation:Strategies-Types: Avoidance, Minimization, and Compensatory mitigation- Mitigation management - Disaster warning systems - Disaster planning - Management and Recovery.

Unit IV: Disaster management cycle: Prevention, Preparedness and Mitigation - National Disaster Management Act 2005 - Responsibilities of Central, State, District, and Local Administration - Role of Information, Education, Communication, and Training.

Unit V: Rehabilitation, Reconstruction and Recovery: Damage Assessment – Vulnerability mapping - Monitoring and Evaluation - Participatory Management - National Disaster Response Force (NDRF), National Disaster Management Authority (NDMA), National Institute of Disaster Management (NIDM), International Strategy for Disaster Reduction (ISDR).

Current Contour (Not for the Examination): Safer Cities (SC)- South Asian Cooperative Environment Programme – Artificial intelligence- Big data block chain.

References:

- 1.Agarwal, S. (2004). Global Warming and Climate Change,. New Delhi: A,P,H, Publications.
- 2.Ghosh, G. (2008). Disaster Management. New Delhi: A,P,H, Publishing Corporation.
- 3.Narayan, B. (2009). Disaster Management.New Delhi: A, P, H, Publishing Corporation.
- 4.Nicholas, K. (1995). Geohazards,Naturalandhuman. NewDelhi: PrenticeHallofIndia.
- 5.Saxena, H.(1996). NaturalDisasters. New York: Wm,C,BrownPublishingCo.
- 6.Singh,R.(2008). DisasterManagement.NewDelhi.RawatPublications.

CO -PO Mapping for

Disaster Management

CODE: 22KP1GELG1:2

CO/PO	1	2	3	4	5	6	7	8	9	10
1	2	-	2	-	-	-	-	-	-	-
2	-	-	2	-	2	-	2	-	-	-
3	-	-	2	-	2	-	2	-	-	-
4	-	2	2	-	1	-	1	-	-	-
5	-	-	-	-	2	-	-	-	-	3

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM II	CC 5	GEOGRAPHICAL THOUGHT	CODE 22KP2G05	Ins. Hrs 6	Credits 5
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Course Objectives:

*To recall contributions of eminent scholars to the development of Geography at various periods of time.
To create the sense of analysis and validation by knowing concepts, theories and models in Geography*

Course Outcomes: After the completion of this course, students should be able to

COs	STATEMENTS
CO1	Recall various contributions to the development of Geography in classical and medieval periods.
CO2	Discuss the four traditions in geography and differentiate the dualism concepts.
CO3	Compile the contributions to the development of geography by different schools of thought in modern period.
CO4	Propose the concepts, hypothesis, laws, theories and models in geography and to validate different approaches and analysis.
CO5	Integrate geography and research, propose Sustainable development Goals and predict future of geography.

Unit I:The Field of Geography: Nature – Branches - Approaches- Development of Geographical Thought: Classical period - Greeks, Roman - Medieval period - Arab - Chinese - Impacts of exploration and discoveries - Ancient Indians - Impacts of exploration and discoveries.

Unit II:: Major Geographical Thoughts: German: Bernhardus Varenius, Immanuel Kant, Humbolt, Ritter, Penck. French: Vidal de la Blache, Jean Brunches, Albert Demangeon - American – Davis, Bowman, Schaefer, Hortshone - British: Mackinder, Herbertson, Roxby - Indian: R.L. Singh, R.P. Mishra, A.Ramesh, R.Vidhyananthan – Geographical societies in India.

Unit III:Perspectives in Geography: - Positivism, Behaviouralism, Humanism, Structuralism, Feminism and Postmodernism - Impact of Darwinian Theory on Geographical Thought - Contemporary trends in Indian Geography: Cartography, Thematic and Methodological contributions.

Unit IV:Four traditions in geography: Man - Land, Area studies, Spatial and Earth sciences - Dualism and dichotomies - Phases of development: Environmental determinism, Regional geography, Quantitative Revolution, Critical geography - Models in geography.

Unit V:Trend towards a new synthesis: Applied geography and Applied research - Scientific analysis - Multidisciplinary approach -Paradigms in Geography -Paradigm Shift - System approach and analysis - Inductive and deductive approaches - Geography and Sustainable development Goals (SDG) – Geoinformatics - Online resources – Future of geography and geographers.

Current Contour (Not for the Examination):NAGI, IGS,ISRS,IGU,AGU,BGA,Geographical knowledge under globalisation - Data science and Artificial intelligence.

References:

- 1.Dikshit, R. (1996). Political Geography: A Contemporary Perspective. New Delhi: Tata McGraw Hill.
- 2.Hartshorne. (1959). Perspective on Nature of Geography. Washington D.C: AAAG.
- 3.Hussain. M. (2015).Evolution of Geographical Thought. NewDelhi:Rawat Publications.

- 4.Negi, B.(1994). Geographical Thought. Meerut: Kedar Nath, Ram Nath.
 5.Sudeepta, Adhikari. (2015). Fundamentals of Geographical Thought. Allahabad:
 Catena Publishing House,

CO-PO Mapping for Geographical Thought CODE: 22KP2G05

CO/PO	1	2	3	4	5	6	7	8	9	10
1	2	2	-	-	-	-	-	-	-	-
2	2	-	-	-	-	-	-	-	-	2
3	-	-	1	-	2	-	1	-	-	-
4	2	-	1	-	-	-	2	-	-	-
5	-	-	-	-	3	-	1	-	-	2

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM II	CC6	GEOINFORMATICS	CODE 22KP2G06	Ins. Hrs 6	Credit 5
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Course Objectives: To introduce Geoinformatics techniques comprising integration of advanced spatial information tools to assess and model the Geographical problems.

Outcomes: On completing this course students will be able to

CO	STATEMENT
1	Define the science and technologies involved in Geoinformatics.
2	Explain the digital mapping technology
3	Describe the state of art of GIS and its various applications for spatial solutions
4	Explore the scope of GNSS technology by emphasizing mapping solutions.
5	Evaluate the suitable geospatial tools and data to apply various spatial modeling.

Unit 1: Nature, branches and development of Geoinformatics – Principles of satellite remote sensing - types of imaging and non imaging sensors: Optical, thermal and microwave – Spectral characteristics: Visible, IR, Thermal and Microwave - Image characteristics, resolutions and interpretation of optical, thermal and RADAR images.

Unit 2: Photogrammetry techniques, aerial triangulation, measurements of scale, relief displacement and stereoscopic parallax and orthophoto – LiDAR data characteristics, limitations and advantages – Principal applications of aerial photos - Overview of drone survey.

Unit 3: Development and Components of GIS - Spatial entity, attributes and geometry - data models and editing: Raster, Vector and TIN - GIS Database: Concept of arc, node, objects and topology – Data Analysis: Measurements, query, buffer, overlay, interpolation and network – overview of GIS spatial Modeling and SDSS.

Unit 4: Components of GNSS – Global Navigational Systems - Indian Regional Navigation Satellite System, GAGAN and Navik: Technology and Applications - Positioning methods, data processing and Accuracy – Surveying, Mapping, tracking, navigation and GIS Applications of GNSS.

Unit 5: Applications of Geoinformatics - Landuse/land cover, soil, agriculture, water resources, urban planning, disaster management, utility mapping and e-governance: Methodology and techniques adopted - National and international setups, standardization and dissemination policy of geospatial data.

Current contour (Not for Examination): Hyper spectral remote sensing, GPR survey, Data mining and AI, Location Intelligence and cloud GIS,

References:

1. Ian Heywood, Cornelius, S., S. Carver. (2000). *An Introduction to Geographical Information Systems*, New York: Addison Wesley Longman Limited.
2. Jensen, J. R. (2006). *Introductory Digital Image Processing: A Remote Sensing Perspective*, Prentice-Hall Inc.
3. Kang-tsung Chang (2002). *Introduction to Geographical Information Systems*, New Delhi: Tata McGraw-Hill Publishing Company Limited.
4. Reddy, A. M., (2008). *Textbook of Remote Sensing and Geographic Information System*, B.S. Publication.

<https://novatel.com/an-introduction-to-gnss>
<https://www.freebookcentre.net/Civil/Surveying-Books.html>
<https://www.esri.com/en-us/news-publications/ebooks>
<https://www.indiascienceandtechnology.gov.in/geospatial-technology>

CO-PO Mapping for

Geoinformatics

Code: 22KP2G06

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	-	2	-	1	-	-	3	-
CO2	3	3	-	3	-	-	3	-	3	-
CO3	3	-	2	2	2	2	2	1	3	-
CO4	2	-	-	-	1	1	1	-	2	-
CO5	3	2	2	3	3	3	3	3	3	3

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM II	CC 7	GEOGRAPHY OF INDIA	CODE 22KP2G07	Ins. Hrs 6	Credit 5
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Course Objectives:

To appreciate various physical and cultural aspects of India
To prepare the students for competitive examinations.

Course Outcomes: *Upon completion of the course, students should be able to*

COs	Statements
CO1	Understand the physical, climatic and floristic aspects of Indian Territory
CO2	Compare and contrast the distribution of crops with that of soils
CO3	Relate the development of industries with the distribution of minerals
CO4	Appreciate the role of transport and communication network in the development of trade
CO5	Realize various aspects of population and its pivotal role in the growth of settlements

Unit I: Introduction: Location and Extent - Strategic Importance of India's Location - Major Physiographic Divisions - Drainage System - Climate - Natural Vegetation: Floristic Regions and Classification of Indian Forests (Champion).

Unit II: Soil and Agriculture: Types, Characteristics and Conservation of Soil - Major Crop Regions, Regional Variations in Agricultural Development, Factors affecting Indian Agriculture - Green Revolution - Food Security and Right to Food.

Unit III: Minerals and Industries: Classification and Distribution of Metallic and Non-metallic Minerals - Conventional and Non-conventional energy resources - Energy Crisis and Conservation - Industrial Development, Industrial Regions and Industrial Policies.

Unit IV: Transport, Communication and Trade: Roadways, Railways, Waterways, Airways and Pipelines - Developments in Postal, Telecommunication and Print media - Internal and External Trade, Balance of Trade, Export Processing Zones and Trade Policy.

Unit V: Political Aspects: Indian Federalism – State Reorganization – Emergence of New States – Regional Consciousness and Inter-State Issues – International Boundary of India and Related Issues – Cross-border Terrorism – India's role in World Affairs – Geopolitics of South Asia and Indian Ocean.

Current contours (Not for Examination): India's role in the post-pandemic world – Globalization and Indian Economy – Regional Disparities - Contemporary issues with case studies.

References:

1. Arunachalam, P. (2014). *Geography of India: Physical, Political and Commercial*. New Delhi: Swastika Publication.
2. Chatterji, R. (2014). *Geography of India*. New Delhi: Global Academic Publishing and Distribution.
3. Chopra, J. (2010). *Geography of India*. New Delhi: Unique Publisher.
4. Gautam, A. (2014). *Advanced Geography of India*. Allahabad: Sharda Pustak Bhawan.
5. Hussain, M. (2014). *Geography of India*. New Delhi: Tata McGraw Hill Education Private Ltd.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	3	--	--	--	--	--	--	--	--
CO2	--	3	3	--	--	--	--	--	3	--
CO3	--	3	3	--	--	--	--	--	3	--
CO4	--	3	3	--	--	--	--	--	--	--
CO5	--	--	3	--	--	--	--	--	2	--

SEM II	CC 8 (P)	LAB II MAP APPRECIATION AND INTERPRETATION	CODE 22KP2G08P	Ins.Hrs. 6	Credits 4
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Course Objectives:

To appreciate the preparation of various thematic maps with the application of various techniques.
To read weather map for forecasting and decision making.

Course Outcomes: After the completion of this course, students should be able to

COs	STATEMENTS
CO1	Discuss topographic map index, the basic components of a topographic / OS / USGS maps.
CO2	Appreciate the demographic/social/economic maps of various atlases.
CO3	Appraise the relationship between the environmental setting and human activities from maps.
CO4	Assess and interpret features (physical & cultural) of Census /Resource/ NATMO Atlases.
CO5	Summarize weather information and recognize weather features, use them for inferences.

UNIT I:

- 1.1 Numbering system of Indian Topographic Map
- 1.2 Appreciation of Indian SOI Map
- 1.3 Appreciation of OSM Map
- 1.4 Appreciation of OS Map

UNIT II:

- 2.1 Appreciation of USGS Map
- 2.2 Appreciation of Census Atlas
- 2.3 Appreciation of Resource Atlas
- 2.4 Appreciation of NATMO Atlas

UNIT III:

3. 1 Interpretation of SOI Map
3. 2 Interpretation of OSM Map
3. 3 Interpretation of OS Map
3. 4 Interpretation of USGS Map

UNIT IV:

- 4.1 Interpretation of Census Atlas of India
- 4.2 Interpretation of Resource Atlas
- 4.3 Interpretation of NATMO Maps
- 4.4 Interpretation of District Census Handbook of Thanjavur

UNIT V:

- 5.1 Weather Symbols and Beufort Scale
- 5.2 Interpretation of Indian Weather Map-Northeast Monsoon
- 5.3 Wind velocity and Intensity of Clouds Zone Map
- 5.4 Track of Cyclone.

References:

1. Ashis, S. (2015). *Practical Geography A Systematic Approach*. Hyderabad: Orient Blackswan Private Limited.
2. Miller, A. (1964). *The Skin of the Earth*. Delhi: B.I Publications.
3. Misra, R. P. (1989). *Fundamentals of Cartography*. New Delhi: Concept Publishing company.
4. Monkhouse, F. J., & Wilkinson, H. R. (1963). *Maps and Diagrams*. London: Methuen & Co.

5. Pijush, K. S., & Partha, B. (2004). *Advanced Practical Geography*. Kolkata-India: Books & Allied (P) Ltd
6. Singh, R. L., & Dutt, P. K. (1978). *Elements of Practical Geography*. Allahabad: Students and Friends.

CO-PO Mapping for Map Appreciation and Interpretation Code: 22KP2G08P

CO/PO	1	2	3	4	5	6	7	8	9	10
1	-	-	-	3	-	-	-	-	-	-
2	-	-	-	3	-	-	-	-	-	-
3	-	-	-	-	3	-	-	-	-	-
4	-	-	3	-	-	-	-	3	-	-
5	-	3	-	-	-	-	-	-	-	-

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM II	NME 1	ENVIRONMENTAL GEOGRAPHY	CODE 22KP2GEL01	Ins.Hrs 4	Credits 3
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Course Objectives:

To study the biosphere, biomes and green house impacts.
To understand the causes, effects of pollution and various disasters.

Outcomes: On completing this course students will be able to

CO	STATEMENT
1	Appreciate the structure and functions of ecosystems
2	Understand the different biomes and its significance
3	Acquire the insight about various pollution, pollutants and impacts
4	Define the cause and consequences of green house effect and associated features.
5	Categorize the disaster and system of management.

Unit I: Environmental Geography: Meaning and Scope – Elements of Environment - Atmosphere - Hydrosphere - Lithosphere – Biosphere.

Unit II: Biomes: Concept – Major Biomes –Tropical Biome- Temperate Biome – Temperate Grassland Biome – Tundra Biome.

Unit III: Pollution: Air Pollution cause and effect - Water Pollution cause and effect- Land Pollution cause and effect – Noise Pollution cause and effect.

Unit IV: - Green House Effect - Ozone Depletion - Global Warming - Sea level changes - Acid Rainfall - Cloud Burst.

Unit V: Disaster Definition -Types: Natural Disaster- Manmade Disaster – Biological Disasters- Cause and Effect - National Disaster Management Authority.

Current contour (Not for Examination): Environmental Ethics- Competitive exclusion principle - Biological carbon fixation and Pathways – Biodiversity: Measurements & hotspots of the world - Epidemic and pandemic - NDRF

References:

- Alexander John W.,(1991) “Economic Geography”, Prentice Hall of India Ltd., New Delhi.
- Allen J L., (1994), “Student Atlas of Environmental Issues”, Dushkin Publications, New Delhi.
- Dikshit R.D., (2006), “Frontier in Environment Geography”, Prayag Publication, Allahabad.
- KumrasamyK.,(2004),Remote Sensing for Environmental Studies, Department of Geography, BharathidasanUniversity, Tiruchirappalli.
- SavindraSingh,(2002),“Environmental Geography”,PrayagPustakBhavan, Allahabad.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	3	2	-	-	-	-	-	3	-
CO2	-	2	3	-	2	-	-	-	2	-
CO3	-	3	3	-	3	-	-	-	3	-
CO4	2	2	2	-	3	-	-	-	3	3
CO5	2	3	3	-	3	-	-	-	3	2

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM II	ECC1	WATER AND SOIL RESOURCE MANAGEMENT (Value Added)	CODE 22KP2ECCG1:1	Ins.Hrs. -	Credits 3
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This is an Value added courses which is an optional paper instead of MOOC offered in **SELF STUDY MODE** to gain extra credits. Students have to prepare this course work by their own effort and attend the examinations to secure credit.

Course Objectives:

To Understand the basic components of hydrological cycle and comprehend practices of integrated watershed management.

To Study the soil as a basic resource, focusing its distribution, problems and management

Unit I: Hydrological Cycle: Systems approach in hydrology, human impact on the hydrological cycle; Precipitation, interception, evaporation, evapotranspiration, infiltration, ground-water, runoff and overland flow;

Unit II: Water Balance: input and output; water balance; floods and droughts; Integrated water resource management.

Unit III: River Basin: Characteristics and problems of river basins, basin surface run-off, and measurement of river discharge. Watershed management

Unit IV: River Water Dispute; River linkages; Case studies

Unit V: Soil Resource: Definition, Types and Distribution, Utilisation, Problems and Management of Soil Resource.

References:

1. Andrew. D. ward, and Stanley, Trimble., (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.
2. Fetter, C.W. (2005):Applied Hydrogeology, CBS Publishers & Distributors, New Delhi.
3. Karanth, K.R., (1988): Ground Water: Exploration, Assessment and Development, Tata McGraw Hill, New Delhi.
4. Lyon, J.G., (2003):GIS for Water Resource and Watershed Management, Taylor and Francis, New York.
5. Meinzer,,O.E., (1962):Hydrology, Dover Publication, New York.
6. Reddy, K. Ramamohan, Venkateswara Rao,B, Sarala, C., (2014):Hydrology and Watershed Management, Allied Publishers.

SEM II	ECC1	MOOC (Value Added)	CODE 22KP2ECCG1:2	Ins.Hrs. -	Credits 3
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According to the guidelines of UGC, the students are encouraged to avail this option of enriching by enrolling themselves in the MOOC provided by various portals such as SWAYAM, NPTEL, etc. Our college is recognized as a local chapter.

Coordinator with department course in-charge will guide the students well in advance regarding the suitable value added courses which is not available in the college and registration process, time to time. **The course should be selected so as to complete during the month of May.**

SEM II	ECC2	ADD ON COURSE	CODE 22KP2ECCG2	Ins.Hrs. -	Credits 4
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Each department will offer a Certificate Course with 10-20 contact hrs (after regular class hrs).It can be availed by the interested students of any discipline. The course will be decided time to time and organized by the Head / course coordinator. Course modules will be announced well in advance (*registration done before the commencement of semester II- i.e December*) and course modules are handled by internal or external faculty / experts or jointly.

In addition, our college has been recognized as the nodal / network centre for conducting Outreach Programs of Indian Institute of Remote Sensing (ISRO, Dept of Space, Dehradun, India). Students of any department can avail the courses as the Add-On Course, through coordinator.

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SEM III	CC 9	RESEARCH METHODOLOGY IN GEOGRAPHY	CODE 22KP3G09	Ins.Hrs 7	Credits 5
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Course Objectives:

To design a systematic research study; to collect data in an organized manner to arrive at valid decisions

To explore bibliometrics and informetrics.

Course Outcomes: After the completion of this course, students should be able to

COs	STATEMENTS
CO1	Identify the types, approaches and the role of models and theories in geographic research
CO2	Choose a research problem and developing hypothesis to limit the scope of study.
CO3	Design methods of collecting research data, apply cartographic techniques and predict hypothesis.
CO4	Evaluate techniques of scientometrics and journals for publication.
CO5	Develop a well-written research report using proper formats; discussions, interpretations supported by citing sources.

Unit I: Research: Definition, Characteristics, Objectives- Steps in Scientific Research-Types and Approaches- Role of Theory, Laws and Models - Research Ethics.

Unit II: Research Formulation: Defining and formulating research problem- Necessity of defining the problem- Literature review and its importance-concept of research gap area - Development of working hypothesis.

Unit III: Research Design: Meaning, Need, Features of good design-Important concepts and steps involved - Different research designs - Sources of data: Primary, Secondary Methodology – Analysis - Testing of hypothesis.

Unit IV: Tools and techniques for Research: Scientometrics: Ranking of Journals: Impact Factor, Scimago Journal Rank, Immediacy Index, h-index- Thompson ISI- Web of Science Author identifiers: ORCID, Researcher ID, Scopus Author ID - Profile Creation: Google Scholar, Microsoft Academic Search- FOSS in Research: Reference Management: Zotero, Mendeley, JabRef- Document Preparation: Open Office, LaTeX – Plagiarism detection.

Unit V: Report and Thesis writing: Structure and components of scientific reports - Types of report: Technical reports and thesis- Different steps in the preparation of report: Layout, structure and Language of typical reports- Citation Methods: Footnote, Endnote, References and Bibliography- Citation Rules: Blue Book, OSCOLA, MLA, APA and Chicago.

Current Contour (Not for semester exam): Qualities of a researcher, Questionnaire, Interview, Seminars, Conferences, Symposia and Colloquium.

References:

1. Amodeo, Dand C. College (1975): An Introduction to Scientific Reasoning in Goegraphy, John Wily & Sons, New York
2. Davi, K.D., (1971): Conceptual Revolution in Geography, University of London, London.

3. Hang, I.L. and J.P. Leonenbug (1973): An Introduction to Scientific Geographic Research, Brown Co, Iowa.
4. Lal Das, D.K., (2000): Practice of Social Research, Rawat Publications, Jaipur.
5. Mishra, R.P., (1998): Research Methodology in Geography, Concept Publishing Company Limited, New Delhi
6. Najma Khan, (1998): Quantitative Methods in Geographical Research, Concept Publishing Company, New Delhi
7. Saravanavel,P. (2000), Research Methodology, Kitab Mahal, Saroji Naidu Mar

CO-PO Mapping for Research Methodology In Geography

CODE: 22KP3G09

CO/PO	1	2	3	4	5	6	7	8	9	10
1	3	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	3	-	-	-
3	-	-	-	-	3	-	-	-	-	-
4	-	-	-	-	-	-	-	3	-	-
5	-	-	-	-	-	-	-	3	-	-

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM III	CC 10	URBAN GEOGRAPHY	CODE 22KP3G10	Ins.Hrs 7	Credits 5
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Course Objectives:

To understand the structure, dynamics and spatial aspects of urban realm, urban issues and urban sprawl.

To develop sustainable urban planning for the future.

Course Outcomes: After the completion of the course, students should be able to

COs	STATEMENTS
CO1	Understand definitions and associate urban growth, trends of urbanization (world & India).
CO2	Relate site and situation of cities; classify cities based on economic base.
CO3	Analyze models or theories of land use across the city.
CO4	Summarize the types of urban expansion and its characteristics.
CO5	Discuss about urban issues and design various national level plans to manage.

UNIT I: Introduction: Definition of Urban, Urbanism, Urbanization and Urban Geography Nature and Scope of Urban Geography – Factors of Urban Growth – Lewis Mumford’s Theory of Origin of Towns – Trends of Urbanization (World and India).

UNIT II: Economic Base and Functions: Location, Site and Situation of Urban Places; Basic and Non-Basic Urban Functions - Functional Classification of cities - Primate City - Rank Size Rule .

UNIT III: Urban Morphology and Land Use: Central Place Theories-Christaller, P August Losch, Models of Urban Land Use -Burgess, Hoyt, Ullman.

UNIT IV: Urban Expansion: Vertical: Skyscrapers- Horizontal : Urban Sprawl, Urban Fringe, Suburban area, City Region, Satellite Town, New Town, Umland - Million Cities: Metropolis, Conurbation, Megalopolis,

UNIT V: Urban Governance and Strategic Plans: Slums, Solid Waste Management, Civic amenities: Sanitary Parks - Assessment of Urban Heat Island using Remote Sensing Techniques - Urban Livability Index - Service Level Benchmarking in India – National Urban Policies: Urban Renewal Mission (JNNURM), Urban Resilience Programs (CPHEEO, PMAY-U, AMRUT), Smart Cities Mission.

Current contour: (Not for semester examination) : Migration and mobility - Urban Poverty, crime, Public Health - impact of Globalization and urbanization on less developed countries.

References:

- 1.Carter, H. (1964). *The Study of Urban Geography*. London: Edward Arnold.
- 2.Johnson, J. H. (1972). *Urban Geography*. London: Pragan Press.
- 3.Mandal, R B. (2000). *A Text Book of Urban Geography*. New Delhi: Concept Publishing Company.
- 4.Mayor, & Kohn. (1967). *Urban Geography*. New York: John Wiley and Sons.
- 5.Siddhartha, K. (2004). *Cities, Urbanization and Urban Systems*. Delhi: Kisalaya Publications Pvt.Ltd.

CO-PO Mapping for Urban Geography CODE: 22KP3G10

CO/PO	1	2	3	4	5	6	7	8	9	10
1	2		-	-	-	-	-	-	-	-
2	-	1	-	-	-	-	-	-	-	-
3	-	2	-	-	-	-	-	-	-	-
4	-	-	3	-	-	-	-	-	-	-
5	-	-	3	1	-	-	-	-	1	1

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM III	CC11P	(Lab III) Geospatial Techniques and Applications	CODE 22KP3G11P	Ins. Hrs 12	Credit 5
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Course Objectives:

To impart the Geoinformatics tools and techniques for data exploration
To apply the techniques for spatial decision support appropriately.

Outcomes: On completing this Lab students will be able to

CO	STATEMENT
1	Recognize the image technical information acquired by various sensors and systems
2	Resolve the information by the inferences from the digital and visual image elements
3	Explore the means and methods of GNSS survey for GIS mapping solutions
4	Develop spatial database with topological relationship.
5	Apply the GIS tools in the area of geospatial data modeling

Unit I

- Ex.No 1. Aerial photo support Data
- Ex.No 2 Optical Imagery support Data
- Ex.No.3 Thermal Imagery support Data
- Ex.No 4 Microwave Imagery support Data

Unit II

- Ex.No 1. Aerial photo interpretation
- Ex.No 2 Optical Image Interpretation
- Ex.No.3 Thermal Image Interpretation
- Ex.No 4 Microwave Image Interpretation

Unit III

- Ex.No 1. GNSS Traversing (Open and Closed)
- Ex.No 2. GNSS Positioning and Tracking
- Ex.No 3. Assessment of GNSS Positioning
- Ex.No 4 GIS GNSS Data Integration

Unit IV

- Ex.No 1.Georeferencing and Projection using GIS
- Ex.No 2 Geodatabase and topology
- Ex.No 3 Feature dataset and Feature Classes
- Ex.No 4 GIS proximity analysis

Unit V

- Ex.No 1. GIS interpolation surface analysis
- Ex.No 2. GIS overlay Analysis
- Ex.No. 3. GIS Model Builder
- Ex.No 4. GIS Layout Generation

References:

1. Ian Heywood, Cornelius, S., S.Carver. (2000). *An Introduction to Geographical Information Systems*, New York: Addison Wesley Longman Limited.

2. Jensen, J. R., (2006). *Introductory Digital Image Processing: A Remote Sensing Perspective*, Prentice-Hall Inc.
3. Kang-tsung Chang. (2002). *Introduction to Geographical Information System*, New Delhi: Tata McGraw-Hill Publishing Company Limited.
4. Reddy, A. M. (2008). *Textbook of Remote Sensing and Geographic Information System*, B.S. Publication.
<https://novatel.com/an-introduction-to-gnss>
<https://www.freebookcentre.net/Civil/Surveying-Books.html>
<https://www.esri.com/en-us/news-publications/ebooks>
<https://www.indiascienceandtechnology.gov.in/geospatial-technology>

CO-PO Mapping for Geospatial Techniques and Applications *CODE: 22KP3G11P*

CO/PO	1	2	3	4	5	6	7	8	9	10
1	-	-	-	3	2	1	-	-	-	-
2	1	3	-	2	1	1	-	-	-	2
3	1	-	-	-	3	3	-	-	-	3
4	-	2	-	-	3	2	-	-	-	3
5	-	-	2	-	3	2	-	-	-	3

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM III	MBE 2	INTERNSHIP	CODE 22KP3GELG2:1	Ins. Hrs -	Credit 4
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1. Internship (External) can be executed under the supervision of internship coordinator / guide..
2. It can be undertaken during the summer vacation of the **II Semester (April /May)**. It is of four week duration for 4 credits.
3. The students can pursue their internship in any Institution / industry /Education Institution/ Business House / Consultancies / other Government / Private / Non Governmental Organizations where Surveying, Mapping, GIS, Remote Sensing and all other geography and related fields is the main activity.
4. The internship fetches 100 marks to the students. 50 marks will be awarded to the report submitted by the students not exceeding 10 pages. Another 50 marks will be allotted for viva-voce examination by the internal guide.

SEM III	MBE 2	INTERNAL INTERNSHIP / FIELD WORK	CODE 22KP3GELG2:2	Ins. Hrs -	Credit 4
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Internship-Internal:

1. All the procedures are a same as the External Internship,
2. Both the parent and facilitating department faculties will act as a guide.
3. The students opt for interdisciplinary area and they can work with prior permission from the facilitating department.

Field Work:

1. The students will go for an industrial visit / field work focusing career opportunities / geographical problems.
2. On the basis of that, each student has to submit an industrial visit report / field work, containing (a) objective, schedule, a bonafide certificate for the field work /industrial visit carried out and (b) Comprehensive report with field photographs not exceeding 10 pages.
3. Totally 100 marks will be awarded by internal guide based on the significance of the study and for the report.

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SEM III	NME 2	GEOGRAPHY OF TOURISM	CODE 22KP3GELO2	Ins.Hrs 4	Credit 3
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Course Objectives:

To acquire the Geographical perspectives of Tourism
To recognize the industrial and applied aspects of Tourism

Course Outcomes: After the completion of this course, students should be able to

COs	STATEMENTS
CO1	Explain the significance of tourism as an industry and its components
CO2	Explore the supporting facilities to promote tourism
CO3	Evaluate the commercial aspects of tourism
CO4	Emphasize the development of National and state level tourism
CO5	Explore National and state level tourism attractions and promotion.

Unit I: Tourism: Definition Scope and Content - importance - classification of travellers: Tourists, Merchants, Explorers, Pilgrims - Basic components of Tourism attraction: Climate, Accessibility and Accommodation – Tourism types - Religious, Recreational, Cultural, Ecological, Sporting, Medical - Domestic and International.

Unit II: Tourist facilities and Services - Transport - Accommodation - Catering - Entertainment - Travel Documents: Passport - Visa - Travellers cheque - credit cards.

Unit III: Tourism Promotion: Advertisement - Sales support activates - Public relations - Tourist products - Travel Agencies - Tour Operators and their functions - Types of Hotels - Motels - Chaultries - Guest house.

Unit IV: World Tourism Organization - Tourism organisation in India: Development of Tourism in India - Indian Tourism Development Corporation - Tamilnadu Tourism Development Corporation

Unit V: Major Tourist spots in India: Delhi - Mumbai - Kolkata - Jaipur - Hyderabad – Major Tourism spots in Tamilnadu - Chennai - Madurai - Ooty - Kodaikanal.

Current Contour (Not for the Examination): *Types of visa - Bleisure Travel -Sustainable Tourism-Staycation*

References:

1. Bhatia.A.K., (1997): ‘Tourism Management and Marketing’, Sterling Publishers Private Ltd., New Delhi.
2. Bhatia.A.K., (2006): ‘Tourism Development’, Sterling Publication, New Delhi.
3. Krishnaswamy. (2004): ‘Tourism Development’, Mani Vasagar Publishers, Chennai.
4. Ratandeeep Singh., (1998): ‘Infrastructureof Tourism in India’, Kanishka Publishers New Delhi.

CO / PO Mapping for GEOGRAPHY OF TOURISM

Code: 22KP3GELO2

CO/PO	1	2	3	4	5	6	7	8	9	10
1	3	-	3	-	2	-	-	-	3	3
2	2	3	2	-	3	-	-	-	3	3
3	3	2	-	-	3	-	-	-	3	3
4	2	3	-	-	2	-	-	-	3	3
5	3	2	2	-	3	-	2	-	2	3

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM III	ECC 3	GEOGRAPHY OF SOCIAL WELLBEING (Value Added)	CODE 22KP3ECCG3:1	Ins.Hrs. -	Credits 3
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This is an Value added courses which is an optional paper (instead of MOOC) offered in **SELF STUDY MODE** to gain extra credits. Students have to prepare this course work by their own effort and attend the examinations to secure credit.

Course Objectives:

*To understand the nature, scope and relationships of geography and human wellbeing
To acquire knowledge on spatial dimensions of social diversity components*

Unit I: Geography of Social Wellbeing: Concept, Origin, Nature and Scope.

Unit II: Social Diversity: Caste, Class, Religion, Race and Gender and their Spatial distribution

Unit III: Social Wellbeing and Inclusive Development: Concept and Components – Healthcare, Housing and Education.

Unit IV: Social Geographies of Inclusion and Exclusion, Slums, Gated Communities, Communal Conflicts and Crime.

Unit V: Social welfare program and policies.

References:

1. Ahmed, A., (1999): Social Geography, Rawat Publications.
2. Casino, V. J. D., Jr., (2009): Social Geography: A Critical Introduction, Wiley Blackwell.
3. Cater, J. and Jones, T., (2000): Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.
4. Holt, L., (2011): Geographies of Children, Youth and Families: An International Perspective, Taylor & Francis.
5. Panelli, R., (2004): Social Geographies: From Difference to Action, Sage.
6. Rachel, P., Burke, M., Fuller, D., Gough, J., Macfarlane, R. and Mowl, G., (2001): Introducing SocialGeographies, Oxford University Press.
7. Ramotra, K.C., (2008): Development Processes and the scheduled Castes, Rawat Publication.
8. Smith, D. M., (1977): Human geography: A Welfare Approach, Edward Arnold, London.

SEM III	ECC3	MOOC (Value Added)	CODE 22KP3ECCG3:2	Ins.Hrs. -	Credits 3
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According to the guidelines of UGC, the students are encouraged to avail this option of enriching by enrolling themselves in the MOOC provided by various portals such as SWAYAM, NPTEL, etc. Our college is recognized as a local chapter.

Coordinator with department course in-charge will guide the students well in advance regarding the suitable value added courses which is not available in the college and registration process, time to time. **The course should be selected so as to complete during the month of November.**

SEM IV	CC12	REGIONAL PLANNING	CODE 22KP4G12	Ins. Hrs 6	Credit 5
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Course Objectives:

To elaborate the significance, concept and techniques of regional planning
To apply the regional planning for resource management, allocation and prioritization process

Outcomes: On completing this course students will be able to

CO	STATEMENT
1	Explain the science of regional planning concept.
2	Distinguish the significance of vertical, horizontal and integrated planning strategies.
3	Synthesis the development of regional planning techniques and methods of analysis.
4	Characterize the problems associated with the region and roll of administrative setup
5	Apply the planning techniques exclusively for urban and environmental management.

UNIT 1: Region - Regionalization - Regional Concept - Definition and Classification of Regions - Regional imbalance and Disparity - Regional planning - Concepts and Theory of Regional Planning - Approaches

UNIT 2: Concept of Regional Hierarchy – Sectoral and Spatial planning concepts - Resource Base Analysis and planning: River Basins, watershed, Agroecological and Population regions- Types of Regional Planning: Rural, urban and integrated.

UNIT 3: Theories of Regional Development - Economic Base Theory - Location - Allocation - Models - Linear Programming, Growth Pole Theory and Diffusion Models - Input - Output Analysis - Cost benefit analysis

UNIT 4: Identification, Characteristics and developmental planning for backward and drought prone regions – Multi Level Planning Programmes - Evolution Regional Planning and planning regions of Tamil Nadu and Backward area development - Functions of Directorate of Town and Country Planning: Master Plan

UNIT 5 Panchayat Act, Municipality Act, Corporation Act, TNULB Act, Land Acquisition, Rehabilitation and Resettlement Act,2013 – Powers and of functions of local bodies - 73rd and 74th CAA and their implications on planning and development - New Town Development Plan and Detailed Development Plan.

Current contour (Not for Examination): SEZ India, Tamil Nadu Protected Agricultural Zone, tribal belts of India, SDG 2030, AMRUT, HRIDAY, Smart city, Ease of Living Index and Municipal performance index and ranking.

References:

1. Central Public Health & Environmental Engineering Organisation (CPHEEO), Ministry of Housing and Urban Affairs, Government of India
2. Misra, R. P., Sundaram, K.V.andV.L.S.Prakasa Rao, (1974). *Regional Development planning in India*, Delhi: Vikas Publishing House.
3. Misra, R.P. (2002). *Regional Planning –Concept, Techniques, Polices and case Studies*, Delhi: Concept publishing Company,

4. Sundaram, K.V. and R.P. Misra, (1976). *Micro Level planning and Development Process - Area Development Programme in India –A Review and Appraisal*, Institute of Development Studies, University of Mysore.

<https://www.tn.gov.in/tcp/>

<https://tnrd.gov.in/databases.html>

CO-PO Mapping for Regional Planning

Code: 22KP4G12

CO/PO	1	2	3	4	5	6	7	8	9	10
1	3	2	-	-	-	-	-	-	3	3
2	1	3	3	-	2	-	-	-	3	3
3	3	1	3	-	3	-	-	-	1	3
4	2	3	3	-	2	-	-	-	3	3
5	-	1	1	-	1	-	-	-	3	3

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM IV	CC13	BIOGEOGRAPHY	CODE 22KP4G13	Ins. Hrs 6	Credit 5
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Course Objectives:

*To appraise of the interrelationship among the living organisms
To realize the importance of conservation of biosphere and biodiversity.*

Course Outcomes: *Upon completion of the course, students will be able to*

COs	Statements
CO1	Understand the relationship between organism and nature
CO2	Appreciate the material cycling and energy flows in different ecosystems
CO3	Apprise of the spatial distribution of different biomes
CO4	Evaluate the biogeographical regions of the world
CO5	Asses the conservation measures of biodiversity

Unit-I: Biogeography: Definition, Scope and Objectives, Multidisciplinary Nature - Phytogeography and Zoogeography - Evolution of Life through Geological Times.

Unit-II: Ecosystem: Meaning, Concept, Forms and Functions - Forest, Grassland, Marine and Mountain Ecosystem - Energy Flows – Food Chain, Food Web, Trophic Levels and Energy Pyramids – Biogeochemical Cycles: Carbon, Nitrogen, Oxygen and Phosphorous cycles.

Unit-III: Biomes: Forest and Grassland Biomes - Spatial Patterns – Factors Controlling Biomes: Climatic, Topographic, Edaphic and Biotic factors – Modification of Biomes.

Unit IV: Biogeographical Regions: Phytogeographical and Zoogeographical Regions of the World – Major Gene Pool Centres - Animal Dispersal and Migration: Causes, Barriers and Consequences – Human-Wildlife Conflict.

Unit V: Conservation Biogeography: Biodiversity Hotspots, Biosphere Reserves, Social Forestry and Agro-forestry - International Treaties on Biodiversity Conservation - Gap Analysis.

Current contour (Not for Examination): Climate change and biodiversity – Environmental ethics, Eco-feminism and Deep Ecology - Green India mission.

References:

1. Mathur, H. (2003). *Essentials of Biogeography*. Jaipur: Pointer Publishers.
2. Pears, N. (1993). *Basic Biogeography*. London: Logman Publications.
3. Robinson, H. (1972). *Biogeography*. London: Macdonald and Evans Publication.
4. Saxena, H. (2004). *Environmental Geography*. Jaipur: Rawat Publications.
5. Singh, S. (1991). *Environmental Geography*. Allahabad: Prayag Pustak Bhawan.
6. Waugh, D. (1990). *Geography An Integrated Approach*. UK: Thomas Nelson and Sons Ltd.

CO-PO Mapping for

Biogeography

CODE 22KP4G13

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	--	--	--	--	--	--	--	--	--
CO2	--	3	3	--	--	--	--	--	--	--
CO3	--	3	3	--	--	--	--	--	--	--
CO4	--	3	3	--	--	--	--	--	--	--
CO5	--	3	3	--	--	--	--	--	3	--

SEM IV	CC14 (P)	LAB IV: DATA ANALYSIS IN GEOGRAPHY	CODE 22KP4G14P	Ins.Hrs 6	Credit 5
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Course Objectives:

To use the graphical techniques for effective portray of geographical problems.

To apply the modeling techniques for research and to assess of research hypothesis.

Course Outcomes: After the completion of this course, students should be able to

COs	STATEMENTS
CO1	Represent various aspects of population data and communicate the geographical information.
CO2	Measure agricultural data using techniques crop combination, diversification, productivity and efficiency index.
CO3	Estimate economic indices like Human Development Index and Gender Development Index.
CO4	Formulate methods of urban hierarchy, measures of interaction, social area analysis and index measures.
CO5	Validate Chi-Square test, F-test, t-test for Hypothesis Testing and prepare Questionnaire and Survey schedule.

Unit I: Population Data

Ex.No: 1 Rank size curve

Ex.No: 2 Band graph

Ex.No: 3 Triangle graph

Ex.No: 4 Population Potential map

Unit II: Agriculture Data

Ex.No: 1 Crop concentration

Ex.No: 2 Crop combinations (**Any one:** Weaver **OR** Doi **OR** Rafiuallah)

Ex.No: 3 Agricultural Productivity

Ex.No: 4 Agricultural Efficiency Index - Kendall's Method

Unit III: Economic Indices

Ex.No: 1 Index of diversification - Gibbs Method

Ex.No: 2 Lorenz Curve, Gini's coefficient

Ex.No: 3 Location Quotient

Ex.No: 4 Growth Index and ranking

Unit IV: Urban Data

Ex.No:1 Index of Urbanization

Ex.No:2 Human Development Index and ranking

Ex.No:3 Disparity Index

Ex.No:4 Urban Green Index

Unit V: Hypothesis Testing

Ex.No:1 Hypothesis and Questionnaire formulation

Ex.No:2 Chi-Square test

Ex.No:3 F - test

Ex.No:4 t - test

References:

- 1.Gobal, S. (1996). Map Work in Practical Geography. New Delhi: Vikas Publishing House, Pvt.Ltd.
- 2.Khan, Z. (1998). Text Book of Practical Geography. New Delhi: Concept Publishing Company.
- 3.Kothari, C. (1996). Research Methodology: Methods and Techniques.New Delhi: VishwasPrakashan.
- 4.Saha, P., &Basu, P. (2007). Advanced Practical geography. Kolkata: A Laboratory Manual, Books &Allied (P) Ltd.
- 5.Sarkar,A. (2015). Practical geography: A systematic approach. New Delhi: Orient Black Swan Private Ltd.
- 6.Singh,R., &Dutt, P. (1979). Elements of Practical Geography.NewDelhi: Kalyani Publishers.

Co / Po Mapping for Lab IV: Data Analysis In Geography Code :22KP4G14P

CO/PO	1	2	3	4	5	6	7	8	9	10
1	-	-	-	-	1	-	-	2	-	-
2	-	-	-	-	2	-	-	1	-	-
3	-	-	-	-	3	-	1	-	-	-
4	-	-	-	-	3	-	1	-	-	-
5	-	-	-	-	1	-	3	-	-	-

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM IV	MBE 3	AGRICULTURAL GEOGRAPHY	CODE 22KP4GELG3:1	Ins. Hrs 6	Credit 4
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Course Objectives:

To know various determinants of agriculture and agricultural systems of the world
To understand the importance agricultural regionalization and the significance of sustainable development goals.

Course Outcomes: *Upon completion of the course, students will be able to*

COs	Statements
CO1	Recognize different approaches to agricultural geography
CO2	Understand the factors determining agriculture, systems of agriculture and agroclimatic regions
CO3	Appreciate the significance of regionalisation
CO4	Apply various models of agricultural geography in the real world situation
CO5	Realize how to achieve Sustainable Development Goals

Unit I: Agricultural Geography: Definition, Objectives, Historical Perspective – Approaches to Agricultural Geography – Sources of Agricultural Data – Land Use and Land Cover Classification by National Remote Sensing Centre.

Unit II: Agricultural System: Physical and Socio-economic Determinants of Agriculture - Whittlesey's Classification – Agro-climatic zones of India by Indian Council of Agricultural Research - Agro-ecological Zones of India by National Bureau of Soil Survey and Land Use Planning.

Unit III: Agricultural Regionalization: Cropping Pattern, Crop Combination Regions (Weaver, Doi and Rafiullah), Crop Diversification and Agricultural Productivity – Role of Geoinformatics in Crop Area and Yield Estimation.

Unit IV: Models in Agricultural Geography: Significance and Limitations – Classification of Models: Input-Output, Decision Making, Diffusion, von Thunen's and Jonasson's Models.

Unit V: Food, Nutrition and Health: Distributional Pattern of Food and Nutrition – Causes and Spatial Pattern of Hunger – Eradication of Hunger: Role of Green Revolution – Nutrition and Health.

Current contour (Not for Examination): *Agriculture, the gamble of monsoon – Inter-State water dispute – Inter-linking of rivers - Kuruvai cultivation at peril in Tamil Nadu – Minimum Support Price for various crops.*

References:

1. Gautam, A. (2014). *Agricultural Geography*. Allahabad: Sharda Pustak Bhawan
2. Hussain, M. (2014). *Systematic Agricultural Geography*. Jaipur: Rawat Publications.
3. Shafi, M. (2006). *Agricultural Geography*. New Delhi: Doring kindersley India Pvt. Ltd.
4. Singh, J., & Dhillon, S. (1984). *Agricultural Geography*. New Delhi: Tata McGraw Hill.
5. Venugopal, S. (2006). *Agricultural Geography*. New Delhi: Arise Publication and Distribution.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	1	--	--	--	--	--	--	--	--
CO2	--	--	3	--	--	--	--	--	--	--
CO3	--	--	--	--	3	--	--	--	--	--
CO4	--	--	--	--	3	--	--	--	--	--
CO5	--	--	--	--	--	--	--	--	3	--

SEM IV	MBE3	POPULATION GEOGRAPHY	CODE 22KP4GELG3:2	Ins. Hrs 6	Credit 4
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Objectives:

To study of the distribution, composition, migration and growth of populations are related to spatio-temporal aspects.

To study the characteristics of population, statistics and developmental aspects

Course Outcomes: *Upon completion of the course, students will be able to*

COs	Statements
CO1	Explain the demography and its significance
CO2	Compare and contrast the demographical elements with space.
CO3	Relate the impacts with population migration.
CO4	Appreciate the problems associated with population explosion.
CO5	Evaluate the measures and effects to combat the population issues.

UNIT I: Population: Demography – Definition – Importance of population study - Population growth – Birth rate – Death rate.

UNIT II: -Composition of Population: Age – Sex Ratio – Literacy – Occupational Structure - Population distribution – Density

UNIT III: Migration – Types – Causes of Migration – Consequences of Migration – Pattern of Migration

UNIT IV: Population problems - Under population – Over population – Population Explosion

UNIT V: Population policies: Population Policy in India - Planning measures and Implementation in India.

Current contours (Not for Examination): *Population Clock – World Population Prospects (UN) – IDB (US) – SEDAC (NASA) – Human Skill - Human Development Index*

References:

1. Gosh B.N., (1985): “Fundamentals of Population Geography”, Sterling Publishers, New Delhi.
2. Norman Pounds (1985): “Success in Geography- Human and Regional”, John Murray, London.
3. Shelar.S.K., .(2012): “Human Geography”, ChandralokPrakashan, Delhi.
4. Trewartha , G.T.(1972): “Geography of Population World Patterns”, John Wiley and Sons, Inc , NewYork.

CO-PO Mapping for Population Geography Code: 22KP4GELG3:2

CO/PO	1	2	3	4	5	6	7	8	9	10
1	3	3	--	--	2	--	--	--	2	3
2	3	2	3	--	3	--	2	--	2	3
3	2	2	2	--	2	--	2	--	2	3
4	2	2	2	2	3	--	--	2	3	3
5	2	--	2	--	3	--	--	--	3	3

Correlation: 1 – Low, 2 – Moderate, 3 – High

SEM IV	CCG15	PROJECT WORK	CODE 22KP4G15PW	Ins.Hrs 6	Credit 5
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1. The students should select a specific topic in Geography and related fields. It should have innovative components and societal relevance. Appropriate statistical analysis, evaluating geographical models, interdisciplinary approach and application of geospatial techniques are given more weightage.

2. Integration of primary and secondary data may be used, wherever possible.

3. Suitable maps, diagrams and graphs and scientific interpretation should be incorporated in the report. **A Complex map / figures / graphs can be shown in a single page other wise a page can be used with at least TWO maps / figures / graphs** to maintain the consistency of the dissertation. There are three multiples copies of dissertation with back & back printout in soft binding form is to be prepared for submission.

4. The Project Report should be between 20 and 25 pages (excluding figures and tables) and with the following structure:

- I. Problem and Procedure
- II. Review of Literature
- III. Aims and Objectives
- IV. Data and Techniques used
- V. Result and discussion
- VI. Summary and Conclusion
References

5. Evaluation and Viva

Candidates have been evaluated individually by means of viva-voce exam using the following marking pattern both by Internal and External Examiners. The average mark has been taken into account for the award of mark for the project.

Sl.No	Area of work	Max. Marks
1	Plan of the Project	10
2	Execution of the Plan / Collection of Data / Organization of Materials / Application of Tools / Experiment / Study / Hypothesis Testing etc., and Presentation of Report	40
3	Individual Initiative	25
4	Viva – Voce Performance	25
Total Marks		100

Number of courses, Instruction hours and credits
(For Candidate admitted from 2022-2023 onwards)

Course	Course Title	No. of Courses	Instruction Hour	Credit
CC	Core Course (Theory & Practical)	14 (10+4)	94	67
CC	Project	1	06	05
MBE	Major Based Elective (2 + 1 Internship)	2 (+1)	12	12
NME	Non Major Elective	2	08	06
	Total	20	120	90
ECC	Extra Credit Courses	3	-	10

SEMESTER – WISE COURSE STRUCTURE

Semester	Course	Total Courses	Ins.Hr/ week	Credit
I	CC 1, CC 2 , CC 3, CC 4 (P) & MBE 1	5	30	23
II	CC 5, CC 6 , CC 7, CC 8 (P) & NME 1 (<i>ECC 1 & ECC 2</i>)	5	30	22
III	CC 9, CC 10 ,CC 11 (P) , MBE 2 & NME 2 (<i>ECC 3</i>)	5	30	22
IV	CC12, CC13 ,CC14 (P) , MBE 3 & Project	5	30	23
	TOTAL	20	120	90

COURSE CATEGORIES

1. **CC** : Core Course : Major Course Works in PG Geography Programme
2. **MBE**: Major Based Elective: Sub Fields of Geography including Internship and Field / Industrial visit:

(A) Internship-External

External Internship can be executed under the supervision of internship coordinator / guide. **Four credits** will be offered on the successful completion of the internship. It can be undertaken during the *summer vacation of the II semester. It is of four week duration*. The students can pursue their internship in any Institution / industry /Education Institution/ Business House / Consultancies / other Government / Private / Non Governmental Organizations where Surveying, Mapping, GIS, Remote Sensing and all other geography and related fields is the main activity.

The internship fetches 100 marks to the students. 50 marks will be awarded to the report submitted by the students after internship. Another 50 marks will be allotted for viva-voce examination.

(B) Internship-Internal

All the procedures are a same as the External Internship, the department faculty will act as a guide. However the students opt for interdisciplinary area they can work under external guide with prior permission from the respective department of our institution.

(C) Field Work

The students will go for an industrial visit / field work focusing career opportunities / geographical problems. On the basis of that, each student has to submit an industrial visit report / field work containing (a) objective, schedule, a bonafide certificate for the field work /industrial visit carried out and (b) Comprehensive report with field photographs. Totally 100 marks will be awarded by internal guide based on the significance of the study and for the report.

3. NME: Non Major Elective Courses are offered to the Students of other disciplines to provide the opportunity to have interdisciplinary idea and approach.

4. **ECC : Extra Credit Course:** Courses are offered aiming to impart value added / carrier oriented courses by which students can gain extra credits

A) SS-Self Study: Value added courses which is offered as an optional paper to gain extra credits. Students have to prepare this course work by their own effort and attend the examinations to secure credit.

(B) MOOC: According to the guidelines of UGC, the students are encouraged to avail this option of enriching by enrolling themselves in the MOOC provided by various portals such as SWAYAM, NPTEL, etc. **Our college is recognized as a local chapter and coordinator will guide the students appropriately.**

5. Add-On Course: Each department offering a *Certificate Course* with 10-20 contact hrs (after regular class hrs). **It can be availed by the interested students of any discipline from both UG and PG.** The course is conducted by the Head / course coordinator using either internal or external staff / experts as per the requirement.

Our college has been recognized as the nodal / network centre for conducting **Outreach Programmes of Indian Institute of Remote Sensing (ISRO, Dept of Space, Dehradun, India).** Students of any department can avail the courses as the **Add-On Course**, through coordinator.

List of Electives

Major Based Elective I		
Semester I	22KP1GELG1:1	Advanced Surveying
	22KP1GELG1:2	Disaster Management
Major Based Elective II		
Semester III	22KP3GELG2:1	Internship
	22KP3GELG2:2	Internal Internship / Field work
Major Based Elective III		
Semester IV	22KP4GELG3:1	Agricultural Geography
	22KP4GELG3:2	Population Geography

Non Major Elective I		
Semester II	22KP2GELO1	Environmental Geography
Non Major Elective II		
Semester III	22KP3GELO2	Geography of Tourism

Continuous Internal Assessment System

	Maximum	Components			Passing Minimum (50 %)
		Attendance	CIA	Seminar / Assignment	
Theory	25	05	15	05	13
Practical	40	05	15	20 (Record)	20

Question Pattern

Examinations	Part A	Part B	Part C
Semester Exam: Theory (75)	20 X 1=20 (Answer All)	5 X 5= 25 (Internal choice)	3 X10 =30 (Open choice)
Semester Exam: Practical (60)	5X10 = 50*	-	-
Semester Exam: SBEC Theory (75)	5 X 5= 25 (Internal choice)	5 X10 =50 (Open choice)	-
Semester Exam NME Theory (75)	5 x 5 = 25 (Internal choice)	5 X 10 = 50 (Open choice)	-
CIA Exam: Theory (50)	10 X 1=10 (Answer All)	4 X 5= 20 (Internal choice)	2 X10 =20 (Open choice)
CIA SBEC Theory / NME (50)	4 x5 = 20 (Internal choice)	3 X10 =30 (Open choice)	-
Model Exam Thoery (75)	20 X 1=20 (Answer All)	5 X 5= 25 (Internal choice)	3 X10 =30 (Open choice)
Model Exam: Practical (50) *	5X10 = 50	-	-

* *Department specific*

Question Allocation and Blooms Taxonomy for (Direct) Assessment

BL	No. Of Questions (Sections)			Total Marks	% of Marks
	A	B	C		
I. Remembering	12	4	2	12	50
II. Understanding	08			48	
III. Applying	-	4	2	20	33
IV. Analyzing	-			20	
V. Evaluating	-	2	1	10	17
VI. Creating	-			10	
Total Questions	20	10	5	120	100

QUESTION BLUE PRINT (75 Marks)

<i>Q.No</i>	<i>Unit</i>	<i>Blooms Level</i>
<i>Part A</i>		
1	1	Remembering I / Understanding II
2	1	Remembering I / Understanding II
3	1	Remembering I / Understanding II
4	1	Remembering I / Understanding II
5	II	Remembering I / Understanding II
6	II	Remembering I / Understanding II
7	II	Remembering I / Understanding II
8	II	Remembering I / Understanding II
9	III	Remembering I / Understanding II
10	III	Remembering I / Understanding II
11	III	Remembering I / Understanding II
12	III	Remembering I / Understanding II
13	IV	Remembering I / Understanding II
14	IV	Remembering I / Understanding II
15	IV	Remembering I / Understanding II
16	IV	Remembering I / Understanding II
17	V	Remembering I / Understanding II
18	V	Remembering I / Understanding II
19	V	Remembering I / Understanding II
20	V	Remembering I / Understanding II
<i>Part B</i>		
21 (a)	1	Remembering I / Understanding II
(b)	1	Remembering I / Understanding II
22 (a)	II	Remembering I / Understanding II
(b)	II	Remembering I / Understanding II
23 (a)	III	Applying III / Analyzing IV
(b)	III	Applying III / Analyzing IV
24 (a)	IV	Applying III / Analyzing IV
(b)	IV	Applying III / Analyzing IV
25 (a)	V	Creating V / Evaluating V I
(b)	V	Creating V / Evaluating V I
<i>Part C</i>		
26	I	Remembering I / Understanding II
27	II	Remembering I / Understanding II
28	III	Applying III / Analyzing IV
29	IV	Applying III / Analyzing IV
30	V	Creating V / Evaluating V I

Teaching Methodology Adopted:

The student centric teaching methodologies are incorporated in order to enhance the learning efficiency and to ensure the dissemination of knowledge among students effectively. Department is adopted a 20 % of ICT enabled classes out of total hours of each course work and documents (*Date, Hour, Course and unit, name of the faculty and sign of the representative student*) has been maintained for the same.

The faculty members who have been solving problems in the classroom and also aware of the assumptions which he or she brings to teaching. The faculty of our college should be aware of the institutional and cultural context of their teaching. They have been actively participated in curriculum development and seek professional development opportunities. Adopting reflective teaching methodology helps our faculty to think critically upon their experiences, actions and decisions during their teaching practice.