

**GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS)
KUMBAKONAM**



DEPARTMENT OF GEOGRAPHY



Programme : *M.SC., APPLIED GEOGRAPHY*

Programme Code : PSGE

SYLLABUS

[2021 – 2022 onwards]

GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS) KUMBAKONAM
(Curriculum – M.Sc., APPLIED GEOGRAPHY – 2021 - 2022)

Department: GEOGRAPHY

Programme Code

: PSGE

Course Type	Course Code	Title of the Course	Hrs/Week	Credits	Exam Hrs	Marks		
						CIA	ESE	Total
SEMESTER – I								
CC I	P21GC101	Applied Geomorphology	6	5	3	25	75	100
CC II	P21GC102	Climatology and Oceanography	6	5	3	25	75	100
CC III	P21GC103	Advanced Cartography	5	5	3	25	75	100
CC IV	P21GC104P	Practical - Terrain and Climatic Data Analysis	6	3	3	40	60	100
MBEC - I	P21G1MBE1:1	Environmental Geography	5	4	3	25	75	100
	P21G1MBE1:2	Disaster Studies						
	P21G1MBE1:3	Hydrology						
SEC - I	P21G1SE1	Health and Wellbeing	2	2	2	25	75	100
Total			30	24				600
SEMESTER – II								
CC V	P21GC205	Population and Settlement Geography	5	5	3	25	75	100
CC VI	P21GC206	Agricultural Geography	5	5	3	25	75	100
CC VII	P21GC207	Geographical Thought	5	5	3	25	75	100
CC VIII	P21GC208P	Practical - Socio-Economic Data Analysis	6	3	3	40	60	100
MBEC - II	P21G2MBE2:1	Geography of India	5	4	3	25	75	100
	P21G2MBE2:2	Quantitative Methods in Geography						
	P21G2MBE2:3	Coastal Geomorphology						
EDC	P21G2EDC	Remote Sensing and GIS	2	2	3	25	75	100
SEC - II	P21G2SE2P	GIS	2	1	2	40	60	100
Total			30	25				700
SSC - I	P212SS1	General Studies for Research Fellowships and Lectureship		2	2	-	100	100
NCGPA (Internship)	INT	-		2		-	-	-
SEMESTER – III								
CC – IX	P21GC309	Social and Cultural Geography	6	5	3	25	75	100
CC – X	P21GC310	Research Methodology in Geography	6	5	3	25	75	100
CC – XI	P21GC311	Urban Geography	6	5	3	25	75	100
CC - XII	P21GC312P	Practical – Applied Statistics	6	3	3	40	60	100
MBEC – III	P21G3MBE3:1	Remote Sensing, GIS and GNSS	6	4	3	25	75	100
	P21G3MBE3:2	Political Geography						
	P21G3MBE3:3	Geography of Tourism						
Total			30	22				500
SSC - II	P21GC3SS2	Geography for Competitive Examinations		2	2	-	100	100
SEMESTER – IV								
CC- XIII	P21GC413	Regional Planning	6	5	3	25	75	100
CC-XIV	P21GC414P	Practical - Map and Image Interpretation	6	4	3	40	60	100
CC-XV	P21GPW415	Project	12	6	-	-	100	100
MBEC- IV	P21G4MBE4:1	Transport Geography	6	4	3	25	75	100
	P21G4MBE4:2	Geography of Economic Activities						
	P21G4MBE4:3	Climate Changes and its Impacts						
Total			30	19				400

**COURSE STRUCTURE ABSTRACT FOR
M.Sc. PROGRAMME 2021-2022 ONWARDS**

Part	Course	Total No Papers	Hours	Credit	Mark
III	Core Course (CC)	14	80	63	1400
III	Core Project	1	12	6	100
III	Major Based Elective Course – IV (MBEC)	4	22	16	400
III	Extra Disciplinary Course (EDC)	1	2	2	100
III	Skill Enhancement (SEC)	2	4	3	200
Total		22	120	90	2200
Extra Credit Courses					
Self Study Course (SSC)		2	-	4	200
NCGPA Course (Internship)		---	-	2	---
Value Added Course		1	-	2	100
Total		3		98	2500

PROGRAMME OUTCOME

1. Understand the unifying themes of both human and Environment interactions.
2. Working knowledge of the discipline in diversifying world.
3. Understanding and Performance: Research and Result via written, Oral, Graphical, Geospatial maps and Quantitative outlet.
4. Student will be able to prove proficiency with the ability to clear in competitive exams like UPSC, NET, SET and TNPSC.

SPECIFIC PROGRAMME OUTCOME:

1. Applying knowledge of Global issues to a unique scientific problem.
2. Evaluate and Apply geographic methods and associated theories used to analyse and advance Geographic concepts.
3. Student will be able to analyse the problems of physical as well as cultural environments of both rural and urban areas. Moreover, they will try to find out the possible measures to solve those problems.
4. Showing an awareness and responsibility for the environment.
5. Demonstrating Proficiency using Geographical Research tools including spatial statistics, Cartography, Remote sensing, GIS and GPS.
6. Students will be able to learn the application of various modern instruments and by these they will be able to collect data primary data.
7. Develop and idea about different types of Mapping Techniques.

SIGNATURE OF THE H.O.D.

SEMESTER – I**CORE COURSE – I****APPLIED GEOMORPHOLOGY**

Theory Hours	:6	Course Code	: P21GC101
Practical Hours	:-	Credits	: 5
Exam Hours	:3	Marks	:100

OBJECTIVES

- To introduce the basic concepts of geomorphology to the students of geography
- To understand the origin of Landforms, Weathering, Erosion and Depositional Processes
- To know the applications of geomorphology, helps employment in different fields like civil, mineral and coastal departments.

UNIT I

Nature, Scope and Content of Geomorphology – Fundamental Concepts – Geological Time Scale - Continental Drift theory – Plate tectonics – Recent Trends in Geomorphology

UNIT II

Internal Processes: Diastrophism – Folds and Faults – Earthquake, Volcanism. External Processes: Weathering, Mass Wasting and Soil Formation – Soil Erosion

UNIT III

Denudational Processes: Erosional, Transportational and Depositional Landforms: Fluvial, Glacial, Aeolian, Coastal and Karst – Flood Management

UNIT IV

Cycle of Erosion: Davis and Penck - Slope Development Theories: Davis, Penck, King and Wood – Landslide Management

UNIT V

Applied Geomorphology: Application in Mineral Exploration – Hydrology, Engineering and Land Use Planning.

LEARNING OUTCOMES

The following will be the outcomes of the course:

- CO1**-The student will demonstrate knowledge of the historical development of geomorphology and fundamental concepts of modern geomorphology.
- CO2**-The course will provide an understanding of the conceptual and dynamic aspects of landform development. They will also gain knowledge of the Geomorphic Processes.
- CO3**-The students will know about the causes and consequences of Natural and Man Made Disasters.
- CO4**-They able to analyze how variations in Climate, Tectonics and Environment affect the development of landforms.
- CO5**-They learn the relevance of applied aspects of Geomorphology in various fields.

REFERENCE BOOKS

1. Mc Geary, D. and Plummer, C. C., (1994) Earth Revealed, W. C. B. Publishers.
2. Ritter, D.F., Kochel, R.C. and Miller, J.R., (2002) Process Geomorphology, Waveland Press
3. Huggett, R.J. (2007) Fundamentals of Geomorphology, Routledge.
4. Robert, S.A. and Suzanne, P.A., (2010) Geomorphology – The mechanics and chemistry of landscapes. Cambridge University Press
5. Christopherson, R. W. and Birkeland, G. H., (2012) Geosystems: An Introduction to Physical Geography (8th edition), Pearson Education.
6. Bierman, P.R. and Montgomery, D.R., (2014) Key concepts in geomorphology, Freeman and Company Publishers.
7. Kale, V. and Gupta, A. (2018) Introduction to Geomorphology, Orient Black Swan
8. Thornbury, W.D. (2019) Principles of Geomorphology, Third Edition, New Age International Publishers.

MAPPING OF POs WITH COs

	Programme outcome				Programme Specific Outcome							
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	
OUTCOMES	CO1	✓	✓		✓		✓			✓	✓	
	CO2	✓	✓		✓	✓	✓			✓		
	CO3	✓	✓		✓	✓	✓				✓	
	CO4	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
	CO5	✓	✓	✓	✓	✓	✓					

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – I**CORE COURSE – II****CLIMATOLOGY AND OCEANOGRAPHY**

Theory Hours	: 6	Course Code	: P21GC102
Practical Hours	: --	Credits	: 5
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- *Climatology aims to study the nature of climate, the causes and interpretations of its spatial variation.*
- *The main aim of the Oceanography is to promote understanding the ocean systems.*

UNIT I

Climatology: Scope and Significance – Atmosphere: Composition and Structure - Solar radiation - Air temperature – heat balance - Atmospheric Pressure - General circulation of the atmosphere – Monsoon - Jet streams

UNIT II

Stability and instability of the atmosphere - Air masses – Fronts – Precipitation – Atmospheric disturbances – temperate and tropical cyclones – Thunderstorms

UNIT III

World Climatic Regions – Koppen’s and Thornthwaite’s Classification - Climatic changes – evidences and theories – Applied climatology – micro climate – agro climate - urban climate – global warming – heat island – health hazards

UNIT IV

Bottom relief of Pacific, Atlantic and Indian Oceans - Ocean deposits – Origin, Types and Distribution - Coral reef - Conditions for growth - types and distribution

UNIT V

Temperature and Salinity: vertical and horizontal distribution – Density of the Sea Water - Movement of Sea Water: Waves, Tides, Currents and Tsunami

LEARNING OUTCOMES

The following will be the outcomes of the course, student would able to:

CO1-Understand the basic principles of climatology and complexity of meteorological processes.

CO2-Analyze atmospheric and oceanic circulation systems as well as their interconnections and driving forces.

CO3-Describe the principals involved in the generation of waves and tides and evaluate their effects on coastal processes and marine ecosystems.

REFERENCE BOOKS

1. Barry, R.G. & Chorley, R.J., (2003) Atmosphere, Weather and Climate, 11th Edition, Routledge.
2. Waugh D. (2005) Geography: An Integrated Approach, Nelson Thornes, Cheltenham.
3. Lal, D.S., (2005) Climatology, Sharda Pustak Bhawan, Allahabad.
4. Lutgens, F.K., Tarbuck E.J. and Tasa D., (2009) The Atmosphere: An Introduction to Meteorology, 11th Edition, Prentice Hall.
5. Stewart, R. (2009) Introduction to Physical Oceanography, Orange Grove Books
6. Christopherson, R. W. and Birkeland, G. H., (2012) Geosystems: An Introduction to Physical Geography (8th edition), Pearson Education, New Jersey.
7. Pinet P.R. (2012) Invitation to Oceanography, 6th Edition, Jones & Bartlett Learning

MAPPING OF POs WITH Cos

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1		✓	✓	✓	✓	✓	✓	✓		✓	✓
CO2	✓	✓	✓	✓	✓	✓	✓	✓		✓	
CO3	✓			✓	✓			✓			

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – I**CORE COURSE – III****ADVANCED CARTOGRAPHY**

Theory Hours	: 5	Course Code	: P21GC103
Practical Hours	: --	Credits	: 5
Exam Hours	: 3	Marks	: 100

OBJECTIVE

- To introduce the students, the theories and techniques in modern map-making concepts
- The course will also develop practical skills in preparing and drafting of thematic maps
- To learn internet mapping and mobile mapping

UNIT I

Nature, Scope and content of Cartography – Arts and Science of Cartography – Cartography as a system of communication - Maps – Classification and their uses

UNIT II

Growth, Development and Modern Trends in Cartography - The Earth and System of Coordinates – Choice of Map Projection – UTM Projection

UNIT III

Compilation and Generalization - Symbolization – Mapping the Qualitative and Quantitative Data – Representation of Relief, Physical and Cultural Features

UNIT IV

Map Design and Layout – General design problems – Principles and Techniques of Map Design and layout – Design of Map Symbols – Lettering and Toponymy – Lettering Methods – Types and Characteristics.

UNIT V

Map Reproduction – Reproduction Processes - Printing and Non-Printing Processes, Photo copier, Plotter and Scanner – Modern Techniques (GIS and GNSS)

LEARNING OUTCOMES

The following will be the outcomes of the course, student would able to:

CO1-Students learn about the different types of maps and mapping techniques.

CO2-Students learn to construct of the map in proper way.

CO3-Students should be known about the differentiate the qualitative and quantitative data.

CO4-After completion of this course they know about the reproduction processes and its modern techniques.

REFERENCE BOOKS

1. Monkhouse, F.J. and Wilkinson, H.R. (1994) Maps and Diagrams, Methuen, London.
2. Robinson, A.H. et al. (1995) Elements of Cartography, John Wiley & Sons, U.S.A
3. Kraak M.J. (2010) Cartography: Visualization of Geospatial Data (3rd edition), Pearson Education Ltd., London.
4. Slocum T., McMaster R., Kessler F. and Howard H. (2013). Thematic Cartography and Geovisualization (3rd edition), Pearson New International Edition (eBook).

MAPPING OF POs WITH Cos

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1		✓	✓	✓	✓	✓	✓		✓	✓	✓
CO2			✓	✓	✓	✓	✓	✓	✓	✓	✓
CO3	✓		✓	✓	✓		✓		✓	✓	✓
CO4	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – I**CORE COURSE – IV****PRACTICAL – TERRAIN AND CLIMATIC DATA ANALYSIS**

Theory Hours	: --	Course Code	: P21GC104P
Practical Hours	: 6	Credits	: 3
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To understand the representation of reliefs.
- To attempt drainage and slope analysis.
- To understand to prepare suitable diagrams for various climatic datasets.

1. PROFILE

- Serial Profile
- Super imposed Profile
- Projected Profile
- Composite Profile
- Longitudinal Profile

2. SLOPE ANALYSIS

- Smith Method
- Wentworth Method
- Robinson Methods

3. MORPHOMETRIC ANALYSIS

- Linear Aspects
- Areal Aspects
- Relief Aspects
- Watershed Delineation

4. CLILMATIC DIAGRAMS

- E.E.Foster's Climograph
- Climatograph
- Windrose Diagram
- Isopleths (Isotherms, Isobars and Isohyets)
- Rainfall Dispersion Diagram
- Water Balance Method

LEARNING OUTCOMES

The following will be the outcomes of the course, student would able to:

CO1-Create professional and aesthetically pleasing maps through contours, thoughtful application of cartographic conventions.

CO2-Apply slope analysis methods to calculate slope of an area

CO3-Perform morphometric analysis for different drainage patterns.

REFERENCE BOOKS

1. R.L. Singh - Elements of Practical Geography, Kalyani Publishers, New Delhi.
2. F.J. Monkhouse and H.R Wilkinson, Maps and Diagrams, B.I. Publications, Madras.
3. Gopal Singh – Map work and Practical Geography, Vikas publishing house Ltd.
4. Khullar. D.R., Practical Geography, Kalyani Publishers, New Delhi.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓		✓	✓	✓			✓	✓		✓
CO2		✓	✓	✓			✓	✓	✓	✓	✓
CO3		✓	✓		✓	✓			✓	✓	✓

P.G Question Paper Pattern (SEM: 60 marks + CIA: 40marks = Total: 100 marks)

SEMESTER – I**CHOICE I-MAJOR BASED ELECTIVE COURSE-I
ENVIRONMENTAL GEOGRAPHY**

Theory Hours	: 5	Course Code	: P21G1MBE1:1
Practical Hours	: --	Credits	: 4
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To understand the components of ecosystem and explore man and environment relationship.
- To learn about natural and man induced disruptions in the ecosystem
- To explore climate change and its implications on ecosystems

UNIT I

Environment – Elements and Types - Man and environment relationships – determinism – Possibilism, changing nature of concept – lithosphere – hydrosphere – biosphere – multi disciplinary approach

UNIT II

Concept of Ecosystem – Forms and functions of Ecosystem — classification: forest, grassland, marine and mountain ecosystem – Biomes – food web – food pyramid – nutrient cycle – biodiversity – types

UNIT III

Natural disruptions of the ecosystem – Natural hazards – landslide, earthquake, volcano, floods and droughts – Pollution – Ozone Depletion - Human interference on ecosystem – Population growth and its impact – Man’s modifications of the biosphere – agriculture – Green Revolution

UNIT IV

Environmental planning and management; objectives and strategies; natural resource management and conservation (land, water and forest) – sustainable development concept - need, problems and strategies – EIA principles and procedures

UNIT V

Climate change - causes and consequences - Stockholm conference, Earth summits and Round tables and Kyoto Protocol - world climate data monitoring programme - Environment related policies and programmes in India - Environment Governances

LEARNING OUTCOMES

CO1-Student would be able to understand the forms and functions of ecosystem.

CO2-Students will be well – versed with the analyzing different environmental programmes and policies.

REFERENCE BOOKS

1. White G.F. (1993) – Environment as a Hazard, Toronto.
2. Bruce Mitchell (1995) Resources and Management Orient Long Man London.
3. Trivedi, R.N (1997) - A Text Book of Environmental Sciences, Anmol Publications Pvt.Ltd New Delhi.
4. Rajagopalan, R. (2015) – Environmental Studies, 3rd Edition, Oxford University Press.
5. Sexna, H.M (2017) – Environmental Geography, 3rd Edition, Rawat Publications Jaipur.
6. Mhaua Basu, S. Xavier (2017) – Fundamentals of Environmental Studies, Cambridge University Press.
7. Savindhra Singh (2018) - Environmental Geography Prayag Pushtak Bhawan University Road, Alagabad.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓	✓	✓		✓		✓	✓			
CO2	✓	✓		✓	✓		✓	✓		✓	

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – I**CHOICE II-MAJOR BASED ELECTIVE COURSE – I
DISASTER STUDIES**

Theory Hours	: 5	Course Code	: P21G1MBE1:2
Practical Hours	: --	Credits	: 4
Exam Hours	: 3	Marks	: 100

OBJECTIVE

- The study of this paper aims to introduce basic concepts of disaster to reduce or avoid the potential losses from hazards and kindle the students to provide prompt and appropriate assistance to victims of disaster and help rapid and effective recovery of community.

UNIT I

Introduction: Concepts and Terminologies: Disaster, Hazard, Catastrophes, Emergency, Risks, Vulnerability - Types of Disasters - Trends - Impacts: Physical, Social, Economic, Political, Environmental and Psychosocial - Resilience

UNIT II

Natural Disasters: Geophysical: Earthquakes, Tsunamis, Landslides and Volcanoes - Hydrological: Floods and Avalanches - Meteorological: Cyclones, Drought, Extreme Temperatures and Wildfires - Biological: Disease Epidemics and Insect / Animal Plagues

UNIT III

Anthropogenic Disasters: Atmospheric Disasters: Global Warming, Ozone Depletion, Acid Rain, Snow Melt, Sea Level Rise - Chemical / Industrial Disasters: Fire Accidents, Nuclear Disasters, Mining, Chemical Pollution, Oil spill and Industrial Waste - Biological Disasters: Deforestation, Bio-Diversity, Loss and Coral / Mangrove Depletion - Others: Stampede, Conflicts, Terrorist attacks and Transport Accidents

UNIT IV

Disaster Risk Management: Management Cycle: Response and recovery, Risk Assessment, Mitigation and Prevention, Preparedness Planning, Prediction and warning - Indigenous Knowledge - Community Based Disaster Management - Role of Geoinformatics - Do's and Don'ts During Disasters

UNIT V

Disaster Management in India: Hazard and Vulnerability Profile of India - Institutional Framework: Disaster Management Act - Policy and Guidelines - International Strategy for Disaster Reduction

LEARNING OUTCOMES

- CO1**-After completion of course, the students will have comprehensive knowledge of various natural and man-made disasters.
- CO2**-This course will create the culture and attitude of prevention of disasters.
- CO3**-The students will be able to assist disaster management system and offer appropriate assistance to the victims of disaster.

REFERENCE BOOKS

- Carter, N. (1991) Disaster Management: A Disaster Manager's Handbook. Asian Development Bank, Manila.
- Govt. of India (2008) Vulnerability Atlas of India. BMTPC, New Delhi.
- Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
- Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
- Govt. of India (2011) Disaster Management in India. Ministry of Home Affairs, New Delhi.
- Savindra S. and Jeetendra S. (2013) Disaster Management, Pravalika Publications, Allahabad.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓	✓		✓	✓		✓	✓	✓	✓	
CO2	✓			✓	✓		✓			✓	
CO3	✓	✓		✓	✓		✓	✓		✓	

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – I**CHOICE III -MAJOR BASED ELECTIVE COURSE - I
HYDROLOGY**

Theory Hours	: 5	Course Code	: P21G1MBE1:3
Practical Hours	: --	Credits	: 4
Exam Hours	: 3	Marks	: 100

OBJECTIVES:

- At the end of the course students able to explain principles of hydrology.
- Identify and explain various sources of water and its importance.

UNIT – I

Introduction: Water as a focus of geographical interest, Distribution and Balance Hydrological Cycle – Components of Hydrological cycle.

UNIT – II

Precipitation Forms and Types of precipitation Measurements of precipitation.

UNIT – III

Evapotranspiration process of Transpiration, Process of Evaporation Measurement of Evapotranspiration Lysi Meter Method only.

UNIT – IV

Surface Water: infiltration and soil moisture: The Process of infiltration zones of sub surface water Runoff: Factors affecting run off.

UNIT – V

Ground Water: Definition porosity and permeability aquifers, Ground water levels artesian wells – Location and distribution.

LEARNING OUTCOMES

CO1-Students understand the role of hydrology (surface water, ground water)

CO2-Complete the basic hydrology or water resources research projects that involves integrated problem solving.

REFERENCE BOOKS:

1. Introduction to physical hydrology Richard and J. Charley Methuen &Co Ltd London. April 2019
2. Applied principles of Hydrology John. C. Manning, CBS. Publishers & Distributors, Delhi.
3. Hand book of hydrology English (Sing Vijay.P)

MAPPING OF POs WITH Cos

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓	✓	✓	✓	✓			✓	✓	✓	✓
CO2	✓	✓	✓	✓			✓	✓	✓	✓	

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – I**SKILL ENHANCEMENT COURSE I****HEALTH AND WELL BEING**

Theory Hours	: 2	Course Code	: P21G1SE1
Practical Hours	: --	Credits	: 2
Exam Hours	: 2	Marks	: 100

OBJECTIVES

- *The social, built and natural environments affect our health and well-being in ways that are directly relevant to health policy. Geography and Health are intrinsically linked.*
- *The application of spatial aspects to health related data will help students to understand the environmental risks as well as many other health effects in an effective way.*

UNIT I

Perspectives on Health - Linkages with Environment - Development and Health - Human Activities and Environmental Pressure - Food Production and Nutrition

UNIT II

Driving Forces in Health and Environment: Population Dynamics, Urbanization, Poverty and Inequality

UNIT III

Exposure and Health Risks: Air Pollution – Household Waste – Water Pollution – Housing and Workplace

UNIT IV

Types of Diseases and their Regional Pattern - Health and Disease Pattern in India (Communicable and Lifestyle related diseases) - Biological Disease Agents

UNIT V

Climate Change and Human Health: Changes in Climate System – Problems in Heat and Cold Areas – Micro-climate changes and health

LEARNING OUTCOMES

- CO1**-Upon studying the course, the student will generate awareness about the driving forces of health and wellbeing.
- CO2**-The students will be able to develop linkages between spatial pattern of the disease with geographical parameters and present policy measures to reduce it
- CO3**-Students will be able to explain the relationships among housing, lifestyle, occupation, environment and health
- CO4**-Students will become competitive to identify linkages between global environmental change, micro climate, heat and cold wave and human health.

REFERENCE BOOKS

1. Akhtar Rais (Ed.), 1990: Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi.
2. Phillips, D. and Verhasselt, Y., 1994 Health and Development, Routledge, London.
3. Cristaler George and Hristopoles Dionissios, 1998: Spatio Temporal Environment Health Modelling, Boston Kluwer Academic Press.
4. Gatrell, A., and Loytonen, 1998: GIS and Health, Taylor and Francis Ltd, London.
5. Avon Joan L. and Jonathan A Patzed. 2001: Ecosystem Changes and Public Health, Baltimin, John Hopling Unit Press(ed)

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1				✓	✓						
CO2				✓	✓			✓			
CO3		✓	✓				✓			✓	
CO4	✓	✓		✓	✓		✓	✓		✓	

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	Five Questions (Two questions from each unit – either or type)	15 x 5 = 75
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SEMESTER – II**CORE COURSE – V****POPULATION AND SETTLEMENT GEOGRAPHY**

Theory Hours	: 5	Course Code: P21GC205
Practical Hours	: --	Credits : 5
Exam Hours	: 3	Marks : 100

OBJECTIVES

- To study the spatial variations in the distribution, composition, migration and growth of populations in a geographical perspective.
- To study the spatial and structural characteristics of human settlements under varies environmental conditions.

UNIT I

Nature, scope and significance of population geography – Sources of Population data – Reliability of Population data - World population - Factors - Distribution and Density.

UNIT II

Dynamics of population – Fertility and Mortality – Measures and Determinants - world trend – World population growth– Theories of Population growth - Malthus, Ricardo and Marx – Migration: Types – Determinants – Causes and Consequences of migrations – Laws and policies of migrations.

UNIT III

Population composition characteristics – age, sex, literacy, rural, urban and occupation – Socio Economic Indicators - population resources relationship – population resource regions, population policies.

UNIT IV

Nature, scope and development of settlement geography – site, situation, types, size, spacing and internal morphology of rural settlements

UNIT V

Urban Settlements: Origin of Cities – Stages of Urban Growth - Site, Situation and Types – Urban Morphology - Urbanization.

LEARNING OUTCOMES

- CO1**-This paper would bring an understanding of population and settlement geography along with the relevance of demographic data.
- CO2**-Students will have a proper understanding of the implications of population composition in different regions of the world.
- CO3**-Students can able to identify and describe the structure and organization of urban and rural settlements in different regions.
- CO4**-They can evaluate the function of a city and explain how its services affect its influence the surrounding rural areas.

REFERENCE BOOKS

- Cole, J.P. and King, C.A.M. (1968). Quantitative Geography: Techniques and Theories in Geography. John Wiley & Sons Inc, New York.
- Gosh, B.N (1987)– Population Geography, Streling Publications.
- Singh, R.Y. (2002). Geography of Settlements. Rawat Publication, New Delhi.
- Chandna,R.C (2012)-Geography of Population, Kalyani Publishers,Ludhiana
- Maurya, S.D. (2012). Human Geography. Prayag Publications, Allahabad.
- Debjani Roy (2015)-Population Geography,Books and Allied Private Limited, Kolkata.

MAPPING OF POs WITH COs

OUTCOMES		Programme outcome				Programme Specific Outcome						
		PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO2	✓	✓	✓	✓	✓		✓	✓		✓	✓
	CO3	✓	✓	✓	✓			✓			✓	
	CO4	✓	✓	✓	✓	✓		✓	✓		✓	✓

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – II**CORE COURSE - VI****AGRICULTURAL GEOGRAPHY**

Theory Hours	: 5	Course Code	: P21GC206
Practical Hours	: --	Credits	: 5
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To understand the different approaches in agricultural geography to study agricultural productivity, land use planning and agricultural systems
- To learn about factors, causes and problems of regionalization of agriculture.

UNIT I

Nature, Scope and significance of agricultural geography – Approaches - Agricultural types and their Characteristics - Determinants of Agriculture – Physical, Economic, Social Institutional and technological factors – Green Revolution – First and Second - Implications.

UNIT II

Agricultural Statistics and Sampling: Geographical, Agricultural, Land Utilization, Crop, Irrigation, Indian and World Agricultural Statistics – Techniques and Methods of Sampling: Random, Purposive, Systematic, Stratified and Multistage

UNIT III

Agricultural productivity – Determinants - Measurements - Cropping Pattern – Crop combinational Analysis: Weaver's, Doi's and Rafiullah's Method. Crop diversification – Bhatia.

UNIT IV

Von Thunen's model - Modification and Application of Von Thunen's theory – Land use - Types – Land Evaluation and GIS Land use Planning - Land capability classification – Remote sensing in land use analysis.

UNIT V

Agricultural systems of the World, India – Whittlessey's agricultural classification – Agro-Ecological Regions in India

LEARNING OUTCOMES

The following will be the outcomes of the course, student would able to

CO1-Understand the determinants of agriculture and agricultural productivity.

CO2-Appraise various agricultural land use models.

CO3-Familiarize with the agricultural types in the world.

REFERENCE BOOKS

1. Hussain, M. (2004) – Agricultural Geography, Rawat Publications, New Delhi
2. Morgan, W.B & Muntan, R.J.C. – Agricultural Geography
3. Singh Jasbir, and Dhillon - Agricultural Atlas of India - A Geographical Analysis, Vista Publishers, Krukshetra.
4. Symons, I – Agricultural Geography, G. Bells & Sons, London.
5. Savindra Singh and Dhillon - Agricultural Geography.
6. Dr. Alka Gautam (2016) – Sharda Pustak Bhavan, Allahabad.

MAPPING OF POs WITH COs

OUTCOME	Programme outcome				Programme Specific Outcome							
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
CO2	✓	✓		✓		✓	✓	✓			✓	
CO3	✓	✓		✓	✓	✓	✓				✓	✓

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – III**CORE COURSE – VII****GEOGRAPHICAL THOUGHT**

Theory Hours	: 5	Course Code	: P21GC207
Practical Hours	: --	Credits	: 5
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To understand the evolution of geographical thought, ideas and knowledge right from the early Greek period to modern periods.

UNIT I

Geographic knowledge during the ancient, medieval and modern period - Contributions of Greek, Roman, Arab and Indian scholars to geography - Foundations of modern geography

UNIT II

German, French, British and American schools of geographical thought - Major geographic traditions – earth science, man & environment relationship – area studies and spatial analysis.

UNIT III

Dualism in Geography - Physical Vs Human, Regional Vs Systematic, Determinism Vs Possibilism, Qualitative Vs Quantitative and Ideographic Vs Nomothetic

UNIT IV

Forms of explanations in geography – Models, Theories and laws in geography – Quantitative revolution.

UNIT V

Perspectives in geography – Positivism, Humanism, Radicalism, Behaviouralism, Marxism, Structuralism, and Feminism.

LEARNING OUTCOMES

- CO1**-Student would able to get an insight into the historical evolution of the subject of geography. It will help them creating philosophical foundation of the subject.
- CO2**-The contemporary modern views incorporated will inculcate critical thinking to the students.

REFERENCE BOOKS

- Freeman. R. (1970) Hundred Years of geography – Hutchinson London.
- Negi B.S. (1994) Geographical thought – Karinath Ramnath meerat.
- Harvey D. Explanation to geography Edward Arnold publication, London.
- Bonnett A., (2008) What is Geography? Sage
- Bhat, L.S. (2009) Geography in India (Selected Themes). Pearson
- Majid Husain (2013) Evolution of Geographical Thought, Rawat Publications, Jaipur.
- Siddhartha K, & Mukherjee S (2016), A Modern Dictionary of Geography, Kitab Mahal, Allahabad.
- Singh, R.B. (2016) Progress in Indian Geography, Indian National Science Academy, New Delhi.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓	✓			✓	✓		✓			✓
CO2		✓	✓		✓	✓			✓		

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – II**CORE COURSE - VIII**

PRACTICAL – II
SOCIO-ECONOMIC DATA ANALYSIS

Theory Hours	: --	Course Code	: P21GC208P
Practical Hours	: 6	Credits	: 3
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To learn the basics of constructing graphs and diagrams.
- To understand the mapping techniques of socio-economic data.
- To perform spatial analysis for agricultural data

1. GRAPHS AND DIAGRAMS

- a. Simple and Multiple Line Graphs
- b. Simple and Multiple Bar Diagrams
- c. Compound Bar Diagrams
- d. Log and Semi Log graph

2. MAPPING OF POPULATION DATA

- a. Located Bar, Sphere and Pie Diagrams
- b. Dot Maps
- c. Choropleth Maps
- d. Isopleths Maps
- e. Age and Sex Pyramids

3. MAPPING OF SETTLEMENT ANALYSIS

- a. Triangular Method
- b. Occupational Data (Core Periphery Model)
- c. Nearest Neighbour Analysis
- d. Centographic Techniques
- e. Network Analysis

4. MAPPING OF AGRICULTURAL DATA

- a. Index of Concentration
- b. Index Diversification
- c. Crop Combination Analysis (Weaver's, Doi's and Rafiuallah's Methods)

LEARNING OUTCOMES

The following will be the outcomes of the course, student would able to

- CO1**-Construct located diagrams and thematic maps for different socio-economic data.
CO2-Attempt statistical and spatial analysis for agricultural data for agricultural regionalization

REFERENCE BOOKS

1. F.J.Monkhouse & H.R.Wilkinson (1971) – Maps and Diagrams, Dirton Co- New York 1971.
2. R.L Singh (1979) – Elements of Practical Geography – Kalyani Publishers New Delhi, 1979.
3. Kansy, Y. – The Structure of Transportation Network.
4. Tafee, E.J.& H.L Gauthier – Geography of Transportation, Prentice Hall, New York.
5. Majid Hussain (2004) – Agricultural Geography, Rawat Publications, New Delhi.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓	✓	✓	✓	✓	✓			✓	✓	✓
CO2		✓	✓	✓	✓			✓		✓	✓

P.G Question Paper Pattern (SEM: 60 marks + CIA: 40 marks = Total : 100 marks)

SEMESTER – II**CHOICE I-MAJOR BASED ELECTIVE COURSE - II
GEOGRAPHY OF INDIA**

Theory Hours	: 5	Course Code	: P21G2MBE2:1
Practical Hours	: --	Credits	: 4
Exam Hours	: 3	Marks	:100

OBJECTIVES

- To understand the physical and human environment of India and provide the picture of the distinctiveness of different geographical regions of the country

UNIT I

Physical Setting: Location, Major Physiographic Divisions – Climate – Soil – Drainage Systems and Irrigation types – Multi-Purpose Projects – Natural Vegetation

UNIT II

Agriculture Resources: Food Crops: Rice and Wheat – Cash Crops: Sugarcane and Tobacco – Plantation Crops: Tea and Coffee – Fiber Crops: Cotton and Jute – Green Revolution – Animal Resources: Cattle and Sheep Rearing – White Revolution – Fisheries: Fresh and Marine Water Fishing – Blue Revolution

UNIT III

Mineral Resources: Distribution and Production of Iron Ore, Bauxite and Mica – Energy Resources: Distribution and Production of Coal, Petroleum and Atomic Minerals – Non Conventional Energy: Solar, Wind and Tidal Geothermal

UNIT IV

Industries and Transport: Distribution and Production: Iron and Steel – Cotton Textiles – Cement – Chemical and Electronic Industries – Industrial Regions of India – Means of Transport Roadways – Railways – Airways and Waterways – Communication: Telecommunication – Information Technology Development

UNIT V

Human Resources and Trade: Human Resources: Growth, Distribution and Density of Population, Population Problems – Trade: Volume and Composition of India's Foreign Trade – Role of India in SAARC and BRICKS

LEARNING OUTCOMES

- CO1**-After completion of course, the students will have a proper understanding of the physical, cultural, economic and demographic aspects of India which will help them to pursue it for competitive exams.

REFERENCE BOOKS

- Tikka, Bali, Sekhon - Geography of India, New Academic Publishing Company, Jalandhar, 1994
- Gopal Singh – Geography of India, Atma Ram & Sons, New Delhi, 1995.
- Memoria, C.B, Economic and Commercial Geography of India, Sivalal agrawal and company, Agra 1995.
- Sharma T.C. and Countinho. O – Economic and Commercial Geography of India, Vikas Pub. House, New Delhi, 1998.
- Pal. Saroj K. Physical Geography of India – A Study in Regional Earth Sciences, Orient Longman Pvt. Ltd., Kolkata (2003)
- Majid Hussain, Geography of India, Tata McGraw Hill Publishing Company Ltd., New Delhi, (2008)
- Khullar. D.R., India – A Comprehensive Geography, Kalyani Publishers, New Delhi, (2010)

MAPPING OF POs WITH COs

OUTCOME	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓			✓		✓	✓			✓	

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – II**CHOICE II-MAJOR BASED ELECTIVE COURSE - II****QUANTITATIVE METHODS IN GEOGRAPHY**

Theory Hours	: 5	Course Code	: P21G2MBE2:2
Practical Hours	: --	Credits	: 4
Exam Hours	: 3	Marks	: 100

OBJECTIVES:

- The subject provides an introduction to quantitative methods used by geographers to analyze and interpret geographic data and solve geographic problems.
- Topics include descriptive statistics, hypothesis formulation and testing, sampling strategies, correlation, regression and spatial patterns.

UNIT I

Introduction – Significance of the Quantitative Techniques in Geographical Studies – Geographical Data – Physical, Social, Cultural and Demographic Data. Data Collection and Sources: Types of Data – Sources – Tools. Measurement of Data – Levels of Measurement – Nominal, Ordinal, Interval and Ratio Scales.

UNIT II

Tabulation and Summarizing of Geographical Data – Classification – Class limits – Class Interval – Matrix – Frequency Grouping – Curve – Graphs and Their Application in Geography.

UNIT III

Measures of Central Tendency: Mean, Median, Mode.

Measures of Dispersion: Range, Quartile Deviation, Mean Deviation, Standard Deviation and Variability.

UNIT IV

Correlation and Regression Analysis: Pearson's Product Movement and Spearman's Rank Correlation – Simple Linear Regression Analysis.

UNIT V

Formulation and Testing of Hypothesis: Chi square Test, 't' Test and 'F' Test. Probability: Meaning – Approaches – Theorems of Probability.

LEARNING OUTCOMES

After learning students should be able to:

- CO1-Understand how to work out the statistical data in geography and limitations.
- CO2-Understand the diagrammatic and graphic representation.
- CO3-Student to learned measures of central Tendency.
- CO4-Apply the various statistical methods used in geographical analysis.

REFERENCE BOOKS

1. Aslam Mahamood, Statistical Methods in Geographical Studies, Rahesh Publications, New Delhi 1977.
2. Cole.J.P. and C.A.M. King – Quantitative Geography, Willey International, New York, 1968.
3. Gregory, S. Statistical Methods and the Geographer, London, 1963.
4. King. L.J. Statistical Analysis in Geography, Prentice Hall, New Jersey, 1969. .
5. R. Hammond,R & McCullagh P.S. (178) “Quantitative Techniques in Geography – An Introduction Clarendon Press – Oxford University Press.
6. R.S.N. Pillai & Bagavathi – Statistics – S.Chand & Company Ltd., New Delhi, 2010.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1			✓	✓	✓		✓		✓	✓	✓
CO2			✓	✓					✓	✓	✓
CO3			✓	✓		✓	✓		✓	✓	✓
CO4			✓	✓		✓	✓		✓	✓	✓

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – II**CHOICE III-MAJOR BASED ELECTIVE COURSE - II
COASTAL GEOMORPHOLOGY**

Theory Hours	: 5	Course Code	: P21G2MBE2:3
Practical Hours	: --	Credits	: 4
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To study of the morphological development and evolution of the Coast.
- To understand the influences winds, waves, currents and sea level changes.

UNIT I

Significance of coastal Geomorphology –Coastal processes - Waves in shallow water – Tide – Wind longshore currents.

UNIT II

Coastal landforms – sand ridges, beaches, spit barriers, lagoons, Cliffs, terraces, tombolo etc., Origin and Distribution of coastal materials – sand and shingle mudflats – Organic reefs.

UNIT III

Coastal erosion and protective measures – movement of materials, surfing, beach profiles – beach in plan.

UNIT IV

Coastal Classifications of Johnson, Shepherd, Cotton, Velentine and Bloom. Sea level changes and Eurastaric Movements – causes, magnitude - evidence inland and along the Coast. Submarine morphology – Continental shelf – Continental slope, submarine Canyons and ridges.

UNIT V

Evolution of the Eastern and western Coast of India special coastal features found in them.

LEARNING OUTCOMES

CO1-After completion of course, the students know about a proper understanding of the Coastal Processes coastal landforms and sea level changes etc.,

CO2-Students can able to learn Eastern and Western coast of India.

CO3-Students will be enjoying the tourism related relief in coast of India.

REFERENCE BOOKS

1. Ahmed, E (1973), Coastal Geomorphology of India, Orient Longman, Bombay.
2. Robert, S.A. and Suzanne, P.A., (2010) Geomorphology – The mechanics and chemistry of landscapes. Cambridge University Press.
3. Christopherson, R. W. and Birkeland, G. H., (2012) Geosystems: An Introduction to Physical Geography (8th edition), Pearson Education.
4. Bierman, P.R. and Montgomery, D.R., (2014) Key concepts in geomorphology, Freeman and Company Publishers.
5. Kale, V. and Gupta, A. (2018) Introduction to Geomorphology, Orient Black Swan.
6. Thornbury, W.D. (2019) Principles of Geomorphology, Third Edition, New Age International Publishers.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1		✓		✓				✓	✓		
CO2				✓				✓			
CO3		✓						✓			

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – II**EXTRA DISCIPLINARY COURSE****REMOTE SENSING AND GIS**

Theory Hours	: 2	Course Code	: P21G2EDC
Practical Hours	: --	Credits	: 2
Exam Hours	: 3	Marks	: 100

OBJECTIVE

- The objective of this course is to introduce the basic concepts of image acquisition systems, image processing and the working principles of GIS.

UNIT I

Introduction: Aerial remote sensing, Photogrammetry, Remote Sensing: active and passive, GIS and GNSS - historical development - emerging trends - multidisciplinary nature

UNIT II

Terrestrial and Aerial Remote Sensing: Basic principles - Elements of EMR - Energy interaction in atmosphere - Terrestrial interaction – Spectral signature – Spectral reflectance curves - Aerial photography - Types of photographs - Aerial triangulation - Photogrammetry - Visual interpretation: Equipment's - Elements of image interpretation

UNIT III

Satellite Remote Sensing: Platforms - Sensors - FOV and IFOV - Pixel - Resolution: spatial, spectral, radiometric and temporal - Earth observation satellites: weather satellites, land and marine observation satellites – Image pre-processing - Image enhancement – Image classification – Accuracy assessment

UNIT IV

Geographical Information System: Definition - Components of GIS – Raster and vector data structures - RDBMS - Spatial referencing - Spatial data input and editing - GIS analysis

UNIT V

Applications of Remote sensing and GIS – Resource Mapping – Land and Water Resources, Urban Studies, Disaster Management and Land Use Planning

LEARNING OUTCOMES

CO1-Students can understand the principles of remote sensing and characteristics of different satellite sensors and image processing techniques.

CO2-They can differentiate components of GIS and have application skills of GIS to address various problems of earth surface.

REFERENCE BOOKS

- Lillisand T.M and R.W. Kiefer (1994) Remote Sensing and Image Interpretation. John Wiley & Sons, New York.
- Burrough, P. A., & McDonnell, R., (2000) Principles of Geographical Information Systems, Oxford Press, London.
- Jensen, J.R., (2006). Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice-Hall Inc., New Jersey.
- Jensen, J. R., (2007). Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall Inc., New Jersey & Wasle, (2008) Global Navigational Satellite Systems, Springer Wien New York.
- Gomasasca, M. A. (2009) Basics of Geometrics, Springer Science, New York

MAPPING OF POs WITH COs

Outcomes	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1		✓	✓	✓	✓				✓	✓
CO2	✓	✓		✓					✓	✓	✓

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	Five Questions (Two questions from each unit – either or type)	15 x 5 = 75
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SEMESTER – II**SKILL ENHANCEMENT COURSE (PRACTICAL)****GIS**

Theory Hours	: --	Course Code	: P21G2SE2P
Practical Hours	: 2	Credits	: 1
Exam Hours	: 2	Marks	: 100

OBJECTIVES

- The practical course is to provide GIS practical skills to the students through open source GIS software (QGIS)

GIS

- Geo reference of Base Map
- Digitizing Point and Line Features
- Digitizing Polygon Features
- Attribute Input and Editing
- Spatial and Attribute Query
- Overlay and Buffering
- Map Design and Layout

LEARNING OUTCOMES

CO1-This course gives hands-on experience to the students for storage, manipulation and analysis of spatial data using GIS software.

CO2-Students will able to use GIS software to do geo referencing, digitization, symbolization, layout of map and spatial analysis.

REFERENCE BOOKS

- Kang-t sung Chang, 2002. Introduction to Geographical Information Systems, Tata McGraw-Hill Publishing Company Limited, New Delhi.
- QGIS Manual - https://docs.qgis.org/2.14/en/docs/training_manual/
- Chang, K. T. (2006) Introduction to Geographic Information Systems. 3rd Edition, McGraw Hill, New York.

MAPPING OF POs WITH Cos

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1		✓	✓	✓					✓	✓	
CO2			✓	✓		✓			✓	✓	✓

P.G Question Paper Pattern (SEM: 60 marks + CIA: 40 marks = Total: 100 marks)

SEMESTER – III**CORE COURSE – IX****SOCIAL AND CULTURAL GEOGRAPHY**

Theory Hours	: 6	Course Code	: P21GC309
Practical Hours	: --	Credits	: 5
Exam Hours	: 3	Marks	:100

OBJECTIVES

- The primary objective of social and cultural geography is to help students to understand *diversity of cultures and relationship between cultures and pattern of living and economic development.*

UNIT I

Nature and Scope of Social Geography – Social Structure and Processes – Concept of Space and Place – Social Well Being – Quality of Life – Social Exclusion and Inclusion

UNIT II

Ethnicity, Tribe, Dialect, Language, Caste and Religion – Spatial Distribution – World and Indian

UNIT III

Space and Society: Concept of social space - Social structure and Social processes - Geographical bases of social formation -Social differentiation and region formation - Patterns and bases of rural and urban society

UNIT IV

Concept of Culture, Culture Complex, Culture Areas and Cultural Regions, Cultural Heritage, Cultural Interactions, Cultural Diffusion and Cultural Ecology – Cultural Imperialism

UNIT V

Human Development – Measurement of Human Development – Social, Economic and Environmental Indicators – Contemporary Issues – Regional Disparity, Poverty, Population Explosion and Globalization – Impact of Development on Environment – Social and Ethnic Tension – Gender Discrimination – Empowerment of Women

LEARNING OUTCOMES

The following will be the outcomes of the course, student would able to

CO1-Evaluate the social issues such as racism, cast conflict, social distance etc.

CO2-Identify the issues / problems confronting various social and cultural groups in the world as well as in India

REFERENCE BOOKS

- C.Daryl Forde (1977) – Habitat, Economy and Society, Methuen Publishers.
- Majid Husain – Human Geograpy – Rawat Publications 1994.
- Giilian C.Morgan – Human and Economic Geography, Oxford University Publications, 1999.
- Chandna – Population Geography, Kalyani Publishers.
- Dikshit R. (2009) – Political Geogoraphy, 3rd Edition, Tata McGraw Hill.
- Casino V. J. D., Jr., Social Geography: A Critical Introduction, Wiley Blackwell.
- Cater J. and Jones T., 2000: Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.
- Holt L., 2011: Geographies of Children, Youth and Families: An International Perspective, Taylor & Francis.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓		✓	✓	✓	✓	✓		✓		
CO2		✓	✓		✓	✓	✓	✓		✓	✓

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – III**CORE COURSE – X****RESEARCH METHODOLOGY IN GEOGRAPHY**

Theory Hours	: 6	Course Code	: P21GC310
Practical Hours	: --	Credits	: 5
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To understand the significances, types and methods of geographical research.
- To learn about research planning, design, data processing and report writing.

UNIT I

Research: Meaning, Objective and Significance – Research and Scientific Methods – Types and Methods of Research

UNIT I

Logic in Research – Hypothesis – Concept and Facts – Principles in Geographical Research

UNIT III

Data Acquisition – Analysis – Collection of Data – Source of Data – Primary data – Secondary data – Sampling Methods – Structure of data base – Data Transformation

UNIT IV

Research Design – Literature Survey – Selection of the Topic – Statement of Problem – Formulation of Hypothesis – Testing of Hypothesis –

UNIT V

Organization of Thesis: Reference Materials – Drafting of Thesis – Plagiarism - Language and Presentation - Abstracts and Synopsis – Bibliography - Research Papers and Journal Publications – Project proposal writing.

LEARNING OUTCOMES

- CO1**-Student would able to identify the concepts and procedures of sampling, data collection, analysis and reporting.
- CO2**-They can formulate research design and conduct a systematic research.
- CO3**-At end of the course students will have a keen interest in research.

REFERENCE BOOKS

1. Mishra, R.P Research Methodology in Geography, Gopal Lal J.2003 Research Methodology, Tools and Techniques, Mangal Deep Publishers, New Delhi.
2. Kothari C.R. Research Methodology, Methods & Techniques, 2004, New Age International Private Limited, Chennai
3. Gomez, B. and Jones, J. P. III (2010): Research Methods in Geography: A Critical Introduction, John Wiley and Sons, Sussex.
4. Montello, D. and Sutton, P. (2013): An Introduction to Scientific Research Methods in Geography and Environmental Studies, SAGE Publications, California.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1		✓	✓	✓	✓	✓	✓		✓	✓	
CO2		✓	✓		✓	✓			✓	✓	
CO3		✓	✓	✓		✓	✓	✓		✓	

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – III**CORE COURSE - XI****URBAN GEOGRAPHY**

Theory Hours	: 6	Course Code	: P21GC311
Practical Hours	: --	Credits	: 5
Exam Hours	: 3	Marks	:100

OBJECTIVES

- To understand the nature and development of urban geography along with prospects and problems of urbanization.
- To understand the patterns of land use and comparative models of internal structure of cities

UNIT I

Nature and scope of urban geography – development of urban geography - recent trends - origin and growth of urban settlements – urbanization - classification of urban settlements

UNIT II

Urban growth and theories - Primate City – Rank-size rule – Settlement hierarchy - Central Place Theory of Christaller - August Losch theory of market centers - Urban economic base: Basic and non-basic functions

UNIT III

Urban morphology and landuse structure - CBD - Umland and periphery - urban expansion – Theoretical models: Concentric zone model, Sector model and Multiple Nuclei model – Social area analysis – Applications

UNIT IV

Contemporary urban issues - urban poverty, urban renewal, urban sprawl, slums and transportation - urban infrastructure - environmental pollution: air, water, noise and solid waste - urban crime - issues of environmental health

UNIT V

Urban policy and planning - city planning - Smart City- urban policy - contemporary issues in urban planning - globalization and urban planning in the Third World - urban land use planning

LEARNING OUTCOMES

- CO1**-Students will gain knowledge of basic characteristics of urban environments, the common social and physical structures, trends and issues.
- CO2**-Students will explore the spatial relationships in urban areas and impact of urbanization.
- CO3**-Students can identify the structural features of cities to make analysis and compare them the present and plan for the future.

REFERENCE BOOKS

1. Dickinson, R.E. (1964) - City and Region, Routledge, London.
2. Urban Geography, An Introductory Analysis, 2nd Edition, Authors: James H. Johnson, Editors: W. B. Fisher, eBook ISBN: 9781483181547.
3. Sumita Ghosh, Orient Longman, (1998), Introduction to Settlement Geography.
4. Mandal, R.B., (2000), Urban Geography, Concept Publishing Company, New Delhi.
5. Mohammed Ishar Hasan (2014) Population geography, Rawat Publications.
6. Richa Mehta (2014) Population geography, Srishti book distributors, New Delhi.
7. UrvijaShanker (2014) Population pattern and urban development, Rajesh publications

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓	✓		✓	✓		✓	✓			✓
CO2		✓	✓	✓			✓		✓	✓	
CO3		✓	✓		✓		✓			✓	✓

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – III**CORE COURSE – XII****PRACTICAL – III
APPLIED STATISTICS**

Theory Hours	: --	Course Code	: P21GC312P
Practical Hours	: 6	Credits	: 3
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To explore the application of statistical techniques in geography.
- To familiarize about treatment of statistical analysis in geographic data.

1. SPATIAL MEASURES OF CENTRAL TENDENCY

- Mean, Median and Mode
- Euclidean distances

2. MEASURES OF DISPERSION

- Mean Deviation and Standard Deviation
- Lorenz Curve

3. CORRELATION

- Rank Correlation
- Co-efficient of Correlation

4. REGRESSION

- Linear Regression
- Multiple Linear Regression

5. HYPOTHESIS TESTING

- t'-test
- F'-test
- Chi-Square testing

LEARNING OUTCOMES

CO1-Student would able to formulate correct statistical methods for different geographical data.

CO2-They can recognize how to use the correlation and regression analysis in cause and effect relationships.

REFERENCE BOOKS

1. Monkhouse F.J. and Wilkinson H.R.-Maps and Diagrams-Dirton Co., Newyork.
2. Gregory S. - Statistical Methods and the Geographer, Longman, London, 1978.
3. David Unwin - Introductory Spatial Analysis, Methuen, London, 1981.
4. Aslam Mahmood, and Moonis Raza, (1986). Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi
5. Singh R.L. and P.K.Dutt - Elements of Practical Geography.
6. Khullar. D.R., Practical Geography, Kalyani Publishers, New Delhi.
7. Dr. Rajamohan .S & Thilagaraj .A (2008), Introduction to Statistics, Learntech Press, Trichy.
8. Pillai .R.S.N. & Bagavathi (2010), S.Chand & Company Limited, New Delhi.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1			✓	✓					✓	✓	✓
CO2	✓		✓	✓					✓	✓	✓

P.G Question Paper Pattern (SEM: 60 marks + CIA: 40 marks = Total: 100 marks)

SEMESTER – III**CHOICE I-MAJOR BASED ELECTIVE COURSE - III**
REMOTE SENSING, GIS AND GNSS

Theory Hours	: 6	Course Code	: P21G3MBE3:1
Practical Hours	: --	Credits	: 4
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To understand the different components of remote sensing, GIS and GNSS.
- To provide a comprehensive overview about applications of geospatial technologies.

UNIT I

Remote Sensing - Types – Ideal Remote Sensing System – Aerial Photography - Types of Photographs – Elements of Visual Image Interpretation – Photogrammetry.

UNIT II

Space borne Remote Sensing – EMR – Platforms – Sensors – Resolution – Spectral signatures – Equipment's – Digital Image Processing - Development of Remote Sensing programs in the world and India

UNIT III

GIS – Components – DBMS – Vector and Raster models – Spatial Data Input and Editing - GIS analysis – Query – Buffer – Overlay – Interpolation - Network Analysis – Surface Analysis – 3D Visualization - Open GIS

UNIT IV

GNSS – Historical development – Segments: Space Segment, Satellite Systems – Control Segment - User segment - Survey methods: single point, differentiate GPS- Sources of errors - Applications.

UNIT V

Applications of RS, GIS and GNSS/GPS - Resource mapping – land and water resources, urban studies, disaster management and land use planning

LEARNING OUTCOMES**The student would able to**

- CO1**-Understand the basic concept of electromagnetic radiation and sensing of earth surface features.
CO2-Understand GIS data models and geospatial analysis tools.
CO3-Apply knowledge of remote sensing, GIS and GNSS/GPS in various problems of earth surface.

REFERENCE BOOKS

1. C.S.Agarwal & P.K.Grag – Text Book of Remote Sensing – Wheeler Publishing 2000.
2. Barrette & Burough – Principles of GIS for Land Resource Assessment – Clarendon Press – Oxford.
3. Campbell. James B.I - Introduction to Remote Sensing – The Guild Press, New York.
4. Ian Heywod, Sarah Cornelines, An Introduction to Geographical Information System I Addison – Wesley, Longman Ltd, 2000.
5. Robinson A.H. and R.D.Sale - Elements of Cartography - John Wiley and Sons, New York.
6. Lillisand T.M., and Kiefer P.W. - Remote Sensing and Image Interpretation, John Wiley & Sons, New York.
7. Wolf P. R - Elements of Photogrammetry, McGraw Hill books Co., London.
8. Anji Reddy, M. (2008): Textbook of Remote Sensing and Geographic Information System, B.S. Publication, Hyderabad

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1		✓		✓	✓				✓	✓	
CO2			✓	✓		✓			✓	✓	✓
CO3			✓		✓				✓	✓	✓

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – III**CHOICE II-MAJOR BASED ELECTIVE COURSE - III
POLITICAL GEOGRAPHY**

Theory Hours	: 6	Course Code	: P21G3MBE3:2
Practical Hours	: --	Credits	: 4
Exam Hours	: 3	Marks	: 100

OBJECTIVE

- The main purpose of this course is to enhance awareness of multi-dimensional nature of geo-political space.
- The students will understand basic concepts of political geography and understand the different characteristics of territories in a broad but an integrative manner.

UNIT I

Introduction: Meaning, nature and scope of political geography – Recent trends in political geography – Approaches to political geography – Major traditions in political geography- Relevance of political geography in international relations

UNIT II

States and Nations: Concepts of Nations – State and Nations – Types of Nation -Elements of the State - Typology of State - Frontiers and boundaries – Unitary States and federal States - Forms of governance - Nationalism and national building

UNIT III

Geopolitics: Development of geopolitics - Global strategic views: Heartland theory, Rimland theory, Organic theory and Domino theory – Sea power: Geopolitical significance of the Indian Ocean - Recent trends in Geopolitics: Meta-geopolitics

UNIT IV

Electoral Geography: History of electoral studies - Geography of voting and representation - Geographic influences on voting pattern - Voting system in India: Factors affecting voting systems - Electoral distortion and bias: Gerrymandering and Malapportionment - Electoral mapping.

UNIT V

Political Realm of India: Governance system in India – Changing Political maps of India - Emergence of new states - Unity and Diversity: Centripetal and centrifugal forces - Interstate issues - Federal India - Political relation of India - Geo-political problems of Border States

LEARNING OUTCOMES

The following will be the outcomes of the course, student would able to

- CO1**-Have preliminary understanding of the intellectual history of political geography.
CO2-Have a solid understanding of the theories, definitions and concepts in political geography
CO3-Develop basics skills to interpret empirical cases and link political geographical issues with broader social, economic and cultural changes.

REFERENCE BOOKS

1. Adhikari, S. (2004) Political Geography, Rawat Publication, New Delhi.
2. SdudeeptaAdhikari (2007) Political Geography –Rawat Publication NewDelhi.
3. Dr. Sudeepth (2013), Political Geography of India –Sharda PustakBhawan Allahabad.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓			✓			✓				✓
CO2		✓		✓	✓		✓		✓		
CO3	✓	✓			✓	✓	✓	✓			

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – III**CHOICE II-MAJOR BASED ELECTIVE COURSE – III
GEOGRAPHY OF TOURISM**

Theory Hours	: 6	Course Code	: P21G3MBE3:3
Practical Hours	: --	Credits	: 4
Exam Hours	: 3	Marks	: 100

OBJECTIVES:

- To conserve and protect the natural environment as well as assuring respect of customs, traditions and cultural heritage.
- Creates community awareness, understanding and support for tourism development.

UNIT – I

Meaning & Nature of Tourism - Basic Concepts, Components –Types of Tourism – Hotel and Types – Motivations of Tourism.

UNIT –II

Historical growth – Prehistoric – Middle Ages – Modern Period. Causes and Consequences of Tourism – Technological Causes.

UNIT-III

Role of Travel Agency – Travel Agent – Tour Operators – Travel Organization Planning & development – Importance of Tourism Planning.

UNIT – IV

International Tourism Organizations: International Union of Official Travel Organization – World Tourism Organization – Pacific Asia Travel Association (PATA).

UNIT – V

Tourism Places in India: Delhi, Mumbai, Kolkatta, Bangalore and Chennai. Tourism Places in Tamilnadu: Climate Centre (Nilgiris and Kodaikkanal), Cultural Centre (Thanjavur and Mahabalipuram) and Sancturaries.

LEARNING OUTCOMES:

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

- CO1**-Equip with a basic understanding of nature and scope, trends and patterns of various types of tourisms.
- CO2**-Have sound knowledge on geographical, environmental and socio-cultural aspects of tourism in India.
- CO3**-Apply the principles of geo-tourism and analyze the prospects and problems associated with pilgrimage tourism.

REFERENCE BOOKS:

1. Tourism Development – Principles and Principles and Practices, Bhatia A.K.
2. Dynamics of Tourism – T.N. Kaul.
3. An Introduction to Travel and Tourism – Preamnathsen.
4. Tourism and Development – Bryden and John M.
5. Tourism Past. Present and Future – Brykare. A.J. and Medliks.
6. The Social implication of Tourism Development – Buseller R.V
7. Tourism Management and Marketing A.K. Bhatia

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓	✓			✓		✓	✓		✓	
CO2	✓	✓		✓	✓		✓	✓	✓		
CO3		✓			✓		✓	✓			

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – III**SELF STUDY COURSE-II****GEOGRAPHY FOR COMPETITIVE EXAMINATIONS**

Theory Hours	: --	Course Code	: P21GC3ESS2
Practical Hours	: --	Credits	: 2
Exam Hours	: 2	Marks	: 100

OBJECTIVES:

- To help aspirants of Competitive Examinations like IAS, SSC, UPSC etc.
- To make the students learn how Human, Physical and Environmental components of the World interact with each other particularly in a Tropical country like India.
- To enable students, understand information regarding Climate, Oceanography and the Physical World.

UNIT- I

Geomorphology-Continental Drift, Plate Tectonics, Endogenetic and Exogenetic Forces. Weathering, Geomorphic Cycle (Davis and Penck), Slope Development Theories, Earth Movements (Folding, Faulting) Geomorphic Hazards (Earthquakes, Volcanoes, Landslides).

UNIT - II

Climatology-Composition and Structure of Atmosphere; Insolation, Heat Budget of Earth, Temperature, Pressure and Winds, Atmospheric Circulation (Air-Masses, Fronts and Upper Air Circulation, Cyclones and Anticyclones (Tropical and Temperate), Climatic Classification of (Koppen & Thornthwaite), ENSO Events (El Nino, La Nina), Disasters (Cyclones, Thunderstorms, Tornadoes, Heat and Cold Waves and Drought).

UNIT - III

Oceanography-Relief of Oceans, Composition: Temperature, Density and Salinity, Circulation: Warm and Cold Currents, Waves, Tides, Sea Level Changes, Hazards: Tsunami.

UNIT - VI

Economic Geography- Factors affecting spatial organisation of Economic Activities (Primary, Secondary, Tertiary and Quaternary), Natural Resources (Classification, Distribution)

UNIT - V

Geography of India-Major Physiographic Regions - Drainage System, Climate - Climatic Divisions, Indian Monsoon - Jet Streams - Natural Resources: Soil, Vegetation, Water, Mineral Resources - Population distribution, Growth and Composition (Age, Sex, Occupational and Educational) – Major Crop Regions - Production of Major Food Crops - Green Revolution - Transport Networks (Railways, Roadways, Waterways and Airways), Internal and External Trade.

LEARNING OUTCOMES:

- CO1**-Confidence level of the competitive exam aspirants is boosted up.
CO2-Students ability of computing appropriate to the discipline is enhanced.
CO3-Students capability to face tests and interviews conducted by potential employers is improved.

REFERENCE BOOKS

1. P. Dayal (2013) Text book of Geomorphology Shukla Book Depot. Patne.
2. Savindra Singh, (2019) Physical Geography Pravalika Publication, Allahabad, India.
3. D.S. Lal, (1990), Oceanography, Chaitanya publishing house, Allahabad.
4. D.S. Lal, (1998), Climatology, Chaitanya publishing house, Allahabad.
5. N.Tikka (1998), Physical Geography, Kedar Nath, Ram Nath, Meerut.
6. Dr.A.Alka Gautham, (2015) Advanced Geography of India.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1			✓	✓	✓		✓				
CO2			✓			✓			✓		
CO3				✓	✓				✓	✓	✓

P.G Question Paper Pattern

50-Multiple Choice Questions (10 Questions from each unit)	50 x 2=100
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SEMESTER – IV**CORE COURSE – XIII****REGIONAL PLANNING**

Theory Hours	: 6	Course Code	: P21GC413
Practical Hours	: --	Credits	: 5
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To study the interdisciplinary nature of regional planning considering physical, socio-economic and infrastructural dimensions
- To identify environmental resources in various parts of the country and impacts of development plans

UNIT I

Geography and Regional planning: Basic concepts – Geographic space and regions – growth pole and growth centre – regional units – types of regions – goals and objectives of regional planning process – interdisciplinary nature of regional planning – nationalization and sectionalism

UNIT II

Approaches to regional planning analysis: systems concept; Geographic data matrix: spatial and temporal dimensions – grouping of dimensions in regional analysis – regional science – methods to study Indian regional problems

UNIT III

Planning in India: historical development – five year plans and annual plans – Agro ecological planning – water shed planning – sustainable development – regional imbalances – development programme: command area, drought prone, metropolitan, river valley, tribal and hill area

UNIT-IV

Regional planning in Tamil Nadu: evaluation of regional planning – planning regions – backward area development – metropolitan, rural planning – local planning authorities – 73rd and 74th amendment of constitution of India

UNIT-V

Town planning: basic concepts of town planning – need of town planning – Powers and functions of Nagar Panchayat, municipal council and Municipal Corporation – functions of town planning authority in Tamil Nadu

LEARNING OUTCOMES

- CO1**-At the end of the course, student would able to understand the need of regional planning at different levels.
- CO2**-The course would develop a keen interest in appraising the socio and economic development strategies in India.
- CO3**-The students will also get comprehensive knowledge on government programs aimed at regional development.

REFERENCE BOOKS

- Misra R.P. (1971) Regional Planning: Concept Technique, Politics and case studies, University Mysore,
- Misra R.P., Sundaram K.V. and V.L.S Prakasa Rao (1974); regional development in India, Vikas publishing house, New Delhi.
- Prakasa Rao V.L.S. (1963); Regional Planning, Asia publishing house, Kolkatta.
- Misra, RP (2002) Regional Planning –Concept, Techniques, Polices and case Studies, Concept publishing Company, Delhi.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1		✓			✓		✓	✓			
CO2	✓	✓			✓	✓	✓	✓			
CO3		✓			✓		✓	✓			

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – IV**CORE COURSE – XIV**

PRACTICAL – IV
MAP AND IMAGE INTERPRETATION

Theory Hours	: --	Course Code	: P21GC414P
Practical Hours	: 6	Credits	: 4
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To provide practical skills to interpret Indian topographical sheets, U.S and O.S maps, aerial photos and satellite images.

1. SOI Sheets

- Appreciation of SOI Sheets
- Interpretation of Physical Features
- Interpretation of Cultural Features

2. U.S. Maps

- Appreciation of US Maps
- Interpretation of Physical Features
- Interpretation of Cultural Features

3. OS Maps and NATMO Maps

- Appreciation of OS Maps and NATMO Maps
- Interpretation of OS Maps
- Interpretation of National Atlas of India and Census Atlas (NATMO) Maps

4. AERIAL PHOTOGRAPHS

- Stereoscope Vision Test
- Marginal Information of Aerial Photographs
- Interpretation of Aerial Photographs

5. SATELLITE IMAGE

- Marginal Information of Satellite Images
- Interpretation of Physical Features
- Interpretation of Cultural Features

LEARNING OUTCOMES**Student would able to**

CO1-Understand the techniques in interpretation of various topographic maps and to analyze physical and cultural features.

CO2-Appraise different topographical and thematic maps and compare them with aerial and satellite remote sensing images

REFERENCE BOOKS

- Robinson A.H. and R.D.Sale - Elements of Cartography - John Wiley and Sons, New York.
- F.J. Monkhouse and H.R Wilkinson, Maps and Diagrams, B.I. Publications, Madras.
- Lillisand T.M., and Kiefer P.W. - Remote Sensing and Image Interpretation, John Wiley & Sons, New York.
- Wolf P. R - Elements of Photogrammetry, McGraw Hill books Co., London.
- Rampal K.K - Hand Book of Aerial Photography and Interpretation, Concept Publishing Company, New Delhi.
- Lillisand, T.M., and Kiefer, P.W., (2007). Remote Sensing and Image Interpretation, 6th Edition, John Wiley & Sons, New York.
- Campbell, J. B. and Wynne, R.H., (2011). Introduction to Remote Sensing, 5th Edition, The Guilford Press, New York.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1			✓				✓	✓		✓	✓
CO2			✓	✓	✓		✓		✓		

P.G Question Paper Pattern (SEM: 60 marks + CIA: 40 marks = Total: 100 marks)

SEMESTER – IV**CORE COURSE – XV****PROJECT WORK**

Theory Hours	: --	Course Code	: P21GPW415
Project Hours	: 12	Credits	: 6
Exam Hours	: --	Marks	: 100

OBJECTIVES

- To explore and find ways to address various geographic problems through systematic framework of research.
1. The students should select a specific topic from the following broad areas for conducting the Project Work.

<ol style="list-style-type: none"> a. Land Resources b. Landuse / Land cover c. Water Resources d. Disaster Studies e. Climate Analysis f. Urban Studies g. Social Area Analysis 	<ol style="list-style-type: none"> h. Demography and Health Analysis i. Pollution and EIA Studies j. Transport and Service Area Analysis k. Perception Studies l. Cropping Pattern m. Tourism n. Environmental impact assessment
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 2. Integration of primary and secondary data may be used, wherever possible.
 3. The students should read Geographical Research Methodology books before conducting the Project Work.
 4. The Project Report should be between 50 and 60 pages.
 5. Sufficient maps, diagrams and graphs and appropriate interpretation should be incorporated in the report.
 6. The thesis should be between 80 and 100 pages including maps, tables, diagrams and graphs. The ideal structure of thesis is Introduction
 - a. Objectives
 - b. Study Area
 - c. Materials and Methods
 - d. Results and Discussion
 - e. Summary and Conclusion
 - f. References
 - g. Appendices, if any

LEARNING OUTCOMES

The following will be the outcomes of the course, student would able to

CO1-Identify and define research problems.

CO2-Collect and analyses the data in a systematic and scientific manner.

CO3-Organize and carry out independent research in the general field of geography.

CO4-Prepare a scientific research report.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
CO2			✓	✓	✓		✓		✓	✓	✓
CO3	✓	✓			✓		✓				
CO4			✓			✓		✓		✓	✓

SEMESTER – IV**CHOICE I-MAJOR BASED ELECTIVE COURSE - IV
TRANSPORT GEOGRAPHY**

Theory Hours	: 6	Course Code	: P21G4MBE4:1
Practical Hours	: --	Credits	: 4
Exam Hours	: 3	Marks	: 100

OBJECTIVES:

- *Transportation is fundamental to the economic activity of exchange.*
- *This course will provide students a background of transport geography and how it affects socio-economic development through concepts and methods*

UNIT I

Nature, Scope and Significance of Transport Geography – Theoretical framework of Transport Geography – Distance and Human Interaction – Technological Changes and Transport Development

UNIT II

Characteristics and Relative Significance of different Modes of Transport – Surface, Water Development of National Highways and National Permit Systems

UNIT III

Structure of Network – Route Density – Slope, Pattern and Route Efficiency and Capacity of the Network – Measures of Connectivity and Accessibility

UNIT IV

Concepts and Methods of Flow Analysis Application of Linear Programming in Geographic Problems – Aggregation & Gravity Potential Models – Least Cost Flow Analysis of Network

UNIT V

Transport and Development Planning – Role of Transport in National Organization in Socio-economic integration – Planning of Transport Systems and impact of Regional Development

LEARNING OUTCOMES**The student would be able to**

CO1-Identify the need and significance of different modes of transport

CO2-Explain the structure of network, methods of flow and role of transport in regional development.

REFERENCE BOOKS

1. Eliot Hust M.E. (1974) Transportation Geography, McGrawhill.
2. Garrison W. Berry BJL, et,al (1959) Studies of Highway, Development and Geographic Change, University of WASHINGTON, Seattle.
3. Grossman W.L. (1959) Fundamentals of Transportation, New York.
4. Ullman, E.L. (1980) Geography as Spatial Interaction, University of Washington Press, Seattle.
5. Taaffe, E.J., H.L. Gauthier and M.E. O'Kelly (1996) Geography of Transportation, 2nd Edition, Prentice Hall, New Jersey.
6. Rodrigue, J.P., Claude C. and Brian S. (2006) The Geography of Transport Systems, Routledge, New York.
7. Newman, M. (2010) Networks: An Introduction. Oxford University Press, Oxford.
8. Tapas Pal (2015) Industrial Geography an Indian Perspective, Bridge Centre, Buzau.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓	✓			✓		✓	✓			
CO2	✓	✓				✓	✓				

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – IV**CHOICE II-MAJOR BASED ELECTIVE COURSE - IV
GEOGRAPHY OF ECONOMIC ACTIVITIES**

Theory Hours	: 6	Course Code	: P21G4MBE4:2
Practical Hours	: --	Credits	: 4
Exam Hours	: 3	Marks	: 100

OBJECTIVES

- To make understand varying sets of conditions associated with location, production, distribution, consumption, exchange of resources and spatial organization of economic activities across the world.

UNIT I

Economic activities – factors affecting spatial organization of economic activities - Primary, secondary, tertiary and quaternary

UNIT II

Natural resources – Renewable and non-renewable - classification – World distribution and associated problems – Resource management World energy crises in developed countries

UNIT III

Classification of industries – bases and characteristics – factors of industrial localization – concepts and theories – Weber, Hoover, August Lonch, Pres and Smith - World industrial regions

UNIT IV

Models of Transportation and Transport Cost – Accessibility and Connectivity Measures and Indices – Comparative Cost Advantages - Spatial Flow Models Gravity and Allocation Models – Ideas of Edward Ullman and Hurst

UNIT V

Information and Communication Technology – World Distribution and Growth – World Trade Organizations – Globalization and Liberalization - World Trade Patterns – Problems and Prospects

LEARNING OUTCOMES**The student would able to**

CO1-Understand ingredients of economic sector and apply economic theories and methodologies in analyzing economic issues

CO2-Understand the different forms of resources along with its advantages, trade pattern and problems.

REFERENCE BOOKS

- Memoria, C.B, (1995) Economic and Commercial Geography of India, Sivalal Agrawal and company, Agra.
- Tirtha, (1996) Geography of India.
- Sharma T.C. and Countinho. O (1998) – Economic and Commercial Geography of India, Vikas publishing house Pvt. Ltd, New Delhi.
- Dubey and Negi (1999) – economic and commercial geography.
- Dr. Alka Gautm (2015), Advanced Economic Geography, Sharda Pustak Bhavan, Allahabad.
- K. Siddhartha (2018), Economic Geography, Kitab Mahal, New Delhi.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓		✓		✓	✓	✓	✓			
CO2		✓			✓		✓				

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER – IV**CHOICE III-MAJOR BASED ELECTIVE COURSE - IV
CLIMATE CHANGES AND ITS IMPACT**

Theory Hours	: 6	Course Code	: P21G4MBE4:3
Practical Hours	: --	Credits	: 4
Exam Hours	:3	Marks	:100

OBJECTIVES:

- To understand the basics of weather and climate
- To have an insight on Atmospheric dynamics and transport of heat
- To develop simple climate models and evaluate climate changes using models

UNIT I

Atmosphere dynamics: isobaric heating and cooling – adiabatic lapse rates – equation of motion – solving and forecasting. Forces – Relative and absolute acceleration – Earth's rotation Coriolis on sphere – full equation of motion

UNIT II

Geostrophy: Thermal winds -departures – small scale motion. Radiation, convection and advections: sun and solar radiation – energy balance -terrestrial radiation and the atmosphere – Green house effect- Global warming – Global budget -radiative fluxes – heat transport. Atmosphere and ocean systems convecting and advecting heat.

UNIT III

Ocean circulation: latitude – longitude dependence of climate features – ocean vertical structure – ocean thermohaline circulation – land surface processes -carbon cycle.

UNIT IV

Components and phenomena in the climate system: Time and space scales – interaction and parameterization problem.

UNIT V

Gradients of Radiative forcing and energy transports by atmosphere and ocean – atmospheric circulation – latitude structure of the circulation – latitude – longitude dependence of climate features.

LEARNING OUTCOMES

At the end of the course the student will be able to understand

CO1-The concepts of weather and climate.

CO2-The principles of Atmospheric dynamics and transport of heat and air mass.

CO3-The develop simple climate models and to predict climate change.

REFERENCE BOOKS:

1. Barry, R.G. & Chorley, R.J., (2003) Atmosphere, Weather and Climate, 11th Edition, Routledge.
2. Waugh D. (2005) Geography: An Integrated Approach, Nelson Thornes, Cheltenham.
3. Lal, D.S., (2005) Climatology, Sharda Pustak Bhawan, Allahabad.
4. Lutgens, F.K., Tarbuck E.J. and Tasa D., (2009) The Atmosphere: An Introduction to Meteorology, 11th Edition, Prentice Hall.
5. Christopherson, R. W. and Birkeland, G. H., (2012) Geosystems: An Introduction to Physical Geography (8th edition), Pearson Education, New Jersey.
6. Pinet P.R. (2012) Invitation to Oceanography, 6th Edition, Jones & Bartlett Learning.
7. Fundamentals of weather and climate (2nd Edition) Robin Moilveen (2010), Oxford University Press
8. Climate change and climate modeling, J. David Neelin (2011) Cambridge University press.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓				✓	✓	✓	✓			
CO2	✓				✓		✓	✓			
CO3	✓	✓	✓		✓			✓		✓	✓

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	20-Multiple Choice Questions (Four Questions from Each unit)	20 x 1 = 20
Section-B	Five Questions (Two questions from each unit – either or type)	5 x 5 = 25
Section-C	Three Questions (out of five one question from each unit)	3 x 10 = 30

SEMESTER - IV**VALUE ADDED COURSE****TOURISM AND TRAVEL MANAGEMENT**

Theory Hours	: --	Course Code	: --
Practical Hours	: --	Credits	: 2
Exam Hours	: --	Marks	: 100

OBJECTIVE:

- Elucidate the basic concepts, types and nature of tourism along with economic, social and environmental importance of tourism industry.

UNIT I

Scope and Content of Tourism – Components: Accessibility, Accommodation, Attraction – Motivation – Seasonality - Types of Tourism: Religious, Cultural, Historical, Recreational, Coastal, Ecological and Medical tourism.

UNIT II

Growth of Tourism - History of travel: Ancient, medieval and modern period -Accounts of famous travelers - origin and concept of the annual holiday - Industrial revolution and Development of travel

UNIT III

Forms of Tourism: National tourism (Domestic) -International Tourism (Inbound and Outbound Tourism) –New Forms of Tourism: Adventure, Green Tourism, Eco tourism, Health, MICE Tourism, Soft Tourism, Sports Tourism and Rural tourism.

UNIT IV

Economic and Social significance of tourism - Impacts of Tourism: Socio Cultural, Economic, and Environmental impacts - Effects on employment - Development of infrastructure - Tourism as a foreign exchange earner

UNIT V

Tourism development in India – Tourism in Tamil Nadu - Tourism organizations: ITDC, TTDC, Ministry of Tourism, Ministry of Railways and Civil Aviation departments - An overview of National and International Organizations and Associations: IATO, TAAI, FHRAI and WTO.

LEARNING OUTCOMES

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

- CO1**-Contextualize tourism within broader of physical, cultural, environmental and economic dimensions.
- CO2**-Identify and assess different forms of tourism.
- CO3**-Critique tourism practices for their implications in local and global level.
- CO4**-Appreciate the tourism development and practices in Tamil Nadu and India.

REFERENCE BOOKS:

1. Swain and Mishra (2011), "Principles of Tourism", Oxford University Press, New Delhi.
2. A.K.Bhatia,(2012) "Tourism Development: Principles and Strategies, Sterling Publishers, New Delhi
3. Sinha, P.C., (2005), "Tourism Management" Vol. – 4", Anmol Publications, New Delhi.
4. Velvet Nelson (2013) – An Introduction to the Geography of Tourism, Rowman& Littlefield Publishers
5. Ballabh, A (2005), "Fundamentals of Travel and Tourism", Akansha Publishing House, NewDelhi
6. Mill, and Morisson, (2006), "Tourism Systems", Kendal Publications, Dubuque.
7. SipraMukhopadhyay, (2010), "Tourism Economics", Ane Books Pvt. Ltd., NewDelhi.
8. Stephen Williams (1998) – Tourism Geography, Routledge, London.

MAPPING OF POs WITH COs

OUTCOMES	Programme outcome				Programme Specific Outcome						
	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

P.G Question Paper Pattern (SEM: 75 marks + CIA: 25 marks = Total: 100 marks)

Section-A	Five Questions (Two Questions from each unit–either or type)	5x15= 75
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