

Semester – I

Core Course – I	Title of the Course	Paper Code: 21PGY01			
	GEOGRAPHY OF INDIA	L	T	P	C
		80	20	0	5
OBJECTIVES:					
<ul style="list-style-type: none"> • This paper disseminates the knowledge on the basic landforms, climate, soil, vegetation and population characteristics of India. • It is a course designed to enable students to broaden and deepen their understanding of India. • This paper helps to know the regional resources and it may help to prepare future plan for welfare of the society. 					
COURSE OUTCOMES:					
On the successful completion of the course, student will be able to					
1	Students would gain understanding of ‘new’ geography of their country				K1
2	To understand the physical profile of the country				K2
3	To identify the spatial distribution of agricultural regions in India				K3
4	To study the resources in relation to industries and distribution for sustainable development				K4
5	To understand the trade and transport development in a developing country				K5
6	To understand the rural and urban population characteristics in India				K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create					
Unit: I					
PHYSICAL ASPECTS				18 Hours	
Location, Extent and Administrative units - Physiographic divisions: Soils, Vegetations and Drainage System - Climate: Seasonal Weather Characteristics, Climatic Divisions, Mechanism of Monsoon - Natural Disasters in India.					
Unit: II					
AGRICULTURE				18 Hours	
Salient features, Major Crops, Methods of regional variations in Agriculture - Factors affecting agriculture - Agro-Climatic Zones, Agricultural Revolutions, Food Security and Right to Food – Types of Irrigation - Multi Purpose Projects.					
Unit: III					
RESOURCES & INDUSTRY				18 Hours	
Resources: Major Resources: Natural, Mineral, Water, Biotic and Marine Resources Types and distributions.					
Industry: Salient Features, Types of Industries, Industrial Development since Independence, Industrial Regions and their characteristics, Industrial Policies in India Major Industries					
Unit: IV					
TRANSPORT AND TRADE				18 Hours	
Transport Networks - Railways, Roadways, Waterways, Airways and Pipelines, Internal and External Trade, Regional Development Planning in India, Trade policies, Impact of Globalization in India					
Unit: V					
POPULATION CHARACTERISTICS				18 Hours	
Rural and Urban Distributions, Spatial patterns, Growth and Composition, Determinants of Population, Population Policies in India					

TEXT BOOKS

1. *Majid Hussain., (2018) Geography of India (7th Edition), McGraw Hill Education Pvt. Ltd, Chennai.*
2. *Siddhartha(2008) India- The Physical Aspects, Kisalaya Publications Pvt. Ltd, New Delhi*
3. *Mamta Sharma (2014) Geography of India, Abhijeet Publications New Delhi.*
4. *Singh .R.L., (1999) India - A Regional Geography, UBS Publishers, New Delhi*
5. *Alka Gautam (2006) Advanced Geography of India, ShardaPustakBhawan, Allahabad*

REFERENCE BOOKS

1. *Rupali Chatterjee (2012) Geography of India, Global Academic Publishers, New Delhi*
2. *Chopra J.K., (2010) Geography of India, Unique Publishers, New Delhi*

ONLINE RESOURCES/TUTORIALS

1. <https://nebula.wsimg.com/2436037e2ba0efb5dd614bc4d22dc748?AccessKeyId=C5D71399558B7E5F014D&disposition=0&alloworigin=1>
2. <https://www.pdfdrive.com/indian-geography-d18765567.html>

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	S	M	S	M	S
CO2	S	S	S	M	S	S	M	M	M	S
CO3	S	S	S	S	S	S	M	M	M	S
CO4	S	M	S	S	S	S	S	S	M	S
CO5	M	M	S	M	M	S	S	S	M	S

S - Strong; M - Medium; L - Low

Semester – I

Core Course – II	Title of the Course	Paper Code: 21PGY02			
	CLIMATOLOGY	L	T	P	C
		80	20	0	5
OBJECTIVES:					
<ul style="list-style-type: none"> • To acquire knowledge and understanding the atmospheric science and aspects related to the day to day weather and climatic changes. • To learn about the various dimensions of climatology • Detailed analysis of global atmospheric pressure and wind system • To know the influencing and controlling elements of climate in different landscapes 					
COURSE OUTCOMES:					
On the successful completion of the course, student will be able to					
1	<i>To describe the composition and structure of atmosphere</i>				K1
2	<i>Understand the interaction process between Earth and Atmosphere</i>				K2
3	<i>Knowing the differences between Precipitation and Rainfall</i>				K3
4	<i>Understand the atmospheric disturbances that lead to affect the human life and biosphere</i>				K4
5	<i>Acquire knowledge about Global Warming and its Origin</i>				K5
6	<i>Apply knowledge of climate towards identification and demarcating the region of geographical importance.</i>				K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create					
Unit: I	INTRODUCTION				18 Hours
Definition, Structure and Composition of Atmosphere – Insolation – Solar Energy – Heat Budget – The Heating of the Atmosphere – Factors Affecting the Temperature pattern – Global Temperature pattern.					
Unit: II	ATMOSPHERIC PRESSURE AND WINDS				18 Hours
General Circulation of the Atmosphere – Subtropical High – Trade Winds – ITCZ – The Westerlies – Easterlies – Monsoon – Localized Wind System – ElNino – LaNino – Southern Oscillations					
Unit: III	ATMOSPHERIC MOISTURE				18 Hours
Water Vapour – Humidity – Relative Humidity – Classification of Clouds – Precipitation Process – Forms of Precipitation – Types of Precipitation – Global distribution of Precipitation – Acid Rain					
Unit: IV	ATMOSPHERIC DISTURBANCE				18 Hours
Air Masses: Characteristics, Origin, Classification – Movement and Modifications. Fronts: Cold, Warm, Stationary and Occluded Fronts. Cyclones, Anticyclones, Hurricanes, typhoons. Localized severe weather: Hailstorms, Heat and cold waves, Drought and Cloudburst, Glacial lake outburst, Thunderstorms and Tornadoes					
Unit: V	CLIMATE				18 Hours
Climate Change – Climate Classification – Koppen Classification – Thornthwaite Classification - World Distribution of major Climate Types: Tropical Humid, Dry Climate, Mid latitude Climate, Polar Climate and Highland Climate – Global Climate Change: Past evidences – Green House Effect. Global Warming: Evidences of Current Global Warming					

TEXT BOOKS

1. *Lal D.S., (2015) Climatology, ShardaPustakBhavan, Allahabad.*
2. *Savindra Singh (2007) Climatology, PrayagPustakBhavan, Allahabad.*
3. *Stringer E.T., (2008) Foundations of Climatology, Surjeet Publications, Delhi.*
4. *Critchfield H.J., (2015) General Climatology (4th Edition), Pearson India Education Services Pvt. Ltd, Chennai*
5. *Barry R.G. and R.J. Chorley., (2010), Atmosphere, Weather and Climate (9th Edition), Routledge Publisher, London*

REFERENCE BOOKS

1. *Bunnet R.B., and S.M. Daniwar(2012) Physical Geography of India, Global Academic Publishers, New Delhi*
2. *Darrel Hess & Dennis Tasa (2012) Physical Geography - A Landscape Appreciation (10th Edition), PHH Learning Pvt. Ltd, New Delhi*

ONLINE RESOURCES/TUTORIALS

1. https://www.researchgate.net/publication/259558094_General_Climatology
2. <https://www.pdfdrive.com/climatology-d190067172.html>

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	M	M	S
CO2	S	S	S	S	S	S	S	S	S	S
CO3	S	S	S	S	S	S	M	M	M	S
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	M	M	M	S

S - Strong; M - Medium; L - Low

Semester – I

Core Course – III	Title of the Course		Paper Code: 21PGY03			
	GEOGRAPHY OF ECONOMIC ACTIVITIES		L	T	P	C
			80	20	0	5
OBJECTIVES:						
<ul style="list-style-type: none"> • To provide the basic understanding of nature & scope of economic geography • To understand the concept and spatial distribution of economic activities in the world. • The students will realize the relevance of economic geography for analysing contemporary societies and economies. • To describe in the details the regionalization of different economic activities. 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
1	<i>Distinguish to different types of economic activities and their utilities.</i>					K1
2	<i>To identify some key issues to economic geography in relation to agriculture</i>					K2
3	<i>Appreciate the factors responsible for the location and distribution of resources</i>					K3
4	<i>Examine the significance and relevance of theories in relation to the location of different economic activities</i>					K4
5	<i>To learn the national and international transport and trade</i>					K5
6	<i>Explain and apply key concepts and theoretical approaches in economic geography.</i>					K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I						
INTRODUCTION					18 Hours	
Definitions – Nature, Scope and Significance - Factors affecting. Classification: Primary, secondary, tertiary and quaternary. Dynamism of Economic Activities - Characteristics of developed and developing economies of the world						
Unit: II						
AGRICULTURE					18 Hours	
World agriculture – Factors affecting agriculture – types – Distribution, production and trade of wheat, rice, maize, sugarcane, cotton, tea and rubber – Forestry – Fishing – Grazing and pastoralism						
Unit: III						
RESOURCES					18 Hours	
Economic significance of minerals – Distribution and production of iron ore, manganese, bauxite, copper, gold and mica – Fuel resources: Coal, Petroleum and Nuclear minerals						
Unit: IV						
INDUSTRIES					18 Hours	
Classification of Industries - Manufacturing industries - Locational theories and factors – Impact of Globalization – ICT and Knowledge production industries - Major industrial regions of the world						
Unit: V						
TRANSPORT AND TRADE					18 Hours	
Transportation: Land, water air and pipeline – Major sea routes of the world - Theories and models of Transport Network. Trade: Factors influencing trade – Technological revolution and trade –						

TEXT BOOKS

1. **Negi .B.S.**, (2018) *Economic and Commercial Geography of India*, KEDAR NATH RAM NATH Publishers, Meerut.
2. **PhaniDeka and AbaniBhagabati** (2002) *Geography Economic and Regional*, New Age International (P) Ltd., Publishers, New Delhi
3. **Hartshorn .T.A., and J.W. Alexander** (1988) *Economic Geography*, Prentice - Hall of India Private Limited, New Delhi.
4. **KashiNath Singh and A.R. Siddiqui** (2012), *Economic Geography*, PrayagPustakBhawan, Allahabad
5. **Khanna, K.K. and Gupta, V.K.** (1998). *Economic and Commercial Geography*. Sultan Chand and Sons, New Delhi.

REFERENCE BOOKS

1. **Mackinnon. D and A. Cumpers** (2015) *Introduction to Economic Geography (Special Indian Edition)*, Routledge Tayler & Francis Group, London and New Yark
2. **Jones &Darkenwald** (2010) *Economic Geography*, Surjeet Publications, Delhi.

ONLINE RESOURCES/TUTORIALS

1. <https://www.pdfdrive.com/a-companion-to-economic-geography-blackwell-companions-to-geography-2-d184925462.html>
2. https://www.researchgate.net/publication/280097193_Economic_Geography_A_Contemporary_Introduction

MAPPING WITH PROGRAMME OUTCOMES

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

S - Strong; M - Medium; L - Low

Semester – I

Major Based Elective – I	Title of the Course	Paper Code: 21PGYM1			
	ENVIRONMENTAL GEOGRAPHY	L	T	P	C
		80	20	0	4
OBJECTIVES:					
<ul style="list-style-type: none"> • To understand its interrelationship with man and his linkages with other organisms, this varies in different biomes. • Various dimensions of environment and natural resource management. • To sensitise the students with the Environmental problems and degradations • Understanding of the concept of appraisal and conservation of Environment and Natural Resources. 					
COURSE OUTCOMES:					
On the successful completion of the course, student will be able to					
1	<i>The Students will learn the importance of conserving biodiversity to maintain ecological balance as well as national and international concerns on various environmental issues.</i>				K1
2	<i>The fundamental issues and debates that circulate around the intersection of geography</i>				K2
3	<i>Environmental science, with a particular focus on how humans affect and are affected by modifications of the physical environment.</i>				K3
4	<i>The importance of 'thinking ecologically' when approaching complex environmental problems.</i>				K4
5	<i>The key environmental inequalities that underpin contemporary globalization, and the ways that race, class, and gender frequently limit access to social and environmental justice.</i>				K5
6	<i>Understanding the environmental programmes and policies at local as well as global level.</i>				K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create					
Unit: I					
INTRODUCTION				18 Hours	
Meaning and Scope of Environmental Geography – Basic Principles of Environmental Geography – Role of Geography – Man and environment relationship - lithosphere – hydrosphere – biosphere – multi disciplinary approach					
Unit: II					
ECOSYSTEM				18 Hours	
Concept of Ecosystem – Structure – Functioning of the ecosystem – Food chain - Food web - Food pyramid – Nutrient cycles – Biodiversity					
Unit: III					
ECOLOGY				18 Hours	
Basis of Ecology – Branches of Ecology – Ecological Niche – Ecological transition and Explosion – Ecotone – Ecological Pyramid, Succession, Pyramid and Productivity – Human interaction and Impacts – Environmental Ethics and Deep Ecology					
Unit: IV					
ENVIRONMENTAL HAZARDS				18 Hours	

Landslides – Earthquakes - Floods and Droughts, Issues related to environmental pollution – Climate Change - Environmental pollution in India; Environmental Problems – Global warming, Urban Heat Island, Atmospheric and Water pollution, Ozone depletion, Land degradation, Green house effect and Desertification		
Unit: V	ENVIRONMENTAL POLICIES	18 Hours
Eco crisis – Environmental management and planning – Environmental Impact Assessment – Brundtland Commission, Stockholm conference, Earth summits and Round tables and Kyoto Protocol, Agenda 21, Sustainable Development goals, Paris Agreement - Environmental Policies and Laws in India - Environmental Governance		
TEXT BOOKS		
<ol style="list-style-type: none"> 1. <i>Saxena H.M., (2007) Environmental Geography (2nd Edition), Rawat Publications, Jaipur.</i> 2. <i>Sanyal M., M. Kundu and S. Rana., (2009) Ecology and Environment, Books and Allied (P) Ltd, Kolkatta</i> 3. <i>Radha V., (2019) Environmental Studies, Prasanna Publishers and Distributers, Chennai</i> 4. <i>Arumugam N., (2019), Concepts of Ecology, Saras Publications, Nagercoil</i> 5. <i>Savindra Singh (2012). Environmental Geography. PrayagPustakBhawan, Allahabad.</i> 		
REFERENCE BOOKS		
<ol style="list-style-type: none"> 1. <i>Majid Hussain(2019) Environment and Ecology (5th Edition), G K Publications (P) Ltd, New Delhi</i> 2. <i>NeerajNachiketa (2018) Environment and Ecology, G K Publications (P) Ltd, New Delhi</i> 		
ONLINE RESOURCES/TUTORIALS		
<ol style="list-style-type: none"> 1. https://drive.google.com/file/d/1_z3rRVihN_wWThNRZ-dSvvODxvqvqQxp/view 2. https://www.uv.mx/personal/fpanico/files/2011/04/AA.-VV.-Environmental-geography.pdf 		

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	S	S	S	S	S	S	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	SS	M	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	M	S

S - Strong; M - Medium; L - Low

Semester – I

Major Based Elective – II	Title of the Course		Paper Code: 21PGYM2			
	GEOGRAPHY OF HEALTH AND WELLBEING		L	T	P	C
			80	20	0	4
OBJECTIVES:						
<ul style="list-style-type: none"> • Understand the key concepts related to health and its driving forces • Detailed analysis of environment and health quality and exposure to risk. • Understanding of the relationship between climate change and human health. 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
1	<i>Detailed exposure of health geography and environment.</i>					K1
2	<i>Identify the linkages between the health, environment, exposure and risk.</i>					K2
3	<i>Explain the relationships among health and disease pattern in environmental context with reference to climate change</i>					K3
4	<i>Apply geographical knowledge to health policy advocacy specifically to third world diseases</i>					K4
5	<i>Evaluate methods applied to infer causal relationships between spatial variability in environment and health outcomes.</i>					K5
6	<i>Understanding the health related programmes and policies at local as well as global level.</i>					K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I						
		INTRODUCTION				18 Hours
Perspectives on Health: Definition; linkages with environment, development and health; driving forces in health and environmental trends - population dynamics, urbanization, poverty and inequality.						
Unit: II						
		ENVIRONMENT AND HEALTH				18 Hours
Human-Environment Interaction: Health and environment-concept of health, geographical approaches of health, natural environment and health- Inorganic and organic, social environment and health: Food intake, perception of diseases, treatment of diseases, Socio-economic conditions and health.						
Unit: III						
		HEALTH RISKS				18 Hours
Exposure and Health Risks: Air and water pollution; household wastes; housing; workplace. Health and Disease Pattern in Environmental Context with special reference to India, Types of Diseases and their regional pattern (Communicable and Lifestyle related diseases).						
Unit: IV						
		DISEASE CLASSIFICATION				18 Hours
Modernization, population change and health: Disease classification- genetic communicable, non-communicable, occupational, deficiency diseases, WHO classification of diseases. Diseases diffusion: Meaning, factors/barriers, phases, types of diffusion. Epidemiological Transition The theory of epidemiological transition (Omran theory) factors of transition- Demographic, changes in risk factors, practices of modern medicine & Indicators.						

Unit: V	HEALTHCARE POLICIES	18 Hours
Global Inequalities in Health resources: Concept of health care, levels of health care, social context of disease, health care accessibility and utilization, health care system worldwide, health care services in India, health care policy in India.		
TEXT BOOKS		
<ol style="list-style-type: none"> 1. Akhtar Rais (1990), <i>Environmental population and health problems</i>, Ashish Publishers Home, New Delhi. 2. Determinants of Health: A New Synthesis. John Frank. <i>Current Issues in Public Health</i>, 1:233240, 1995 3. Egles, J. and Woods, K.J. (1983) <i>The Social Geography of Medicine and Health</i>, Groom Helm London, 1st Edition 4. K. Chaubey, "Epidemic of HIV/AIDS in India: A Study in Medical Geography. " <i>Annals of NAGI</i>, Vol. XXV No.1, 2005 pp 28-33. Learmonth, A.T.A. (1985) <i>Diseases in India</i>, Concept Pub. Company, New Delhi, 1st Edition 5. Misra, R.P., (2007), <i>Geography of Health</i>, Concept Publishing Company, New Delhi, 2007. 		
REFERENCE BOOKS		
<ol style="list-style-type: none"> 1. Hazra, J. (1997). <i>Health Care Planning in Developing Countries</i>. Calcutta, India: University of Calcutta. 2. Narayan, K.V. (1997). <i>Health and Development Inter-Sectoral Linkages in India</i>. Jaipur, Rawat Publications. 		
ONLINE RESOURCES/TUTORIALS		
<ol style="list-style-type: none"> 1. https://www.pdfdrive.com/community-public-health-nursing-promoting-the-publics-health-e163459388.html 2. https://www.pdfdrive.com/medical-geography-third-edition-e40807167.html 3. https://milonm28.files.wordpress.com/2017/08/parks-preventive-social-medicine-23rd-ed.pdf 		

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	S	S	S	S	S	S
CO2	S	S	M	M	M	S	S	S	M	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	S	M	S	S	M	S	S	M	S

S - Strong; M - Medium; L - Low

Semester – II

Core Course – IV	Title of the Course		Paper Code: 21PGY04			
	GEOMORPHOLOGY		L	T	P	C
			80	20	0	5
OBJECTIVES:						
<ul style="list-style-type: none"> • To understand the distribution of topographical features on Earth Surface • To identify the knowledge of Geomorphology is essential. • In addition the formation of landforms can be understood by the internal and external forces of the Earth. • To provide a theoretical and empirical framework for understanding landscape evolution and the characteristics of individual types of geomorphic landscapes 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
1	<i>To understand the facts of earth and development of landforms.</i>					K1
2	<i>To Describe the exogenic and endogenic processes, their importance in landform development,</i>					K2
3	<i>To assess how structure, stage and time affect geomorphological processes</i>					K3
4	<i>To prepare geomorphology maps and apply the knowledge in geographical research</i>					K4
5	<i>To Apply geomorphological knowledge in various fields</i>					K5
6	<i>To assess the roles of structure, stage and time in shaping the landforms, interpret geomorphological maps and apply the knowledge in geographical research</i>					K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I	BASICS OF GEOMORPHOLOGY					18 Hours
Nature, Scope and Development of Geomorphology - Recent trends in Geomorphology - Geological Time Scale - Fundamental concepts of Geomorphology						
Unit: II	INTERNAL PROCESS					18 Hours
Isostasy, Continental Drift, Sea floor Spreading - Plate Tectonics: Major and Minor Plates - Fold, Fault, Earthquake and Volcanism.						
Unit: III	EXTERNAL PROCESSES					18 Hours
Concept of gradation, Agents and processes of gradation, Erosional, Transportational and Depositional Land forms of Fluvial, Glacial, Aeolian, Coastal and Karst - Weathering and Mass movement						
Unit: IV	CONCEPTUAL DEVELOPMENT IN GEOMORPHOLOGY					18 Hours
Normal Cycle of Erosion by Davis and Penck - Slope development: Slope Decline Theory of Davis, Slope Replacement Theory of W.Penck - Morphogenetic Regions						
Unit: V	APPLIED GEOMORPHOLOGY					18 Hours
Applications of Geomorphology in Mineral Exploration, Oil Exploration and Hydrology - Terrain Evaluation: Highway Construction-Location of Land and Gravel Pits - Dam site selection -						

Application in Military strategy - Geomorphic Hazards

TEXT BOOKS

1. *Dayal P.A., (1996) Text book of Geomorphology, Shukla Book Depot, Patna.*
2. *Savindra Singh (1998) Geomorphology, PrayagPustakBhavan, Allahabad.*
3. *Thornbury W.D. (2004) Principles of Geomorphology, Second Edition, CBS Publishers & Distributers Pvt. Ltd, Chennai*
4. *Small R.J., (1978) The Study of Landforms, Cambridge University Press, London*
5. *Majid Husain (2011) Fundamentals of Physical geography (4th Edition), Rawat Publications, Jaipur*

REFERENCE BOOKS

1. *Monkhouse F.J (1960) Principles of Physical Geography, Hodder and Stoughton, London.*
2. *Strahler, A.A., and Strahler A.H., (1992) Modern Physical Geography, John Wiley and Sons, New York.*

ONLINE RESOURCES/TUTORIALS

1. <https://nptel.ac.in/courses/105/107/105107200/>
2. https://sudartomas.files.wordpress.com/2012/11/fundamentalsofgeomorphology_routledgefundamentalsofphysicalgeography.pdf

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	S	M	M	S
CO2	S	S	S	S	S	S	S	S	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	M	S	M	M	M	S
CO5	S	S	S	M	S	M	S	S	S	S

S - Strong; M - Medium; L - Low

Semester – II

Core Course – V	Title of the Course		Paper Code: 21PGY05			
	OCEANOGRAPHY AND HYDROLOGY		L	T	P	C
			80	20	0	5
OBJECTIVES:						
<ul style="list-style-type: none"> • This paper is also the part of Physical Geography that is basis of all Geographical Studies. • The aspects of Oceanography emphasize the constituents of the hydrosphere. • The component of oceanography similarly deals with the coastal processes and describes the vast and diversified resources the ocean hold. 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
<i>1</i>	<i>Understand the fundamentals of oceanography and ocean floor.</i>					<i>K1</i>
<i>2</i>	<i>Evaluate ocean relief of submarine and chemical properties</i>					<i>K2</i>
<i>3</i>	<i>To understand the movements and circulation of ocean water.</i>					<i>K3</i>
<i>4</i>	<i>To understand and evaluate ocean deposits and its impact of human on the marine environment.</i>					<i>K4</i>
<i>5</i>	<i>Understand the basic components of hydrological cycle in various forms</i>					<i>K5</i>
<i>6</i>	<i>Explain various components of water balance and management</i>					<i>K6</i>
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I						
OCEANOGRAPHY					18 Hours	
Scope, Content, Significance, Distribution of Land and Sea – Hypsometric Curve, Surface Configuration of the Ocean Floor: Continental Shelf, Continental Slope, Deep Sea Plain, Oceanic Deeps and Submarine Canyons						
Unit: II						
OCEAN RELIEF FEATURES					18 Hours	
Atlantic, Pacific and Indian Ocean – Temperature, Salinity and Density of the Oceans – Vertical and Horizontal Distribution – Currents – Waves, Tides and Tsunami – Sea level changes.						
Unit: III						
MARINE RESOURCES					18 Hours	
Types – Distribution and Uses – Tidal Energy – Role of National Institute of Oceanography in India. Marine Deposits: Classification and Distribution – Coral Reefs types - Conditions for the Growth						
Unit: IV						
HYDROLOGY					18 Hours	
Definition Scope and Content of Hydrology – Water Sources; Surface Water, ground Water, Artesian well, tube wells and springs water above the earth surface: Cyclic, Orographic and Conductive						
Unit: V						
HYDROLOGICAL ELEMENTS					18 Hours	
Hydrological cycle – Sub cycles – Elements – Precipitation, Evaporation, Infiltration, Runoff and Groundwater hydrology – Water Balance - human impact on hydrological systems						
TEXT BOOKS						

1. *Viessman W., and G.L. Lewis (2013), Introduction to Hydrology (5th Edition) PHI Learning (P) Ltd, Delhi.*
2. *Sukhvinder Singh., (2014), Oceanography, Wisdom Press, Ansari Road, New Delhi*
3. *Savindra Singh., (2014) Oceanography, Pravalika Publications, Allahabad.*
4. *Jaya Rami Reddy. P (2007) A text book of Hydrology, Laxmi Publications (P) Ltd, New Delhi*
5. *Sharma R.C. and M.Vital (1970) Oceanography for Geographers, Chaithaya Publishing House, Allahabad*

REFERENCE BOOKS

1. *Monkhouse F.J (1960) Principles of Physical Geography, Hodder and Stoughton, London.*
2. *Strahler, A.A., and Strahler A.H., (1992) Modern Physical Geography, John Wiley and Sons, New York.*
3. *Siddhartha K., (2006), Oceanography A Brief Introduction, Kisalaya Publications Pvt. Ltd, Delhi*

ONLINE RESOURCES/TUTORIALS

1. http://www.hkk.gf.vu.lt/wordpress/wpcontent/uploads/2012/09/Tim_Davie_Fundamentals_of_Hydrology.pdf
2. <https://www.pdfdrive.com/essentials-of-oceanography-3-edition-d176058534.html>

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	S	M	S	S	M	M	S	S
CO3	S	S	S	S	M	M	M	M	S	S
CO4	S	S	S	M	M	M	M	M	M	S
CO5	S	S	S	S	S	S	S	S	S	S

S - Strong; M - Medium; L - Low

Semester – II

Core Course – VI	Title of the Course	Paper Code: 21PGY06			
	CARTOGRAPHY	L	T	P	C
		80	20	0	5
OBJECTIVES:					
<ul style="list-style-type: none"> • To understand about the historical development of Cartography. Map projections and Generalization • To learn about map reproduction methods and recent trends. • Develop an understanding of the concepts regarding scale, map projections to suit map purposes; 					
COURSE OUTCOMES:					
On the successful completion of the course, student will be able to					
1	Acquire knowledge about the relationship of cartography with other branches of earth science and disciplines of geography				K1
2	To identify the earth's dimensions relating the cartographic problems and their geographic coordinate system.				K2
3	Students can be able to learn map making with suitable cartographic symbols				K3
4	To evaluate the techniques of suitable lettering with map drawing materials.				K4
5	Evaluate the map reproduction techniques in a proper way				K5
6	To get the capacity of map making with suitable cartographic techniques				K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create					
Unit: I	CARTOGRAPHY				18 Hours
Nature and Scope - History of Cartography – Cartography as a science of Communication – Recent Trends in Cartography - Types of maps – uses of maps - Format of a Map					
Unit: II	MAPPING OF THE EARTH				18 Hours
Map drawing and Measuring Techniques - Shape and dimensions of the earth – Scale and direction –The Earth and System of Co-ordinates					
Unit: III	MAP DESIGN AND LAYOUT				18 Hours
Principle of map design – Constrains of map design – Symbolization: Point, Line and Area symbols					
Unit: IV	LETTERING AND TOPONOMY				18 Hours
Lettering: Style, Forms and Size of Lettering – Geographical Name – Map drawing materials. Tools and Techniques for map drawing – Base map - Compilation and Generalization of maps					
Unit: V	MAP REPRODUCTION				18 Hours
Planning for reproduction – Reproduction processes – Duplicating processes: Stencil, Photostat,					

Xerox, Silk screen printing – Latest Techniques.

TEXT BOOKS

1. *Khan M.Z.A., (1998) Text Book of Practical Geography, Concept Publishing Company, New Delhi*
2. *Erwin Raiz, (1948). General Cartography, McGraw Hill Company., New York*
3. *Mishra, R.P and A. Ramesh, (1988) Fundamentals of Cartography, Concept Publishers, New Delhi.*
4. *Monkhouse, F.J., and H.R. Wilkinson (1973) Maps and Diagrams, Methuen and Co.Ltd., London.*
5. *Robinson, A.H., (1984). Elements of Cartography, John Wiley, London*

REFERENCE BOOKS

1. *Lawrence G.R.P., (1971) Cartographic Methods, Methuen and Co.Ltd., London.*
2. *Singh R.L. & Rana P. B. Singh (2010) Elements of Cartography, Kalyani Publishers, New Delhi.*

ONLINE RESOURCES/TUTORIALS

1. <https://freehomedelivery.net/wp-content/uploads/2016/11/NCERT-Class-11-Geography-Practical.pdf>
2. <https://ia601607.us.archive.org/29/items/in.ernet.dli.2015.84040/2015.84040.An-Introduction-To-Mapwork-And-Practical-Geography.pdf>

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	S	M	M	M	L	M	M	S
CO2	M	M	S	M	S	L	L	L	M	S
CO3	M	M	S	S	M	M	L	L	L	S
CO4	M	M	S	M	M	L	L	M	L	S
CO5	M	M	S	M	M	L	L	M	L	S

S - Strong; M - Medium; L - Low

Semester – II

MBEC – III	Title of the Course		Paper Code: 21PGYM3			
	URBAN GEOGRAPHY		L	T	P	C
			80	20	0	4
OBJECTIVES:						
<ul style="list-style-type: none"> • To understand the Nature and Development of Urban Geography. • To familiarize about Urbanization, Urban morphology, Urban theories and problems. • To critically understand the complexities of urban cities and the experience of living in these cities. • To provide a basic social, cultural, political and economic understanding of cities. 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
1	<i>Gain knowledge about the development of history of urbanization in the developed and developing countries.</i>					K1
2	<i>Study of urban morphology and urban functions of towns need to be encouraged.</i>					K2
3	<i>To learn the internal structure and functional classification of urban centres</i>					K3
4	<i>To gain knowledge about the models and theories of urban centres</i>					K4
5	<i>To create the awareness of contemporary urban problems</i>					K5
6	<i>To get the capacity of planning and policies in any urban area</i>					K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I	INTRODUCTION					18 Hours
Nature, Scope and Development of Urban Geography –Factors of Urban Growth - Definition of urban settlements – Urbanization through times- Trends of urbanization in the world and India.						
Unit: II	URBAN MORPHOLOGY					18 Hours
Urban Land use models: Concentric zone model – Sector model – Multiple nuclei model – CBD and its characteristics –Urban ecology - Functional Classification of towns - Basic and Non-basic functions.						
Unit: III	URBAN EXPANSION					18 Hours
Vertical and Horizontal expansion – Urban Sprawl – Rural-Urban Fringe – Urban renewal - Suburbanization –City region – Umland - Satellite Town – Conurbation – Metropolis – Megalopolis.						
Unit: IV	URBAN THEORIES					18 Hours
Central place theory - Primate city – Rank size rule – Social area analysis – Hierarchy of urban centres - Factorial ecology.						

Unit: V	URBAN PROBLEMS	<i>18 Hours</i>
Urban problems: Slums, Pollution, Poverty, Informal Growth, Solid waste management, Transport, Crime and Social exclusion - Urban Planning and Policies		
TEXT BOOKS		
<ol style="list-style-type: none"> 1. <i>Mandal.R.B.(2000): Urban Geography, concept publishing company, New Delhi</i> 2. <i>Northam.U.K(1975): Urban Geography, John Wiley and Sons, New York</i> 2. <i>Harold Carter (2010) Urban Geography, Fourth Edition, Rawat Publication, Jaipur.</i> 4. <i>Verma. L.N (2008) Urban Geography, Rawat Publication, Jaipur.</i> 5. <i>Maurya .S.D (2014) Settlement Geography, Shardapustakbhawan, Allahabad.</i> 		
REFERENCE BOOKS		
<ol style="list-style-type: none"> 1. <i>Siddhartha.K and S. Mukherjee (1996): Cities, Urbanization and Urban Systems, New Way Screen Publication, New Delhi.</i> 2. <i>Singh .R.Y (2010) Geography of Settlements, Rawat Publication, Jaipur.</i> 		
ONLINE RESOURCES/TUTORIALS		
<ol style="list-style-type: none"> 1. https://shora.tabriz.ir/Uploads/83/cms/user/File/657/E_Book/Urban%20Studies/Urban%20Geography.pdf 2. https://www.pdfdrive.com/urban-geography-a-global-perspective-third-edition-d186143084.html 		

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	M	M	L	M	M	S
CO2	S	M	S	M	S	L	L	M	L	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	M	S	M	M	M	L	L	M	S

S - Strong; M - Medium; L - Low

Semester – II

MBEC – IV	Title of the Course		Paper Code: 21PGYM4			
	DEMOGRAPHIC TECHNIQUES IN GEOGRAPHY		L	T	P	C
			80	20	0	4
OBJECTIVES:						
<ul style="list-style-type: none"> • This course shall equip the students with a basic understanding of demographic concepts and issues. • It shall enable them to understand different sources of demographic data and related data limitations. • The students will learn about estimates of different measures related to fertility, nuptiality, mortality, and population projections. 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
1	<i>This course must train the student about the concepts and issues of demography.</i>					K1
2	<i>Students should have good knowledge of various sources of demographic data and related limitations.</i>					K2
3	<i>To learn the fertility and mortality measures</i>					K3
4	<i>To gain knowledge about the migration in urban centres</i>					K4
5	<i>They must be conversant with different estimations methods related to fertility, nuptiality, mortality, migration, urbanization, and population projections.</i>					K5
6	<i>To get the capacity of planning and policies in demographic aspects</i>					K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I	INTRODUCTION					18 Hours
Definition and scope of demography; Basic concepts and measures: universe and variables, rates and ratios; Demographic data sources: Census, Vital, Sample and United Nation.						
Unit: II	DEMOGRAPHIC DATA					18 Hours
Quality of Data; Basic measures of Fertility and Mortality and Life Table; Fertility and Nuptiality; Migration and Urbanization						
Unit: III	POPULATION PROJECTION					18 Hours
Standardization of Rates and Ratios; Nuptiality analysis; Population projection						
Unit: IV	THEORIES AND MODELS					18 Hours
Demographic transition theories, Population and resources-optimum, over and under population.						

Demographic models and Model life tables; Evaluation of Programmes		
Unit: V	DEMOGRAPHIC POLICIES	18 Hours
Concept of Human Resource and Management, Population Resource Regions, Population Planning and Policies in Under – Development and developed countries with special reference to Japan and India, Population as Social Capital, Human Development Index, National Population Policy		
TEXT BOOKS		
<ol style="list-style-type: none"> 1. <i>Srinivasan, K. : (1998) Demographic Techniques and Applications, Sage Publication, New Delhi,</i> 2. <i>Carmichael, G.A. 2016. Fundamentals of Demographic Analysis: Concepts, Measures, and methods, Springer, London.</i> 3. <i>Hinde, A.(2009). Demographic Methods, Routledge, London.</i> 4. <i>Cox P.R.,(1990). Demography, Universal Book Stall, New Delhi.</i> 5. <i>Hans Raj (2012). Fundamentals of Demography, Surjeet Publications, New Delhi</i> 		
REFERENCE BOOKS		
<ol style="list-style-type: none"> 1. <i>Watcher, K.W. 2014. Essential Demographic Methods, Cambridge, MA: Harvard University Press.</i> 2. <i>Yusuf, F., Martins, J.M., Swanson, D.A. 2014. Methods of Demographic Analysis, Springer, London.</i> 		
ONLINE RESOURCES/TUTORIALS		
<ol style="list-style-type: none"> 1. https://www.pdfdrive.com/an-integration-of-demographic-and-geographic-techniques-e136401357.html 2. https://www.pdfdrive.com/population-and-society-an-introduction-to-demography-e184398033.html 		

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	M	S	S	S
CO2	S	S	S	S	M	M	M	M	S	S
CO3	M	M	M	L	M	M	M	M	M	S
CO4	S	S	S	S	S	S	S	M	S	S
CO5	S	S	M	S	M	S	M	M	M	S

S - Strong; M - Medium; L - Low

Semester – I &II

Core Practical – I	Title of the Course		Paper Code: 21PGYP1			
	TERRAIN AND CLIMATIC DATA ANALYSIS		L	T	P	C
			10	10	80	4
OBJECTIVES:						
<ul style="list-style-type: none"> • To enable the students to evaluate the slope and morphology of landforms and to prepare various climatic maps • Will be able to demarcate basin with representation of basin relief through profiles and will be able to draw interpretations. • It shall enable them to understand different types of terrain region and climatic elements in the form of suitable mapping. 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
1	<i>To gain knowledge about the different profiles in relation to various landforms</i>					K1
2	<i>To understand the slope analysis using various mathematical methods.</i>					K2
3	<i>To identify the relationship of morphometric parameters of a drainage or watershed</i>					K3
4	<i>To assess the climate change and its impact identified through different diagrams in geography</i>					K4
5	<i>To get the capacity of terrain and climatic data mapping in geographical perspective</i>					K5
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I						
		DRAWING PROFILES				18 Hours
1.1 Serial Profiles 1.2 Super-Imposed Profile 1.3 Projected Profile 1.4 Composite Profile						
Unit: II						
		SLOPE ANALYSIS				18 Hours
2.1 Wentworth's method 2.2 Smith's method 2.3 Robinson method 2.4 Thalweg-Longitudinal Profile of the river						
Unit: III						
		MORPHOMETRIC ANALYSIS				18 Hours
3.1 Stream Ordering						

- 3.2 Bifurcation Ratio
- 3.3 Stream Length Ratio
- 3.4 Drainage Density.

Unit: IV

CLIMATIC DATA ANALYSIS

18 Hours

- 4.1 Taylor's Climograph
- 4.2 Foster's Climograph
- 4.3 Wind Rose Diagram
- 4.4 Track of Cyclone

TEXT BOOKS

1. **Khan M.Z.A.**, (1998) *Text Book of Practical Geography*, Concept Publishing Company, New Delhi
2. **Gobal Singh**, (1998) *Map Work and Practical Geography (4th Edition)*, Vikas Publishing House, (P)Ltd., Noida
3. **Mishra, R.P and A. Ramesh**, (1988) *Fundamentals of Cartography*, Concept Publishers, New Delhi.
4. **Monkhouse, F.J., and H.R. Wilkinson** (1973) *Maps and Diagrams*, Methuen and Co.Ltd., London.
5. **Raghunandan Singh.**, (2012) *Map Work and Practical Geography*, SurjeethPublcatons, New Delhi.

REFERENCE BOOKS

1. **Lawrence G.R.P.**, (1971) *Cartographic Methods*, Methuen and Co.Ltd., London.
2. **Singh R.L. &Rana P. B. Singh** (2010) *Elements of Cartography*, Kalyani Publishers, New Delhi.

ONLINE RESOURCES/TUTORIALS

1. <https://freehomedelivery.net/wp-content/uploads/2016/11/NCERT-Class-11-Geography-Practical.pdf>
2. <https://ia601607.us.archive.org/29/items/in.ernet.dli.2015.84040/2015.84040.An-Introduction-To-Mapwork-And-Practical-Geography.pdf>

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	S	M	M	M	L	L	S	M
CO2	M	L	M	L	M	L	M	L	S	M
CO3	M	M	M	L	M	M	L	L	S	S
CO4	M	M	M	L	M	M	L	M	S	S
CO5										

S - Strong; M - Medium; L - Low

Semester – I &II

Core Practical – II	Title of the Course	Paper Code: 21PGYP2			
	SPATIAL ANALYSIS IN GEOGRAPHY	L	T	P	C
		10	10	80	4
OBJECTIVES:					
<ul style="list-style-type: none"> • Will be able to identify the mapping techniques with statistical calculation • It shall enable them to understand different kinds of data in the form of suitable mapping. 					
COURSE OUTCOMES:					
On the successful completion of the course, student will be able to					
<i>1</i>	<i>Students would gain understanding of statistical methods in simple and complex graphs</i>				K1
<i>2</i>	<i>To learn the distribution maps in relation to population aspects</i>				K2
<i>3</i>	<i>To identify the agricultural analysis on different cropping methods.</i>				K3
<i>4</i>	<i>To gain knowledge the centrophobic measures of various statistical methods.</i>				K4
<i>5</i>	<i>To get the capacity of spatially distributed graphs and maps in different forms.</i>				K5
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create					
Unit: I	ANALYSIS OF FREQUENCY DISTRIBUTION				18 Hours
1.1 Simple Graph 1.2 Semi Logarithmic Graph 1.3 Log-Log-Graph 1.4 Triangular Graph 1.5 Lorenz Curve.					
Unit: II	POPULATION DISTRIBUTION MAPS				18 Hours
2.1 Choropleth Map 2.2 Dasymetric Map 2.3 Isopleth Map 2.4 Population Potential Map 2.5 Cartogram.					
Unit: III	AGRICULTURAL DATA ANALYSIS				18 Hours
3.1 Cropping Intensity 3.2 Crop Ranking 3.3 Crop Concentration					

3.4 Crop Diversification 3.5 Crop Combination (<i>Weaver, Doi and Raffiullah</i>)		
Unit: IV	CENTROGRAPHIC MEASURES	18 Hours
4.1 Nearest Neighbour Analysis 4.2 Mean Centre 4.3 Weighted Mean Centre 4.4 Median Centre 4.5 Standard Distance		
TEXT BOOKS		
<p>1. <i>Khan M.Z.A., (1998) Text Book of Practical Geography, Concept Publishing Company, New Delhi</i></p> <p>2. <i>Mishra, R.P and A. Ramesh, (1988) Fundamentals of Cartography, Concept Publishers, New Delhi.</i></p> <p>3. <i>Monkhouse, F.J., and H.R. Wilkinson (1973) Maps and Diagrams, Methuen and Co.Ltd., London.</i></p> <p>4. <i>Raghunandan Singh., (2012) Map Work and Practical Geography, Surjeeth Publications, New Delhi.</i></p> <p>5. <i>Pijushkanti Saha & Partha Basu (2011) Advanced practical Geography, Books and Allied (P) Ltd, Kolkatta</i></p>		
REFERENCE BOOKS		
<p>1. <i>Lawrence G.R.P., (1971) Cartographic Methods, Methuen and Co.Ltd., London.</i></p> <p>2. <i>Singh R.L. & Rana P. B. Singh (2010) Elements of Cartography, Kalyani Publishers, New Delhi.</i></p>		
ONLINE RESOURCES/TUTORIALS		
<p>1. https://freehomedelivery.net/wp-content/uploads/2016/11/NCERT-Class-11-Geography-Practical.pdf</p> <p>2. https://ia601607.us.archive.org/29/items/in.ernet.dli.2015.84040/2015.84040.An-Introduction-To-Mapwork-And-Practical-Geography.pdf</p>		

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	S	M	M	L	L	M	M	S
CO2	M	M	S	M	M	M	L	M	M	S
CO3	M	L	S	M	M	L	L	M	S	M
CO4	S	S	S	M	S	L	M	M	S	S
CO5										

S - Strong; M - Medium; L - Low

Semester – III

Core Course – VII	Title of the Course		Paper Code: 21PGY07			
	POLITICAL GEOGRAPHY		L	T	P	C
			80	20	0	5
OBJECTIVES:						
<ul style="list-style-type: none"> • To understand the association between Geography and Political affairs. • To understand the different kinds of political rule throughout the world. • To elucidate the Electoral practices in India. • To examine the role of various organization in world political affairs. 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
<i>1</i>	<i>Students could the close association of Geography and Polity</i>					<i>K1</i>
<i>2</i>	<i>Students are able to role of Geography in World Political Scenario</i>					<i>K2</i>
<i>3</i>	<i>To demarcate Geopolitics of the World</i>					<i>K3</i>
<i>4</i>	<i>To analyse the world level organization and their role in climate change</i>					<i>K4</i>
<i>5</i>	<i>To estimate the trend of climate change and measures to be taken to minimize.</i>					<i>K5</i>
<i>6</i>	<i>To apply the Indian's geographical factors and present political scenario</i>					<i>K6</i>
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I						
GENERAL INTRODUCTION					18 Hours	
Meaning, Nature, Scope and Content of Political Geography. Contemporary Geographical Traditions: Environmental, Possibilistic, Regionalistic, Systematic and Marxist Traditions – Recent trends in Political Geography – Heartland and Rimland Theories.						
Unit: II						
CONCEPT OF TERRITORIALITY					18 Hours	
State and Nation: Territoriality – The State – The Nation – Nationalism – Imperialism – Colonialism – Nation Building – The Spatial factors of the state: Location – Size and Shape – Frontiers and Boundaries: Concept of Frontiers – Distinction between Frontiers and Boundaries – Territorial Sea and Marine Boundaries – Boundary disputes,						
Unit: III						
FEDERALISM					18 Hours	
Federalism as a Geographical Phenomena – Desirability to Federalism – Development of federalism – National building in Federal societies – Federalism and the State idea – Core area – Types of Capitals: Natural and Artificial Capitals – Head-link Capitals – Forward Capitals – Federal Capitals						
Unit: IV						
ELECTORAL GEOGRAPHY					18 Hours	
Geography of voter participation – Regional stability – Regional Redesignments – Contextual effect – Geography of Representation – Trends in Electoral Geography – Electoral Reforms in India - The Geographical study of voters in International and National assemblies – Determinants of Electoral						

Behaviors		
Unit: V	GEOPOLITICS OF CLIMATE CHANGE	18 Hours
Geopolitics of World Resources – Geopolitics of Indian Ocean – Regional organizations of Co-operation (SAARC, ASEAN, OPEC and EU) – World organizations – Intercontinental Association – Political Regions		
<p>TEXT BOOKS</p> <p>1. <i>Dwivedi R.L and H.N. Mishra (2018) Fundamentals of Political Geography, Surjeet Publications, New Delhi.</i></p> <p>2. <i>AdhikariSudepta(2008) Political geography of India, ShardaPustakBhawan</i></p> <p>3. <i>Mark Blacksell(2006) Political Geography, Routlegue Publications, New Yark.</i></p> <p>4. <i>AdhikariSudepta(2004)Political Geography, Rawat Publications Jaipur & New Delhi</i></p> <p>5.</p> <p>REFERENCE BOOKS</p> <p>1. <i>Prescott. J.R.V(1972)Political Geography, Methueu& Co Ltd, First Edn, 11, New Fetter Lane, London, EC4</i></p> <p>2. <i>Dikshi R.D (2005) Political Geography, 3rdEdn, Tata McGraw-Hill Publishing Company Ltd, New Delhi</i></p> <p>ONLINE RESOURCES/TUTORIALS</p> <p>1. https://www.pdfdrive.com/political-geography-world-economy-nation-state-and-locality-d189346179.html</p> <p>2. https://www.pdfdrive.com/an-introduction-to-political-geography-universitas-pgri-palembang-d16254148.html</p>		

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	S	M	M	M	S
CO2	S	S	S	S	S	S	S	S	S	S
CO3	S	S	M	M	M	L	M	S	M	S
CO4	M	M	L	L	L	L	M	S	M	S
CO5	M	M	L	M	L	L	M	L	L	S

S - Strong; M - Medium; L - Low

Semester – III

Core Course – VIII	Title of the Course		Paper Code: 21PGY08			
	GEOGRAPHICAL THOUGHT		L	T	P	C
			80	20	0	5
OBJECTIVES:						
<ul style="list-style-type: none"> • To trace out the origin development and dynamic nature of Geography. • To appraise the contributions made by ancient Indians to the development of Geography.. • To evaluate the recent trends in geographical subject. 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
<i>1</i>	<i>Students can understand the tradition of the subject</i>					K1
<i>2</i>	<i>To understand the philosophical nature of Geography</i>					K2
<i>3</i>	<i>To apply the geographical knowledge for balanced growth of mankind</i>					K3
<i>4</i>	<i>To analyse the inter disciplinary nature of Geography subject</i>					K4
<i>5</i>	<i>To evaluate the various organizations involve in map making process</i>					K5
<i>6</i>	<i>To create pollution free nation with sustainable economic development</i>					K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I						
INTRODUCTION					18 Hours	
Global and Indian Perspectives. Changing Paradigms of Geography: Germany, France, Britain, Anglo-America and USSR. Philosophy and Theory of Geography. Nature and Trends in Geographical Studies: Regional Geography, Development Studies, Environmental Studies, Area studies and Behavioral Studies						
Unit: II						
EARLIER DEVELOPMENTS					18 Hours	
Greek, Roman, Chinese, Arabs and Indians – Explorations and Discoveries: Marco Polo, Christopher Columbus, Ferdinand Magellan, Vasco da Gama and Captain Cook						
Unit: III						
MAJOR SCHOOLS IN GEOGRAPHY					18 Hours	
German: Alexander Von Humboldt, Carl Ritter and Friedrich Ratzel; French: Vidal de la Blache, Jean Brunhes, Albert Demangeon and Emmanuel de Martonne; British: L.D.Stamp J. Mackinder, Peter Haggett A.J Herbertson; American: Ellen Churchill Semple, Huntington, W.M. Davis and Isaiah Bowman.						
Unit: IV						
INDIAN CONTRIBUTIONS IN GEOGRAPHY					18 Hours	
Contributions of Ancient Indians to the development of Geography. Development of Modern Geography in India in the fields: Geomorphology, Climatology, Settlement Geography, Agricultural Geography, Urban Geography and Population Geography						
Unit: V						
MODERN TRENDS IN GEOGRAPHY					18 Hours	

Quantitative Revolution in Geography. Remote Sensing, GIS and GPS in Geography. Indian Organizations in Geographical Research: ISRO, Survey of India, Geological Survey of India and NATMO

TEXT BOOKS

1. *Majid Hussain, (2017): Evolution of Geographical Thought (6th Edition), Rawat Publication, Jaipur.*
2. *Negi. B.S., (1994): Geographical Thought, KedarNath and Ram Nath Publications, Meerut, Uttra Pradesh.*
3. *EayneK.Davies, (1972): Conceptual Revolution in Geography, Edward Arnold Publications, London.*
4. *SudeeptaAdhikari, (2004): Fundamentals of Geographical Thought, Chaitanya Publishing House, Allahabad.*
5. *Dikshit, R.D., (1997): Geographical Thought, Prentice Hall of India, New Delhi.*

REFERENCE BOOKS

1. *Majid Hussain, (2019): Models in Geography, Rawat Publications, Jaipur.*
2. *Richard Peet., (2011): Modern Geographical Thought, Rawat Publications, Jaipur.*
3. *Richard Hartshorne, (2005): The Nature of Geography, RawatPublicatiosn, Jaipur..*

ONLINE RESOURCES/TUTORIALS

1. <https://drive.google.com/file/d/1Jdsr9Hhdmd48s63RQq6pEiHjHplci2jx/view>
2. <https://www.pdfdrive.com/geographic-thought-e93901893.html>

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	S	M	S	S	M	M	M	S
CO2	S	S	S	S	S	S	M	M	L	S
CO3	S	M	S	M	M	S	M	S	L	M
CO4	S	M	S	M	M	S	M	L	M	S
CO5	S	M	S	S	S	S	S	S	M	S

S - Strong; M - Medium; L – Low

Semester – III

Core Course – IX	Title of the Course		Paper Code: 21PGY09			
	REGIONAL PLANNING IN GEOGRAPHY		L	T	P	C
			80	20	0	5
OBJECTIVES:						
<ul style="list-style-type: none"> • To impart knowledge on regions and regional planning. • To understand the planning regions. • To know the planning regions of India • To evaluate the theories and models associated with regional planning 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
1	Understand the essential of Regional Planning to overcome regional imbalances.					K1
2	To understand uneven distribution of natural resources					K2
3	To apply the geographical knowledge to eradicate the natural imbalances					K3
4	To analyse the hurdles for sustainable development and overcome the problems					K4
5	To evaluate the existing govt. plans to improve backward areas of India.					K5
6	To create pollution free environment by using geospatial technology					K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I						
BASICS					18 Hours	
Definition of Region - Geography and regional planning -Goals and objectives of regional planning process - Concept and scope of Regional Planning- Techniques of regional planning - Need for planning –Interdisciplinary nature of regional planning						
Unit: II						
TYPES OF REGIONS					18 Hours	
Types and techniques for Delineation of Regions: Formal, Functional and Vernacular– Types of Regionalization - Regional disparity in India and World – Regional imbalances.						
Unit: III						
PLANNING REGIONS					18 Hours	
Regions for Planning:Regional awareness –Planning Regions – Characteristics – Regional Developmental Programmes: Command area, Drought prone, Metropolitan, River valley, Tribal and Hill area						
Unit: IV						
PLANNING IN INDIA					18 Hours	
Regional Planning in India:Five year plans and Annual plans in India – Rural and Urban development plan in India- Integrated Area Development Planning - Fundamentals of town and country planning - 73 rd and 74 th amendment of constitution of India.						
Unit: V						
THEORIES AND MODELS					18 Hours	

Theories and Models of Regional Development: A.O. Hirschman, G. Myrdal, J. Friedman, W.W.Rostow,R.P. Misra and F. Perroux - Dependency theory of Underdevelopment - Global Economic Blocks - Regional Development and Social Movements in India.

TEXT BOOKS

1. *Chaudhuri J.R., (2007) An Introduction to Development and Regional Planning with Special Reference to India, Orient Longman, Hyderabad.*
2. *Chandana R.C.,(2002) Regional Planning A Comprehensive Text, Kalyani Publishers, Ludhiana*
3. *Jayasri Ray Chaudhuri(2007) An Introduction to Development and Regional Planning with special reference to India, Orient Longman, Hyderabad.*
4. *Misra .R.P., (2002) Regional Planning (Concepts, Techniques, Policies and Case Studies), Concept Publishing Company, New Delhi*
5. *Chandana R.C., (2006) Regional Planning and Development, Kalyani Publishers, Ludhiana*

REFERENCE BOOKS

1. *Sundaram K.V., (1977) Urban and Regional Planning in India Vikash Publishing House PVT LTD, New Delhi*
2. *John Glasson (1974) An Introduction to Regional Planning, Hutchinson Educational Ltd, London*
3. *Bhat, L.S. (1973) Regional Planning in India, Statistical Publishing Society, Calcutta.*

ONLINE RESOURCES/TUTORIALS

1. https://www.google.co.in/books/edition/Regional_Planning_in_India/6-sPBAAAQBAJ?hl=en&gbpv=1&printsec=frontcover
2. http://www.dspmuranchi.ac.in/pdf/Blog/Regional-Planning-All_Part-Conc.pdf

MAPPING WITH PROGRAMME OUTCOMES

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

S - Strong; M - Medium; L – Low

Semester – III

Interdisciplinary Course	Title of the Course		Paper Code: 21PGYGG			
	GENERAL GEOLOGY		L	T	P	C
			80	20	0	5
OBJECTIVES:						
<ul style="list-style-type: none"> • To impart the knowledge on the origin of Earth • To disseminate knowledge of Geology to predict geomorphological disasters. • To elucidate the theories related with the formation of Earth 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
1	<i>Students could visualize the structure of the Earth</i>					K1
2	<i>To understand the process associated with the formation of landforms.</i>					K2
3	<i>To apply geological knowledge for the development of mankind</i>					K3
4	<i>To evaluate the role of Geological knowledge in prediction of Natural Disasters</i>					K4
5	<i>To evaluate the minerals distribution by using geological knowledge.</i>					K5
6	<i>To create environmental awareness students community</i>					K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I						
EARTH AS A PLANET		18 Hours				
Introduction to Geology – its perspective, Scope and Subdivisions; General characteristics and origin of the Universe, Solar System and its planets. The terrestrial and Jovian planets. Meteorites and Asteroids. Earth in the solar system - origin, size, shape, mass, density, rotational and revolution parameters and its age.						
Unit: II						
INTERNAL STRUCTURE		18 Hours				
Internal structure of the earth; Formation of Core, Mantle, Crust; Volcanoes: Types, products and distribution. Earthquakes - intensity, causes, earthquake belts and distribution.						
Unit: III						
GEOMORPHOLOGY		18 Hours				
Weathering and Erosion, Mass wasting; Geological works of river, glacier, wind, undergroundwater, ocean and landforms produced by them. Wave erosion and beach processes.						
Unit: IV						
ROCKS AND MINERALS		18 Hours				
Definition and classification of Rock and minerals. Formation of Igneous, Sedimentary and Metamorphic rocks and their classification. Rock Cycle. Common classification of minerals and their basis. Physical Properties of the minerals. Classification of major silicates and non silicate minerals						
Unit: V						
THEORIES AND APPLICATIONS		18 Hours				

Continental Drift, Sea floor spreading theory and evidences: Plate Tectonics. Oceanic trenches, volcanic arcs, mid-ocean ridges, Palaeomagnetism and its application, Raised beach, River terraces, river meandering.

TEXT BOOKS

1. *Radhakrishnan, V. (1996). General Geology, V.V.P. Publishers, Tuticorin.*
2. *Mahapatra, G.P. (1994). Physical Geology, CBS Publishers, New Delhi.*
3. *Thornbury W.D. (2004) Principles of Geomorphology, Second Edition, CBS Publishers & Distributers Pvt. Ltd, Chennai*
4. *Patwardhan, A.M. (1999). Dynamic Earth System, Prentice Hall, New Delhi.*
5. *Mukherjee, P.K. (1995). A Text Book of Geology, The World Press Pvt Ltd, Calcutta.*

REFERENCE BOOKS

1. *Emiliani, C. (1992). Planet Earth, Cambridge University Press, Delhi.*
2. *Porter, S.C. & B.J. Skinner (1995). The Dynamic Earth, John Wiley & Sons, New York.*

ONLINE RESOURCES/TUTORIALS

1. <https://www.pdfdrive.com/general-geology-d188844258.html>
2. https://sudartomas.files.wordpress.com/2012/11/fundamentalsofgeomorphology_routledgefundamentalsophysicalgeography.pdf

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	S	S	S	S	S	S	M	S
CO3	S	S	S	M	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	L	M
CO5	S	S	S	S	S	S	S	S	M	M

S - Strong; M - Medium; L - Low

Semester – IV

Core Course – X	Title of the Course		Paper Code: 21PGY10			
	RESEARCH METHODOLOGY IN GEOGRAPHY		L	T	P	C
			80	20	0	5
OBJECTIVES:						
<ul style="list-style-type: none"> • To understand the essential of Research in Geography. • To know about the steps involve in Geographical Research. • Identification of Research problems and execution in Geographical field. 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
<i>1</i>	<i>Students would gain understanding of geographical research</i>					K1
<i>2</i>	<i>To understand the stages of Geographical Research</i>					K2
<i>3</i>	<i>To explore the research nature of the area in Geography</i>					K3
<i>4</i>	<i>To utilize the optimum level of geographical knowledge for sustainable development</i>					K4
<i>5</i>	<i>To evaluate the existing complicated environmental problems of mankind</i>					K5
<i>6</i>	<i>To create sustainable development in all fields by using geographical research</i>					K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I	INTRODUCTION					18 Hours
Meaning of research–Objectives of Research-Types of Research-Research approaches-Significance of Research-Traditional and Scientific Research – Recent trends in Geographical Research-Role of Internet in Research						
Unit: II	RESEARCH PROBLEM					18 Hours
Logic in research- Hypothesis, Concepts and Facts, Principles and Law, Theory and their implications in Geographical Research - Role of Models –Research problems-Selecting the problem-Defining the problem-Techniques involved in defining the problem						
Unit: III	RESEARCH DESIGN					18 Hours
Research Design-Meaning and Definition –Need for Research Design –Feature of good design-Concepts relating to research design-Time Schedule-Literary survey–Bibliography						
Unit: IV	RESEARCH TECHNIQUES					18 Hours
Data Acquisition and Analysis: Collection of data- Sources of Data: Primary and Secondary – Interpretation of Data- Sampling techniques –Simple quantitative techniques of analysis. Mean, Median, Mode, Standard Deviation, and Chi-Square test (Based on Frequency Data) Analysis of Variance- Correlation Analysis						

Unit: V	WRITING METHODS	18 Hours
Thesis writing: Organization of Thesis – Preliminaries – Text-reference materials – Online Reference - Language and Presentation (form and style) - Writing of Abstract, Reports/Research papers and Research Project Proposal		
<p>TEXT BOOKS</p> <p>1. <i>ZamirAlvi., (2008) Statistical Geography (Methods & Applications), Rawat Publications, Jaipur</i> 2. <i>AslamMahmood(2008) India- The Physical Aspects, Kisalaya Publications Pvt. Ltd, New Delhi</i> 3. <i>Sancheti.D.C., and V.K. Kapoor (2017) Statistics (Theory, Methods & Applications), Sulthan Chand & Sons, New Delhi.</i> 4. <i>Kothari .C.R., (2004) Research Methodology (Tools and Techniques), New Age International Publishers (P) Ltd, New Delhi</i> 5. <i>Robert Hammond and Patrick McCullough, (1978): Quantitative Techniques in Geography: An Introduction, Clarendon press, Oxford.</i></p> <p>REFERENCE BOOKS</p> <p>1. <i>AnandBallabh., (2007)Research in Geography (Trends & Techniques), Akansha Publishing House, New Delhi.</i> 2. <i>Davis, W.K.D., (1972) The Conceptual Revolution in Geography University of London press ltd., London.</i> 3. <i>Cooray, P.G., (1992): Guide to Scientific and Technical Writing, Hindgala, Srilanka</i></p> <p>ONLINE RESOURCES/TUTORIALS</p> <p>1. https://ia802906.us.archive.org/3/items/in.ernet.dli.2015.131904/2015.131904.Reserch-Methodology-In-Geography.pdf 2. https://saidnazulfiqar.files.wordpress.com/2013/09/0098metode-penelitian-geografi.pdf</p>		

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	M	M	M	M	S	S
CO2	M	M	M	S	M	M	M	M	M	S
CO3	S	M	S	M	M	L	L	M	L	S
CO4	M	S	M	S	M	L	M	S	M	S
CO5	M	M	S	M	M	M	L	M	L	S

S - Strong; M - Medium; L – Low

Semester – IV

Core Course – XI	Title of the Course		Paper Code: 21PGY11			
	GEOSPATIAL TECHNIQUES IN GEOGRAPHY		L	T	P	C
			80	20	0	5
OBJECTIVES:						
<ul style="list-style-type: none"> • This paper disseminates the basic knowledge of Remote Sensing. • To understand the role of Geographical Information System in Geographical Study. • To familiarize the GPS technology to the students • To utilize the natural resources for eco friendly method by using Geo Spatial Technology. 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
1	<i>Students could gain technical knowledge in geographical study</i>					K1
2	<i>To understand the application of Remote Sensing in Geographical study</i>					K2
3	<i>To apply the technology to the development of mankind</i>					K3
4	<i>To update and analyse the recent trends in geospatial technology</i>					K4
5	<i>To evaluate the Remote Sensing, GIS and GPS technologies in day today life</i>					K5
6	<i>To create technology based community for rational utilization of natural resources</i>					K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I						
BASICS					18 Hours	
Definition and Basic concepts of Remote Sensing-Energy source and Radiation principles-Energy interaction in the Atmosphere and Earth Surface features - EMR - Ideal and Real remote sensing systems-Historical development of remote sensing.						
Unit: II						
REMOTE SENSING					18 Hours	
Types of Remote Sensing - Aerial photographs- Key Elements of Aerial Photo Interpretation -Photo Mosaics - Types of satellites-Sensors and Platforms - Resolution aspects of LANDSAT, SPOT, IRS and ERS series of satellites-Visual image interpretation-Image classification- Digital Image Processing – Recent Developments.						
Unit: III						
GEOGRAPHICAL INFORMATION SYSTEM					18 Hours	
History of GIS-Components-Spatial data modeling-Vector and Raster data models-DBMS - Hardware and Software -Query- Buffer - Overlay-Neighborhood analysis-Generation of DEM - TIN-Data integration - Open source software's.						
Unit: IV						
GLOBAL POSITIONING SYSTEM					18 Hours	
History of GPS – Types of GPS – Segments of GPS–Uses of GPS – Geo positioning - Constellation and Signals –GPS Errors –DGPS – WAAS.						

Unit: V	APPLICATIONS	18 Hours
Remote Sensing Applications of Land use/Land cover, Water resources Geomorphology, Waste land studies-Disaster management and urbanplanning. GIS Applications of Urban Planning, Hotspot analysis, EIA, Navigation, Mining, Hazard zone identification and land information system. Applications of GPS in Surveying, Military, Farming, Aviation, Marine and navigation		
TEXT BOOKS		
<p>1. BasudebBhatta., (2012) <i>Remote Sensing and GIS (2nd Edition)</i>, Oxford University Press, New Delhi.</p> <p>2. Chandra A.M. and S.K. Gosh (2015) <i>Remote Sensing and Geographic Information System(2nd Edition)</i>, Narosa Publishing House Pvt. Ltd, New Delhi</p> <p>3. Anji Reddy M.(2015) <i>Text Book of Remote Sensing and Geographical Information Systems (4th Edition)</i>, B.S Publications, Hyderabad.</p> <p>4. Chandra A.M., (2016) <i>Geoinformatics</i>, New Age International Publishers, New Delhi</p> <p>5. Alfred Leick (2004) <i>GPS Satellite Surveying</i>, Wiley India Pvt. Ltd, New Delhi</p>		
REFERENCE BOOKS		
<p>1. Lillesand T.M., R.W. Kiefer and J.W. Chipman(2014) <i>Remote Sensing and Image Interpretation (6th Edition)</i>, Wiley India Pvt. Ltd, New Delhi</p> <p>2. Chouddhury S., D. Chakrabarti and S. Choudhury (2010) <i>An Introduction to Geographic Information Technology</i>, I.K. International Publishing House Pvt. Ltd, New Delhi</p> <p>3. Muralikrishna I.V., (2001) <i>Spatial Information Technology (Remote Sensing and Geographical Information Systems)</i>, B.S. Publications, Hyderabad</p>		
ONLINE RESOURCES/TUTORIALS		
<p>1. https://www.pdfdrive.com/geoinformation-remote-sensing-photogrammetry-and-geographic-information-systems-d188376098.html</p> <p>2. https://www.pdfdrive.com/datums-and-map-projections-for-remote-sensing-gis-and-surveying-d157946146.html</p>		

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	S	S	M	S	S	M	M	S
CO2	M	M	S	M	S	M	S	S	M	S
CO3	M	M	S	M	M	S	M	S	M	S
CO4	S	S	S	M	M	M	S	S	M	S
CO5	S	S	S	S	S	S	S	S	M	S

S - Strong; M - Medium; L – Low

Semester – IV

Core Course – XII	Title of the Course	Paper Code: 21PGY12			
	QUANTITATIVE TECHNIQUES IN GEOGRAPHY	L	T	P	C
		80	20	0	5
OBJECTIVES:					
<ul style="list-style-type: none"> • To trace out the history of Quantitative revolution in Geography. • It is a course designed to enable students to improve their analytical knowledge to handle the research in Geography. • This paper helps to know the basic knowledge on statistics and application in geographical research. • To strengthen the accuracy prediction of geographical research 					
COURSE OUTCOMES:					
On the successful completion of the course, student will be able to					
1	To realise the utility of statistical techniques in Geography				K1
2	To understand the role of statistical techniques in Geography				K2
3	To apply the statistical techniques in spatial data representation				K3
4	To analyse the application of statistical techniques in Geography				K4
5	To appraise the essential of quantitative techniques in geographical study				K5
6	To create data base of for the sustainable development of mankind				K6
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create					
Unit: I					
DATA SOURCES				18 Hours	
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. Levels of Measurement – Nominal, Ordinal, Interval and Ratio Scales.					
Unit: II					
FREQUENCY DISTRIBUTION				18 Hours	
Tabulation and Summarizing of Geographical Data – Classification – Class limits – Class Interval – Normal frequency distribution, Frequency Curve and its uses, Lorenz curve, Frequency Polygon and Graphs					
Unit: III					
SAMPLING TECHNIQUE				18 Hours	
Sampling – Types of Sampling - Characteristics of samples, Methods of sampling, Statistical significance, Probability - Standard error of difference, Significance test in small samples, Formulation and Testing of Hypothesis: Chi Square test-‘t’ Test and ‘F’ Test - Goodness of fit.					
Unit: IV					
STATISTICAL METHOD				18 Hours	
Measures of Central Tendency: Mean, Median, Mode. Measures of Dispersion: Range, Quartile Deviation, Mean Deviation, Standard Deviation and Variability. Measures of Skewness and Kurtosis					

Unit: V	DATA ANALYSIS METHOD	18 Hours
<p>Correlation Analysis: Karl Pearson, Spearman and Kendall's correlation. Regression Analysis: Types - Simple Linear Regression Analysis - Regression line and confidence limits. ANOVA - Factor Analysis – Importance of SPSS software - Application of quantitative Methods in the Geographical Research.</p>		
<p>TEXT BOOKS</p> <ol style="list-style-type: none"> Kothari C.R., (1999) <i>Quantitative Techniques (3rd Revised Edition)</i>, Vikas Publishing House PVT LTD, New Delhi Najma Khan(1998) <i>Quantitative Methods in Geographical Research</i>, Concept Publishing Company, New Delhi Saroj K. Pal(1982) <i>Statistical Techniques (A Basic Approach to Geography)</i>, Tata McGraw-Hill Publishing Limited, New Delhi. Robert Hammond and Patrick McCullough, (1978): <i>Quantitative Techniques in Geography: An Introduction</i>, Clarendon press, Oxford. Taylor P.J (2006) <i>Quantitative Methods in Geography - An Introduction to Spatial Analysis</i>, Rawat Publications, Jaipur & New Delhi 		
<p>REFERENCE BOOKS</p> <ol style="list-style-type: none"> John A. Matthews (1981) <i>Quantitative and Statistical Approaches to Geography (A Practical Manual)</i>, Pergamon Press, England Hammod. R and P.S. McCullagh., (2010) <i>Quantitative Techniques in geography – An Introduction</i>, Oxford University Press, New Delhi 		
<p>ONLINE RESOURCES/TUTORIALS</p> <ol style="list-style-type: none"> https://serval.unil.ch/resource/serval:BIB_05FBCD424B3F.P001/REF.pdf https://www.pdfdrive.com/introducing-quantitative-geography-measurement-methods-and-generalised-linear-models-d41509771.html 		

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	S	S	S	L	L	L	M	S
CO2	M	M	S	M	M	L	L	M	L	M
CO3	L	M	S	S	S	L	L	M	L	M
CO4	L	M	S	S	S	L	L	M	L	S
CO5	L	S	S	M	M	L	L	M	L	S

S - Strong; M - Medium; L – Low

Semester – III & IV

Core Practical – III	Title of the Course		Paper Code: 21PGYP3			
	THEMATIC CARTOGRAPHY		L	T	P	C
			10	10	80	4
OBJECTIVES:						
<ul style="list-style-type: none"> • To learn the history of map making process • To identify the symbolization process. • To know the marginal information of the various countries maps 						
COURSE OUTCOMES:						
On the successful completion of the course, student will be able to						
<i>1</i>	<i>Students can improve skill of interpretation the map</i>					<i>K1</i>
<i>2</i>	<i>To learn the steps involve in map making and details presentation</i>					<i>K2</i>
<i>3</i>	<i>Can be familiar with the scales and symbols.</i>					<i>K3</i>
<i>4</i>	<i>To enhance the skill to identify the details given in maps.</i>					<i>K4</i>
<i>5</i>	<i>To enable to extract the data from the maps</i>					<i>K5</i>
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create						
Unit: I	MAPS					18 Hours
1.1 Map Generalization 1.2 Representation of Statistical data into Thematic maps Point, Line, Area Volume symbols.						
Unit: II	SCALES					18 Hours
2.1 An Introduction to Scale 2.2 Types of scales						
Unit: III	INDIAN TOPOSHEET INTERPRETATION					18 Hours
3.1 Cartographic Appreciation of Survey of India. 3.2 Detailed interpretation of Survey of India.						
Unit: IV	UK AND US MAP INTERPRETATION					18 Hours
4.1 British Ordnance Survey. 4.2 US Geological Survey maps.						
TEXT BOOKS						
<i>1. Khan M.Z.A., (1998) Text Book of Practical Geography, Concept Publishing Company, New</i>						

Delhi

2. **Mishra, R.P and A. Ramesh**, (1988) *Fundamentals of Cartography*, Concept Publishers, New Delhi.

3. **Monkhouse, F.J., and H.R. Wilkinson** (1973) *Maps and Diagrams*, Methuen and Co.Ltd., London.

4. **Raghunandan Singh.**, (2012) *Map Work and Practical Geography*, Surjeeth Publications, New Delhi.

5. **Pijushkanti Saha & Partha Basu** (2011) *Advanced practical Geography*, Books and Allied (P) Ltd, Kolkatta

REFERENCE BOOKS

1. **Lawrence G.R.P.**, (1971) *Cartographic Methods*, Methuen and Co.Ltd., London.

2. **Singh R.L. & Rana P. B. Singh** (2010) *Elements of Cartography*, Kalyani Publishers, New Delhi.

3. **Gopal Singh** (2007) *Map Work and Practical Geography (4th Revised Edition)*, Vikas Publishing House PVT LTD, Noida

ONLINE RESOURCES/TUTORIALS

1. <https://freehomedelivery.net/wp-content/uploads/2016/11/NCERT-Class-11-Geography-Practical.pdf>

2. <https://ia601607.us.archive.org/29/items/in.ernet.dli.2015.84040/2015.84040.An-Introduction-To-Mapwork-And-Practical-Geography.pdf>

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	M	M	L	L	L	L	L	L	M
CO2	L	M	M	L	M	L	L	L	L	M
CO3	L	M	M	M	M	M	M	M	L	M
CO4	M	M	L	M	M	L	L	L	L	M
CO5										

S - Strong; M - Medium; L – Low

Semester – III & IV

Core Practical – IV	Title of the Course	Paper Code: 21PGYP4			
	REMOTE SENSING AND GIS APPLICATIONS	L	T	P	C
		10	10	80	4
OBJECTIVES:					
<ul style="list-style-type: none"> • To understand the basic of Remote Sensing Technique • To enhance the interpretation skill of Remotely sensed data products • To identify the concepts of remote sensing and GIS • To develop the geospatial data analysis in different geographical aspects. 					
COURSE OUTCOMES:					
On the successful completion of the course, student will be able to					
1	Students would gain understanding of Remote Sensing Technology				K1
2	To learn the various kind of Remotely sensed data products				K2
3	To identify the natural and cultural factors distribution on the earth surface.				K3
4	To gain knowledge the to identify the spatial distribution on the earth.				K4
5	To mapping the distribution of spatial elements.				K5
K1 - Remember. K2 - Understand. K3 - Apply. K4 - Analyze. K5 - Evaluate. K6 - Create					
Unit: I					
AERIAL REMOTE SENSING		18 Hours			
1.1 Aerial Photo 1.2 Key Elements of Interpretation 1.3 Marginal Information's 1.4 Interpretation of Aerial Photographs 1.5 Determination of Scale and Height					
Unit: II					
SATELLITE REMOTE SENSING		18 Hours			
2.1 Satellite Imagery 2.2 Marginal Information's 2.3 Visual Image Interpretation 2.4 Digital Image Enhancement 2.5 Image Classification					
Unit: III					
GEOGRAPHICAL INFORMATION SYSTEM		18 Hours			
3.1 Geographical Information System 3.2 Scanning and File Conversion 3.3 Georeferencing and Digitization					

- 3.4 Data Sources and Types
- 3.5 Generation of DEM and TIN
- 3.6 Query, Buffering and Overlay Analysis

Unit: IV

GLOBAL POSITIONING SYSTEM

18 Hours

- 4.1 Global Positioning System
- 4.2 GPS Segments and Types
- 4.3 GPS Functions
- 4.4 GPS Survey

TEXT BOOKS

1. **Basudeb Bhatta.**, (2012) *Remote Sensing and GIS (2nd Edition)*, Oxford University Press, New Delhi .
2. **Chandra A.M. and S.K. Gosh** (2015) *Remote Sensing and Geographic Information System(2nd Edition)*, Narosa Publishing House Pvt. Ltd, New Delhi
3. **Anji Reddy M.**(2015) *Text Book of Remote Sensing and Geographical Information Systems (4th Edition)*, B.S Publications, Hyderabad.
4. **Chandra A.M.**, (2016) *Geoinformatics*, New Age International Publishers, New Delhi
5. **Alfred Leick** (2004) *GPS Satellite Surveying*, Wiley India Pvt. Ltd, New Delhi

REFERENCE BOOKS

1. **Lillesand T.M., R.W. Kiefer and J.W. Chipman**(2014) *Remote Sensing and Image Interpretation (6th Edition)*, Wiley India Pvt. Ltd, New Delhi
2. **Chakrabarti D and S. Choudhury** (2010) *An Introduction to Geographic Information Technology*, I.K. International Publishing House Pvt. Ltd, New Delhi
3. **John A, Richards and Xiuping Jia**(2006) *Remote Sensing Digital Image Analysis An Introduction (4th Edition)*, Springer (India) Private Limited, New Delhi

ONLINE RESOURCES/TUTORIALS

1. <https://www.pdfdrive.com/geoinformation-remote-sensing-photogrammetry-and-geographic-information-systems-d188376098.html>
2. <https://www.pdfdrive.com/datums-and-map-projections-for-remote-sensing-gis-and-surveying-d157946146.html>

MAPPING WITH PROGRAMME OUTCOMES										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	M	L	M	M	L	M	M	S
CO2	M	S	M	M	M	M	L	S	S	S
CO3	M	M	M	S	S	M	L	M	S	S
CO4	M	M	M	M	S	M	L	M	S	S
CO5										

S - Strong; M - Medium; L – Low