GOVERNMENT COLLEGE FOR WOMEN
(AUTONOMOUS)
KUMBAKONAM

DEPARTMENT OF GEOGRAPHY

Programme: **B.SC. GEOGRAPHY**

Programme Code: USGE

(Applicable to the candidates admitted from the academic year 2020-2021 onwards)

SYLLABUS

2021 – 2022 – I YEAR

2022 – 2023 – II YEAR

2023 – 2024 – III YEAR

I. PROGRAMMEOUTCOMES :

1. Creates a balance between sustainable development of Human Resource and various needs of society.
2. Students gets exposure to new techniques in Geography.
3. Students gain application knowledge about the acquisition of data, quantitative and qualitative techniques.
4. Student will be able to prove proficiency with the ability to clear in competitive exams like UPSC and TNPSC.
5. Understanding the different Resources in the Regional local and Global level.
6. Students gain knowledge about the basic skills of Map making

II. SPECIFIC PROGRAMME OUTCOME:

1. Students will be able to use the scientific method including critical thinking, sampling, hypothesis formulation and testing, and controlled experimentation to assess environmental problems, and be able to effectively communicate research objectives, methodology, results, interpretations, and conclusions in oral and written formats.
2. Students will have a general understanding of physical geographic processes, the global distribution of land forms and ecosystems, and the role of the physical environment on human population.
3. Students will be able to think in spatial terms to explain what has occurred in the past as well as using geographic principles to understand the present and plan for the future.
4. Students will have a general understanding of the various theoretical and methodological approaches in both physical and human geography and be able to develop research questions and critically analyse both qualitative and quantitative data to answer those questions.
5. Develop and idea about different types of Mapping Techniques.
6. Develop and idea about the different types of scales, map projections, identifications of rocks and minerals, diagrammatic representation of data, types of surveying instruments.
7. Interpretation knowledge of aerial photographs, satellite imageries, Indian toposheets and Indian daily weather report.

GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS) KUMBAKONAM

(Curriculum – B.Sc., GEOGRAPHY– 2021 - 2022)

Department : GEOGRAPHY **Programme Code: USGE**

SEMESTER – I

Part	Course Type	Course Code	Title of the Course	Hrs/ Week	Credits	Exam Hrs	Marks		
							CIA	ESE	Total
I	**LC**	U211T1	Tamil	**6**	**3**	**3**	**25**	**75**	**100**
II	**ELC**	U211E1	English	**6**	**3**	**3**	**25**	**75**	**100**
III	**Core Course – I**	U21GC101	Earth System Science	**6**	**5**	**3**	**25**	**75**	**100**
III	**Core Course – II**	U21GC102P	Practical I – Map Scale and Representation of Relief	**3**	**2**	**3**	**40**	**60**	**100**
III	**Allied Course - I**	U211AG1	Tourism and Travel Management I	**5**	**4**	**3**	**25**	**75**	**100**
III	**Allied Course – II**	U212AG2P	Allied Practical I – Tourism Data Analysis	**2**	--	--	--	--	---
IV	**Ability Enhancement Course**	U211VES	**Value Education**	**2**	**2**	**3**	**25**	**75**	**100**
Total				**30**	**19**				**600**

SEMESTER – II

Part	Course Type	Course Code	Title of the Course	Hrs/ Week	Credits	Exam Hrs	Marks		
							CIA	ESE	Total
I	**LC**	U212T2	Tamil	**6**	**3**	**3**	**25**	**75**	**100**
II	**ELC**	U212E2	English	**4**	**3**	**3**	**25**	**75**	**100**
III	**Core Course – III**	U21GC203	Climatology	**6**	**5**	**3**	**25**	**75**	**100**
III	**Core Course – IV**	U21GC204P	Practical II - Climatic Data Analysis	**3**	**2**	**3**	**40**	**60**	**100**
III	**Allied Course - II**	U212AG2P	Allied Practical I – Tourism Data Analysis	**2**	**4**	**3**	**40**	**60**	**100**
III	**Allied Course - III**	U212AG3	Tourism and Travel Management II	**5**	**4**	**3**	**25**	**75**	**100**
IV	**Ability Enhancement Course**	U212ES	Environmental Studies	**2**	**2**	**3**	**25**	**75**	**100**
IV	Naan Mudhalvan Course	U21NM2LP	NME-Language Proficiency for Employability	2	2		25	75	100
Total				**30**	**23**				**700**

SEMESTER – III

Part	Course Type	Course Code	Title of the Course	Hrs/ Week	Credits	Exam Hrs	Marks		
							CIA	ESE	Total
I	LC	U213T3	Tamil	**6**	**3**	**3**	**25**	**75**	**100**
II	ELC	U213E3	English	**6**	**3**	**3**	**25**	**75**	**100**
III	Core Course - V	U21GC305	Geomorphology	**6**	**5**	**3**	**25**	**75**	**100**
III	Core Course - VI	U21GC306P	Practical III - Appreciation and Interpretation of Topo sheets	**3**	**2**	**3**	**40**	**60**	**100**
III	Allied Course – IV	U213AG4	Statistics I	**5**	**4**	**3**	**25**	**75**	**100**
III	Allied Course – V	U214AG5P	Allied Practical II - Statistics	**2**	**--**	**--**	**--**	**--**	**--**
IV	Non Major Elective Course – I	U21G3NME1 : 1	*Disaster Studies*	**2**	**2**	**3**	**25**	**75**	**100**
		U21G3NME1 : 2	*Geography of India (with Special Reference to Tamil Nadu)*						
Total				**30**	**19**				**600**
	Self Study Course - I	U213SS1	Mathematical Aptitude for Recruitment Board Examinations.	**-**	**2**	**2**	**-**	**100**	**100**

SEMESTER – IV

Part	Course Type	Course Code	Title of the Course		Hrs/ Week	Credits	Exam Hrs	Marks		
								CIA	ESE	Total
I	LC	U214T4	Tamil		**6**	**3**	**3**	**25**	**75**	**100**
II	ELC	U214E4	English		**6**	**3**	**3**	**25**	**75**	**100**
III	Core Course - VII	U21GC407	Cartography		**4**	**4**	**3**	**25**	**75**	**100**
III	Core Course – VIII	U21GC408P	Practical IV - Map Projection		**3**	**2**	**3**	**40**	**60**	**100**
III	Allied Course - V	U214AG5P	Allied Practical II - Statistics		**2**	**4**	**3**	**40**	**60**	**100**
III	Allied Course - VI	U214AG6	Statistics II		**3**	**3**	**3**	**25**	**75**	**100**
IV	Non Major Elective Course – II	U21G4NME2 : 1	*Fundamentals of Remote sensing and GPS*		**2**	**2**	**3**	**25**	**75**	**100**
		U21G4NME2 : 2	*Agricultural Geography*							
IV	Skill Enhancement Course – I	U214GSE1	Basics of Computer Applications	Theory	**1**	**1**	**2**	**20**	**-**	**-**
				Practical	**1**	**1**	**2**	**20**	**60**	**100**
IV	Naan Mudhalvan Course	U21NM4DS	NME-Digital Skills for Employability		**2**	**2**		**25**	**75**	**100**
Total					**30**	**25**				**800**
	Self-Study Course – II	U214SS2	*Social Study for Competitive Examinations.*		**-**	**2**	**2**	**-**	**100**	**100**

SEMESTER – V

Part	Course Type	Course Code	Title of the Course		Hrs/ Week	Credits	Exam Hrs	Marks		
								CIA	ESE	Total
III	**Core Course – IX**	U21GC509	Oceanography		**5**	**5**	**3**	**25**	**75**	**100**
III	**Core Course – X**	U21GC510	Human Geography		**5**	**5**	**3**	**25**	**75**	**100**
III	**Core Course – XI**	U21GC511	Geography of Resources		**5**	**5**	**3**	**25**	**75**	**100**
III	**Core Course – XII**	U21GC512P	Practical V - Surveying		**6**	**4**	**3**	**40**	**60**	**100**
III	**Major Based Elective Course – I**	U21G5MBE1:1	*Biogeography*		**5**	**5**	**3**	**25**	**75**	**100**
		U21G5MBE1:2	*Geography of Sri Lanka*							
		U21G5MBE1:3	*Disaster Studies*							
IV	**Skill Enhancement Course – II**	U215GSE2	Field Techniques	Theory	**1**	**1**	**2**	**20**	-	-
				Practical	**1**	**1**	**2**	**20**	**60**	**100**
IV	**Skill Enhancement Course – III**	U215GSE3	Basics of GNSS	Theory	**1**	**1**	**2**	**20**	-	-
				Practical	**1**	**1**	**2**	**20**	**60**	**100**
Total					**30**	**28**				**700**

SEMESTER – VI

Part	Course Type	Course Code	Title of the Course	Hrs/ Week	Credits	Exam Hrs	Marks		
							CIA	ESE	Total
III	**Core Course – XIII**	U21GC613	Geoinformatics	**6**	**5**	**3**	**25**	**75**	**100**
III	**Core Course – XIV**	U21GC614	Geography of India	**6**	**5**	**3**	**25**	**75**	**100**
III	**Core Course – XV**	U21GC615P	Practical VI - Remote Sensing Image Interpretation	**6**	**4**	**3**	**40**	**60**	**100**
III	**Major Based Elective Course – II**	U21G6MBE2:1	*Geography of Tamil Nadu*	**6**	**5**	**3**	**25**	**75**	**100**
		U21G6MBE2:2	*Geography of Health*						
		U21G6MBE2:3	*Agricultural Geography*						
III	**Major Based Elective Course – III**	U21G6MBE3:1	*World Regional Geography*	**5**	**5**	**3**	**25**	**75**	**100**
		U21G6MBE3:2	*Land use and Cadastral Surveying*						
		U21G6MBE3:3	*Population Geography*						
V	**Ability Enhancement Course**	U216GS	**Gender Studies**	**1**	**1**	**3**	**25**	**75**	**100**
V		U21EA	**Extension Activities**	-	**1**	-	-	-	-
Total				**30**	**26**				**600**

Course Structure Abstract for
B.Sc., Programme 2021-2022 onwards

Part	Course		Total No. of Papers	Hours	Credit	Mark
I	Language Course (LC)		4	24	12	400
II	English Language Course (ELC)		4	22	12	400
III	Core Course (CC)		15	74	60	1500
III	Allied Course (AC)		6	27	23	600
III	Major Based Elective Course (MBEC)		3	16	15	300
IV	Non Major Elective Course (NMEC)		2	4	4	200
IV	Skill Enhancement		3	6	6	300
IV	Ability Enhancement Course (AEC)	Value Education	1	2	2	100
IV		Environmental Studies	1	2	2	100
V		Gender Studies	1	1	1	100
V	Extension Activities		--		1	---
	Naan Mudhalvan Course		2	4	4	
Total			40	180	140	4000
Extra Credit Courses						
Self-Study Course			2	--	4	200
Total			42	180	144	4200

Earth System Science

Theory Hours	: 6	Course Code	: U21GC101
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objective:

- This introductory course is intended to acquaint the students with science of geography and fundamentals of earth systems.
- The earth process is discussed in such a way that students develop a keen interest in the subject and pursue it for higher studies.

Unit I

Nature of Geography - Spatial analysis: space, location, distance, accessibility and spatial interaction - Human–earth interactions - Systems organization in earth systems

Unit II

Origin of the Earth - Modern theories - Earth's orbital parameters - Internal and external heat engines of the Earth – Earth's internal structure: crust, mantle and core - Earth's dimensions

Unit III

Rocks: Origin and composition of rocks - igneous, sedimentary and metamorphic processes - Rock cycle - Geological time scale

Unit IV

Earth's Topography - Orders of relief - Crustal formation and deformation - Tectonic forces –Fold – Fault – Orogenesis- Continental drift – Wegener's continental drift theory – Plate tectonics

Unit V

Earthquakes: causes – Seismic waves – Measurement of earthquakes – Effects – Tsunamis – Volcanism: Types – Ejecting materials - Intrusive bodies – Distribution of earthquakes and volcanoes

Course Outcome:

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

1. Understand the functioning of Earth systems in real time and analyze how the natural and anthropogenic operating factors affects the development of landforms

2. Students will able to demonstrate the knowledge of origin of the earth with suitable theories.
3. They know about the interior and exterior parts of the earth.
4. Students know about the continental drift and how the continents are formed, plate tectonics and the movements of plates and its impact on the Earth.

References:

1. Christopherson, R.W. and Birkeland, G. H. (2012) Geosystems: An Introduction to Physical Geography (8/E), Pearson Education, New Jersey.
2. Dale F. Ritter, (2011) Process Geomorphology – Waveland PrInc Publication
3. Das Gupta, A & Kapoor, A.N. (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi.
4. Ernst, W.G. (2000) Earth Systems: Process and Issues (Ed.), Cambridge University Press.
5. Khullar, D.R. (2012) Physical Geography, Kalyani Publishers, New Delhi.
6. Strahler, A. H. &Strahler, A N. (2001) Modern Physical Geography (4/E), John Wiley and Sons, Inc., New York.
7. Paul R. Bierman, (2013) Key concepts in Geomorphology - W. H. Freeman Publisher.

MAPPING OF POs WITH COs

		Programme outcome						**Programme Specific Outcome**						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUTCOMES	**CO1**		✓		✓	✓			✓	✓	✓	✓	✓	
	CO2	✓			✓	✓			✓	✓	✓	✓	✓	✓
	CO3		✓		✓	✓		✓	✓	✓	✓		✓	
	CO4	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

PRACTICAL I - MAP SCALE AND REPRESENTATION OF RELIEF

Theory Hours	: -	Course Code	: U21GC102P
Practical Hours	: 3	Credits	: 2
Exam Hours	: 3	Marks	: 100

Objective:

- The course is a laboratory based which provide students with hands on training on representation, construction and conversion of scales; qualitative / quantitative methods of relief representations; and basic methods of profile drawing for different relief features.

1. **Methods of Representation of Scales**
   a. Statement Scale
   b. Graphical Scale
   c. RF Scale

2. **Construction of scales**
   a. Simple Linear Scale
   b. Comparative Scale
   c. Diagonal Scale
   d. Time Scale

3. **Enlargement and Reduction Maps**
   a. Enlargement of Map
   b. Reduction of Maps

4. **Qualitative and Quantitative Methods**
   a. Hachures Method
   b. Layer-tinting Method
   c. Hill Shading Method
   d. Spot Heights
   e. Bench Marks
   f. Trigonometrical Stations
   g. Contours

5. **Cross Section of Relief Features**
   a. Methods of drawing Profile
   b. Slopes
   c. Hills and Valleys
   d. Plateau, Ridge and Spur
   e. George and Waterfall

Course Outcome:

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

1. Understand the functioning of Earth systems in real time and analyze how the natural and anthropogenic operating factors affects the development of landforms
2. Students will able to demonstrate the knowledge of origin of the earth with suitable theories.
3. They know about the interior and exterior parts of the earth.
4. Students know about the continental drift and how the continents are formed, plate tectonics and the movements of plates and its impact on the Earth.

References:

1. Jayachandran, (1964): Practical Geography (Tamil Edition) Tamil Nadu Text Book Society, Chennai.
2. B.S. Negi (1995) Text Book of practical Geography, KedarNath, Ramnath, Meerut.
3. Gopal Singh (1996) Map Work Practical Geography, Vikas Publishing House Pvt. Ltd., New Delhi
4. Monk House, F.J. & Wilkinson, H.R. (1973) Maps and Diagrams, Methuen & Co Ltd, London.
5. Saha, P. &Basu, P. (2014) Advanced Practical Geography, Books and Allied Ltd., Kolkatta.
6. Singh, R.L. & Singh, R. P. B. (2009) Elements of Practical Geography, Kalyani Publishers, New Delhi.
7. Gopal Singh (1998) Map Work and Practical Geography (4th Edition), Vikas Publishing House, Ahmedabad.
8. Zulfequar Ahmad Khan, M.D. (1998) Text book of Practical Geography, Concept Publishing Company, New Delhi.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
OUTCOMES	CO1		✓		✓	✓			✓	✓	✓	✓	✓	✓
	CO2	✓			✓	✓			✓	✓	✓	✓	✓	✓
	CO3		✓		✓	✓		✓	✓	✓	✓		✓	✓
	CO4	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓

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

TOURISM AND TRAVEL MANAGEMENT – I

Theory Hours	: 5	Course Code	: U211AG1
Practical Hours	: -	Credits	: 4
Exam Hours	: 3	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.

Course Outcome:

Students will able to

- Contextualize tourism within broader physical, cultural, environmental aneconomic dimensions of society,
- Identify and assess different forms of tourism, and
- Critique tourism practices for their implications locally and globally.

References:

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. SipraMukhopadhayay, (2010), "Tourism Economics", Ane Books Pvt. Ltd., NewDelhi.
8. Stephen Williams (1998) – Tourism Geography, Routledge, London

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUTCOMES	**CO1**	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	
	CO2	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
	CO3		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

SEMESTER - I & II **ALLIED COURSE II**

ALLIED PRACTICAL – I TOURISM DATA ANALYSIS

Theory Hours	: -	Course Code	: U212AG2P
Practical Hours	: 2	Credits	:-
Exam Hours	: -	Marks	: -

Course Objective:

Gives hands-on training Weather Map interpretation, climate and tourism mapping, preparation of itinerary and brochures along with travel documents and formalities.

1. Fundamentals

a. Latitude and Longitude of a place
b. World Time Zones
c. Directions and Bearing

2. Currency Codes and Conversion

a. Currency Codes for Major Countries
b. Exchange Rate for Major Currency
c. Currency Conversion (INR, USD, EUR, JPY, CNY, MYR)

3. IATA Procedures

a. IATA Symbols and Abbreviations
b. Passenger Fare Construction

4. Representation of Tourism Data and Interpretation

a. Simple, Multiple and Compound Bar Diagrams
b. Flow Charts
c. Mapping of World Air Routes
d. Interpretation of Tourism Data and Map

5. Tourism Regions

a. Major Tourism Regions in Western Hemisphere (North America, Central America, South America)
b. Major Tourism Regions in Eastern Hemisphere (Europe, Asia, Africa, Australia, Oceania)
c. Major Tourism Regions in India
d. Major Tourism Attractions in Tamil Nadu

Course Outcome:

1. Students will demonstrate the skills in identify tourism potential regions.
2. Calculate tourist trip estimation, collect and representation of different tourist related dataset, and able to evaluate and interpret international tourism business system.

References:

1. PijushkantiSaha&Partha Bas (2010), "Advanced Practical Geography" Publisher Books & Allied (p) Ltd. Kolkata
2. IATA - Standards, Manuals & Guidelines, https://www.iata.org/
3. Currency Codes and Conversion, https://www.exchange-rates.org/
4. Tourism Data, https://www.unwto.org/unwto-tourism-dashboard
5. Tourism Map, https://www.mapsofworld.com/

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
OUTCOMES	CO1	✓	✓	✓		✓	✓	✓	✓	✓	✓			
	CO2			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

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

SEMESTER II **CORE COURSE III**

CLIMATOLOGY

Theory Hours	: 6	Course Code	: U21GC203
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objective:

- Study the nature of atmosphere and dynamic processes of meteorological parameters
- Explain the patterns and distributions of various climatic elements and climatic zones

Unit I

Origin, Nature and Scope of Climatology – Climatic Elements – Weather and Climate – Composition and Structure of Atmosphere – Insolation.

Unit II

Horizontal and Vertical Distribution of Temperature – Range of Temperature: Diurnal, Seasonal, and Annual – Heat Budget.

Unit III

Atmospheric Pressure and Winds: Vertical, Horizontal Distribution of Pressure – Winds: Local –Monsoon– Planetary - Jet stream – General Circulation of winds.

Unit IV

Atmospheric Moisture – Forms of Precipitation and Types of Rainfall – Classification: Clouds, Air Masses, Fronts.

Unit V

Cyclone: Tropical, Temperate, Anticyclones. Climatic Classification of Koppen andThornthwaite

Learning Outcomes:

After the completion of course, students are able to:

- Understand the basic concepts and provide essential background for further studies in weather and climate.
- Explain the causes of atmospheric instability and disturbances, climate variability and climate change.

Reference:

1. Barry, R.G. & Chorley, R.J., (2003) Atmosphere, Weather and Climate, 11th Edition, Routledge.
2. Critchfield, H. J., (1987): General Climatology, Prentice-Hall of India, New Delhi
3. Das,R.K.,(1968): The Monsoons, National Book Trust, New Delhi.
4. Das Gupta, A &Kapoor, A.N. (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi.
5. Keith Smith (1988). Applied Climatology, McGraw Hill, New York.
6. Kumaraswamy.K.,et al.,(2003): Climatology (Tamil Edition), Grace Publishers, Kumbakonam.
7. Mather,J.R.,(1974): Climatology, McGraw Hill, New York.
8. Strahler, A. H. &Strahler, A N. (2001) Modern Physical Geography (4/E), John Wiley and Sons, Inc., New York.
9. Trewartha, G. T., and Horne L. H., (1980): An Introduction to Climate, McGraw-Hill.
10. Lal, D.S., (2005) Climatology, ShardaPustakBhawan, Allahabad.
11. Oliver, J. E., and Hidore J. J., (2002): Climatology: An Atmospheric Science, Pearson Education, New Delhi.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUTCOMES	**CO1**		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO2		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

PRACTICAL II - CLIMATIC DATA ANALYSIS

Theory Hours	: -	Course Code	: U21GC204P
Practical Hours	: 3	Credits	: 2
Exam Hours	: 3	Marks	: 100

Objective:

- Provide the students with climatic data to learn various drawing methods and statistical techniques for better interpretation

1. **Bar and Line Diagrams for Climate Regions**
    a) Equatorial Region
    b) Tropical Region
    c) Hot Desert Region
    d) Warm Temperate Region
    e) Cool Temperate Region
    f) Polar Region
    g) Meditterean Region
2. **Climatic Diagrams**
    a) Taylor's Climograph
    b) Hythergraph
    c) Ergograph
    d) Rainfall Dispersion Diagram
3. **Wind Rose Diagrams**
    a) Simple
    b) Star
    c) Superimposed
    d) Octagonal
4. **Interpretation of Indian Weather Reports**
    a) Summer
    b) Winter
    c) NE Monsoon
    d) SW Monsoon

Learning Outcomes:

At the end students shall be able to:

- describe the climatic data using diagrams
- draw suitable diagrams to represent climatic data
- interpret Indian weather reports

References:

1. Gopal Singh, (1996): Map Work Practical Geography, Vikas Publishing House, New Delhi.

2. Jayachandran, (1964): Practical Geography (Tamil Edition) Tamil Nadu Text Book Society, Chennai.
3. Khan, Z.A., (1998): Text Book of Practical Geography, Concept Publishing Company, New Delhi.
4. Monkhouse, F.J. and H.R. Wilkinson, (1980): Maps and Diagrams, B.I Publications, New Delhi.
5. Singh, R.L. and Singh, R. P. B. (2009) Elements of Practical Geography, Kalyani Publishers, New Delhi.
6. Zulfequar Ahmad Khan, M.D., (1998) Text book of Practical Geography, Concept Publishing Company, New Delhi.
7. King, C. A.M (1966) Techniques in Geomorphology, Edward Arnold, London

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUTCOMES	**CO1**		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO2		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓
	CO3		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓

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

SEMESTER - I ALLIED COURSE II

TOURISM AND TRAVEL MANAGEMENT – II

Theory Hours	: 5	Course Code	: U212AG3
Practical Hours	: -	Credits	: 4
Exam Hours	: 3	Marks	: 100

Objective:

- Explains tourism and travel management types and provide skills in terms of business management, travel product management, environmental preservation and conservation management.
- The objective of the course is to familiarize the students with various aspects of tourism and to orient the students to the logistics of tourism industry.

Unit I

Nature and scope of Tourism Management – Objective, Strategies and Types of Tourism Management - Tourism Planning Process and Approaches - Types of Tourism Planning: Sectoral, Spatial, Integrated, Complex, Centralized and Decentralized

Unit II

Human Resource Management: Managerial Skills, Technical skills, Hard and Soft skills – Special Training – Guides – Tour and Travel Operators – Event management – Tour Operator Association of India

Unit III

Tourism Demand: Determinants and Measurement - Cost benefit analysis - Multiplier effect – Linkages in Tourism sectors: Hospitality, attraction and event, transport, travel organizer and intermediaries - destination organization

Unit IV

Travel Product Management - Travel Itinerary – Brochure and Pamphlets – Types of advertising – Importance of publicity in Tourism - Modern Communication Techniques for Tourism Management.

Unit V

Tourism and Environmental management – Sustainable Management – Wild life Management – Environmental Preservation and Conservation – Community Involvement and participation – Tourism Policies and Programmes

Learning Outcomes:

1. Equip with a basic understanding of nature and scope, trends and patterns of various types of tourisms.

2. Have sound knowledge on geographical, environmental and socio-cultural aspects of tourism in India.

3. Apply the principles of Geo-tourism and analyze the prospects and problems associated with pilgrimage tourism.

References:

1. Bhatia A.K. (1999) Tourism Development Principles & Practices, Sterling publishers, New Delhi.
2. A.K.Bhatia ,(2006) International Tourism Management, Sterling Publishers
3. Parul Gupta, (2011) Tourism Management, Global India Publications Private, Ltd
4. P.C.Sinha, (2010) Tourism Management, Anmol Publications Private, Ltd
5. Maneet K. (1992) Tourism Today, Kanishka Publishing House, Delhi.
6. Robinson, H. A. (1996) Geography of Tourism, Macdonald and Evans, London
7. RomilaChawla,(2003) Tourism Management, Sonali Publications Private, Ltd.
8. Ratandeepsingh (2004) Tourism Marketing Principles, Policies and Strategies Kamshlea Publishers.
9. Rosemary B. (1995) Travel Geography, Pitman Publishing, London. Jag Pradeep, Murari Lal & Sons., (2008), "Hotel Management", Kanishka Publishers, New Delhi.
10. Vinod N. (2010) Tourism and Hotel Industry, Cyber Tech Publications, New Delhi.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUTCOMES	**CO1**	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
	CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	CO3		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

SEMESTER III **CORE COURSE V**

GEOMORPHOLOGY

Theory Hours	: 6	Course Code	: U21GC305
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objective:

- Familiarize the students with exogenic and endogenic processes, their importance in landform development and distinguish the mechanisms that control these processes

Unit I

Geomorphic processes: Endogenic and Exogenic- Gradation - Denudational agents - Weathering: types, factors and associated landforms – Massmovement: typesandfactors - Formation of regolith and soils.

Unit II

Work of river – erosional and depositional landforms - Rejuvenation - Drainage pattern - River capture.

Unit III

Underground water - Aquifer rocks - Water table - Springs - Work of underground water - Karst topography: Erosional and depositional landforms in limestone regions.

Unit IV

Work of the glaciers - Continental and mountain glaciers - Erosional and depositional landforms - Glacio-fluvial deposits.

Unit V

Work of wind – Erosional and depositional landforms in arid regions - Coastal process – Erosional and depositional features – Classification of coasts.

Learning Outcomes:

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

1. Differentiate geomorphic agents and their work on the Earth's Surface
2. Understand various landforms of the earth surface

References:

1. Dale F. Ritter, (2011) Process Geomorphology – Waveland PrInc Publication
2. Das Gupta, A &Kapoor, A.N. (2001) Principles of Physical Geography, S.C. Chand &Company Ltd. New Delhi.
3. Strahler, A. H. &Strahler, A N. (2001) Modern Physical Geography (4/E), John Wiley and Sons, Inc., New York.
4. Khullar, D.R., (2012) Physical Geography, Kalyani Publishers, New Delhi.
5. NegiB.S. (1993) Physical Geography, S.J. Publications, Meerut.
6. Robert S. Anderson (2010) – Geomorphology: The Mechanics & Chemistry of Landscape, Cambridge University
7. Ro Charlton: (2007) Fundamentals of Fluvial Geomorphology, Routledge Publication
8. Sharma, V.K. (1986) Earth Surface Process and Forms, Tata McGraw-Hill Publishing Company Ltd, New Delhi.

MAPPING OF POs WITH COs

	Programme outcome							Programme Specific Outcome						
OUTCOMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	
	CO2	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

SEMESTER III **CORE COURSE VI**

PRACTICAL III-APPRECIATION AND INTERPRETATION OF TOPOSHEETS

Theory Hours	: -	Course Code	: U21GC306P
Practical Hours	: 3	Credits	:2
Exam Hours	: 3	Marks	: 100

Objective:

- To explain conventional signs and symbols for better mapreading
- Give a practical knowledge about the topographical map interpretation

1. **Conventional Sign and Symbols**
    a. Physical
    b. Cultural
2. **Marginal Information**
    a. Extra Marginal
    b. Intra Marginal
    c. Inner marginal
3. **Appreciation of Indian Topographical Sheets**
    a. One Inch to One Mile Sheet
    b. 1:50,000
    c. OSM Series
4. **Interpretation of Physical Features**
    a. Mountains and Plateaus
    b. Plain and Coastal
5. **Interpretation of Cultural Features**
    a. Land use / Land cover
    b. Settlements and Transport

Learning outcomes:

After the completion of course, Student would able to understand various signs and symbols that used in Indian topographical maps and independently interpret physical and cultural features of an area using toposheets.

References:

1. Gopal singh, (1996). Map work and practical geography, Vikas Publishing House Pvt.Ltd.
2. Khullar, (1997). Practical Geography, Educational Publishers, New Delhi.
3. Negi B.S. (1998) Practical Geography Geography, Kedarnath and Ramnath, Meerut.
4. Monkhouse, F.J. and Wilkinson, H.R., (1989). Maps and Diagrams, B.I.Publications, New Delhi.
5. PijushkantiSaha and ParthaBasu, (2010). Advanced Practical Geography, Books and Allied (P) Ltd, Kolkata.

6. Raghunandar Singh (1965), Map Work and Practical Geography, Central Book Depot, Allahabad.
7. Singh, R. L., (2005). Elements of Practical Geography, Kalyani Publishers, New Delhi.
8. Zulfequar Ahmad Khan, M. D., (1998). Text Book of Practical Geography, Concept Publishing Company, New Delhi.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

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

SEMESTER III **ALLIED COURSE IV**

STATISTICS I

Theory Hours	:5	Course Code	: U213AG4
Practical Hours	: -	Credits	: 4
Exam Hours	: 3	Marks	: 100

Objective:

- Introduce the basic concepts of statistics to the students of geography in a brief but adequate manner and equip students with requisite quantitative skills that they can employ and build on in flexible ways.

Unit I

Nature and Scope of Statistics - Limitations of Statistics – Uses of Statistics in Geography -Collection of Data: Primary and Secondary sources.

Unit II

Classification of data – Tabulation of Data –Frequency distributions -Diagrammatic and Graphic Representation of data.

Unit III

Measures of Central Tendency: Mean(Arithmetic, Geometric and Harmonic), Median, Mode – Properties and Limitations.

Unit IV

Measures of Dispersion – Range, Quartile Deviation, Mean Deviation, Standard Deviation and Coefficient of Variation.

Unit V

Skewness and Kurtosis – Coefficient of Skewness – Bowley's& Karl Pearson methods.

Learning Outcomes:

After learning, students should be able to:

- Understand how to use different statistical techniques
- Apply various statistical methods for geographic data analysis

References:

1. Ajai, S. G. and Sanjaya, S.G. (2009) Statistical Methods for Practice and Research, Sage Publications, New Delhi.
2. Cole, J.P. & King, C.A.M. (1968) Quantitative Techniques in Geography. John Wiley & sons Inc.New York.
3. Elhance, D.N. (1972) Fundamentals of Statistics, KitabMahal, Allahabad.
4. Gregory. S (1963) Statistical Methods and the Geographer, Orient Longmans Press, London.
5. Gupta, S.P. (1995) Statistical Methods, Sultan Chand and Sons,New Delhi.
6. Hammond, R., &McCullagh, P.S. (1978) Quantitative Techniques in Geography: An Introduction (2/E), Oxford University Press, New York.
7. Mishra, R.P. (1991) Research Methodology in Geography, Concept Publising, New Delhi.
8. Pal S. K., (1998) Statistics for Geoscientists: Techniques and Applications, Concept Publishing Company, New Delhi.
9. Pillai &Bagawathi R.S.N, (2017), Statistics Theory and Practice, S Chand and Company Limited, New Delhi.
10. Rogerson,P. A., (2001) Statistical Methods for Geography, Sage Publications, New Delhi.
11. Sarkar, A. (2013): Quantitative geography: techniques and presentations. Orient Black.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUT COMES	**CO1**		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO2		✓	✓		✓	✓	✓	✓		✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

SEMESTER III **ALLIED COURSE V**

PRACTICAL II – STATISTICS

Theory Hours	: -	Course Code	: U214AG5P
Practical Hours	: 2	Credits	: -
Exam Hours	: -	Marks	: -

Objective:

- The purpose of this two semester course is to provide geographical data that to be analyzed through the statistical procedures so that students can extract meaningful information towards analyzing the geographical problems.

1. **Frequency distribution**
   a. Individual
   b. Discrete Frequency
   c. Continue Frequency
   d. Cumulative Frequency

2. **Graphic Representation**
   a. Histogram
   b. Frequency Polygon
   c. Frequency Curve
   d. Ogive Curve

3. **Measurement of Central Tendency**
   a. Mean
   b. Median
   c. Mode

4. **Correlation and Regression**
   a. Coefficient of Correlation
   b. Rank Correlation
   c. Simple Linear Regression

5. **Time Series**
   a. Graphical Method
   b. Semi Average
   c. Moving Average

6. **Hypothesis Testing**
   a. 't'-Test
   b. 'F' Test
   c. Chi-square Test

Learning Outcomes:

After completion of course, the students will have practical ability to use statistical techniques to comprehend the geographical patterns. Students will also put the basic statistical skills into every day's life.

References:

1. Ajai, S. G. and Sanjaya, S.G. (2009) Statistical Methods for Practice and Research, Sage Publications, New Delhi.
2. Berry, B. J. L. and Marble, D. F. (eds.): Spatial Analysis–A Reader in Geography.
3. Gregory S (1971) – Statistical Methods in Geography, Orient Longmans Press, London.
4. Ebdon, D., (1977): Statistics in Geography: A Practical Approach.
5. Hammond, P. and McCullagh, P. S., (1978): Quantitative Techniques in Geography: An Introduction, Oxford University Press.
6. King, L. S., (1969): Statistical Analysis in Geography, Prentice-Hall. 6. Mahmood, A., 1977: Statistical Methods in Geographical Studies, Concept.
7. Pillai &Bagawathi R.S.N, (2017), Statistics Theory and Practice, S Chand and Company Limited, New Delhi.
8. Rogerson,P. A., (2001) Statistical Methods for Geography, Sage Publications, New Delhi.
9. Sarkar, A. (2013): Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

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

SEMESTER IV **CORE COURSE VII**

CARTOGRAPHY

Theory Hours	:4	Course Code	: U21GC407
Practical Hours	: -	Credits	: 4
Exam Hours	: 3	Marks	: 100

Objective:

- The course provides the basic concepts and techniques of cartography in a systematic manner viz. map scales, map types, map projections, map compilation and symbolization, map design and final map production processes.

Unit I

Scope and content of cartography – History of cartography- Maps: Classification and uses. Map scale and types

Unit II

Size and shape of the earth- Map projection: General principles of map projections – Classification (cylindrical, conical and zenithal projections) – Coordinate systems

Unit III

Map Compilation: Enlargement and reduction of maps – Generalization - Symbolization: Point, Line and Area(qualitative and quantitative)

Unit IV

Map design and layout - Lettering and Taxonomy: Form, Size and Positioning - Cartographic tools and equipment

Unit V

Map Production and Reproduction: Mechanics of map construction - map reproduction methods: tradition and modern (Offset printing, Xerox, Plotter) – digital cartography

Learning Outcomes:

- After completion of course the students will understand thoroughly the arts and science of map making.
- Students able to design the map with proper cartographic procedures

References:

1. Robinson, A.H. et al. (1995) Elements of Cartography, John Wiley & Sons, U.S.A.
2. Misra, R.P. (2014) Fundamentals of Cartography, Concept Publishing Company, New Delhi.
3. Kraak M.J. (2010) Cartography: Visualization of Geospatial Data (3rd edition), Pearson Education Ltd., London.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓
	CO2		✓	✓		✓	✓	✓		✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

SEMESTER - IV **CORE COURSE VIII**

PRACTICAL IV - MAP PROJECTION

Theory Hours	: -	Course Code	: U21GC408P
Practical Hours	: 3	Credits	: 2
Exam Hours	: 3	Marks	: 100

Objective:

- The practical course is to provide technical skills in construction of map projection.

1. **Cylindrical Projection**
   a. Equal Distance
   b. Equal Area
   c. Mercator
2. **Conical Projection**
   a. One Standard
   b. Two Standard
   c. Polyconic
   d. Bonne's
3. **Zenithal Projection**
   a. Gnomonic
   b. Stereographic
   c. Orthographic
4. **Conventional Projection**
   a. Sinusoidal
   b. Interrupted Sinusoidal
   c. Mollweide
   d. Interrupted Mollweide

Learning Outcome:

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

- Systematically transform the details of three dimensional surface to a plain paper
- Choose the right projection based on geographical area and purpose of the map

Refernces:

1. Jayachandaran, S. (1964). Practical Geography (Tamil Edition). Tamil Nadu Text Book Society, Chennai.
2. Z.A Khan (1998), Text Book of practical Geography, concept publishing Company.
3. B.S. Negi (1995) Text Book of practical Geography, KedarNath, Ramnath, Meerut.
4. Gopal Singh (1996) Map Work Practical Geography, Vikas Publishing House Pvt. Ltd., New Delhi
5. F.J. Monk house and H.R. Wilkinson, (1980) Maps and Diagrams, B.I. Publications, New Delhi.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO2		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

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

SEMESTER IV **ALLIED COURSE VI**

STATISTICS II

Theory Hours	: 3	Course Code	: U214AG6
Practical Hours	: -	Credits	: 3
Exam Hours	: 3	Marks	: 100

Objectives:

- The main objective of this course is to introduce advance statistical techniques and procedures that applied in geographical research

Unit I

Correlation: Scatter diagram - Types of Correlation: Karl Pearson's Coefficient of correlation – Spearmen's Rank Correlation.

Unit II

Regression – Regression line (two variables only) – Regression Coefficient –Difference between Correlation and Regression.

Unit III

Time Series: Uses and Components – Principles of Least Square - Seasonal and Cyclic Variations – Moving Average Method.

Unit IV

Probability –Probability Theorems: Addition and Multiplication Theorems – Probability Distribution: Binomial and Normal distribution.

Unit V

Sampling Theory – Test of Significance for large and small samples – Chi square Test.

Learning Outcomes:

After Studying, students will gain proficiency in statistical knowledge and will be able to apply correlation, regression and sampling tests to geographical data.

References:

1. S.P. Gupta (2000) Statistical Methods, Sultan Chand & Sons, New Delhi.
2. Sancheti D.C, Kapoor V.K, (1993), Statistical Theory, Methods & Application,Sultan Chand & Sons, New Delhi.
3. Gregory S (1963) Statistical Methods and the Geographer Oxford Univesity Press London
4. Hammond and Mccullagh S, (1978) Quantitative Techniques in Geography, Oxford Univesity Press, USA.
5. Aslam Mahmood (1999) Statistical Methods in Geographical Studies, Rajegh Publication.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUT COMES	**CO1**		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit **(Three Questions Only)**	3 x 10 = 30 marks

SEMESTER IV **SKILL ENHANCEMENT- I**

BASICS OF COMPUTER APPLICATIONS

Theory Hours	: 1	Course Code	: U214GSE1
Practical Hours	: -	Credits	: 1
Exam Hours	: 2	Marks	: 20 (CIA 20)

Objective

- The aim of this value added course is to provide the students an opportunity to understand the basic operations of a computer system

Theory

Components of Computer – Operating Systems – Information Technology – Social Media – Usefulness and limitations.

Learning Outcome:

Students can able to demonstrate functional skills on basic computing using software packages

References:

1. Stefano Ceri, Dino Mandrioli&LiciaSbattella, (1998) The Art and Craft of Computing, Addison-Wesley.
2. User Manual of Microsoft Office Packages.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1		✓	✓		✓	✓	✓			✓		✓	

U.G Question Paper Pattern (CIA : 20 marks = Total : 20 marks)

SEMESTER IV **SKILL ENHANCEMENT- I**

COMPUTER APPLICATIONS

Theory Hours	: -	Course Code	: U214GSE1
Practical Hours	: 1	Credits	: 1
Exam Hours	: 2	Marks: 80	(CIA020+ESE060)

Objective

- The aim of this value added course is to provide the students an opportunity to understand the basic operations of a computer system

Practical

I Word Processer

a. Create and Savea Word Document
b. Paragraph Editing
c. Table Preparation
d. Header and Footer

II Spreadsheet

a. Create and SaveaExcel Sheet
b. Prepare a Table
c. Calculate Basic Statistics
d. Prepare Charts and Diagrams

III Power Point

a. Create and Savea Presentation
b. Insert Different Layout
c. Apply Custom Animation and Slide Show

Learning Outcome:

Students can able to demonstrate functional skills on basic computing using software packages

References:

1. Stefano Ceri, Dino Mandrioli&LiciaSbattella, (1998) The Art and Craft of Computing, Addison-Wesley.
2. User Manual of Microsoft Office Packages.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1		✓	✓		✓	✓	✓			✓		✓	

U.G Question Paper Pattern (SEM: 60 marks + CIA : 20 marks = Total : 80 marks)

SEMESTER V **CORE COURSE IX**

OCEANOGRAPHY

Theory Hours	: 5	Course Code	: U21GC509
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objective:

- The objective of the course is to introduce the dynamic nature of ocean and to understand the characteristic features of marine environment.

Unit I

Nature, Scope and Significance of Oceanography– Distribution of Land and Sea – Surface configuration of the Ocean floor – Continental shelf, Continental slope – Deep sea plains and Oceanic Deeps

Unit II

Major Relief Features of the Pacific, Atlantic and Indian Ocean -Classification of Ocean deposits

Unit III

Temperature, Salinity and Density of Sea Water - Controlling Factors and Distribution

Unit IV

Dynamics of Ocean: Waves, Tides and Current -Major Types and Effects – Ocean Oscillation

Unit V

Marine Resources: Types, Distribution and Uses- Coral reefs: Origin and Types

Learning Outcomes:

- After completion of course, the students will having the knowledge about the significance of ocean and resources.Students will understand the causes and consequences of ocean waves, tides and currents.

References:

1. Anikouchine, W. A. and Sternberg, R. W., (1973): The World Oceans: An Introduction to Oceanography, Prentice-Hall.
2. Ramasamy.G (1970): Oceanography (Tamil Edition), Text Book of Society, Chennai.
3. Dr.Subbiah – (1982) Oceanography (Tamil Edition).
4. Kershaw, S., (2000): Oceanography: An Earth Science Perspective, Stanley Thornes

5. Nagi.B.S.(1995) Climatology and Oceanography KedarNath Ram Nath, Meerut.
6. Savindrasingh (2002) Physical Geography, Pravalika Publication, Allahabad.
7. Siddhartha.K (1998) The Oceans, CDER Delhi.
8. Sverdrup, K. A. and Armbrust, E. V., (2008): An Introduction to the World Ocean, McGraw Hill, Boston.
9. Tilkha R.N. (1999), Physical Geography, KedarNath Ram &co., Meerut.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

SEMESTER V **CORE COURSE X**

HUMAN GEOGRAPHY

Theory Hours	: 5	Course Code	: U21GC510
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objective:

The main objective is to acquaint the students with the nature of man-environment relationship and human capability to adopt and modify the environment.

Unit I

Nature and scope of human geography –Evolution of man - Concepts of man-environment relationships.

Unit II

Human races Caucasoid, Mongoloid Negroid - Human Habitats - Mode of life in Equatorial regions, Tropical deserts, Temperate grasslands and Tundra region- Culture and Identity.

Unit III

World's major religions: Hinduism- Buddhism- Christianity- Islam and Judaism - Sacred spaces - Language - Major world languages.

Unit IV

Population distribution - Population growth – influencing factors- Problems of over population and under population - optimum population.

Unit V

Rural and Urban settlements: influencing factors – types - growth – Urban morphology – Urbanization - Migration: types, causes and consequences.

Learning Outcomes:

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

1. Understand the basic concepts in various sub-fields of human geography
2. Appreciate the growth, distribution and composition of population in different parts of the world
3. Analyze the types and patterns of rural and urban settlements, urbanization and related issues in India and other regions of the world.

References:

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher, New Delhi.
2. Cheng Leong, G. & Morgan, G.C. (1995) Human and Economic Geography, Oxford University Press, Oxford
3. Hussain, Majid (2012) ManavBhugol. Rawat Publications, Jaipur.
4. Johnston, R; Gregory, D, Pratt, G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication,New Jersey.
5. Knox, P. & Marston, S. (2013) Human Geography: Places and Regions in Global Context, 6th Edition, Pearson Education, New Delhi.
6. Majid Hussain, (2005), Human Geography, Rawat Publications, New Delhi.
7. Negi, B.S. (2002) Human Geography – An Ecological Approach, KedarNath Ram Nath, New Delhi.
8. Rubenstein, J.H. (2013) The Cultural Landscape - An Introduction to Human Geography, 11th Edition, Prentice-Hall, New Jersey.
9. Rubenstein, J.H. (2013) Contemporary Human Geography, 2nd Edition, Prentice-Hall, New Jersey.

MAPPING OF POs WITH COs

	Programme outcome							Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUT COMES	**CO1**	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

SEMESTER V **CORE COURSE XI**

GEOGRAPHY OF RESOURCES

Theory Hours	: 5	Course Code	: U21GC511
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objective:

- The objective of this course is to give an overview of type and distribution of mineral resources, energy resources, industrial resources, trade and transportation at global level. The course will also provide a broader outlook about the availability of renewable and non-renewable resources to the students.

Unit I

Nature and Scope of Geography of Resources Classification Resource – Resources utilization – conservation of resources – Forest: Types and Distribution.

Unit II

Agriculture: Production and Distribution of Rice – Wheat - Cotton – Jute – Sugarcane – Tea - Coffee and Rubber – Life stock –Fishing and Types – Major fishing grounds.

Unit III

Mineral Resources – Iron ore, Bauxite, Gold and Manganese - Power Resources –Coal, Petroleum and Electricity - Non-Convectional energy resources.

Unit IV

Manufacturing Industries: Classification – Distribution of Iron and Steel Industries – Cotton Textiles – Sugar Industries – Chemical - Automobiles - Ship Building and ITIndustries.

Unit V

Transportation: Surface – Air- Waterways and Pipelines – International Trade: Pattern of World Trade - Impact of Globalization on Trade.

Learning Outcomes:

After the completion of course, the students will have ability to explain the production and distribution of agricultural crops, minerals, basic industrial products, patterns of major transport types and the impacts of world trade and globalization.

References:

1. Coh Cheng Leong (1982) Economic and Human Geography, Oxford University Press, New Delhi.
2. Clawson Marion (Ed) (1964)Natural Resources and International development. New York.
3. S.K. Sadhukhan (1994) Economic and Geography an Appraisal of Resources, S.Chand& Co., Chennai.
4. K.Khanna& V.K. Gupta (1998) Economic and Commercial Geography Sultan Chand & Sons, New Delhi.
5. Alexander, J.W. (1964). Economic Geography. John Wiley & Sons Inc, New York.
6. Leong, C.H. and Morgan, G.C. (1982). Economic and Human Geography (2nd Edition). Oxford University Press, Kuala Lumpur.
7. Bengtson, N.A. and Royen, W.V. (1935). Fundamentals of Economic Geography. Prentice Hall Inc, New York.
8. Thomas, R.S. (1962). The Geography of Economic Activities. McGraw Hill, New York.
9. Mather, A.S. and Chapman, K. (1995). Environmental Resources. John Wiley and Sons, New York.

MAPPING OF POs WITH COs

	Programme outcome							**Programme Specific Outcome**						
OUT COMES		**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
	CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

SEMESTER V **CORE COURSE XII**

PRACTICAL V –SURVEYING

Theory Hours	: -	Course Code	: U21GC512P
Practical Hours	: 6	Credits	: 4
Exam Hours	: 3	Marks	: 100

Objective:

- The practical course is to provide technical skills in conducting different surveying techniques to the students.

1. **Chain Survey**
   a. Open Traverse
   b. Closed Traverse
2. **Prismatic Compass Survey**
   a. Open Traverse
   b. Closed Traverse
3. **Plane Table Survey**
   a. Radiation Method
   b. Resection Method
4. **Dumpy Level Measurement**
   a. Height Measurement
   b. Rise and Fall Method
5. **Indian Clinometer Survey**
   a. Accessible Method
   b. Inaccessible Method
6. **Abney Level Measurement**
   a. Accessible Method
   b. Inaccessible Method

Learning Outcomes:

After the completion of course, the students will have ability to make use of proper tools and surveying methods for ground data collection. The course will enable students to handle a range of surveying instruments to measure distance, height and angle of physical features on the ground.

References:

1. Khullar, D. R., (2010) India: A Comprehensive Geography, Kalyani Publishers, New Delhi.
2. Jayachandaran, S. (1964). Practical Geography (Tamil Edition). Tamil Nadu Text Book Society, Chennai.
3. Khan, M.Z.A. (1998). Text Book of Practical Geography. Concept Publishing Company, New Delhi.
4. Negi, B.S. (1998). Practical Geography. Kedarnath and Ramnath, Meerut.

5. Singh, G. (1995). Map Work and Practical Geography (3rd Edition). Vikas Publishing House Pvt. Ltd., New Delhi.
6. Saha, P. and Basu, P. (2013). Advanced Practical Geography. Kolkata Books and Allied Publisher, Kolkata.
7. Alvi, Z. (1998). A Text book of Practical Geography. Sangam Books Limited, Hyderabad.
8. Herubin, C.A. (1991). Principles of Surveying (4th Edition). Prentice Hall, New Jersey.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

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

SEMESTER V **SKILL ENHANCEMENT- II**

FIELD TECHNIQUES

Theory Hours	: 1	Course Code	: U215GSE2
Practical Hours	: -	Credits	: 1
Exam Hours	: 2	Marks	: 20 (CIA 20)

OBJECTIVES

- To provide basic understanding of the significances, types and methods of field work in geographical research and develop a keen interest in field based research

THEORY

Basic principles of field work – Approaches to the field study – Types of field survey – Sequence of steps in fieldwork

LEARNING OUTCOMES

Upon completing this course, students will be able to conduct a field based geographical study. They can collect and process the data for report writing.

REFERENCE

1.Ashis Sarkar, (2015)A Systematic Approach, Third Edition, Orient Blackswan Publication.
2. R.L Singh Rana, P.B. Sing, (2014) Elements of Practical Geography, KalyaniPublication.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
OUT COMES	CO1		✓	✓		✓	✓	✓		✓	✓	✓	✓	✓

SEMESTER V **SKILL ENHANCEMENT- II**

FIELD TECHNIQUES

Theory Hours	: -	Course Code	: U215GSE2
Practical Hours	: 1	Credits	: 1
Exam Hours	: 2	Marks	:80 (CIA 20+ESE 60)

Objectives:

- To provide basic understanding of the significances, types and methods of field work in geographical research and develop a keen interest in field based research

Practical:
Students will have to conduct a field survey on any theme of their interest by following the steps:

1. Choosing a topic
2. Data Collection
3. Data processing and presentation
4. Writing a field Report (5 to 10 pages)

Learning Outcomes:

Upon completing thiscourse, students will be able to conduct a field based geographical study. They can collect and process the data for report writing.

Reference:

1.Ashis Sarkar, (2015)A Systematic Approach, Third Edition, Orient Blackswan Publication.
2. R.L Singh Rana, P.B. Sing, (2014) Elements of Practical Geography, KalyaniPublciation.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
OUT COMES	CO1		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

U.G Question Paper Pattern (SEM: 60 marks + CIA : 20 marks = Total : 80 marks)

SEMESTER V **SKILL ENHANCEMENT- III**

BASICS OF GNSS

Theory Hours	: 1	Course Code	: U215GSE3
Practical Hours	: -	Credits	: 1
Exam Hours	: 2	Marks	: 20 (CIA 20)

Objective:

- The objective of this course is to introduce the basic concepts of Global Navigation Satellite System

Theory:

History of GNSS - Segments of GNSS - GNSS Constellations: GPS, GLONASS, Galileo, BeiDou, IRNSS – Errors in GNSS.

Learning Outcome:

After the completion of course, the students will have ability to make use of proper tools and surveying methods for ground data collection.

References:

1. Agarwal, N. K., (2006). Essentials of GPS, Geodesy and GPS publications, Hyderabad.
2. AnjuReddy (2006) Remote Sensing and Geographical Information System Sulthan Bazar Hyderbad.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
OUT COMES	CO1		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

SEMESTER V **SKILL ENHANCEMENT- III**

GNSS SURVEY

Theory Hours	: -	Course Code	: U215GSE3
Practical Hours	: 1	Credits	: 1
Exam Hours	: 2	Marks	:80 (CIA 20 +ESE 60)

Objective:

- The objective of this course is to introduce the basic concepts of Global Navigation Satellite System

Practical:

Students will have to conduct a GNSS survey using GPS receivers or Smart PhoneApps and collect the following data:

1. Point features (Electrical poles, facilities)
2. Line features (Road, Fence)
3. Area features (Building, Boundary)

References:

1. Agarwal, N. K., (2006). Essentials of GPS, Geodesy and GPS publications, Hyderabad.
2. AnjuReddy (2006) Remote Sensing and Geographical Information System Sulthan Bazar Hyderbad.

Learning Outcome:

After the completion of course, the students will have ability to make use of proper tools and surveying methods for ground data collection.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
OUT COMES	CO1		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

U.G Question Paper Pattern (SEM: 60 + CIA : 20 marks = Total : 80 marks)

SEMESTER VI **CORE COURSE XIII**

GEOINFORMATICS

Theory Hours	: 6	Course Code	: U21GC613
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objective:

- The objective of this course is toprovide fundamentals of remote sensing and Geographic Information System (GIS) for the benefit of their professional carrier.

Unit I

Components of Geoinformatics: Types of Remote Sensing – Development of Remote Sensing – Indian Space Programmes.

Unit II

Electro Magnetic Spectrum – Energy Interaction with Atmosphere and Earth Surface Features - Spectral Signatures: Water, Soil and Vegetation – Resolution.

Unit III

Satellites: Earth observation Satellites (LANDSAT, IRS), Weather satellites (INSTAT, NOAA), Land and Marine observation satellites (MODIS,OCEANSAT).

Unit IV

Components of GIS – Raster and vector data structures - Spatial data input methods – Data editing - GIS analysis - GIS applications

Unit V

Applications of Geoinformatics: Land Resources, Water Resources, Land Use Planning, Urban Studies and Disaster Management.

Learning Outcomes:

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

- understand the principles of remote sensing and characteristics of different satellite sensors
- understand the components of GIS and various geospatial data models
- apply the knowledge of remote sensing and GIS to various problems on earth surface

Reference:

1. Lillisand T.M and R.W. Kiefer (1994) Remote Sensing and Image Interpretation. John Wiley & Sons, New York.
2. Burrough, P. A., & McDonnell, R., (2000). Principles of Geographical Information Systems, Oxford Press, London.
3. Gomarasca, M. A. (2009) Basics of Geomatics, Springer Science, New York

4. AnjuReddy 2006 Remote Sensing and Geographical Information System Sulthan Bazar Hyderbad.
5. Arthur Carcknell Ladson Hayes September 1991, Introduction to Remote Sensing, Taylor & Francis.
6. Bhatta 2011 Remote Sensing and GIS Jai Singh road, New Delhi.
7. Floyd F. Sabins August 1997, Remote Sensing: Principles of Interpretation. W.H.Freeman& Co.
8. Heywood, I., Comelius, S., and Carver, S., (1988). An Introduction to Geographical Information Systems, Addison Wiley Longmont, New York.
9. Jensen, J.R. (2007) Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall Inc., New Jersey.
10. Lo. C.P. Yeung, and Albert, K.W., (2002). Concepts and Techniques of Geographic Information Systems, Prentice-Hall of India Pvt Ltd, New Delhi.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUT COMES	**CO1**		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO2		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO3	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

SEMESTER VI **CORE COURSE XIV**

GEOGRAPHY OF INDIA

Theory Hours	: 6	Course Code	: U21GC614
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objective:

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

Location – Major Physiographic Divisions – Drainage System – Climate – Soil – Natural Vegetation.

Unit II

Agriculture: Regions of India – Distribution of Major crops: Rice, Wheat, Pulses, Millets, Cotton, Jute, Coffee, Tea and Rubber – Irrigation.

Unit III

Distribution and Production of Mineral Resources – Iron ore, Manganese, Bauxite, Mica and Copper - Fuel Resources – Coal, Petroleum, Natural Gas - Power Resources – Hydel, Thermal and Nuclear – Multipurpose Projects.

Unit IV

Distribution and Production of Major Industries: Iron and Steel, Cotton Textiles, Sugar, Cement, Engineering, Automobiles, Electronic and Software Industries.

Unit V

Demographic Trends in India – Density of Population – Urbanization - Transport: Surface, Air, Water and Pipe line – Major export and import items of India.

Learning Outcomes

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

References:

1. Khullar, D. R., (2010) India: A Comprehensive Geography, Kalyani Publishers, New Delhi.
2. Singh Gopal (1970) – Geography of India, Atmaram& Sons, New Delhi.
3. Spate, O.H.K and Learmonth A.T.A., 1954 – India and Pakistan – Methues& Co., India.
4. Arunachalam.B (1996) – Economic Geography of India – Bombay.
5. Tiwari, (2002), Geography of India, PrayagPustakBhawan, Allahabad.
6. Gopal Singh, (1970), A Geography of India, Atnaram& sons, New Delhi.
7. Majid Hussain (2008), Geography of India, Tata McGraw Hill Publishing company Ltd., New Delhi.
8. Pal, Saroj K. (2003), Physical Geography of India – A study in Regional Earth Sciences, Orient Longman Pvt. Ltd. Kolkata.
9. Sharma, T.C., (2003), India – An Economic & Commercial Geography, Vikas Publishing House Pvt. Ltd., New Delhi.
10. Singh, R.L., (1977), India - A Regional Geography, NGSI, Varanasi.

MAPPING OF POs WITH COs

	Programme outcome							Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUT COMES	**CO1**	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

SEMESTER VI **CORE COURSE XV**

PRACTICAL VI -REMOTE SENSING IMAGE INTERPRETATION

Theory Hours	: -	Course Code	: U21GC615P
Practical Hours	: 6	Credits	: 4
Exam Hours	: 3	Marks	: 100

Objective:
This practical course will provide skills to the students to interpret and extract useful information from aerial photographs and satellite images.

1. **Elements of Visual Image Interpretation**
   a. Terrain Elements
   b. Image Elements

2. **Interpretation of Aerial Photos**
   a. Stereoscopic vision Test
   b. Marginal information of Aerial Photos
   c. Interpretation of Physical features
   d. Interpretation of Cultural features

3. **Interpretation of Satellite Images**
   a. Marginal information of Satellite Images
   b. Interpretation of Physical features
   c. Interpretation of Cultural features

4. **Comparative Study**
   a. Compare different satellite images of same area
   b. Compare imageswithtoposheets
   c. Study the temporal changes

Learning Outcomes:

After the completion of course, the students will have practical ability to interpret the aerial and satellite images and to extract physical and cultural features for different geographical problems

Reference:

1. Anji Reddy, M. (2008): Textbook of Remote Sensing and Geographic Information System,
2. Campbell, J.B. and Wynne, R.H. (1987). Introduction to Remote Sensing. The Guilford Press, New York.
3. Jensen, J. R., (2004): Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall Inc., New Jersey.
4. Lillesand, T.M. and Kiefer, R.W. (1987). Remote Sensing and Image Interpretation. John Willy and Sons, New York.
5. Lueder, D.R. (1959). Aerial Photographic Interpretation– Principles and Applications. McGraw Hill Book Co., New York.

6. Negi B.S. (1998) Practical Geography, Kedarnath and Ramnath, Meerut.

7. Singh R.L. and Rana P.B. Singh (1998) Elements of Practical Geography, Kalyani Publishers, New Delhi, Ludhians.
8. Wolf, P. R. and Dewitt, B. A., (2000): Elements of Photogrammetry: With Applications in GIS, McGraw-Hill

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUT COMES	**CO1**		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

MAJOR BASED ELECTIVE COURSES

for

B.Sc. Geography Programme

OPTIONAL I **MAJOR BASED ELECTIVE COURSE -I**

BIOGEOGRAPHY

Theory Hours	: 5	Course Code:	U21G5MBE1:1
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objective:

- The purpose of this course is to provide fundamentals of biotic components of the earth and appraise the interrelationships among the living organisms

Unit I

Nature, Scope and Significance of Biogeography – Basic Ecological Principle - Darwin's Theory of Evolution Ecosystem: Types, Components and Functions – Ecotone and Community

UnitII

Origin of Fauna and Flora - Factors Controlling Spatial Distribution: Climate, Topography, Edaptic and Biotic Factors – Desertification: Consequences and Management.

UnitIII

Concept of Biomes – Major Biomes: Equatorial Forest – Tropical Grassland – Temperate Grassland and Tropical Deserts.

UnitIV

Biodiversity – Problems of extinction of plant and animal life – Habitat decay and their conservation – Environmental Hazards and biodiversity loss.

UnitV

Conservation of Natural Resources – Management of Environment – Environmental impact Assessment and Strategies – Sustainable development.

Learning Outcomes:

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

- Understand the factors affecting the growth and distribution of natural vegetation
- Assess different aspects of floral and faunal provinces.
- Understand the importance of conservation of biosphere and biodiversity

References:

1. Bhattacharyya, N.N.(2003): Biogeography, Rajesh Publications, New Delhi.
2. Clarke, G. L. (1967): Elements of ecology, New York: John Wiley Pub.
3. Huggett, R.J. (1998): Fundamentals of Biogeography, Routeldge, U.S.A.

4. Lapedes, D.N. (1974): Encyclopaedia of Environmental Science (eds.), McGraw Hill.
5. Mal, Suraj., and Singh, R.B. (Eds.) (2009):Biogeography and Biodiversity,Rawat Publication, Jaipur
6. Nigel Pears – 1985Basic Biogeography, Longman, London and New York
7. Saxena.H.M. – 2010.Environamantal Geography, Second Edition, Rawat, Jai
8. Robinson. H – Biogeography, ELBS: McDonald and Evana, London – 1982.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUT COMES	**CO1**	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓
	CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

OPTIONAL II **MAJOR BASED ELECTIVE COURSE - I**

GEOGRAPHY OF SRILANKA

Theory Hours	: 5	Course Code	: U21G5MBE1:2
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objectives:

To study and understand the regional geography of neighbouring country which will help the students to compare and contrast geographies of two countries.

Unit I

Srilanka: Location – Physical Divisions – Climatic Regions – Drainage.

Unit II

Soil and their types – Landuse in Srilanka – Agriculture – Distribution of major food crops, Commercial Crops and Plantation Crops - Agro Climatic Regions of Srilanka.

Unit III

Minerals: – Metalic and Non Metalic and their distribution – Major Industries – Industrial Regions of Srilanka.

Unit IV

Population: Distribution, Density and Growth – Population Composition: Age, Sex, Literacy and Religion.

Unit V

Transportation and Trade: Land, Water and Air Transportation – Principal import and export items – Strategic Cooperation with India.

Learning Outcomes:

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

1. Explain the human and physical features of Srilanka
2. Comprehend the trends in socio-economic systems in Srilanka

References:

1. Wilmore , (1961), Groundwork of Modern Geography, G: BELL Publication.
2. Minshull (1967),Regional Geography, Aldine Publication.
3. Kannah& Gupta (2003), Economic & Commercial Geography, Sultan Chand & Sons Publication, New Delhi.
4. Surender Singh (2017), Geography, McGraw Hill, India.

5. Majid Hussain, (2017), Indian and World Geography, McGraw Hill, India.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

OPTIONAL III **MAJOR BASED ELECTIVE COURSE - I**

DISASTER STUDIES

Theory Hours	: 5	Course Code	: U21G5MBE1:3
Practical Hours	: -	Credits	: 5
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

Basic Concepts: Hazard, Vulnerability, Risk and Disaster – Trends in Disaster

Unit II

Disaster Types: Geological (Earthquakes, Tsunami and Landslide), Meteorological (Cyclone and Heat Wave), Hydrological (Flood and Drought) and Anthropogenic (Accidents and Deforestation)

Unit III

Disaster Impacts: Physical, Economic, Social and Environment

Unit IV

Disaster Risk Management; Prevention and Mitigation –Relief and Recovery – Risk Assessment

Unit V

Disaster Preparedness: Early Warning System – Disaster Education and Awareness – Community Based Disaster Management

Learning Outcomes:

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

References:

1. Government of India, 1997. Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Government of India.
2. Kapur, A., 2010. Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.Suggested References

3. Savindra S. and Jeetendra S. (2013) Disaster Management, Pravalika Publications, Allahabad.
4. NDMA (2011) Disaster Management in India.Ministry of Home Affairs, New Delhi.
5. Carter, N. (1991) Disaster Management: A Disaster Manager's Handbook. Asian Development Bank, Manila.
http://www.ndma.gov.in/en/ and http://nidm.gov.in/

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUT COMES	**CO1**	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
	CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

OPTIONAL I **MAJOR BASED ELECTIVE COURSE - II**

GEOGRAPHY OF TAMIL NADU

Theory Hours	: 6	Course Code	: U21G6MBE2:1
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objectives:

To appraise administrative and physiographical divisions, climate, agriculture, mineral resources, industries, population, transportpatterns in Tamil Nadu

Unit I

Administrative Division – Major Physiographic Divisions – Drainage System – Climate – Soil types – Natural Vegetation.

Unit II

Irrigation – Agriculture Production and Distribution of major crops – Problems of Agriculture - Fisheries – Livestock, Dairy and Poultry development.

Unit III

Distribution and Production of Mineral and Energy Resources – Electricity Generation projects.

UNIT IV

Industrial Regions – Special Economic Zones –Distribution and Production of Major Industries.

UnitV

Population: Distribution, Density and Growth – Population Composition – Transport - Major Ports – Trade.

Learning Outcomes:

After the completion of course, the students will have a thorough understanding on physical, cultural, economic and demographic aspects ofTamil Nadu

References:

1. Basic resources Atlas of Tamil Nadu, (1983), University of Madras.
2. Kumaraswamy, S.V. (2014). Geography of Tamil Nadu (Tamil Edition), SakthiAbiramiPathipagam, Coimbatore.

3. SHBoTN (2004). Statistical Hand Book of Tamil Nadu. Department of Economics and Statistics, Government of Tamil Nadu, Chennai.
4. TNEA (2014). Tamil Nadu – An Economic Appraisal 2011-12 to 2013-14. Department of Evaluation and Applied Research, Chennai.
5. SCROTN (2004). Season and Crop Report of Tamil Nadu for the Agricultural Year 2003-2004. Department of Economics and Statistics, Chennai.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
	CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

OPTIONAL II **MAJOR BASED ELECTIVE COURSE - II**

GEOGRAPHY OF HEALTH

Theory Hours	: 6	Course Code	: U21G6MBE2:2
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objectives:

It aims to present the indicators values and characteristics that can be used to describe, compare and contrast the state of health of the population.

Unit I

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

Pressure on Environmental Quality and Health: Human activities and environmental pressure land use and agricultural development; industrialization; transport and energy.

Unit III

Exposure and Health Risks: Air and water pollution; household wastes;; housing; workplace.

Unit IV

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 V

Climate Change and Human Health: Changes in climate system – heat and cold; Biological disease agents; food production and nutrition.

Course Outcome:

After the completion of course, the students will have ability to:
1. Understand the key concepts related to health and its driving forces
2. Identify the linkages between the health, environment, exposure and risk.
3. Explain the relationships among health and disease pattern in environmental context with reference to climate change

References:

1. Rais, Akhtar., (Ed.), (1990): Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi.
2. Avon, Joan, L. and Jonathan, A, Patzed (2001): Ecosystem Changes and Public Health,Baltimin, John Hopling Unit Press(ed).
3. Bradley,D.,(1977): Water, Wastes and Health in Hot Climates, John Wiley Chichesten.
4. Christaler, George and Hristopoles, Dionissios., (1998): Spatio-Temporal Environment Health Modelling, Boston Kluwer Academic Press.
5. Cliff, A.D. and Peter,H., (1988): Atlas of Disease Distributions, Blackwell Publishers, Oxford.
6. Gatrell, A. andLoytonen, (1998): GIS and Health, Taylor and Francis Ltd, London.
7. Harpham T. and Tanner, M.,(eds)(1995): Urban Health in Developing Countries; Progress and Prospects, Routledge, London.
8. Hazra, J., (1997): Health Care Planning in Developing Countries. University of Calcutta,Calcutta.
9. Moeller, Dade, wed., (1993): Environmental Health, Cambridge, Harward Univ. Press.
10. Murray, C. and A. Lopez, (1996): The Global Burden of Disease, Harvard University Press.
11. Narayan, K.V., (1997): Health and Development Inter-Sectoral Linkages in India. Rawat Publications, Jaipur.
12. Phillips, D.andVerhasselt, Y., (1994): Health and Development, Routledge, London. 13. Tromp, S., (1980): Biometeorology: The Impact of Weather and Climate on Humans and their Environment, Heydon and Son.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUT COMES	**CO1**	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓
	CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

OPTIONAL III **MAJOR BASED ELECTIVE COURSE - II**

AGRICULTURAL GEOGRAPHY

Theory Hours	: 6	Course Code	: U21G6MBE2:3
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objectives:

- To examine the spatial distribution of crops, livestock and other agricultural activities.
- To understand the cropping patterns and livestock combinations that varies in space and time.

Unit I

The origin of Agriculture – Geographical factors influencing Agriculture: Physical, Cultural, Social and Economic factors – Agriculture and soil Erosion and Conservation – Agriculture and Irrigation.

Unit II

Global patterns of farming systems: simple subsistence farming, migratory, sedentary, intensive and extensive, mechanized grain farming, plantation and commercial.

Unit III

Major Cereals: Rice, Wheat - Beverage crops: Tea and Coffee – Industrial crops: Cotton and Jute - Cash crops: Sugarcane and Tobacco.

Unit IV

Agricultural regions: Methods of Delineation – Agricultural regions of the World – Agricultural region of India characteristic salient.

Unit V

Whittlesey's world agricultural classification – Problems and Prospects.

Learning Outcomes:

After completion of this course students will able to know about the origin of agriculture, geographical factors influencing the agriculture and types of agriculture.

References:

1. Morgan W.B. and MuntonR.Jc(1971) Agricultural Geography, Methuen, London.

2. Majid Hussain (2013),Systematic Agricultural Geography, Inter-India Publications, Delhi.
3. Coh Cheng Leong, (1982), Human and Economic Geography, Oxford University Press, New Delhi.
4. Misra. R.P.(1986) Agricultural Geography, Heritage Publishers, New Delhi.
5. Ali Mohammed (1978) Studies in Agricultural Geography, Rajesh Publications, New Delhi.
6. Gregor and Howard F (1979) Geography of Agriculture: Themes in Research Printice Hall, New Jersey.
7. Shafi, M., (2006): Agricultural Geography, Doring Kindersley India Pvt. Ltd., New Delhi
8. AlkaGautam, 2016, AgiculturalGeography,ShardaPustakBhavan Allahabad.

MAPPING OF POs WITH COs

		Programme outcome						**Programme Specific Outcome**						
OUT COMES		**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
	CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

OPTIONAL I **MAJOR BASED ELECTIVE COURSE - III**

WORLD REGIONAL GEOGRAPHY

Theory Hours	: 5	Course Code	: U21G6MBE3:1
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objective:

The objectives of this course is to give an overview of the land, people and economy of the different regions of the world, so that the students are aware of world natural regions

Unit I

Concept of Natural Regions –Formal and Functional regions - Regional Hierarchy.

Unit II

Equatorial Regions: Location and extent – Physiography – Climate – Mineral resources - Economic activities - Population.

Unit III

Tropical Regions: Location and extent – Physiography – Climate – Mineral resources - Economic activities - Population.

Unit IV

Temperate & Mediterranean Regions: Location and extent – Physiography – Climate – Mineral resources - Economic activities - Population.

Unit V

Polar Temperate Regions: Location and extent – Physiography – Climate – Mineral resources - Economic activities - Population.

Learning Outcomes:

After completion of course, the students will have ability to describe the distinctiveness of natural regions of the world. The students will understand the adaptation and adaptive capacities of different natural systems of the world

References:

1. Cole, J (1996) A Geography of the World's Major Regions, Routledge, London
2. Majid Husian (2012) World Geography, 4th Edition. Rawat Publications, New Delhi.

3. Trewartha &Robinson (1967) Physical Elements of Geography, McGraw-Hill Book Company, New York.
4. Sadhukhan S.K. (1994), Economic Geography, S.Chand& Company Ltd, New Delhi.
5. Jackson. R.H. &Hudman. L.E. (1991). World Regional Geography: Issues for Today, John Wiley, New York.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

OPTIONAL II **MAJOR BASED ELECTIVE COURSE - III**

LAND USE AND CADASTRAL SURVEYING

Theory Hours	: 5	Course Code	: U21G6MBE3:2
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objectives:

At the end of the course students able to,
1. Identify the use Land use classification and importance
2. Conduct survey and able classify land uses.

UNIT – I

Land use mapping meaning and scope, approaches to Land use mapping Cadastral mapping uses and methods

UNIT – II

Land use and regulation, Land use and environment, Land use conflict, Land use planning. Cadastral surveying etymology of cadastral surveying ownership and tenure.

UNIT – III

Land use classification Concepts and methods – Land use system in India cadastral mapping in India Land use types.

UNIT – IV

Techniques in Land use survey and mapping land use resource measurements – Techniques of cadastral mapping, procedures and instruments used in cadastral surveying.

UNIT – V

Role of GIS and GPS in Land use and cadastral surveying – Land use classification and remote sensing.

Learning Outcomes:

After the completion of course, the students will have ability to make use of proper tools and surveying methods for ground data collection. The course will enable students to handle a range of surveying instruments to measure distance, height and angle of physical features on the ground.

References:

1. Freeman T N – Geography and Planning, Hatchinsen University
2. Sharan A S –Landuse planning, Essays in Geography
3. Chishon – Rural settlements Landuse, Hatchinsen University.
4. Mandal R B – Land utilization: theory and practice, concept publishing company.
5. AnjyReddy – Remote sensing & GIS.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
OUT COMES	**CO1**		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

OPTIONAL III **MAJOR BASED ELECTIVE COURSE - III**

POPULATION GEOGRAPHY

Theory Hours	: 5	Course Code	: U21G6MBE3:3
Practical Hours	: -	Credits	: 5
Exam Hours	: 3	Marks	: 100

Objectives:

- The objective is to acquaint the students with demographic characteristics of the world concerning births and deaths patterns, age and sex compositions, migration andpopulation policies.

Unit I
Nature, Scope and Significance of Population Geography – Sources of Population Data: Census, Vital Statistics, Demographic sample surveys, Population Registers, International Reports Problems and prospects.

Unit II
World Population: Determination of Population – Distribution, Density and Growth – Recent Trends of World Population – Demographic Transition.

Unit III
Composition of Population: Age, Sex, Literacy – Measurements of Fertility and Mortality - Occupational Structure.

Unit IV
Migration: Causes and Consequences – Internal and International Migration.

Unit V
Population development and Environment Interrelations – Population Policies.

Learning Outcomes:

This course gives knowledge to the students to appreciate the distribution and trends of population patterns in the developed and developing Countries. The students will also understand the implications of population composition in different regions of the world.

References:

1. G.T.Trewartha (1969) Geography of Population, World Patterns john Wiley and Sim lnc.
2. Knox, P. & Marston, S. (2013) Human Geography: Places and Regions in Global Context, 6th Edition, Pearson Education, New Delhi.
3. Majid Hussain, (2005), Human Geography, Rawat Publications, New Delhi. 2.
4. Negi, B.S. (2002) Human Geography – An Ecological Approach, KedarNath Ram Nath, New Delhi.
5. Rubenstein, J.H. (2013) Contemporary Human Geography, 2nd Edition, Prentice-Hall, New Jersey.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
OUT COMES	CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Four Questions from each unit (**Multiple choice questions)**	20 x 1 = 20 marks
Section – B	Two questions from each unit **(Either or type)**	5 x 5 = 25 marks
Section – C	One questions from each unit**(Three Questions Only)**	3 x 10 = 30 marks

NON-MAJOR ELECTIVE COURSES

for

Other Department Students

SEMESTER III **PART IV-NON MAJOR ELECTIVE COURSE I**

DISASTER STUDIES

Theory Hours	: 2	Course Code	: U21G3NME1:1
Practical Hours	: -	Credits	: 2
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

Basic Concepts: Hazard, Vulnerability, Risk and Disaster – Trends in Disaster

Unit II

Disaster Types: Geological (Earthquakes, Tsunami and Landslide), Meteorological (Cyclone and Heat Wave), Hydrological (Flood and Drought) and Anthropogenic (Accidents and Deforestation)

Unit III

Disaster Impacts: Physical, Economic, Social and Environment

Unit IV

Disaster Risk Management; Prevention and Mitigation –Relief and Recovery – Risk Assessment

Unit V

Disaster Preparedness: Early Warning System – Disaster Education and Awareness – Community Based Disaster Management

Learning Outcomes:

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

References:

1. Government of India, 1997. Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Government of India.
2. Kapur, A., 2010. Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.Suggested References
3. Savindra S. and Jeetendra S. (2013) Disaster Management, Pravalika Publications, Allahabad.
4. NDMA (2011) Disaster Management in India.Ministry of Home Affairs, New Delhi.
5. Carter, N. (1991) Disaster Management: A Disaster Manager's Handbook. Asian Development Bank, Manila.
6. http://www.ndma.gov.in/en/ and http://nidm.gov.in/

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Five questions from each unit **(Either or type)**	5 x 15 = 75 marks

SEMESTER III **PART IV – NON MAJOR ELECTIVE COURSE II**

GEOGRAPHY OF INDIA
(with special reference to Tamil Nadu)

Theory Hours	: 2	Course Code	: U21G3NME1:2
Practical Hours	: -	Credits	: 2
Exam Hours	: 3	Marks	: 100

Objectives:

To elucidate the physical and human environment of India with a special focus on geography of Tamil Nadu

Unit I

Location and Administrative Setup – Major Physiographic Divisions – Major Rivers – Climatic zones – Major Soil Types – Forest

Unit II

Distribution of Major crops: Rice, Wheat, Pulses, Millets, Cotton, Jute, Coffee, Tea and Rubber – Population: Distribution and Density.

Unit III

Distribution of Mineral Resources: Iron ore, Manganese, Bauxite and Mica –Distribution of Energy Resources: Coal, Nuclear, Hydro and Wind Power.

Unit IV

Distribution of Major Industries: Iron and Steel, Cotton Textiles and Sugar – Transport: Surface, Air, Water and Pipeline – Major export and import items of India.

Unit V

Geography of Tamil Nadu: Administrative Division, Physiography, Climate, Soil – Major Crops (Rice, Millets, Pulses, Cotton and Sugarcane), Minerals, Major Industries and Population.

Learning Outcomes:

After completion of course, the students will have a geographical knowledge on physical, cultural, economic and demographic setup of India which will help them to pursue it for competitive exams

References:

1. Khullar, D. R., (2010) India: A Comprehensive Geography, Kalyani Publishers, New Delhi.
2. Singh Gopal (1970) – Geography of India, Atmaram& Sons, New Delhi.
3. Spate, O.H.K and Learmonth A.T.A., 1954 – India and Pakistan – Methues& Co., India.

4. Arunachalam.B (1996) – Economic Geography of India – Bombay.
5. Tiwari, (2002), Geography of India, PrayagPustakBhawan, Allahabad.
6. Gopal Singh, (1970), A Geography of India, Atnaram& sons, New Delhi.
7. Majid Hussain (2008), Geography of India, Tata McGraw Hill Publishing company Ltd., New Delhi.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Five questions from each unit **(Either or type)**	5 x 15 = 75 marks

SEMESTER IV **PART IV – NON MAJOR ELECTIVE COURSE II**

FUNDAMENTALS OF REMOTE SENSING AND GPS

Theory Hours	: 2	Course Code	: U21G4NME2:1
Practical Hours	: -	Credits	: 2
Exam Hours	: 3	Marks	: 100

Objective:

- The objective of this course is to provide fundamentals of remote sensing and Global Positioning System (GPS) for the benefit of their professional carrier.

Unit I

Remote Sensing: Definition, Development, Platforms and Types.

Unit II

Aerial Photography: Principles, Types and Geometry.

Unit III

Satellite Remote Sensing: Principles, EMR Interaction with Atmosphere and Earth Surface; Satellites (Landsat and IRS) and Sensors.

Unit IV

Interpretation and Application of Remote Sensing: Land use/ Land Cover.

Unit V

Global Positioning System (GPS) and Global Navigation Satellite System (GNSS) – Its Principles and Uses.

Learning Outcomes:

After the completion of the course, the students will have the ability to:
1. Appreciate the development and uses of aerial and satellite remote sensing system and navigation satellite systems in India and other nations.
2. Understand the basics of EMR and energy interaction in atmosphere and on earth surface features.
3. Analyze and interpret the aerial and satellite data products and GNSS/GPS survey results.

References:

1. Campbell, J. B., (2007) Introduction to Remote Sensing, Guildford Press,New York.
2. Jensen, J. R., (2004) Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall, New Jersey.
3. Joseph, G. (2005) Fundamentals of Remote Sensing, Universities Press, Hyderabad.
4. Kumar, Dilip, Singh, R.B. and Kaur, Ranjeet (2019) Spatial Information Technology for Sustainable Development Goals, Springer, Basel.
5. Lillesand, T. M., Kiefer, R. W. and Chipman J. W., (2004) Remote Sensing and Image Interpretation, Wiley, New Jersey. (Wiley Student Edition).
6. Nag P. and Kudra, M., (1998) Digital Remote Sensing, Concept, New Delhi.
7. Rees, W. G., (2001) Physical Principles of Remote Sensing, Cambridge University Press, Cambridge.
8. Singh, R. B. and Murai, S., (1998) Space-informatics for Sustainable Development, Oxford and IBH Pub, New Delhi.
9. Wolf, P. R. and Dewitt, B. A., (2000) Elements of Photogrammetry: With Applications in GIS, McGraw-Hill, New York.

MAPPING OF POs WITH COs

		Programme outcome						**Programme Specific Outcome**						
OUT COMES		**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**
	CO1		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Five questions from each unit **(Either or type)**	5 x 15 = 75 marks

SEMESTER IV **PART IV – NON MAJOR ELECTIVE COURSE - II**

AGRICULTURAL GEOGRAPHY

Theory Hours	: 2	Course Code	: U21G4NME2:2
Practical Hours	: -	Credits	: 2
Exam Hours	: 3	Marks	: 100

Objectives:

- To examine the spatial distribution of crops, livestock and other agricultural activities.
- To understand the cropping patterns and livestock combinations that varies in space and time.

Unit I

The origin of Agriculture – Geographical factors influencing Agriculture: Physical, Cultural, Social and Economic factors – Agriculture and soil Erosion and Conservation – Agriculture and Irrigation.

Unit II

Global patterns of farming systems: simple subsistence farming, migratory, sedentary, intensive and extensive, mechanized grain farming, plantation and commercial.

Unit III

Major Cereals: Rice, Wheat - Beverage crops: Tea and Coffee – Industrial crops: Cotton and Jute - Cash crops: Sugarcane and Tobacco.

Unit IV

Agricultural regions: Methods of Delineation – Agricultural regions of the World – Agricultural region of India characteristic salient.

Unit V

Whittlesey's world agricultural classification – Problems and Prospects.

Learning Outcomes:

After completion of this course students will able to know about the origin of agriculture, geographical factors influencing the agriculture and types of agriculture.

References:

1. Morgan W.B. and Munton R.Jc(1971) Agricultural Geography, Methuen, London.
2. Majid Hussain (2013),Systematic Agricultural Geography, Inter-India Publications, Delhi.

3. Coh Cheng Leong, (1982), Human and Economic Geography, Oxford University Press, New Delhi.
4. Misra. R.P.(1986) Agricultural Geography, Heritage Publishers, New Delhi.
5. Ali Mohammed (1978) Studies in Agricultural Geography, Rajesh Publications, New Delhi.
6. Gregor and Howard F (1979) Geography of Agriculture: Themes in Research Printice Hall, New Jersey.
7. Shafi, M., (2006): Agricultural Geography, Doring Kindersley India Pvt. Ltd., New Delhi
8. AlkaGautam, 2016, AgiculturalGeography,ShardaPustakBhavan Allahabad.

MAPPING OF POs WITH COs

		Programme outcome						Programme Specific Outcome						
OUT COMES		PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓

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

Section – A	Five questions from each unit **(Either or type)**	5 x 15 = 75 marks