



**(For the candidates admitted from the academic year 2016-2017 onwards)**

Semester	Part	Course	Title	Inst. Hours/Week	Credit	Exam	Marks		Total	
						Hours	Internal	External		
I	I	Language Course-I (LC) – Tamil*/Other Languages ** #		6	3	3	25	75	100	
	II	English Language Course - I (ELC)		6	3	3	25	75	100	
	III		Core Course-I (CC)	Earth Science	6	6	3	25	75	100
			First Allied Course-I (AC)	Statistics I	6	4	3	25	75	100
			First Allied Course-II (AP)	Statistics (P)	4	2	3	40	60	100
	IV	Value Education	Value Education		2	2	3	25	75	100
<b>Total</b>				<b>30</b>	<b>20</b>				<b>600</b>	
II	I	Language Course-II (LC)– Tamil*/Other Languages ** #		6	3	3	25	75	100	
	II	English Language Course-II (ELC)		6	3	3	25	75	100	
	III		Core Course-II (CC)	Geomorphology	6	5	3	25	75	100
			Core Practical – I (CP)	Representation of Terrain and Map Making (P)	6	4	3	40	60	100
			First Allied Course-III (AC)	Statistics II	4	4	3	25	75	100
	IV	Environmental Studies	Environmental Studies		2	2	3	25	75	100
<b>Total</b>				<b>30</b>	<b>21</b>				<b>600</b>	
III	I	Language Course – III (LC)– Tamil*/Other Languages ** #		6	3	3	25	75	100	
	II	English Language Course-III (ELC)		6	3	3	25	75	100	
	III		Core Course – III (CC)	Climatology	5	5	3	25	75	100
			Core Course – IV (CC)	Human Geography	5	5	3	25	75	100
			Second Allied Course – I (AC)	Geoinformatics I	4	4	3	25	75	100
			Second Allied Course-II (AP)	Geoinformatics (P)	2	2	3	40	60	100
	IV	Non Major Elective I - for those who studied Tamil under Part-I a) Basic Tamil for other language students b) Special Tamil for those who studied Tamil up to +2 but opt for other languages in degree programme	Geography of Tourism		2	2	3	25	75	100
<b>Total</b>				<b>30</b>	<b>24</b>				<b>700</b>	

IV	I	Language Course –IV (LC) - Tamil*/Other Languages ** #		6	3	3	25	75	100	
	II	English Language Course – IV (ELC)		6	3	3	25	75	100	
	III	Core Course – V (CC)	Oceanography		5	5	3	25	75	100
		Core Practical – II (CP)	Representation of Climatic and Socio-Economic data (P)		5	4	3	40	60	100
		Second Allied Course - III	Geoinformatics II		4	4	3	25	75	100
	IV	Non Major Elective II-for those who studied Tamil under Part I a) Basic Tamil for other language students	Disaster Management		2	2	3	25	75	100
		b) Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree programme								
		Skill Based Elective I			2	2	3	25	75	100
	<b>Total</b>				<b>30</b>	<b>23</b>				<b>700</b>
	V	III	Core Course – VI (CC)	Cartography		6	6	3	25	75
Core Course – VII (CC)			Economic Geography		6	5	3	25	75	100
Core Practical – III (CP)			Map Projection and Surveying (P)		6	4	3	40	60	100
Major Based Elective – I			Bio-geography		6	5	3	25	75	100
IV		Skill Based Elective –II			2	2	3	25	75	100
		Skill Based Elective – III			2	2	3	25	75	100
		Soft Skills Development	Soft Skills Development		2	2	3	25	75	100
		<b>Total</b>				<b>30</b>	<b>26</b>			
VI	III	Core Course – VIII (CC)	World Regional Geography		6	5	3	25	75	100
		Core Course – IX (CC)	Geography of India		6	5	3	25	75	100
		Core Practical – IV (CP)	Map and Image Interpretation (P)		6	4	3	40	60	100
		Major Based Elective II	Settlement Geography		6	5	3	25	75	100
		Major Based Elective III	Regional Planning		5	5	3	25	75	100
	V	Extension Activities	Extension Activities		-	1	-	-	-	-
		Gender Studies	Gender Studies		1	1	3	25	75	100
		<b>Total</b>				<b>30</b>	<b>26</b>			
<b>Grand Total</b>				<b>180</b>	<b>140</b>				<b>3900</b>	

List of Allied Courses:

Group I

**Statistics**

Group II

**Geoinformatics**

Language Part – I	-	4	
English Part –II	-	4	
Core Paper	-	9	
Core Practical	-	4	
Allied Paper	-	4	
Allied Practical	-	2	
Non-Major Elective	-	2	
Skill Based Elective	-	3	
Major Based Elective	-	3	
Environmental Studies	-	1	
Value Education	-	1	
Soft Skill Development	-	1	
Gender Studies	-	1	
Extension Activities	-	1	(Credit only)

\* for those who studied Tamil upto 10<sup>th</sup> +2 (Regular Stream)

+ Syllabus for other Languages should be on par with Tamil at degree level

# those who studied Tamil upto 10<sup>th</sup> +2 but opt for other languages in degree level under Part I should study special Tamil in Part IV

\*\* Extension Activities shall be out side instruction hours

Non Major Elective I & II – for those who studied Tamil under Part I

- a) Basic Tamil I & II for other language students
- b) Special Tamil I & II for those who studied Tamil upto 10<sup>th</sup> or +2 but opt for other languages in degree programme

**Note:**

	Internal Marks	External Marks
1. Theory	25	75
2. Practical	40	60
3. Separate passing minimum is prescribed for Internal and External marks		

**FOR THEORY**

The passing minimum for CIA shall be 40% out of 25 marks [i.e. 10 marks]  
The passing minimum for University Examinations shall be 40% out of 75 marks [i.e. 30 marks]

**FOR PRACTICAL**

The passing minimum for CIA shall be 40% out of 40 marks [i.e. 16 marks]  
The passing minimum for University Examinations shall be 40% out of 60 marks [i.e. 24 marks]

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## **CORE COURSE I**

### **EARTH SCIENCE**

#### **Objective**

This introductory course is intended to acquaint the students with science of geography and fundamentals of earth systems. The earth processes 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.

#### **Reference Books**

1. Das Gupta, A & Kapoor, A.N. (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi.
2. Khullar, D.R. (2012) Physical Geography, Kalyani Publishers, New Delhi.
3. Strahler, A. H. & Strahler, A N. (2001) Modern Physical Geography (4/E), John Wiley and Sons, Inc., New York.
4. Christopherson, R.W. and Birkeland, G. H. (2012) Geosystems: An Introduction to Physical Geography (8/E), Pearson Education, New Jersey.
5. Ernst, W.G. (2000) Earth Systems: Process and Issues (Ed.), Cambridge University Press, Cambridge.

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## **FIRST ALLIED COURSE I**

### **STATISTICS I**

#### **Objective**

The objective of the course is to introduce the basic concepts of statistics to the students of geography in a brief but adequate manner. This allied course will help the students to understand the purpose, meaning, and use of statistics in geographical studies.

#### **Unit I**

Statistics – Nature and Scope – Significance of statistical methods in geography - Sources of data – Primary and secondary data - Scales of measurement: Nominal, Ordinal, Interval and Ratio.

#### **Unit II**

Frequency distribution - Tabulation of data - Diagrams and graphs - Types - Graphs of frequency distributions: Histograms, Frequency polygon and Cumulative frequency curve.

#### **Unit III**

Measures of Central Tendency: Mean: Arithmetic, Weighted, Harmonic, Geometric, Median, Mode and Quartiles - Measures of Dispersion: Range, Variance, Mean deviation and Standard deviation – Coefficient of Variation – Variance - Lorenz curve - Skewness, Moments and Kurtosis.

#### **Unit IV**

Correlation – Types - Scatter diagram - Karl Pearson's Correlation Coefficient – Spearman's Rank Correlation – Regression lines and equations - Regression residuals.

#### **Unit V**

Time Series – Components - Measurement of trend: Graphic method, Semi averages and Moving average - Method of least square - Measurement of variations: Seasonal, Cyclical and Irregular variations.

#### **Reference Books**

1. Gupta, S.P. (1995) Statistical Methods, Sultan Chand and Sons, New Delhi.
2. Pal S. K., (1998) Statistics for Geoscientists: Techniques and Applications, Concept Publishing Company, New Delhi.
3. Elhance, D.N. (1972) Fundamentals of Statistics, Kitab Mahal, Allahabad.
4. Cole, J.P. & King, C.A.M. (1968) Quantitative Techniques in Geography. John Wiley & sons Inc. New York.
5. Hammond, R., & McCullagh, P.S. (1978) Quantitative Techniques in Geography: An Introduction (2/E), Oxford University Press, New York.
6. Mishra, R.P. (1991) Research Methodology in Geography, Concept Publishing, New Delhi.

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## **FIRST ALLIED COURSE II**

### **STATISTICS (P)**

#### **Objective**

The objective of this practical course is to introduce some basic statistical procedures to the students towards analysing the geographical problems.

#### **Unit I**

Representation of Geographic Data – Line and bar graphs –Pie diagrams - Histograms - Frequency polygon - Ogives.

#### **Unit II**

Measures of Central Tendency: Mean: arithmetic, weighted, harmonic and geometric mean - Median - Mode - Quartiles.

#### **Unit III**

Measures of Dispersion: range, mean deviation, quartile deviation, and standard deviation –Coefficient of Variations -Variance - Lorenz Curve.

#### **Unit IV**

Correlation – Scatter diagram and graphic method - Karl Pearson's Correlation Coefficient – Spearman's Rank Correlation – Linear Regression.

#### **Unit V**

Measurement of Trend: graphic method, semi averages and moving average - Measurement of variations: seasonal, cyclical and irregular variations.

#### **Reference Books**

1. Gupta, S.P. (1995) Statistical Methods, Sultan Chand and Sons, New Delhi.
2. Pal S. K., (1998) Statistics for Geoscientists: Techniques and Applications, Concept Publishing Company, New Delhi.
3. Elhance, D.N. (1972) Fundamentals of Statistics, KitabMahal, Allahabad.
4. Burt, J.E., Barber, G.M., & Rigby, D.L. (2009) Elementary Statistics for Geographers (3/E), The Guilford Press, New York.
5. Cole, J.P. & King, C.A.M. (1968) Quantitative Techniques in Geography. John Wiley & sons Inc. New York.
6. Hammond, R., &McCullagh, P.S. (1978) Quantitative Techniques in Geography: An Introduction (2/E), Oxford University Press, New York.

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## **CORE COURSE II**

### **GEOMORPHOLOGY**

#### **Objective**

The objective of the course is to familiarize the students with the geomorphic processes. After completing the course, students will be able to understand various landforms of the earth surface.

#### **Unit I**

Geomorphic processes: Endogenic and exogenic- Gradation - Denudational agents - Weathering: types, factors and associated landforms - Mass-movement - Types - Formation of regolith and soils - Soil profile.

#### **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.

#### **Reference Books**

1. Das Gupta, A & Kapoor, A.N. (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi.
2. Strahler, A. H. & Strahler, A N. (2001) Modern Physical Geography (4/E), John Wiley and Sons, Inc., New York.
3. Khullar, D.R., (2012) Physical Geography, Kalyani Publishers, New Delhi.
4. Negi B.S. (1993) Physical Geography, S.J. Publications, Meerut.
5. Sharma, V.K. (1986) Earth Surface Process and Forms, Tata McGraw-Hill Publishing Company Ltd, New Delhi.

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## **CORE PRACTICAL I**

### **REPRESENTATION OF TERRAIN AND MAP MAKING (P)**

#### **Objective**

The practical course is to provide basic cartographic skills to the students. By studying the course, students could able to understand various methods of representing map scales and terrain data.

#### **Unit I**

Scales - Types of scales -Construction of linear, comparative and diagonal scales  
- Conversion of scales.

#### **Unit II**

Measurement of distances and areas - Enlargement and reduction -  
Combination of maps.

#### **Unit III**

Directions and bearings - Conversion – Methods of finding Truth North.

#### **Unit IV**

Methods of representation of relief:hachures, contours, spot heighth and bench  
marks.

#### **Unit V**

Drawing of profiles - Cross section of major relief features - Calculation of slope.

#### **Reference Books**

1. Monk House, F.J. & Wilkinson, H.R. (1973) Maps and Diagrams, Methuen & Co Ltd, London.
2. Saha, P. &Basu, P. (2014) Advanced Practical Geography, Books and Allied Ltd., Kolkatta.
3. Singh, R.L. & Singh, R. P. B. (2009) Elements of Practical Geography, Kalyani Publishers, New Delhi.
4. Gopal Singh (1998) Map Work and Practical Geography (4th Edition), Vikas Publishing House, Ahmedabad.
5. Zulfequar Ahmad Khan, M.D. (1998) Text book of Practical Geography, Concept Publishing Company, New Delhi.

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## **FIRST ALLIED COURSE III**

### **STATISTICS II**

#### **Objective**

The aim of the course is to teach the basics of sampling, hypothesis formulation and methods of statistical data analysis for geographical research.

#### **Unit I**

Sampling – Theoretical basis - Methods of sampling: simple random, stratified random, systematic, cluster and purposive sampling - Size of sample - Sampling errors.

#### **Unit II**

Probability – Theorems of probability - Conditional probability - Bayes' theorem - Probability distribution: discrete and continuous – Binomial distribution and Normal distribution - Properties of normal curve.

#### **Unit III**

Statistical hypothesis - Tests of hypothesis – Types - Hypothesis error - Sampling distribution - Tests of significance: One tailed and Two tailed tests.

#### **Unit IV**

Parametric and Non-parametric Tests: Procedures - Student's t- test, Chi-square test, F-test and Z-test – ANOVA -Applications.

#### **Unit V**

Applications: General applications - Statistics in research - Quantitative techniques in geography –Spatial statistics.

#### **Reference Books**

1. Gupta, S.P. (1995) Statistical Methods, Sultan Chand and Sons, New Delhi.
2. Pal S. K., (1998) Statistics for Geoscientists: Techniques and Applications, Concept Publishing Company, New Delhi.
3. King, L.J. (1991) Statistical Analysis in Geography. Prentice Hall, Englewood Cliff.
4. Cole, J.P. & King, C.A.M. (1968) Quantitative Techniques in Geography. John Wiley & sons Inc. New York.
5. Kothari, C.R. (1996) Research Methodology: Methods and Techniques, VishwasPrakashan, New Delhi.

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## **CORE COURSE III**

### **CLIMATOLOGY**

#### **Objectives:**

The course provides an outline of atmosphere, and its dynamic nature of the processes. The course content gives a lead to the identification of climatic differentiation and the consequences of human activities.

#### **Unit I**

Nature and scope of climatology: elements of weather and climate -composition and structure of the atmosphere – Insolation – heat budget – horizontal – vertical and seasonal distribution of temperature.

#### **Unit II**

Atmospheric pressure: vertical and horizontal distribution of pressure - Wind: planetary, seasonal – monsoon – local winds - Atmospheric circulation – general and tri cellular model.

#### **Unit III**

Humidity, - cloud – fog – precipitation: forms and types - evaporation - condensation - hydrological cycle – air masses: types - fronts: classification and properties.

#### **Unit IV**

Atmospheric disturbances: tropical and temperate cyclones – Anti cyclone - thunderstorms – tornadoes.

#### **UNIT V**

Climatic classification: Koppen's and Thornthwaite - Atmospheric pollution - global warming –sea level rise – ozone depletion.

#### **Reference Books**

1. D.S. Lal (1998) -Climatology, Chaitanya Publishing House, Allahabad.
2. Critchfield.H (1969) General –Climatology, Prentice Hall of India Pvt, Ltd, New Delhi.
3. Keith Smith (1988). Applied Climatology, McGraw Hill, New York.
4. Das Gupta, A &Kapoor, A.N. (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi.
5. Strahler, A. H. &Strahler, A N. (2001) Modern Physical Geography (4/E), John Wiley and Sons, Inc., New York.

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## **CORE COURSE IV**

### **HUMAN GEOGRAPHY**

#### **Objective**

The 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 - Concepts of man-environment relationships: determinism, possibilism, probabilism and neo-determinism - dichotomy in Physical and Human Geography.

#### **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.

#### **Reference Books**

1. Majid Hussain, (2005), Human Geography, Rawat Publications, New Delhi.
2. Cheng Leong, G. & Morgan, G.C. (1995) Human and Economic Geography, Oxford University Press, Oxford
3. Negi, B.S. (2002) Human Geography – An Ecological Approach, KedarNath Ram Nath, New Delhi.
4. Rubenstein, J.H. (2013) The Cultural Landscape - An Introduction to Human Geography, 11th Edition, Prentice-Hall, New Jersey.
5. Rubenstein, J.H. (2013) Contemporary Human Geography, 2nd Edition, Prentice-Hall, New Jersey.
6. Knox, P. & Marston, S. (2013) Human Geography: Places and Regions in Global Context, 6th Edition, Pearson Education, New Delhi.

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## **SECOND ALLIED COURSE I**

### **GEOINFORMATICS I**

#### **Objective**

Geoinformatics is a technological synthesis of remote sensing, GIS and GNSS. The objective of this course is to introduce the basic concepts of geoinformatics and impart new skills to the students.

#### **Unit I**

Components of geoinformatics: cartography, geodesy, photogrammetry, remote sensing, GIS and GNSS - historical development - emerging trends – Geoinformatics development in India – role of ISRO, survey of India and NATMO.

#### **Unit II**

Basic principles of remote sensing - Elements of EMR - Energy interaction in atmosphere - Terrestrial interaction - Spectral signature – Spectral reflectance curves.

#### **Unit III**

Remote Sensing Platforms: types - Sensors - FOV and IFOV - Pixel - Resolution: spatial, spectral, radiometric and temporal.

#### **Unit IV**

Definition and Components of GIS – Raster and vector data structures - RDBMS - Spatial referencing - Spatial data input and editing.

#### **Unit V**

Basic principles of Global Navigation Satellite System (GNSS) - segments: space, control and user – selective availability - Error sources – GNSS survey methods.

#### **Reference Books**

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. Agarwal, N. K., (2006). Essentials of GPS, Geodesy and GPS publications, Hyderabad.
4. Jensen, J. R., (2007). Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall Inc., New Jersey.
5. Heywood, I., Comelius, S., and Carver, S., (1988). An Introduction to Geographical Information Systems, Addison Wiley Longmont, New York.

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## **SECOND ALLIED COURSE II**

### **GEOINFORMATICS (P)**

#### **Objective**

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

#### **Unit I**

Exploring GIS software, Google Earth and Bhuvan - Scanning – georeferencing.

#### **Unit II**

Digitization: point – line – polygon –spatial data editing and error correction – attribute data input (table entry, join and relate)

#### **Unit III**

Vector based GIS analysis: Spatial and attribute - Query – buffer - overlay

#### **Unit IV**

Raster based GIS analysis: Reclassification – overlay – Interpolation – Digital Elevation modeling (DEM) – slope – aspect.

#### **Unit V**

Symbolization – Map layout and design – Preparation of base Map and thematic map.

#### **Reference Books**

1. Burrough, P. A., & McDonnell, R., (2000). Principles of Geographical Information Systems, Oxford Press, London.
2. Heywood, I., Comelius, S., and Carver, S., (1988). An Introduction to Geographical Information Systems, Addison Wiley Longmont, New York.
3. <http://www.qgis.org/en/site/>
4. [http://docs.qgis.org/testing/en/docs/training\\_manual/](http://docs.qgis.org/testing/en/docs/training_manual/)

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## **NON-MAJORE ELECTIVE I**

### **GEOGRAPHY OF TOURISM**

#### **Objective**

The objective of the course is to familiarise the students with various aspects of tourism and to orient the students to the logistics of tourism industry.

#### **Unit I**

Basics of Tourism: Growth and development – Factors influencing tourism: historical, natural, socio-cultural and economic - Modern tourism - Tourism as an industry.

#### **Unit II**

Tourism Motivation: Physical, cultural, social and economic - Types of tourism – Leisure – Recreation – Hospitality -Tourist centers: Classification.

#### **Unit III**

Infrastructure and Support System: Accommodation and supplementary accommodation - Other facilities and amenities - Indian hotel industry - Passport and Visa: Types.

#### **Unit IV**

Tourism Organization: International, national, regional and local - Public and Private – Role of travel agency – Guide services – Role of soft skill in visitor's service.

#### **Unit V**

Tourism Promotion: Advertisement – Public Relations – Tourist publicity – Mass communication – Information and communication technology - Importance of Tourism in Indian Economy.

#### **Reference Books**

1. Bhatia A.K. (1999) Tourism Development Principles & Practices, Sterling publishers, New Delhi.
2. Maneet K. (1992) Tourism Today, Kanishka Publishing House, Delhi.
3. Rosemary B. (1995) Travel Geography, Pitman Publishing, London.
4. Vinod N. (2010) Tourism and Hotel Industry, Cyber Tech Publications, New Delhi.
5. Robinson, H. A. (1996) Geography of Tourism, Macdonald and Evans, London.

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## **CORE COURSE V**

### **OCEANOGRAPHY**

#### **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 and scope of oceanography - Formation of oceans - Distribution of land and sea - Tetrahedral theory - Importance of the oceans.

#### **Unit II**

Surface configuration of the ocean floor: continental shelf, continental slope, abyssal plain, mid-oceanic and oceanic trenches - Relief of Atlantic, Pacific and Indian Oceans.

#### **Unit III**

Physical and chemical properties of sea water: Temperature and Salinity - Factors - Distribution: Vertical and horizontal.

#### **Unit IV**

Circulation of oceanic waters: Waves, Tides and Currents - Currents of the Atlantic, Pacific and Indian oceans.

#### **Unit V**

Deposits of the Ocean floor: Sources - Classification - Marine sediments - Coral Reefs: origin, types and distribution - Minerals - Other marine resources - Oceans as storehouse of resources for the future.

#### **Reference Books**

1. Sharma, R. C. & Vatal, M., (1970) Oceanography for Geographers, Chaitanya Publishing House, Allahabad.
2. Lal, D.S. (2005) Oceanography, Sharda Pustak Bhawan, Allahabad.
3. Das Gupta, A & Kapoor, A.N. (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi.
4. Strahler, A. H. & Strahler, A N. (2001) Modern Physical Geography (4/E), John Wiley and Sons, Inc., New York.
5. Khullar, D.R. (2012) Physical Geography, Kalyani Publishers, New Delhi.

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## **CORE PRACTICAL II**

### **REPRESENTATION OF CLIMATIC AND SOCIO-ECONOMIC DATA (P)**

#### **Objective**

The practical course is to inculcate the techniques in representation of climatic and socio-economic data to the students.

#### **Unit I**

Line and bar diagrams - Representation of temperature and rainfall data - Rainfall dispersion diagram.

#### **Unit II**

Climatic Graphs: Climographs, Hythergraphs, Ergograph and Wind rose diagrams.

#### **Unit III**

Meteorological signs and symbols - Station model - Study and interpretation of weather reports of India.

#### **Unit IV**

Representation of socio-economic data: one, two and three dimensional diagrams - Pyramidal diagrams - Flow lines and Pie diagrams.

#### **Unit V**

Methods of representing distribution of data - Isopleths, Choropleths, Chorochromatic and Choroschematic maps.

#### **Reference Books**

1. Monk House, F.J. & Wilkinson, H.R. (1973) Maps and Diagrams, Methuen & Co Ltd, London.
2. Saha, P. & Basu, P. (2014) Advanced Practical Geography, Books and Allied Ltd., Kolkatta.
3. Singh, R.L. & Singh, R. P. B. (2009) Elements of Practical Geography, Kalyani Publishers, New Delhi.
4. Gopal Singh (1998) Map Work and Practical Geography (4th Edition), Vikas Publishing House, Ahmedabad.
5. Zulfequar Ahmad Khan, M.D. (1998) Text book of Practical Geography, Concept Publishing Company, New Delhi.

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## **SECOND ALLIED COURSE III**

### **GEOINFORMATICS II**

#### **Objective**

The course will enable the students to apply the Geoinformatics techniques in geographical studies.

#### **Unit I**

Aerial photography - Types of photographs: vertical and oblique - camera - film - Photogrammetry : relief displacement - parallax - mosaic - visual interpretation: Equipments - Elements of image interpretation - Applications.

#### **Unit II**

Earth observation satellites: weather satellites (INSAT, MODIS & NOAA), land satellites (IRS, SPOT, LANDSAT, IKONOS, and WORLDVIEW) and marine satellites (OCEANSAT & SEASAT) - Applications.

#### **Unit III**

Digital Image processing: preprocessing (atmospheric and geometric) - enhancement (contrast stretching and filters) - classification (supervised and unsupervised) - Accuracy assessment - Applications.

#### **Unit IV**

GIS analysis: Measurements - query - overlay - buffer- network - interpolation - Digital Elevation modeling (DEM) - Applications.

#### **Unit V**

GNSS programmes: GPS, GLONASS, GALILEO, COMPASS and IRNSS - augmented systems (LAAS, WAAS, GBAS and GAGAN) - DGPS - GNSS Applications.

#### **Reference Books**

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. Agarwal, N. K., (2006). Essentials of GPS, Geodesy and GPS publications, Hyderabad.
4. Jensen, J. R., (2007). Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall Inc., New Jersey.
5. Jensen, J.R., (2006).Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice-Hall Inc., New Jersey.
6. Heywood, I., Comelius, S., and Carver, S., (1988). An Introduction to Geographical Information Systems, Addison Wiley Longmont, New York.

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## **NON-MAJORE ELECTIVE II**

### **DISASTER MANAGEMENT**

#### **Objective**

The course is to provide students an exposure to disasters, their types, and disaster management. This multidisciplinary course will also enable students to recognize the increasing vulnerability of the planet in general and India in particular to disasters.

#### **Unit I**

Basic Concepts: Hazard, risks, vulnerability, catastrophe, emergency and disaster - Types of disasters - Impacts: physical, social, economic, political, environmental and psychological - Resilience.

#### **Unit II**

Natural Disasters: Earthquakes - Tsunamis - Landslides - Volcanoes - Floods - Cyclones - Drought - Disease Epidemics - Causes and Effects.

#### **Unit III**

Anthropogenic Disasters: Chemical and industrial disasters - Nuclear disasters - Fire accidents - Oil spill - Bio-diversity loss - Coral / mangrove depletion - Stampede - Terrorist attacks - Transport accidents.

#### **Unit IV**

Disaster Risk Management: Management Cycle - Response and recovery, risk assessment, mitigation and prevention, preparedness planning, prediction and warning - Community based disaster management - Role of Geoinformatics.

#### **Unit V**

Disaster Management in India: Hazard and vulnerability profile of India - Institutional framework - Disaster Management Act - International strategy for disaster reduction.

#### **Reference Books**

1. Savindra S. & Jeetendra S. (2013) Disaster Management, Pravalika Publications, Allahabad.
2. Govt. of India (2008) Vulnerability Atlas of India, BMTPC, New Delhi.
3. Govt. of India (2011) Disaster Management in India. Ministry of Home Affairs, New Delhi.
4. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.  
<http://www.ndma.gov.in/en/>      <http://nidm.gov.in/>  
<http://www.imd.gov.in/>      <https://www.unisdr.org/>

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## **CORE COURSE VI**

### **CARTOGRAPHY**

#### **Objective**

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

#### **Unit I**

Scope and content of cartography – History of cartography- Branches of cartography- maps – classification of maps- uses of maps- Limitations- 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 – UTM- spatial referencing system.

#### **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 style, form and size of lettering - Positioning - cartographic equipments.

#### **Unit V**

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

#### **Reference Books**

1. Robinson, A.H. et al. (1995) Elements of Cartography, John Wiley & Sons, U.S.A.
2. Misra, R.P. and Ramesh, A. (1986) Fundamentals of Cartography, Concept Publishing Company, New Delhi.
3. Kraak M.J. (2010) Cartography: Visualization of Geospatial Data (3<sup>rd</sup> edition), Pearson Education Ltd., London.

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**CORE COURSE VII**  
**ECONOMIC GEOGRAPHY**

**Objective**

The basic economy of the world is undergoing rapid transformation in recent times. The process of such transformation of economic activities from primary to secondary and tertiary stage is dynamic in nature. In view of this, the objective of this course is to integrate the various factors of economic development and to acquaint the students about this dynamic aspect of economic geography.

**Unit I**

Nature and scope of economic geography - spatial organization economic activities - Classification of economies - Sectors of economy: primary, secondary tertiary, quaternary – recent trends of economic geography.

**Unit II**

Resource classification - renewable and non-renewable - Distribution: Livestock - Fishing - Forestry - Agriculture.

**Unit III**

Industries: Classification of industries - Factors of localization - Industrial location theories: Weber's approach - Major industries: iron and steel, textile, food processing, chemicals, cement, paper, ship building and knowledge based industries - Industrial regions - Globalisation on industrial development.

**Unit IV**

Minerals: metallic – nonmetallic, energy resources: hydrocarbon – hydel power – atomic.

**Unit V**

Transport: Roads – Railways – Waterways - Airways - Geographical factors - Ports and Harbours – Trade: International trade - Factors - Patterns - World trade Blocks: WTO, OPEC, SAARC and ASEAN.

**Reference Books**

1. Goh Cheng Leong & Morgan, G.C. (1982) Human and Economic Geography, 2<sup>nd</sup> Edition, Oxford University Press, New Delhi.
2. Knox, P. & Marston, S. (2013) Human Geography: Places and Regions in Global Context, 6<sup>th</sup> Edition, Pearson Education, New Delhi
3. Prithwish Roy (2014) Economic Geography - A study of Resources, New Central Book Agency, Kolkata.
4. Knowles, R. & Wareing, J. (2004) Economic and Social Geography Made Simple, Rupa & Co., Kolkata.
5. Saxena, H.M. (2013) Economic Geography, Rawat Publications, Jaipur.
6. Negi, B.S. (1995) Economic and Commercial Geography of the World, Kedar Nath Ram Nath, New Delhi.
7. Siddhartha, K. (2013) Economic Geography, Kisalaya Publications Pvt. Ltd., New Delhi.

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## **CORE PRACTICAL III**

### **MAP PROJECTION AND SURVEYING (P)**

#### **Objective**

The practical course is to provide technical skills in construction of map projection and various surveying techniques to the students.

#### **Unit I**

Construction of map projections: Cylindrical, conical and zenithal projections - Properties and uses.

#### **Unit II**

Construction of polyconic projection: One standard and two standard parallel – Bonne's, Sinusoidal and Mollweide's projections – Properties and uses.

#### **Unit III**

Principles and techniques chain, prismatic compass and plane table survey.

#### **Unit IV**

Indian Clinometer and Dumpy level survey methods.

#### **Unit V**

Modern electronic surveying - Principles and methods.

#### **Reference Books**

1. Monk House, F.J. & Wilkinson, H.R. (1973) Maps and Diagrams, Methuen & Co Ltd, London.
2. Saha, P. & Basu, P. (2014) Advanced Practical Geography, Books and Allied Ltd., Kolkatta.
3. Singh, R.L. & Singh, R. P. B. (2009) Elements of Practical Geography, Kalyani Publishers, New Delhi.
4. Gopal Singh (1998) Map Work and Practical Geography (4th Edition), Vikas Publishing House, Ahmedabad.
5. Zulfequar Ahmad Khan, M.D. (1998) Text book of Practical Geography, Concept Publishing Company, New Delhi.

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## **MAJOR BASED ELECTIVE I**

### **BIO-GEOGRAPHY**

#### **Objectives:**

The purpose of this course is to appraise the students of the interrelationships among the living organisms within the environment and the importance of conservation of biosphere and biodiversity.

#### **Unit I**

Definition, scope and significance of biogeography – Basic ecological concepts and principles - Ecosystem: Types, Components and Functions – Biome: Types, Ecotone and Community – Bio diversity.

#### **Unit II**

Origin of fauna and flora – Plant and animal evolution through geological times - Distribution of plant life on earth and its relation to soil types.

#### **Unit III**

Problem of extinction of plant and animal life – habitat decay and their conservation – Process of desertification – its consequences and management.

#### **Unit IV**

Effluents: Types - Sources - Effects on fresh water biology – Eutrophication - Management practices (special reference to India).

#### **Unit V**

Ecological regions of Himalayas and Western Ghats - Plant and animal life – Interrelationships - Problems – Conservation and management measures.

#### **Reference Books**

1. Robinson – Biogeography – ELBS Mc Donald and Evans London, 1982.
2. L.G. Simons – Biogeographically process – Allen and Unwell, London.
3. C Barry – Cox, Black Well - Biographical – an Ecological Evolutionary approach - Oxford 1977.
4. B. Seddon – Biogeography – Duck worth, London 1971.

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## **CORE COURSE VIII**

### **WORLD REGIONAL GEOGRAPHY**

#### **Objectives**

The objectives of this course are 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 resources

#### **UNIT I**

Meaning of Natural Regions – Concept of Region – Types of region -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.

#### **Reference Books**

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.

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## **CORE COURSE IX**

### **GEOGRAPHY OF INDIA**

#### **Objectives:**

The course is aimed at presenting a comprehensive, integrated and empirically based profile of India. Further the course enable the student community to understand the resource distribution of India and Tamil Nadu

#### **UNIT I**

Location -Physiographic Divisions -Drainage -Climate-Soil -Natural vegetation.

#### **UNIT II**

Irrigation - Types - Multipurpose Projects - Agriculture: Food crops, cash crops, plantation, pulses and oil seeds.

#### **UNIT III**

Distribution of metallic and non-metallic minerals - Power resources: hydel, coal, petroleum, nuclear, solar and wind - Industries: iron and steel, cement, paper, cotton, chemical, engineering & electronics, automobile and software industries – major industrial regions.

#### **UNIT IV**

Population growth and distribution - Transport: surface (Road & Rail), air, water and pipelines – Major ports and harbours - Trade: types – principal imports and export items.

#### **UNIT V**

Tamil Nadu: Physiography – drainage – soil – climate – agriculture – minerals – Industries – population - transport - trade.

#### **Reference Books**

1. Khullar, D. R (2014) India: A Comprehensive Geography, Kalyani Publication, New Delhi.
2. Singh R.L. (1971) India a regional Geography, NGSI. Varanasi.
3. Mamoria C.B., Economic & commercial Geography of India, Kitab Mahal, Allahabad.
4. Sharma T.C. (1980) Economic & Commercial Geography of India, Vikas Publication.
5. Nag, P., and Sengupta, S., (1992), Geography of India, Concept of Publishing Company, New Delhi.

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## **CORE PRACTICAL IV**

### **MAP AND IMAGE INTERPRETATION (P)**

#### **Objective**

The practical course provides skills to the students to interpret and extract useful information from maps, toposheets, aerial photographs and satellite images.

#### **Unit I**

Cartographic appreciation of Survey of India, NATMO, Ordnance Survey and United States Geological Survey Maps - Layout and numbering of SOI Topographic sheets - Conventional signs and symbols.

#### **Unit II**

Interpretation of SOI toposheets – Physical details: relief, drainage, climate and vegetation - Cultural details: Land use / land cover, settlement, transport and communication.

#### **Unit III**

Interpretation of United States Geological Survey Maps: Relief, drainage, climate and vegetation - Interpretation of Ordnance Survey maps: Land use / land cover, settlement, transport and communication.

#### **Unit IV**

Aerial photographs – Marginal information - Stereo vision - Elements of visual interpretation – Interpretation of physical and cultural details.

#### **Unit V**

Satellite images –Marginal information of IRS satellites - Interpretation of physical and cultural details - Land use /land cover mapping - Comparative study of topographic maps and satellite images.

#### **Reference Books**

1. Saha, P. & Basu, P. (2014) Advanced Practical Geography, Books and Allied Ltd., Kolkatta.
2. Singh, R.L. & Singh, R. P. B. (2009) Elements of Practical Geography, Kalyani Publishers, New Delhi.
3. Gopal Singh (1998) Map Work and Practical Geography (4th Edition), Vikas Publishing House, Ahmedabad.
4. Rampal, K.K.(1999) Handbook of Aerial Photography and Interpretation, Concept Publishing Company, New Delhi.
5. Lillesend TM & Kiefer R.W. (2007) Remote Sensing and Image Interpretation, 5<sup>th</sup> Edition, John Wiley & Sons, New York.

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## **MAJOR BASED ELECTIVE II**

### **SETTLEMENT GEOGRAPHY**

#### **Objective**

The course provides the basic knowledge about different type of settlements and theories. After completion of the course the students will understand different characteristics of settlements.

#### **Unit I**

Nature and scope of settlement geography- origin of settlements- Definition of rural and urban settlements - classification of settlements (Hamlet, Village, Town, City, Metropolis, Megalopolis, Conurbation) - Rural-Urban Fringe.

#### **Unit II**

Site and Situation - functions of a settlement - settlement hierarchy - Central Place Theory - Rank-Size Rule - Primate City.

#### **Unit III**

Classification of rural settlement- Factors affecting rural settlements - Rural settlement pattern - Rural form - Rural house types - Size and density of rural settlements.

#### **Unit IV**

Urbanization – factors – patterns - Classification of urban settlement- functional classification of cities

#### **Unit V**

Urban morphology - Urban landuse models and theories (Burgess, Homer Hoyt, Harris and Ullman) – Urban Issues: problems of housing, slums, civic amenities (water and transport)

#### **Reference Books**

1. Sumita Ghosh (2015) Introduction to settlement Geography, Orient black swan private limited, Kolkata
2. Sing R.Y.(2010) Geography of Settlements, Rawat Publication, Jaipur
3. Goh Cheng Leong & Morgan, G.C. (1982) Human and Economic Geography, 2nd Edition, Oxford University Press, New Delhi.

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## **MAJOR BASED ELECTIVE II**

### **REGIONAL PLANNING**

#### **Objective**

The objective of the course is to understand the concept of region and to identify the issues relating to the development of the region through the process of spatial organization of various attributes and their inter relationship.

#### **Unit I**

Concepts and Principles: Frame work for regional planning - Approaches: Bottom up approach – Top down approach.

#### **Unit II**

Region and Regionalism: Classification of regions – Types of regions – Regional hierarchy – Resource regions – Problem regions: hilly region, tribal region, drought prone regions.

#### **Unit III**

Planning processes: sectoral, temporal and spatial dimensions - Short-term and long-term perspectives of planning – Multi-level planning - Indicators of development.

#### **Unit IV**

Regional population analysis - Population projection - Impact of population on regional Planning.

#### **Unit V**

Regional Planning in India and Tamil Nadu – Block level and District level planning – Panchayat Raj system.

#### **Reference Books**

1. Bhat, L.S (1973) Regional Planning in India, Statistical Publishing Society, Calcutta.
2. Hall, P. (1992) Urban and Regional Planning, Routledge, London.
3. Misra, R.P. (1971) Regional Planning: Concept, Techniques, Policies and Case Studies, University of Mysore, Mysore.
4. Misra, R.P. & Sundaram K. V. (1974) Regional Development Planning In India, Vikas Publishing House, Delhi.
5. Mishra, R.P. (1980) Multi-Level Planning Heritage Publishers, Delhi.

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