Parvatibai Chowgule College of Arts and Science

(Autonomous)

DEPARTMENT OF GEOGRAPHY

THREE YEAR B.A. DEGREE COURSE IN GEOGRAPHY

UPDATED ON 16TH MARCH 2020

COURSE STRUCTURE

SEMESTER	CORE		ELECTIVE			
I	GEG-I.C1: Introduction to Geography	GEG-I.C2: Fundamentals of Physical Geography				
II	GEG-II.C3: Basics of Human Geography	GEG-II.C4: Basics of Regional Geography				
III	GEG-III.C5: Cartography		GEG-E1: Socio-Economic Survey	GEG-E2: Field Survey in Physical Geography	GEG-E3: Participatory Rapid Appraisal Techniques	GEG-E4: Application of Computer in Geography
IV	GEG-IV.C6: Basics of Geomorphology		GEG-E5: Basics of Climatology	GEG-E6: Basics of Oceanography	GEG-E7: Regional Geography of India	GEG-E8: Regional Geography of USA
V	GEG-V.C7: Geomorphology: Landforms and Processes		GEG-E9: Geography of Climate Change	GEG-E10: Oceans: Issues and Challenges	GEG-E11: Geography of Rural Settlements	GEG-E12: Geography of Urban Settlements
VI	GEG-VI.C8: Geography of Population Growth		GEG-E13: Introduction to Regional Planning	GEG-E14: Fundamentals of Economic Geography	GEG-E15: Geography of Tourism	GEG-E16: Quantitative Techniques in Geography

SYLLABUS FOR AUTONOMOUS COURSES IN GEOGRAPHY
BACHELOR OF ARTS
SEMESTER I
UPDATED ON 16TH MARCH 2020

CORE
Course Title: Introduction to Geography (Theory)
Course Code: GEG-I.C1
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
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Prerequisite Courses: Nil

Course Objectives:
1. To acquaint the students with distinctiveness of Geography as a field of learning.
2. The philosophy of the subject is to be taught in order to develop a keen interest in the subject and to pursue it for higher studies.

Course outcomes: At the end of this course, students will be able to:
CO1: Understand fundamental concepts and dichotomies in geography
CO2: Analyze the interrelationships among fundamental concepts of geography
CO3: Acquire Basic cartographical skills such as basic elements of map and map reading, area measurements, time calculation
CO4: Differentiate and evaluate different domains of geography

Unit No.	Course Content	No. of hours	Marks
I	**Introduction of Geography** Definition, Meaning, nature and scope of geography; Major divisions of geography Major themes in Geography – location, region, process, spatial interaction and time.	15	25
II	**Introduction to Geosphere: I** **Atmosphere:** Meaning & Definitions-Composition& Structure of Atmosphere, Elements of Weather & Climate and their inter-relation. **Biosphere & Nanosphere** Major Natural regions of world	15	25
III	**Introduction to Geosphere: II** **Lithosphere:** Evolution of Earth, Geological Time scale. Orders of Relief (I, II, III), oceans and continents, classification of mountains, plateau and plains **Hydrosphere**: Hydrological Cycle Spatial distribution of water on earth.	15	25
		45	75

References:

Mandatory:

1. Goh Cheng Leong (2003): Certificate Physical and Human Geography, Oxford university press, New Delhi

Supplementary:

1. Dikshit R.D (2004): The Arts, Science of Geography, Integrated Readings Prentice Hall of India, New Delhi
2. Lal. D. S. (2007): Climatology, Pushtak Mahal, Allahabad
3. Das Gupta and Kapoor (2013): Principles of Physical Geography, S. Chand & Company Pvt. Ltd.
4. Singh Savindra (2005): Environmental Geography, Prayag Pustak Bhavan, Allahabad

Web-based:

1. https://player.uacdn.net/lesson-raw/7B40WVPQTFRB0H1UF10H/pdf/7647790894.pdf
2. https://scied.ucar.edu/atmosphere-layers
3. https://d43fweuh3sg51.cloudfront.net/media/assets/wgbh/tdc02/tdc02_doc_biomesummary/tdc02_doc_biomesummary.pdf
4. https://www.researchgate.net/publication/225491377_The_early_evolution_of_the_planet_earth_and_the_origin_of_life
5. https://www.nap.edu/resource/12161/origin_and_evolution_of_earth_final.pdf
6. https://www.researchgate.net/publication/315125743_THE_HYDROLOGIC_CYCLE

CORE
Course Title: Measurement Systems in Geography (Practical)
Course Code: GEG-I.C1
Marks: 25
Credits: 01
Duration: 15 sessions of 2 hours each
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Unit	Title	Practical sessions	Marks
I	1. Scales and its types: a. Verbal Statement. b. Representative Fraction. 2. Linear scale- a. Simple and comparative- b. time and distance 3. Identification of location and extension based on latitude and longitudes. 4. Grid reference system. 5. Finding directions. 6. Calculation of time based on longitude 7. Calculation of area by square method	10	15
II	8. Preparation of map – Title, Scale, Legend, Direction, Signs and symbols, lettering and colour scheme.	05	05
III	Journal		5
		15	25

References:
Mandatory:
1. Misra, R.P. and Ramesh, A., (2005): Fundamentals of Cartography, Concept Pub. Co., New Delhi

Supplementary:
1. Campbell, J.(2004) Introductory Cartography, Prentice Hall, Inc Englewood
2. Monkhouse, I.J. and Wilkinson, H.R., (2009): Maps and Diagram, B.I. Publication, New Delhi
3. R. P Mishra. (2014) Fundamentals of Cartography, Concept Pub. Co., New Delhi
4. Gopal Singh. (2014), : Map Work and Practical Geography, 4th Edition, Sterling Book House Mumbai

Web-based:
1. http://groundwater.fullerton.edu/Maps,_Scale,_GIS_and_GPS/Guide_to_Map_Scale.html
2. https://www.timeanddate.com/geography/longitude-latitude.html
3. https://www.youtube.com/watch?v=ei5FAinKXoY
4. https://www.mathopenref.com/squarearea.html
5. http://www.fao.org/economic/the-statistics-division-ess/world-census-of-agriculture/conducting-of-agricultural-censuses-and-surveys/chapter-5-cartographic-preparation/en/

CORE
Course Title: Fundamentals of Physical Geography (Theory)
Course Code: GEG-I.C2
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objectives:
1. The course aims to introduce fundamental concepts of physical geography.
2. The course focuses of various spheres of the earth and their related concepts.

Course Outcomes: At the end of this course, students will be able to:
CO1: Understand fundamentals of physical geography
CO2: Apply techniques to represent different relief features
CO3: Interpret the characteristics and associate with other relief features
CO4: Analyze and interpret climate data

Unit No.	Course Content	No. of hours	Marks
I	**Concept and Nature**: Introduction to physical geography Recent developments in physical geography. **Layers of the Earth**: Lithospheric system: Interior of the earth. Layering of the earth- Mechanical layering and chemical layering. Weathering and mass movement, Rocks and its types. Soil- definition and profile.	15	25
II	**Basic concepts of climatology**: Definition and scope of climatology Insolation, factors affecting Insolation and Heat budget. Temperature, atmospheric pressure, wind, and humidity	15	25
III	**Introduction to oceanography**- Definition, Development of oceanography as a discipline, Significance and scope of oceanography	15	25
		45	75

References:

Mandatory:

1. Bloom, Arthur L., 2008: Geomorphology – A Systematic Analysis of Late Cenozoic Landforms, Prentice Hall, Engle Wood Cliff, New Jersey.
2. Dayal, P. (2nd edition) 2006: A Textbook of Geomorphology, Shukla Book Depot, Patna
3. Strahler, A.N., 2005: Physical Geography, 3rd Ed., Wiley Publications
4. Singh, S. 2005: Physical Geography, Prayag Pustak Bhawan, Allahabad
5. Lal, D.S , 2004: Oceanography, Prayag Pustak Bhavan, Allahabad

Supplementary:

1. Ahmed, E., 2005: Geomorphology, Kalyani Publishers, New Delhi
2. Sharma, V.K., 2006: Geomorphology, Earth Surface, Process and forms, Tata McGraw Hill, New York
3. Thornbury, W.D., 1969: Principles of Geomorphology, 2nd Ed., Wiley International Edition, Wiley Eastern Reprint, 2004
4. Wooldridge, S.W. and Morgan, R.S., 2008: The Physical Basis of Geography, Longman (First published in 1937)
5. Worcestor, P.G., 2005: A Textbook of Geomorphology, Van Nostrand, 2nd Ed., East West Edition, New Delhi.
6. Chorley, Richard J., 2002: Spatial Analysis in Geomorphology, Harper and Row Publishers, New York, London.
7. Sharma, H.S. (ed), 2002: Perspective in Geomorphology, Vol. I & IV, Concept, New Delhi.
8. Sharma, V.K., 2006: Geomorphology, Earth Surface Processes and Forms, Tata Mc. Graw Hill, New Delhi.
9. Sparks, B.W., 2000: Geomorphology, Longman, London, 2nd edition.

Web-based:

1. https://www.nationalgeographic.org/media/earths-interior/
2. https://www.nationalgeographic.org/encyclopedia/rock-cycle/
3. http://www.geo.hunter.cuny.edu/~fbuon/GEOL_231/Lectures/Weathering%20and%20Mass%20Wasting%20Part%202.pdf
4. http://ncert.nic.in/textbook/pdf/kegy209.pdf
5. https://www.ukessays.com/essays/geography/history-significance-oceanography-9589.php

CORE
Course Title: Fundamentals of Physical Geography (Practical)
Course Code: GEG-I.C2
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
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Unit	Title	Practical Sessions	Marks
I	1. Methods of Representation of Relief features a. Spot Heights, b. Bench Marks. c. Triangulation mark 2. Contours diagrams for slopes with cross sections- gentle slope, steep slope, concave and convex slope, 3. Contours diagrams for hills, plateaus, cliff 4. Contours diagrams for V-shaped valley, waterfall, rapids, river terraces 5. Profile Drawing from contour diagram. a. Serial b. Superimposed c. composite	10	15
II	6. Calculation of mean, average, range of temperature. 7. Calculation of lapse rate and Relative Humidity.	5	05
III	Journal	15	05

References:
Mandatory:
1. Chorley, Richard. J. (ed.), 2009: Water, Earth and Man, Methuen & Co., London
2. King, C.A.M., 2006: Techniques in Geomorphology, Edward Arnold, London
3. Monkhouse, F.J. and Wilkinson, H.R., 2009: Maps and Diagrams, B.I. Publications Pvt. Ltd., New Delhi
4. Singh, R.L. and Singh Rana P.B., 2008, Elements of Practical Geography, Kalyani Publishers, New Delhi

Supplementary:
1. Goudie, Andrew, et al. (eds), 2001: Geomorphological Technique, George Allen & Unwin, London
2. Gregory, K.J. and Walling, D.E., 2003: Drainage Basin – Form and Process, Edward Arnold, London
3. Leopold, L.B, Wolman, M.G. and Miller, J.P., 2004: Fluvial Processes in Geomorphology, Freeman, San Francisco
4. Misra, R.P. and Ramesh, A., 2009: Fundamentals of Cartography, Concept Publishing Co., New Delhi

Web-based:
1. http://www.brainkart.com/article/Methods-of-Representing-Relief-Features_33844/
2. https://www.slideshare.net/gauravlath1997/contour-diagrams
3. https://geo.libretexts.org/Bookshelves/Ancillary_Materials/Laboratory/Book%3A_Laboratory_Manual_For_Introductory_Geology_(Deline%2C_Harris_and_Tefend)/03%3A_Topographic_Maps/3.6%3A_Drawing_Contour_Lines_and_Topographic_Profiles
4. https://sciencing.com/calculate-mean-annual-temperature-7236109.html
5. https://eesc.columbia.edu/courses/ees/climate/lectures/atm_phys.html

SYLLABUS FOR AUTONOMOUS COURSES IN GEOGRAPHY
BACHELOR OF ARTS
SEMESTER II
UPDATED ON 16TH MARCH 2020

CORE
Course Title: Basics of Human Geography (Theory)
Course Code: GEG-II.C3
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objectives:
1. The course provides the basic conceptual framework of Human Geography.
2. It focuses on cultivating basic knowledge through understanding and analysis of the fundamental concepts in Human geography.

Courses Outcomes: At the end of this course, students will be able to:
CO1: Understanding of fundamental concepts of Human Geography
CO2: Understand and analyze human related issues in societies
CO3: Develop an understanding of basic quantitative techniques used in Human geography
CO4: Collect, process and analyze socio economic data
CO5: Visually illustrate population data

Unit	Topic	No. of hours	Marks
I	**Concept and Nature:** Meaning, Scope and Development of Human Geography. Basic principles-Principle of Activity or Change, Principle of Terrestrial Unity or whole. Approaches in human geography (humanistic, scientific, welfare and behavioral)	15	25
II	**Society and Culture** Evolution of man (Australopithecus, Homo Erectus, Homo sapiens. Man's spread over the earth during the Pleistocene). Culture- meaning and components. Language and religion. (Classification, distribution, issues and challenges.) Contemporary social problems: Gender disparity and related issues Ethnicity and the related issues. (Case study of India).	15	25
III	**Indicators of Development:** L.D.C. and M.D.C.-social, economic and demographic. (Distribution and Density. Concepts of under population, over population, age and gender composition. Fertility, mortality, migration, Ageing population.) Demographic transition.	15	25
		45	75

Note: The course should focus on basic conceptual aspects.

References:

Mandatory:

1. Hussain, M. (2004) *Human Geography*. Rawat Publication. New Delhi.
2. H.J De Blij, Alexander B. Murphy, Erin H. Fouberg (2007) *Human Geography: People, Place and Culture.* John Wiley and sons. USA.

Supplementary:

1. Panigrahi P.K. (2011) *Human Geography-Landscape of Human Activities*. Murari Lala and sons. New Delhi.
2. Sharma Y.K. (2007) *Human Geography*. Lakshmi Narain Agrawal, Agra.
3. Rubenstein J M (2010) *Contemporary Human Geography*. PHI learning Pvt., New Delhi.
4. Chandna, R.C. (2006) *Geography of Population*. Kalyani Publishers. New Delhi
5. Hagget, P. (2002) *Geography: A Modern Synthesis*. Harper & Row, New York
6. De Blij, H.J., Human Geography, Culture, Society and Space, John Wiley, New York, 2006
7. Fellman, J.L. Human Geography-Landscapes of Human Activities, Brown and Bench man, Pub. U.S.A. 2007.
8. Arun Kumar Sharma, 2012: Principles of Human Geography, Rastogi Publications, Meerut

Web-based:

1. https://researchguides.dartmouth.edu/human_geography
2. https://freegeobook.files.wordpress.com/2009/01/0761942637.pdf
3. https://www.britannica.com/science/human-evolution
4. https://ourworldindata.org/economic-inequality-by-gender
5. https://pages.uwc.edu/keith.montgomery/Demotrans/demtran.htm

CORE
Course Title: Basics of Human Geography (Practical)
Course Code: GEG-II.C3
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
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Unit.	Title	Practical sessions	Marks
I	Calculation and interpretation of: 1. Fertility measures: Crude Birth Rate, General Fertility Rate 2. Mortality measures: Crude Death Rate, Infant Mortality Rate. 3. Age data Analysis: Age and gender composition 4. Construction of Population Pyramid	8	10
II	5. Literacy measures: Crude Literacy Rate. Gross Enrolment Ratio. 6. Work Participation Ratio. 7. Per capita income 8. GDP	7	10
III	Journal and viva		5
		15	25

References:
Mandatory:
1. Bose, Ashish et. al., 2004: Population in India's Development, Vikas Publishing House, New Delhi
2. Chandna, R.C. Geography of Population: Concept, Determinants and Patterns, Kalyani Publishers, New York 2000.

Supplementary:
1. Bogue, D. J., 2001: Principles in Demography, John Wiley, New York
2. Census of India, 2001, India: A State Profile
3. Crook, Nigel, 2007, Principles of Population and Development. Pergmon Press, New York.
4. Daugherty, Helen Gin, Kenneth C.W. Kammeryir (2008) An Introduction to Population (Second Edition). The Guilford Press, New York, London
5. Mitra, Asok, 2008, India's Population. Aspects of quality and Control Vol. I & II. Abhinar Publication. New Delhi.
6. Srinivsan, K. and M. Vlassoff, 2001. Population Development Nexus in India: Challenges for the New Millennium. Tata McGraw Hill, New Delhi.
7. Srinivasan, K. Basic Demographic Techniques and Applications Sage Publications, New Delhi 2008.
8. UNDP, 2000: Human Development Report Oxford University Press, Oxford.
9. United Nations, 2004, Methods for Projections of Urban and Rural Populations. No. VIII, New York.
10. Woods, R., 2009: Population Analysis in Geography, Longman, London.
11. Sawant & Athavale, 2005: Population Geography, Mehta Publishing House, Pune.

Web-based:
1. https://ourworldindata.org/fertility-rate
2. https://www.who.int/data/gho/indicator-metadata-registry/imr-details/3130
3. https://censusindia.gov.in/census_and_you/gender_composition.aspx
4. https://www.britannica.com/topic/population-pyramid
5. https://censusindia.gov.in/Census_Data_2001/India_at_glance/workpart.aspx

CORE
Course Title: Basics of Regional Geography (Theory)
Course Code: GEG-II.C4
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objectives:
1. The course aims to develop a basic understanding of the regions and recognizing the significance of geography in shaping region.
2. It helps students to appreciate regional unique dimensions of regions.

Course Outcomes: At the end of this course, students will be able to:
CO1: Understand Fundamental concepts of regional geography
CO2: Apply techniques of regionalization
CO3: Differentiate among different regions spatial organization and areal variation in human activities.
CO4: Develop an understanding of basic quantitative techniques used in regional geography.
CO5: Develop the skill of calculation of different indicators of development.
CO6: Diagrammatically represent and interpret regional data
CO7: Represent and interpret characteristics of various regions.

Unit	Title	No. of hours	Marks
I	Concept of Region in Geography: Definition and characteristic The Regional Approach - area, region, space Factors of regionalization ii) Methods of Regionalization- methods of delineation of region, types of regions,	15	25
II	i.) Foundations of Region - Ecological, Economic, Social and Cultural Dimensions ii.) Federalism-center – state relationships. iii.) Core – Periphery iv.) Hierarchy of regions, v.) Regional Consciousness and Identity. vi.) The Regional issues. (Two case studies)	15	25
III	Study of Regional Organization: Their evolution, functions and inter-linkages. Globalization and the New Territorial Order.	15	25
		45	75

References:

Mandatory:

1. Singh, R.L., 2001 (ed): India – A Regional Geography, National Geographical Society, India
2. Paul Claval, 2003, *An Introduction to Regional Geography*, , Rawat Publication, Jaipur & Delhi

Supplementary:

1. Cole, J. 2000: *A Geography of the World's Major Regions*, Routledge, London
2. Israel, S. Johnson, D.I. and Wood, D., 2005: World Geography Today
3. Jackson, R.H. and Hudman, L.E, 2007: Regional Geography: Issues for Today.
4. Wheeler, J.H. Jr. and Kostbade, J.T., (1990): World Regional Geography, Holt Rinshort and Winston, Inc
5. Holier, G.P., 2008: Regional Development in Michael Pacione (ed), *The Geography of the 3rd World: Progress & Prospects*, Rutledge, London, New York.
6. Jackson, R.H. and Hudmar, L.E. 2004: Regional Geography: Issues for Today
7. Paul Claval (2008) An Introduction to Regional Geography, Wiley-Blackwell, ISBN 155786733X.

Web-based:

1. https://shodhganga.inflibnet.ac.in/bitstream/10603/39734/12/12_chapter%202.pdf
2. https://issuu.com/rengasamy/docs/regional_planning_part_ii_types_of_regions___regio
3. https://www.insightsonindia.com/2014/11/13/regionalism-dimensions-meaning-issues/
4. https://link.springer.com/chapter/10.1007/978-3-319-18971-0_7
5. https://www.longdom.org/open-access/from-globalization-to-regionalism-and-interregionalism-a-study-ofsaarc-2332-0761-1000279.pdf
6. https://institutdelors.eu/wp-content/uploads/2018/01/regionalism_globalgovernance_t.behr-j.jokela_ne_july2011_01.pdf

CORE
Course Title: Basics of Regional Geography (Practical)
Course Code: GEG-II.C4
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
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Unit	Topic	Practical Sessions	Marks
I	Methods of Regional Demarcation: 1. Demarcation of agricultural regions (crop combination and diversification) 2. Gravity model, 3. Breaking point Analysis, 4. Sphere of Urban Influence 5. Population potential surfaces	08	10
II	6. Network Analysis 7. Nearest Neighbor index, 8. Centro graphic analysis	07	10
III	Journal and viva		05
		15	25

References:
Mandatory:
1. Hegget Peter, Cliff A.D. et. al. (2001) Locational Methods, Locational Analysis in Human Geography, Vol. II Arnold – Heinemann Pub. (India)

Supplementary:
1. Hegget Peter, Cliff A.D. et. al. (2000) Locational Models, Locational Analysis in Human Geography. Vol. I Arnold – Heinemann Pub. (India)
2. Chandna R.C. (2003): Regional Planning: A Comprehensive Text, Kalyani Publishers, Ludhiana

Web-based:
1. https://www.thoughtco.com/reillys-law-of-retail-gravitation-1433438
2. https://www.geographyforyou.com/2019/09/maximum-positive-deviation-crop.html
3. http://www.fao.org/3/x6906e/x6906e06.htm
4. https://shodhganga.inflibnet.ac.in/bitstream/10603/10376/9/09_chapter%201.pdf
5. https://karnataka.pscnotes.com/main-notes/paper-iii-general-studies-ii/urban-spheres-of-influence-and-rural-urban-fringe/
6. https://transportgeography.org/?page_id=623
7. https://www.geoib.com/nearest-neighbor-index.html
8. https://rashidfaridi.com/2017/09/14/centrographic-techniques/
9. http://www.geodz.com/eng/d/population-potential/population-potential.htm

SYLLABUS FOR AUTONOMOUS COURSES IN GEOGRAPHY
BACHELOR OF ARTS
SEMESTER III
UPDATED ON 16TH MARCH 2020

CORE
Course Title: Cartography (Theory)
Course Code: GEG-III.C5
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objectives:
1. The course aims to provide basic cartographic concepts.
2. This forms the basis for advanced cartographic techniques.

Course Outcomes: At the end of this course, students will be able to:
CO1: Understand the basic cartographic concepts
CO2: Develop cartographic skills taught in the practical component of this course.
CO3: Understand map projections construction, properties, merits – demerits and their applications
CO4: Understand projections by using maps
CO5: Develop the skill to create basic map
CO6: Know the mapping organizations in India

Unit	Topic	No. of hours	Marks
I	**Introduction**: Cartography, Focuses of cartography,(geometric, presentation, symbols, layout, etc.)Scope of Cartography. Growth of modern cartography. Spatial data – Data nature and data sources. **Mapping Organizations in India** – Survey of India, NATMO,NRSC~~A~~, Lettering and color scheme in SOI Maps **Map symbolization**: Mapping qualitative data and quantitative data-using point, line and area symbols. Maps- Types- physical and cultural maps, SOI Conventional signs and symbols and Colour.	20	30
II	**Map projections**: General Principles: Classification, properties and choice of map projections. Merits and demerits. Cylindrical, conical and zenithal projections	15	25
III	**Introduction to topographical map~~s~~:** Indexing. Marginal information. Scales and gridding.	10	20
		45	75

References

Mandatory:

1. Sarkar, Ashis (2000), Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
2. Monkhouse, F.J. & Wilkinson, H.R., (2009): Maps & Diagrams, B.I. Publications, New Delhi

Supplementary:

1. Bygott, J. (2007), An Introduction to Map work and Practical Geography,
2. Campbell, J.(2004): Introductory Cartography, Prentice Hall Inc., Englewood Cliff
3. Misra, R.P. and Ramesh, A., (2005): Fundamentals of Cartography, Concept Publishing Company, New Delhi
4. Robinson, A.H., et al: (2000)Elements of Cartography, John Wiley & Sons, New York ,
5. Raisz, E. (2004) Principles of Cartography, McGraw Hills, London ,
6. Singh, R. & Singh, R.: (2001) Map Work & Practical Geography, Central Book Depot, Allahabad.
7. Talukder, S., (2008): Introduction to Map Projections, Eastern Book House, Guwahati

Web-based:

1. https://www.edx.org/learn/cartography
2. https://www.coursera.org/courses?query=cartography
3. https://www.esri.com/training/catalog/596e584bb826875993ba4ebf/cartography./
4. https://www.udemy.com/topic/cartography/
5. https://www.classcentral.com/tag/cartography

CORE
Course Title: Cartography (Practical)
Course Code: GEG-III.C5
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
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Unit	Topic	Practical Sessions	Marks
I	Cylindrical Projections. Mercators Equidistance and Equal area Sinusoidal Projection and Mollweide's Projection	5	07
II	Conical Projections: One standard parallel. 2 standard parallel and Equal area(Bonne's Projection)	5	07
III	Zenithal Projections: Steorographic, Gnomonic , Orthographic	5	06
IV	Journal		05
		15	25

References
Mandatory:
1. Sarkar, Ashis (2000), Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
2. Monkhouse, F.J. & Wilkinson, H.R., (2009): Maps & Diagrams, B.I. Publications, New Delhi

Supplementary:
1. Bygott, J. (2007), An Introduction to Map work and Practical Geography,
2. Campbell, J.(2004): Introductory Cartography, Prentice Hall Inc., Englewood Cliff
3. Elhance, D.N.,(2002): Fundamentals of Statistics, Kitab Mahal, Allahabad
4. Gregory, S., (2003): Statistical Methods and Geographers, Longman, London
5. Hammond, R. and McCullagh, P. (2005): Quantitative Techniques in Geography, Clarendon Press, Oxford Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
6. Misra, R.P. and Ramesh, A., (2005): Fundamentals of Cartography, Concept Publishing Company, New Delhi
7. Mahmood, A., (2009): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
8. Robinson, A.H., et al: (2000)Elements of Cartography, John Wiley & Sons, New York ,
9. Raisz, E. (2004) Principles of Cartography, McGraw Hills, London ,
10. Singh, R. & Singh, R.: (2001)Map Work & Practical Geography, Central Book Depot, Allahabad.
11. Talukder, S., (2008): Introduction to Map Projections, Eastern Book House, Guwahati

Web-based:
1. http://ncert.nic.in/textbook/pdf/kegy304.pdf
2. https://www.geographyrealm.com/types-map-projections/
3. https://www.axismaps.com/guide/general/map-projections/
4. https://www.e-education.psu.edu/geog160/node/1918
5. https://web.csulb.edu/~rodrigue/geog140/lectures/projections.html
6. https://gisgeography.com/map-projections/

ELECTIVE
Course Title: Socio Economic Survey in Human Geography (Theory)
Course Code: GEG-E1
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objectives:
1. The primary objective is to provide basic methodology in field based socio-economic survey.

Course Outcomes:
At the end of this course, students will be able to:
CO1: Understand basic concepts of Socio Economic Surveying
CO2: Develop the skill of questionnaire formulation
CO3: Independently collect data from field using online apps and manually
CO4: Process, analyze, graphically represent and interpret data

Unit	Topic	No. of hours	Marks
I	Socio-economic survey in Geography: Meaning and significance indicators of development Socio-economic indicators, Sources of data, Types of data – Social, Economic, Geographical and Demographic	15	25
II	Types of surveys: Historical, Social, Descriptive and Action Surveys. Sampling Techniques. Preparation of Questionnaire, Interview, Group Discussion, Planning Strategy and Implementing of Survey.	15	25
III	Based on the objective of the Survey. Pilot Survey, Planning for Main Survey, Pre-Survey and Post Survey Work. E- Survey-Introduction to e-surveying and various sites. Safety Measures, Responsibility Sharing and Plan of Action. (a) Academic report – Literature Survey, structure, layout, reporting language (b) Comprehensive report representation – photos, sketch, maps, etc.	15	25
		45	75

References:

Mandatory:

1. Bagavathi, V. & Pillai R. S. N. (2005) Statistical Theory and Practice, S. Chand Publication, New Delhi.
2. Kothari, C.R., (2004) Research Methodology- Methods and techniques, New Age International (P) Limited, New Delhi.

Supplementary:

1. Gosh, B N (2007) Scientific Methods and Social Research, sterling Publishers Private Limited.
2. Mahmood, A., (2009): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
3. Saravanavel, P.,(2014), Research Methodology, Kitab Mahal, New Delhi
4. Singh, Gopal., (2010) Map Work and Practical Geography, Vikas Publishing House, New Delhi

Web-based:

1. https://www.um.es/empafish/files/Deliverable%209.pdf
2. https://openjicareport.jica.go.jp/pdf/11810140_03.pdf
3. https://www.jk.gov.in/jammukashmir/sites/default/files/Socio%20Economic%20Survey%20of%20Village.pdf
4. https://stattrek.com/survey-research/sampling-methods.aspx
5. https://medcraveonline.com/BBIJ/sampling-and-sampling-methods.html
6. https://courses.lumenlearning.com/suny-hccc-research-methods/chapter/chapter-9-survey-research/
7. http://www.tools4dev.org/resources/how-to-pretest-and-pilot-a-survey-questionnaire/

ELECTIVE
Course Title: Socio Economic Survey in Human Geography (Practical)
Course Code: GEG-E1
Marks: 25
Credits: 1
Duration: 15 Sessions of 2 hours each
==========

Unit	Topic	Practical Sessions	Marks
I	Questionnaire Formulation Field Book Preparation Literature Survey (Cataloging)	04	05
II	Conducting on-field survey (Village, Market, Ward) E- surveying – web mapping	08	05
III	Data analysis using MS Excel and compilation	03	05
IV	Report		10
		15	25

References:
Mandatory:

1. Bagavathi, V. & Pillai R. S. N. (2005) Statistical Theory and Practice, S. Chand Publication, New Delhi.
2. Kothari, C.R., (2004) Research Methodology- Methods and techniques, New Age International (P) Limited, New Delhi.

Supplementary:

1. Gosh, B. N., (2007), Scientific Methods and Social Research, Sterling Publishers Private Limited., New Delhi
2. Mahmood, A., (2009): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
3. Saravanavel, P.,(2014), Research Methodology, Kitab Mahal, New Delhi
4. Singh, Gopal, (2010) Map Work and Practical Geography, Vikas Publishing House, New Delhi

Web-based:

1. https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1025&context=geographyfacpub
2. https://shodhganga.inflibnet.ac.in/bitstream/10603/168485/15/15_chapter%207.pdf
3. https://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC1491888&blobtype=pdf
4. https://www.analyticsvidhya.com/blog/2020/04/excel-tips-tricks-data-analysis/
5. https://www.excel-easy.com/data-analysis.html
6. https://people.umass.edu/evagold/excel.html
7. http://data-analysis-reports.blogspot.com/2020/03/945108-anilgiri702-do-data-analysis-forecasting-compilation-reports-with-ms-excel.html

ELECTIVE
Course Title: Field Survey in Physical Geography (Theory)
Course Code: GEG- E2
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objectives:
1. The primary aim of this Course to introduce various surveying instrument used in Physical Geography.
2. Students will learn the operation and the application of the instruments and methods of surveying.

Course Outcomes: At the end of this course, students will be able to:
CO1: Understand functions and applications of dumpy level, Plane table and Global Positioning Systems (GPS) in field based studies.
CO2: Independently handle survey instruments and prepare maps and field reports.
CO3: Have hands-on training on using survey instruments in final year project work
CO4: Detect the change in the spatial extension of area, locality and region.

Unit.	Topic	No. of hours	Marks
I	Significance and Methods of Survey; Classification of Surveying; Fundamentals of Plane Table and Prismatic Compass Survey: a) Radiation Method b) Intersection Method Pre survey work: Safety Measures, Field Book Preparation Post field survey work Report Writing.	15	25
II	Dumpy level surveying : meaning, functioning elements, applications and Methods: Rise-fall and Collimation method Pre survey and Post survey tasks.	15	25
III	GPS survey: Meaning, Space Segment, Ground Segment and GPS Receivers, Applications.	15	25
		45	75

References:
Mandatory:
1. Khullar, D.R. (2007), Essentials of Practical Geography, New Academic Publishing
2. Monkhouse, I.J. and Wilkinson, H.R. (2009), Maps and Diagram, B.I. Publication, New Delhi
3. Sarkar, Ashis (2000), Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata

Supplementary:

1. Campbell, J. (2004), Introductory Cartography, Prentice Hall, Inc Englewood
2. Co.,Jalandher
3. Misra, R.P. and Ramesh, A. (2005), Fundamentals of Cartography, Concept Pub. Co., New Delhi
4. Singh, R.L. and Singh Rana P.B.(2008), Elements of Practical Geography, Kalyani Publishers, New Delhi

Web-based:

1. https://explorable.com/types-of-survey
2. https://www.slideshare.net/gauravhtandon1/plane-table-survey-27614680
3. https://libguides.usc.edu/writingguide/fieldreport
4. https://theconstructor.org/surveying/dumpy-level-surveying-components-procedure-advantages/20456/
5. https://www.gps.gov/systems/gps/

ELECTIVE
Course Title: Field Survey in Physical Geography (Practical)
Course Code: GEG-E2
Marks: 25
Credits:1
Duration: 15 Sessions of 2 hours each
==========

Unit	Topic	Practical sessions	Marks
I	Plane table and Prismatic Compass Survey: a) Radiation Method :1 Exercises b) Intersection Method: 1 Exercises	07	10
II	Dumpy Level Survey: Rise-Fall GPS Survey: Use of GPS in Mapping And Location Observation Of Slope, River and Coastal Morphology on Field	08	10
III	Journal /Field report		5
		15	25

References:
Mandatory:

1. Khullar, D.R. (2007), Essentials of Practical Geography, New Academic Publishing
2. Monkhouse, I.J. and Wilkinson, H.R. (2009), Maps and Diagram, B.I. Publication, New Delhi
3. Sarkar, Ashis (2000), Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata

Supplementary:

1. Campbell J. (2004), Introductory Cartography, Printice Hall, Inc Englewood
2. Misra, R.P. and Ramesh, A. (2005), Fundamentals of Cartography, Concept Pub. Co., New Delhi
3. Singh, R.L. and Singh Rana P.B.(2008), Elements of Practical Geography, Kalyani Publishers, New Delhi

Web-based:

1. https://explorable.com/types-of-survey
2. https://www.slideshare.net/gauravhtandon1/plane-table-survey-27614680
3. https://libguides.usc.edu/writingguide/fieldreport
4. https://theconstructor.org/surveying/dumpy-level-surveying-components-procedure-advantages/20456/
5. https://www.gps.gov/systems/gps/

ELECTIVE
Course Title: Participatory Rapid Appraisal Techniques (Theory)
Course Code: GEG-E3
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objectives:
1. To introduce the basics of Participatory Rapid Appraisal techniques in geographical studies.
2. This will facilitate students in their field work and further research.

Course Outcomes: At the end of this course, students will be able to:
CO1: Be familiar with the basic concepts of PRA techniques
CO2: Develop the skill to prepare questionnaires and Schedules for different PRA techniques.
CO3: Understand the application of PRA techniques in geographical studies
CO4: Accurately analyze and interpret the data collected using PRA techniques

Unit	Topic	No. of hours	Marks
I	PRA :Meaning Nature and Scope, evolution **Principles of Participatory Rapid Appraisal** -Offsetting biases, Rapid and Progressive Learning, Reversal of Roles, Focused Learning, Seeking for Diversity and Differences, Crosscheck by using different methods (Triangulation).	15	15
II	**Mapping Models**: Creating a Community Inventory Focus Group Discussions Matrix Ranking and Scoring Wealth Ranking Trend Analysis Timeline Venn diagrams Traditional management systems and local-resource collections Folklore, Songs, Poetry, And Dance	20	25
III	**PRA techniques:** Transect walks and guided field walks**,** Daily-activity profiles**,** Semi structured interviewing**,** Field report writing: techniques and structure.	10	35
		45	75

References:

Mandatory:

1. Mukherjee A, Chambers R,(2004), Participatory Rural Appraisal: Methods and Applications in Rural Planning, Concept Publishing Company, New Delhi
2. Narayanaswamy, N., (2008), Participatory Rural Appraisal: Principles, Methods and Application, SAGE publications, New Delhi

Supplementary:

1. Bartle Phil, (2003),Methods of Participatory Appraisal, CSMED
2. Mikkelsen Britha, (2005), Methods for Development Work and Research: A New Guide for Practitioners, SAGE publications, New Delhi
3. Pokharel Ridish, Balla Mohan, (2003), A Process for Participatory Rural Appraisal, Institute of Forestry, Pokhar.

Web-based:

1. http://www.fao.org/3/i2495e/i2495e06.pdf
2. https://www.participatorymethods.org/resource/participatory-rapid-appraisal-community-development-training-manual-based-experiences
3. https://www.nccmt.ca/knowledge-repositories/search/289
4. https://www.crs.org/sites/default/files/tools-research/rapid-rural-appraisal-and-participatory-rural-appraisal.pdf
5. https://getd.libs.uga.edu/pdfs/wolfgang_stephanie_l_201205_mla.pdf

ELECTIVE
Course Title: Participatory Rapid Appraisal Techniques (Practical)
Course Code: GEG-E3
Marks: 25
Credits: 1
Duration: 15 Sessions of 2 hours each
==========

Unit	Topic	Practical Sessions	Marks
I	Exercise 1. Preparing a field Plan Exercise 2. Preparation of time scale. Exercise 3. Social mapping chart. Exercise 4.Semi-structured interview. Exercise 5. Timeline	07	10
II	Exercise 6. Time chart Exercise 7. Wealth ranking. Exercise 8. Venn diagram preparation. Exercise 9. Daily activity profiling.	08	10
III	Journal / Viva voce		05
		15	25

Note: This practical is based on field work

References:
Mandatory:

1. Mukherjee A, Chambers R,(2004), Participatory Rural Appraisal: Methods and Applications in Rural Planning, Concept Publishing Company, New Delhi
2. Narayanasamy. N, (2008), Participatory Rural Appraisal: Principles, Methods and Application, SAGE publications New Delhi

Supplementary:

1. Bartle Phil, (2003),Methods of Participatory Appraisal, CSMED
2. Mikkelsen Britha, (2005), Methods for Development Work and Research: A New Guide for Practitioners, SAGE publications, New Delhi
3. Pokharel Ridish, Balla Mohan, (2003), A Process for Participatory Rural Appraisal, Institute of Forestry, Pokhar.

Web-based:

1. http://www.fao.org/3/i2495e/i2495e06.pdf
2. https://www.participatorymethods.org/resource/participatory-rapid-appraisal-community-development-training-manual-based-experiences
3. https://www.nccmt.ca/knowledge-repositories/search/289
4. https://www.crs.org/sites/default/files/tools-research/rapid-rural-appraisal-and-participatory-rural-appraisal.pdf
5. https://getd.libs.uga.edu/pdfs/wolfgang_stephanie_l_201205_mla.pdf

ELECTIVE
Course Title: Application of Computer in Geography (Theory)
Course Code: GEG-E4
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objectives:
1. The course in application of computer in geography will enable student to use basic computer skills in geography to represent dimensional cartograms and data models.

Course Outcomes: At the end of this course, students will be able to:
CO1: Understand functioning of different e-sources of geographical data
CO2: Understand and its binary coding
CO3: Prepare cartograms that can be used for various geographical applications using computers
CO4: Represent geo-data using excel
CO5: Identify and apply appropriate cartograms for given data set

Unit	Topic	No. of hours	Marks
I	Application of computers in cartography, E sources of geographical data. (e.g. Census ,Bhuvan, IMD, Easy tide, India Water Portal, portal of rural data)	15	15
II	Representation of Geographic data using computer: Cartograms of one, two and three dimensions, (Graphical Representation-Histogram, Bar Graphs, Line Graphs, Multiple Line Graphs, Scatter Diagrams, Pie Diagrams, Frequency polygon, Frequency curve, Cumulative frequency curve or Ogive	20	25
III	Geographic data and GIS: Fundamentals of raster and vector data models.(sources of data)	10	35
		45	75

References:
Mandatory:
1. Wilbanks. J, Thomas. (2004). Geography and Technology. Pg: 3-16. 10.1007/978-1-4020-2353-8_1.

Supplementary:

1. Brunn Stanley, Cutter L. Susan, Harrington. J.W,(2004), Geography and Technology, Published by Kluwer Academic Publishers, P.O.Box 17, 3300 AA Dordrecht, The Netherlands.
2. Demers N. Michael, (2008), Fundamentals of Geographic Information systems, Published by Wiley India Pvt Ltd
3. Khullar, D.R. (2007), Essentials of Practical Geography, New Academic Publishing Co.,Jalandher
4. Robinson, A.H., et al: (2000)Elements of Cartography, John Wiley & Sons, New York
5. Sarkar Ashis, (2015), Practical Geography: A systematic Approach, Published by Orient Blackswan Pvt. Ltd., Telangana
6. Sui, Daniel & Morrill, Richard. (2004). Chapter 5 Computers And Geography: From Automated Geography To Digital Earth. 123-123. 10.1007/978-1-4020-2353-8_5.

Web-based:

1. https://www.loc.gov/rr/geogmap/guide/gmilldma.html
2. https://censusindia.gov.in/
3. http://mowr.gov.in/sites/default/files/AR2015-16_2.pdf
4. https://mausam.imd.gov.in/
5. http://eagri.org/eagri50/STAM101/pdf/lec03.pdf
6. https://www.easybiologyclass.com/graphical-representation-of-data-frequency-polygon-frequency-curve-ogive-and-pie-diagram/
7. http://www.geo.umass.edu/courses/geo494a/Chapter2_GIS_Fundamentals.pdf

ELECTIVE
Course Title: Application of Computer in Geography (Practical)
Course Code: GEG-E4
Marks: 25
Credits: 1
Duration: 15 Sessions of 2 hours each
==========

Unit	Topic	Practical Sessions	Marks
I	Use of computer application in thematic mapping – Map Layouts, choropleth, dot density Cartograms of one, two and three dimensions, One dimensional plot: The Dot plot, Box and Whisker Plot	08	06
II	Two and Three dimensional: Histogram, Frequency Polygon, Cumulative frequency curve or Ogive (Graphical Representation-Histogram, Bar Graphs, Line Graphs, Multiple Line Graphs, Pie Diagrams, Frequency polygon, Frequency curve, Cumulative frequency curve or Ogive with the help of computers) Representation of point, line and polygon	09	14
IV	Journal		05
		15	25

References:
Mandatory:

1. Wilbanks. J, Thomas. (2004). Geography and Technology. Pg: 3-16. 10.1007/978-1-4020-2353-8_1.

Supplementary:

1. Brunn Stanley, Cutter L. Susan, Harrington. J.W,(2004), Geography and Technology, Published by Kluwer Academic Publishers, P.O.Box 17, 3300 AA Dordrecht, The Netherlands.
2. Demers N. Michael, (2008), Fundamentals of Geographic Information systems, Published by Wiley India Pvt Ltd
3. Khullar.D.R. (2007), Essentials of Practical Geography, New Academic Publishing Co.,Jalandher
4. Robinson, A.H., et al: (2000)Elements of Cartography, John Wiley & Sons, New York
5. Sarkar Ashis, (2015), Practical Geography: A systematic Approach, Published by Orient BlackswanPvt.Ltd., Telangana
6. Sui, Daniel & Morrill, Richard. (2004). Chapter 5 Computers And Geography: From Automated Geography To Digital Earth. 123-123. 10.1007/978-1-4020-2353-8_5.

Web Based:

1. https://www.researchgate.net/publication/280112742_CHAPTER_5_COMPUTERS_AND_GEOGRAPHY_FROM_AUTOMATED_GEOGRAPHY_TO_DIGITAL_EARTH
2. https://www.gislounge.com/whats-in-a-map/
3. https://datavizcatalogue.com/methods/choropleth.html
4. https://www.axismaps.com/guide/univariate/dot-density/
5. http://egyankosh.ac.in/bitstream/123456789/20422/1/Unit-14.pdf
6. https://www.statisticshowto.com/ogive-graph/
7. https://www.easybiologyclass.com/graphical-representation-of-data-frequency-polygon-frequency-curve-ogive-and-pie-diagram/
8. https://www.mathsisfun.com/data/data-graph.php
9. https://www.igismap.com/gis-tutorial-basic-spatial-elements-points-lines-and-polygons/

SYLLABUS FOR AUTONOMOUS COURSES IN GEOGRAPHY
BACHELOR OF ARTS
SEMESTER IV
UPDATED ON 16TH MARCH 2020

SEMESTER IV
CORE
Course Title: Basics of Geomorphology (Theory)
Course Code: GEG-IV.C6
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course objectives:
1. To provide the basic concepts, theories and application in geomorphology

Course outcomes:
At the end of this course, students will be able to:
CO1: Understand basic concepts of Geomorphology.
CO2: Understand theories of continental drifts, Isostacy sea floor spreading,
CO3: Analyze different types of slopes using contouring method.
CO4: Identify and distinguish geomorphic processes and landforms created by winds, underground water.
CO5: Analyze river basin based on morphometric parameters.
Identify and independently interpret relief features and their associations on SOI toposheets.

Unit	Topic	No. of hours	Marks
I	• Fundamental concepts in geomorphology- detail study of all nine fundamental concepts and their relevance in understanding Geomorphological processes.	15	25
II	Selected Theories in geomorphology • Tetrahedral theory. • Plate tectonics and mountain building. • Theories of slope development. • Slope- their stability and failures. • Drainage systems and patterns.	15	25
III	Agents, processes and landforms: erosional, transportation and depositional. • Fluvial landforms • Glacial landforms	15	25
		45	75

References:

Mandatory:

1. Singh, S. 2005 : Geomorphology, PrayagPustakBhawan, Allahabad
2. Thornbury, W.D., 2001: Principles of Geomorphology, 2nd Ed., Wiley International Edition, Wiley Eastern Reprint,
3. Sharma, H.S. (ed), 2002: Perspective in Geomorphology, Vol. I & IV, Concept, New Delhi
4. Wooldridge, S.W. and Morgan, R.S., 2000: The Physical Basis of Geography, Longman.
5. Sparks, B.W., 2000: Geomorphology, Longman, London

Supplementary:

1. Ahmed, E., 2005: Geomorphology, Kalyani Publishers, New Delhi
2. Bloom, Arthur L., 2004: Geomorphology – A Systematic Analysis of Late Cenozoic Landforms, Prentice Hall, Engle Wood Cliff, N.J
3. Chorley, Richard J., 2002: Spatial Analysis in Geomorphology, Harper and Row Publishers, New York, London.
4. Dayal, P. (2nd edition) 2006: A Textbook of Geomorphology, Shukla Book Depot, Patna
5. Sharma, V.K., 2006: Geomorphology, Earth Surface Processes and Forms, Tata Mc. Graw Hill, New Delhi.
6. Sharma, V.K., 2006: Geomorphology, Earth Surface, Process and forms, Tata McGraw Hill, New York
7. Strahler, A.N. 2006: Physical Geography, 3rd Ed., Wiley
8. Worcestor, P.G., 2005: A Textbook of Geomorphology, Van Nostrand, 2nd Ed., East West Edition, New Delhi.

Web-Based:

1. http://shaileshchaure.com/Notes/GEOMCON.pdf
2. https://www.kean.edu/~csmart/Observing/05.%20Plate%20tectonics.pdf
3. https://www.researchgate.net/publication/272510857_Main_Drainage_Systems
4. https://www.researchgate.net/publication/309630899_FLUVIAL_PROCESSES_AND_LANDFORMS
5. https://people.wou.edu/~taylors/g322/glacial.pdf

CORE
Course Title: Basics of Geomorphology (Practical)
Course Code: GEG-IV.C6
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
==========

Unit	Title	Practical sessions	Marks
I	Slope analysis – Aspect map and Isotan map Identification of river patterns from SOI toposheet and Satellite Image	6	10
II	Preparation and interpretationof drainage map using SOI toposheet (at least one for humid/tropical and arid/dry region)	9	10
III	Journal and Viva		05
		15	25

References:
Mandatory:

1. Sarkar, Ashis, 2000: Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
2. Kale V.S. and Gupta Avijit (2000): Introduction to Geomorphology, Orient Black Swan Publications
3. Monkhouse, F.J. and Wilkinson, H.R., 2009: Maps and Diagrams, B.I. Publications Pvt. Ltd., New Delhi
4. Singh, R.L. and Singh Rana P.B., 2008, Elements of Practical Geography, Kalyani Publishers, New Delhi
5. Singh, Savindra (2006): Geomorphology, PrayagPustakBhavan, Allahabad

Supplementary

1. Chorley, Richard. J. (ed.), 2001: Water, Earth and Man, Methuen & Co., London
2. Goudie, Andrew, et al. (eds),2001: Geomorphological Technique, George Allen & Unwin, London
3. Gregory, K.J. and Walling, D.E., 2003: Drainage Basin – Form and Process, Edward Arnold, London
4. King, C.A.M., 2006: Techniques in Geomorphology, Edward Arnold, London
5. Leopold, L.B, Wolman, M.G. and Miller, J.P., 2004: Fluvial Processes in Geomorphology, Freeman, San Francisco
6. Misra, R.P. and Ramesh, A., 2009: Fundamentals of Cartography, Concept Publishing Co., New Delhi
7. Strahler, A.N., 2000: Physical Geography, 3rd Ed., Wiley.

Web-Based:

1. https://shodhganga.inflibnet.ac.in/bitstream/10603/160201/3/chapter%204.pdf
2. http://www.wvca.us/envirothon/pdf/Drainage%20Patterns.pdf
3. https://www.soilandwater.nyc/uploads/7/7/6/5/7765286/watershed_delineation.pdf
4. https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/manage/?cid=stelprdb1046651
5. http://www.ncert.nic.in/ncerts/l/iess103.pdf

Semester IV
ELECTIVE
Course Title: Basics of Climatology (Theory)
Course Code: GEG-E5
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========

Prerequisite Courses: Nil

Course Objective:
1. To introduce key concepts of climatology in general and Indian monsoon in details

Course Outcomes:
At the end of this course, students will be able to:
CO1: Understand and analyze the concepts in atmospheric stability.
CO2: Distinguish different mechanisms of Indian monsoon.
CO3: Associate the indicators of changing climate to the day to day weather dynamics.
CO4: Apply climatic concepts in issues related to agriculture, health and disasters.
CO5: Represent weather phenomenon using weather station model.
CO6: Have hands on experience of handling weather instruments, calibrating, reading, interpretation and forecasting.

Unit	Title	No. of hours	Marks
I	**Fundamental of Atmospheric circulation** Atmospheric Stability. Cloud Development and Stability. Clouds seeding and artificial rain, Atmospheric Disturbance, Air Masses and its types. Fronts and types. Tropical and temperate Cyclones. El-nino and la-nina.	15	25
II	**Indian Climatology:** **Pre monsoon:** Cyclonic storms, frequency, cyclone genesis, intensity, landfall and associated weather.	15	25
III	**Indian Climatology:** **South West monsoon :** onset and advance of southwest monsoon, links to EI Nino/Southern Oscillation, Indian Ocean Dipole and Madden Julian Oscillation Index. **Post monsoon:** withdrawal of southwest monsoon, Northeast monsoon, cyclonic storms in the Indian seas, trends in cyclonic disturbances, western disturbances, Easterly waves..	15	25
		45	75

References:

Mandatory:

1. Lal, D.S., 2011: Climatology, ShardaPustakBhavan
2. Monkhouse, F.J., 1975 – Principles of Physical Geography , Hodder Murray Publishers
3. Barry R.G. and Chorley, R. J., 2009: Atmosphere, Weather and Climate, Routledge
4. Tikka - R.N., 1998 - Physical Geography. KedarNath Ram Nath, Meerut
5. Trewartha, G.T., 1968: Introduction to Climate, McGraw-Hill

Supplementary:

1. Bunnett R.B. , 1993: Physical geography in Diagrams, Longman
2. Critchfield, H.J, 1998 : General Climatology, Prentice-Hall
3. P. Birot, 1966: General Physical Geography, Longman, Green & Co Strahler, A.H., 1983: Modern Physical Geography, John Wiley and Sons
4. Strahler A. M. and Strahler A.H., 1983: Elements of Physical Geography, John Wiley and Sons
5. Stringer, E.T., 1972: Foundation of Climatology: An Introduction to Physical, Dynamic, Synoptic, and Geographical Climatology, W.H. Freeman & Co. Ltd.

Web-Based:

1. https://www.ess.uci.edu/~yu/class/ess5/Chapter.9.airmass.all.pdf
2. https://www.weather.gov/media/owlie/2018_ENSO.pdf
3. http://www.wmo.int/pages/prog/wcp/wcasp/documents/JN142122_WMO1145_EN_web.pdf
4. http://www.fao.org/3/ca3758en/ca3758en.pdf
5. https://www.ias.ac.in/article/fulltext/reso/012/05/0004-0020

ELECTIVE
Course Title: Basics of Climatology (Practical)
Course Code: GEG-E5
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
==========

Unit	Title	Practical sessions	Marks
I	Representation and interpretation of weather phenomena using isolines Isohyets map Isotherm map Isobars Wind rose and their types Evapotranspiration(Annual variability) Preparation of weather Station Model.	05	8
II	• Study of weather symbols and IMD weather charts. Interpretation of IMD weather charts (at least 1 map of three seasons) • Visit to IMD for hands- on- training: handling of weather instruments, taking readings, temperature, pressure, sunshine chart interpretation and forecasting	2 + 8=10	12
III	Journal		5
		15	25

References
Mandatory:

1. Misra, R.P. and Ramesh, A., 2009: Fundamentals of Cartography, Concept Publishing Co., New Delhi
2. Singh, R.L., 2000: Elements of Practical Geography, Kalyani Publishers, New Delhi
3. Singh, R ; Singh L.R., 2001: Mapworks in Practical Geography,Central book Depot, Allahabad
4. Bygot, J., 2001: An Introduction to Map Work and Practical Geography
5. Campbell, J., 2004: Introductory Cartography, Prentice Hall, Inc Englewood

Supplementary

1. Chorley, Richard. J. (ed.), 2001: Water, Earth and Man, Methuen & Co., London
2. Monkhouse, F.J. and Wilkinson, H.R., 2009: Maps and Diagrams, B.I. Publications Pvt. Ltd., New Delhi
3. Raisz, E., 2005: General Cartography, McGraw Hills Co., London
4. Robinson, A.H., et al, 2003: Elements of Cartography, John Wiley and Sons, New York

Web-Based:

1. https://www.ntschools.org/cms/lib/NY19000908/Centricity/Domain/112/Drawing%20Isotherms.Isobars.pdf
2. http://www.huskersk12.org/vimages/shared/vnews/stories/521b6ab5ac56b/isobarandisothermmaplab.pdf
3. https://www.lakeheadu.ca/sites/default/files/uploads/53/outlines/2017-18/GEOG2331/2331_Manual_W18_forStudents.pdf
4. http://ncert.nic.in/textbook/pdf/kegy308.pdf
5. https://www.imdtvm.gov.in/index.php?option=com_content&task=view&id=21&Itemid=35

Semester IV
ELECTIVE
Course Title: Basics of Oceanography (Theory)
Course Code: GEG- E6
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objective:
1. To provide the basic conceptual framework of oceanography, its dynamism and the contemporary issues associated with Oceans.

Course outcomes:
At the end of this course, students will be able to:
CO1: Develop an understanding of the ocean bottom relief features of Indian, Atlantic and Pacific ocean
CO2: Understand and test the physical properties of ocean water using scientific instruments.
CO3: Understanding the types of marine deposition and its relation with man
CO4: Read and interpret bathymetric and hydrographic charts
CO5: Prepare bathymetric chart using interpolation method.

Unit	Title	No. of hours	Marks
I	**Comparative Study of bottom relief of Indian, Atlantic and pacific ocean** **Properties of ocean water**- Salinity, Temperature, Density and relation among them.	15	25
II	**Dynamics of ocean water**: -Waves, Tides, and surface currents of Indian and Atlantic Ocean.	15	25
III	**Marine Deposits:** Classification and sources **Man and marine resources**	15	25
		45	75

References
Mandatory:
1. K. Siddhartha Oceanography, 2000: A Brief Introduction, Kislaya publishers
2. Defant, A., 2001: Physical Oceanography, Vol. I, Pergamon Press
3. Gautam, Alka. 2004. Climatology and Oceanography. Rastogi Publication-Meerut, UP.
4. Sharma R. C. and Vatal M., 2003: Oceanography for Geographers, Chaitanya Publishing House, Allahabad.
5. Lal, D.S., 2003: Oceanography, ShardaPustakBhavan, Allahabad

Supplementary:

1. Singh, S. 2005 : Geomorphology, PrayagPustakBhawan, Allahabad
2. Ahmed, E., 2005: Geomorphology, Kalyani Publishers, New Delhi
3. Bloom, Arthur L., 2004: Geomorphology – A Systematic Analysis of Late Cenozoic Landforms, Prentice Hall, Engle Wood Cliff, N.J
4. Kale V.S. and Gupta Avijit (2000): Introduction to Geomorphology, Orient Black Swan Publications
5. Strahler, A.N., 2000: Physical Geography, 3rd Ed., Wiley

Web-Based:

1. https://sweethaven02.com/PDF_Lifelong/Oceanography.pdf
2. http://msi.ttu.ee/~elken/IntroOcean_Tomczak.pdf
3. http://www.geographynotes.com/oceanography/bottom-reliefs-of-various-oceans-oceanography-geography/2592
4. https://www.mt-oceanography.info/regoc/pdffiles/colour/single/14P-Atlantic.pdf
5. https://www.researchgate.net/publication/315191645_Marine_Sediments

ELECTIVE
Course Title: Basics of Oceanography (Practical)
Course Code: GEG- E6
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
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Unit	Title	Practical sessions	Marks
I	Signs and symbols in hydrographic charts and reading of hydrographic chart. Reading of Bathymetric chart Plotting of Bathymetric and Hypsometric curves.	10	15
II	Water analysis – salinity, PH, Conductivity and TDS	05	05
III	Journal and Viva		05
		15	25

References:
Mandatory:
1. Misra, R.P. and Ramesh, A., 2005: Fundamentals of Cartography, Concept Pub. Co., New Delhi
2. Singh, R.L., 2000: Elements of Practical Geography, Kalyani Publishers, New Delhi
3. Singh, R ; Singh L.R., 2001: Mapworks in Practical Geography,Central book Depot, Allahabad
4. Sarkar, Ashis, 2000: Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
5. Khullar, D. R. (2000: Essentials Of Practical Geography, New Academic Publishing Co., Jalandar

Supplementary
1. Bygot, J., 2001: An Introduction to Map Work and Practical Geography
2. Campbell, J., 2004: Introductory Cartography, Prentice Hall, Inc Englewood
3. Jackson, R.H. and Hudmar, L.E., 2001: Regional Geography: Issues for today
4. Monkhouse, I.J. and Wilkinson, H.R., 2001: Maps and Diagram, B.I. Publication, New Delhi
5. Raisz, E., 2005: General Cartography, McGraw Hills Co., London
6. Robinson, A.H., et al, 2003: Elements of Cartography, John Wiley and Sons, New York

Web-based:
1. https://www.researchgate.net/publication/281410339_Bathymetry_History_of_Seafloor_Mapping
2. http://aquaticcommons.org/14702/4/nycmsp_ch2_bathymetry.pdf
3. https://pubs.usgs.gov/of/2015/1180/ofr20151180.pdf
4. http://www.scpscience.com/Company%20Literature/Pdf/Catalogs/wateranalysis%20vol2(Oct%207).pdf
5. https://www.who.int/water_sanitation_health/dwq/2edvol3d.pdf

SEMESTER IV
ELECTIVE
Course Title: Regional Geography of India (Theory)
Course Code: GEG-E7
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========

Pre-requisite Courses: Nil

Course Objectives:
1. The course is aimed at presenting an integrated and empirically based profile of India and Goa

Course Outcomes:
At the end of this course, students will be able to:
CO1: Have an understanding of the inter linkages and interaction between physical aspects and resource base of India and Goa
CO2: Learn the skills of choosing appropriate cartographic techniques to quantitatively represent regional aspects of India and Goa
CO3: Infer the processes that operate through space and time in different regions of India and Goa
CO4: Understand the recent development and changes in context of India.

Unit	Title	No. of hours	Marks
I	India: Location, Geology, Morphological divisions, Drainage System, Soil, Forest	15	25
II	Resource development: Indian Agriculture: New Technology Water Resource Development: multipurpose projects inland waterways plan. Industrialization : IT's, SEZ Trade and Transport: Golden Quadrangle, Konkan Railway	15	25
III	Goa: Location: Absolute and relative. Physiographic divisions, soils, vegetation, mineral resources, Mining and water resources, population, Tourism, Industrialization Trade, Transport and Communication	15	25
		45	75

References:
Mandatory:
1. Deshpande C.D, (1992): India-A Regional Interpretation Northern Book Centre, New Delhi
2. Khullar, D.R. (2011): "Indian-A Comprehensive Geography" Kalyani Publishers, New Delhi
3. Tiwari, R.C. (2006): "Geography of India" PrayagPustakBhavan, Allahabad.
4. Singh, R.L.(ed) (1971): India: A Regional Geography. National Geographical Society. India, Varnasi
5. Alvares Claude (2002), Fish, Curry and Rice: A Source Book on Goa, its Ecology and Lifestyle, The Goa Foundation, Goa

Supplementary:

1. Routray, J.K. (1993): Geography of Regional Disparity Asian Institute of technology, Bangkok
2. Learmonth, A.T.A. et.al (ed): Man and Land of South Asia Concept, New Delhi.
3. Shafi, M, (2000): Geography of South Asia, McMillan & Co., Calcutta
4. Spate, O.H.K. and Learmonth, A.T.A. (1967): India and Pakistan - Land, People and Economy Methuen & Co., London,
5. Valdiya, K.S. (1998): Dynamic Himalaya, University Press, Hyderabad
6. Valdiya, K.S. (2004): Geology, Environment and Society, University Press, Hyderabad
7. Wadia, D.N. (1967): Geology of India, McMillan & Co., London,

Web-Based:

1. https://www.researchgate.net/publication/39728980_Agricultural_Development_in_India_since_Independence_A_Study_on_Progress_Performance_and_Determinants
2. http://ncert.nic.in/ncerts/l/iess102.pdf
3. https://www.researchgate.net/publication/316644891_Physiographic_Divisions_of_India
4. https://www.researchgate.net/publication/271829967_India's_Golden_Quadrilateral_A
5. https://www.researchgate.net/publication/283721221_WESTERN_GHATS_OF_GOA_STATE_A_GEOGRAPHICAL_DIAGNOSIS

ELECTIVE
Course Title: Regional Geography of India (Practical)
Course Code: GEG-E7
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
==========

Unit	Title	Practical sessions	Marks
I	Cartographic representation and mapping of physiographic division, Soil, Forest, Climatic Division- examples of India and Goa	8	10
II	Calculation and graphical representation ~~of~~ by usingGoa's census data: Age-sex ratio. Child-women ratio, Dependency ratio, Infant mortality rate, Age specific mortality ,Population growth rate, Population projection(as per 2001 and 2011 census) Preparation of choroschematic map of Goa	7	10
III	Journal and Viva		05
		15	25

References:
Mandatory:
1. Singh, R.L.: Elements of Practical Geography, Kalyani Publishers, New Delhi ,2000
2. Khullar, D.R. (2011): "Indian-A Comprehensive Geography" Kalyani Publishers, New Delhi
3. Monkhouse, I.J. and Wilkinson, H.R., 2001: Maps and Diagram, B.I. Publication, New Delhi
4. Singh, R ; Singh L.R., Mapworks in Practical Geography,Central book Depot, Allahabad,2001
5. Singh Gopal (2000), Map Work and Practical Geography, 4th Revised Edition, Vikas Publishing House Pvt. Ltd., New Delhi

Supplementary:
1. Bygot, J.: An Introduction to Map Work and Practical Geography,2001
2. Campbell, J., 2004: Introductory Cartography, Prentice Hall, Inc Englewood
3. Misra, R.P. and Ramesh, A., 2005: Fundamentals of Cartography, Concept Pub. Co., New Delhi
4. Raisz, E.: General Cartography, McGraw Hills Co., London ,2005
5. Robinson, A.H., et al,: Elements of Cartography, John Wiley and Sons, New York,2003
6. Jackson, R.H. and Hudmar, L.E.: Regional Geography: Issues for today ,2001
7. Tiwari, R.C. (2006): "Geography of India" PrayagPustakBhavan, Allahabad.
8. Valdiya, K.S. (2004): Geology, Environment and Society, University Press, Hyderabad

Web-Based:
1. http://ncert.nic.in/ncerts/l/kegy106.pdf
2. http://fsi.nic.in/isfr-2015/isfr-2015-important-characteristics-of-indian-forest-types.pdf
3. http://censusindia.gov.in/Data_Products/Library/Provisional_Population_Total_link/PDF_Links/chapter6.pdf
4. https://www.demographic-research.org/volumes/vol4/8/4-8.pdf
5. https://www.ifo.de/DocDL/dicereport3-03-database-6.pdf

ELECTIVE
Course Title: Regional Geography of USA (Theory)
Course Code: GEG-E8
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil
Course Objectives:

1. This introductory Course is intended to acquaint the students with a systematic view of physical and socio-economic dimensions of the United States of America.

Course Outcomes:
At the end of this course, students will be able to:
CO1: Understand the physical landscape of USA.
CO2: Understand the Socio-Cultural, Demographic, Political and Economic aspects of USA
CO3: Infer the processes that operate through space and time in different regions of USA
CO4: Understand the recent transnational developments in USA and their impacts on India

Unit	Title	No. of hours	Marks
I	Physical landscape: Tectonics, Mountains, Plateaus, Plains, Deserts, Islands. Climate Region. Rivers & Water Regimes. Wetlands. Plants Animal Ecology and Ecoregions. Human imprints on landscape and Environmental: management and conservation.	15	25
II	Socio-Cultural landscape: Demographic, Cultural, Political and Economic aspects. Socializing Economic Space: Culture and the Firm, Gender Economies, Ethnic Economies. Social issues and experience of living in America.	15	25
III	Determinants of Economic landscape: Incorporations and Government Transnational Corporations, Labour Power, Consumption Dynamic Economic Space: Economic Growth and development, commodity chain technology and agglomeration.	15	25
		45	75

References:
Mandatory:

1. Antony Orme (2002), Physical Geography of North America. Oxford University Press, New York

Supplementary:

1. Chris Mayda (2013), A Regional Geography of the United States and Canada: Toward a Sustainable Theme. Rowman and litlefields Pub. UK
2. John C. Hudson (2002), Across This Land: A Regional Geography of the United States and Canada. The John Hopkins University Press, USA
3. Neil Coe, Philip Kelly& Henry W. C. Yeung (2007), Economic Geography: A Contemporary Introduction (2ed), Blackwell Publishing, USA

Web-based:

1. https://www.infoplease.com/encyclopedia/places/north-america/us/united-states/physical-geography
2. https://study.com/academy/lesson/overview-of-the-geography-of-the-united-states.html
3. https://www.worldtravelguide.net/guides/north-america/united-states-of-america/weather-climate-geography/
4. https://www.nps.gov/subjects/culturallandscapes/understand-cl.htm
5. https://www.canyonspringshighschool.org/ourpages/auto/2015/11/6/54748438/Geography%206.pdf
6. https://www.nederland.k12.tx.us/view/2819.pdf

ELECTIVE
Course Title: Regional Geography of USA (Practical)
Course Code: GEG-E8
Marks: 25
Credits: 01
Duration: 15 sessions of 2 hours each
==========

Unit	Title	Practical Sessions	Marks
I	Interpretation of USGS topographical Map, Indexing, Signs and symbols, colour schemes, Scales and Grids, projections Physical aspects: Relief, Drainage, Vegetation,	8	10
II	Interpretation of USGS topographical maps Cultural Aspects: Settlement, transport network, Landuse	7	10
III	Journal		5
		15	25

References:

Mandatory:

1. Nelson Petrie (2007) Analysis and Interpretation of Topographical Maps (Rev) (Getting Ahead in Social Science). Orient BlackSwan,
2. Terry Marsh (2007) Pathfinder Map Reading Skills: An Introduction to Map Reading and Basic Navigation (Pathfinder Guide) Jarrold Publishing.

Supplementary:

1. D.S. Bhattacharya and T.C. Bagchi (1973) Elements of Geological Map Reading and Interpretation (with exercises). Orient Black Swan
2. Geological Survey and Rand McNally (2003) National Geographic Arkansas: Seamless USGS Topographic Maps. National Geographic Society.
3. Gopal Singh Map Work and Practical Geography, 4/e. Vikas Publishing.
4. Jenny Marie Johnson (2003):Geographic Information, How to Find It, How to Use It. Greenwood Press, London.
5. John B. Rowland (1955) FEATURES SHOWN ON TOPOGRAPHIC MAPS. GEOLOGICAL SURVEY CIRCULAR 368, USGS, Washington DC.
6. Ordinance Survey (2002) Reading, Wokingham and Pangbourne (Explorer M… (Map), Ordinance Survey Southampton, UK.
7. Pentagon U.S. Military (1999) Map Reading and Land Navigation. Pentagon US.
8. Rachel Hewitt (2013) Map of a Nation: A Biography Of The Ordnance Survey. Granta Book.
9. Richard DE Bruin and W. Hilton Johnson American Educational 100 Topographic Maps. American Packing & Gasket
10. Robert B. Matkin (1992)Map Reading. Dalesman Publishing Co Ltd

Web-based:

1. Data Source: http://www.map-reading.com/
2. https://pubs.usgs.gov/gip/TopographicMapSymbols/topomapsymbols.pdf
3. https://www.usgs.gov/science-support/osqi/yes/resources-teachers/interpreting-topographic-maps-and-aerial-photographs
4. https://www.honolulu.hawaii.edu/instruct/natsci/geology/brill2/TopoMaps.pdf
5. https://pubs.usgs.gov/circ/1955/0368/report.pdf
6. https://mapasyst.extension.org/topography-and-understanding-topographic-maps/
7. https://www.honolulu.hawaii.edu/instruct/natsci/geology/brill2/TopoMaps.pdf

SYLLABUS FOR AUTONOMOUS COURSES IN GEOGRAPHY
BACHELOR OF ARTS
SEMESTER V
UPDATED ON 16TH MARCH 2020

CORE
Course Title: Geomorphology: Landforms and Processes (Theory)
Course Code: GEG-V.C7
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses:
Nil

Course objective:
1. To provide the basic concepts, theories and applications in geomorphology

Course outcomes:
At the end of this course, students will be able to:
CO1: Understand the nine fundamental concepts of Geomorphology.
CO2: Understand theories of plate tectonics, mountain building, drainage systems and patterns.
CO3: Identify and distinguish geomorphic processes and landforms created by rivers.
CO4: Identify and distinguish geomorphic processes and landforms created by glaciers.
CO5: Prepare Slope map using aspect map and isotan map.
CO6: Independently prepare a drainage map.

Unit	Topic	No. of hours	Marks
I	• Meaning, Nature, Scope and significance of geomorphology • Geological timescale. • Continental Drift Theory • Theory of Isostasy – Airy's& Pratt. • Concept of seafloor spreading.	15	25
II	• Vulcanicity and the related landforms • Cycle of erosion – Davis and Penck • Concept of rejuvenation.	15	25
III	• Geomorphic processes and landforms • Study of Aeolian processes and the resultant landforms-erosional, transportational and depositional. • Study of Karst processes and the resultant landforms-erosional, transportational and depositional.	15	25
		45	75

References:

Mandatory:

1. Singh, S. 2005 : Geomorphology, PrayagPustakBhawan, Allahabad
2. Thornbury, W.D., 2001: Principles of Geomorphology, 2nd Ed., Wiley International Edition, Wiley Eastern Reprint,
3. Sharma, H.S. (ed), 2002: Perspective in Geomorphology, Vol. I & IV, Concept, New Delhi
4. Wooldridge, S.W. and Morgan, R.S., 2000: The Physical Basis of Geography, Longman.
5. Sparks, B.W., 2000: Geomorphology, Longman, London

Supplementary:

1. Ahmed, E., 2005: Geomorphology, Kalyani Publishers, New Delhi
2. Bloom, Arthur L., 2004: Geomorphology – A Systematic Analysis of Late Cenozoic Landforms, Prentice Hall, Engle Wood Cliff, N.J
3. Chorley, Richard J., 2002: Spatial Analysis in Geomorphology, Harper and Row Publishers, New York, London.
4. Dayal, P. (2nd edition) 2006: A Textbook of Geomorphology, Shukla Book Depot, Patna
5. Sharma, V.K., 2006: Geomorphology, Earth Surface Processes and Forms, Tata Mc. Graw Hill, New Delhi.
6. Sharma, V.K., 2006: Geomorphology, Earth Surface, Process and forms, Tata McGraw Hill, New York
7. Strahler, A.N. 2006: Physical Geography, 3rd Ed., Wiley
8. Worcestor, P.G., 2005: A Textbook of Geomorphology, Van Nostrand, 2nd Ed., East West Edition, New Delhi.

Web-Based:

1. http://www.geo.hunter.cuny.edu/~fbuon/GEOL_231/Lectures/Intro%20Basic%20Concepts.pdf
2. https://courses.ess.washington.edu/ess-306/links/Goudie_Encyclopedia_of_Geomorphology.pdf
3. https://bgc.org.in/pdf/OPEN-EDUCATIONAL-RESOURCES/GEOGRAPHY/Cycle-of-erosion_%20UG_I_AI_1.pdf
4. https://www.slideshare.net/pramodgpramod/davis-cycle-of-erosion
5. https://www.researchgate.net/publication/314395551_Karst_Processes_and_Landforms

SEMESTER V
CORE
Course Title: Geomorphology: Landforms and Processes (Practical)
Course Code: GEG-V.C7
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
==========

Unit	Topic	Practical Sessions	Marks
I	River morphometry Calculation of linear properties of river. Calculation of Aerial properties of river. Calculation of Relief properties of river.	6	10
II	Interpretation of 42 SOI toposheets- physical aspect (relief, vegetation, river)	9	15
III	Journal	15	25

References:
Mandatory:
1. Sarkar, Ashis, 2000: Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
2. Kale V.S. and Gupta Avijit (2000): Introduction to Geomorphology, Orient Black Swan Publications
3. Monkhouse, F.J. and Wilkinson, H.R., 2009: Maps and Diagrams, B.I. Publications Pvt. Ltd., New Delhi
4. Singh, R.L. and Singh Rana P.B., 2008, Elements of Practical Geography, Kalyani Publishers, New Delhi
5. Singh, Savindra (2006): Geomorphology, PrayagPustakBhavan, Allahabad

Supplementary
1. Chorley, Richard. J. (ed.), 2001: Water, Earth and Man, Methuen & Co., London
2. Goudie, Andrew, et al. (eds),2001: Geomorphological Technique, George Allen & Unwin, London
3. Gregory, K.J. and Walling, D.E., 2003: Drainage Basin – Form and Process, Edward Arnold, London
4. King, C.A.M., 2006: Techniques in Geomorphology, Edward Arnold, London
5. Leopold, L.B, Wolman, M.G. and Miller, J.P., 2004: Fluvial Processes in Geomorphology, Freeman, San Francisco
6. Misra, R.P. and Ramesh, A., 2009: Fundamentals of Cartography, Concept Publishing Co., New Delhi
7. Strahler, A.N., 2000: Physical Geography, 3rd Ed., Wiley.

Web-Based:
1. https://www.researchgate.net/publication/235990109_Morphometric_analysis_of_Morar_River_Basin_Madhya_Pradesh_India_using_remote_sensing_and_GIS_techniques
2. https://www.tandfonline.com/doi/full/10.1080/24749508.2018.1563750
3. http://ncert.nic.in/ncerts/l/kegy305.pdf
4. https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/earthsciences/pdf/topo101/pdf/mapping_basics_e.pdf
5. https://www.wvgs.wvnet.edu/www/maps/topomapsymbols_MapX1B.pdf

Semester V
ELECTIVE
Course Title: Geography of Climate Change (Theory)
Course Code: GEG-E9
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objective:
1. To introduce key concepts of climatology in general and Indian monsoon in details.

Course outcomes:
At the end of this course, students will be able to:
CO1: Understand and analyze the concepts in urban climate.
CO2: Distinguish different mechanisms of city weather modifications.
CO3: Associate the indicators of changing climate to the day to day weather dynamics.
CO4: Apply climatic concepts in issues related to agriculture, health and disasters.
CO5: Understand the working of weather instruments
CO6: Set up, calibrate weather instruments, collect readings and interpret weather data

Unit	Title	No. of hours	Marks
I	Urban Climate – introduction, modification of atmospheric composition Modification of heat budget Modifications in city weather conditions	15	25
II	Changing climate – climate system Climate change detection Natural causes of climate change Human impact on global climate	15	25
III	Climate and its applications – agriculture, health and disaster reduction	15	25
		45	75

References:
Mandatory:
1. Lal, D.S., 2011: Climatology, ShardaPustakBhavan
2. Monkhouse, F.J., 1975 – Principles of Physical Geography , Hodder Murray Publishers
3. Barry R.G. and Chorley, R. J., 2009: Atmosphere, Weather and Climate, Routledge
4. Tikka - R.N., 1998 - Physical Geography. KedarNath Ram Nath, Meerut
5. Trewartha, G.T., 1968: Introduction to Climate, McGraw-Hill

Supplementary:

1. Bunnett R.B. , 1993: Physical geography in Diagrams, Longman
2. Critchfield, H.J, 1998 : General Climatology, Prentice-Hall
3. P. Birot, 1966: General Physical Geography, Longman, Green & Co Strahler, A.H., 1983: Modern Physical Geography, John Wiley and Sons
4. Strahler A. M. and Strahler A.H., 1983: Elements of Physical Geography, John Wiley and Sons
5. Stringer, E.T., 1972: Foundation of Climatology: An Introduction to Physical, Dynamic, Synoptic, and Geographical Climatology, W.H. Freeman & Co. Ltd.

Web-Based:

1. http://uccrn.org/files/2014/02/ARC3-Chapter-3.pdf
2. https://www.epa.gov/sites/production/files/2014-6/documents/basicscompendium.pdf
3. http://www.cengage.com/resource_uploads/downloads/0495555061_137181.pdf
4. https://unfccc.int/resource/docs/publications/impacts.pdf
5. http://dels.nas.edu/resources/static-assets/exec-office-other/climate-change-full.pdf

ELECTIVE
Course Title: Geography of Climate Change (Practical)
Course Code: GEG-E9
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
==========

Unit	Title	Practical sessions	Marks
I	Study of weather instruments – Barometer, Maximum & Minimum Thermometer, Wind Wane Collection and analysis of data from automatic weather station	05	8
II	Visit to IMD for hands-on training	10	12
III	Journal		5
		15	25

References
Mandatory:

1. Misra, R.P. and Ramesh, A., 2009: Fundamentals of Cartography, Concept Publishing Co., New Delhi
2. Singh, R.L., 2000: Elements of Practical Geography, Kalyani Publishers, New Delhi
3. Singh, R ; Singh L.R., 2001: Mapworks in Practical Geography,Central book Depot, Allahabad
4. Bygot, J., 2001: An Introduction to Map Work and Practical Geography
5. Campbell, J., 2004: Introductory Cartography, Prentice Hall, Inc Englewood

Supplementary

1. Chorley, Richard. J. (ed.), 2001: Water, Earth and Man, Methuen & Co., London
2. Monkhouse, F.J. and Wilkinson, H.R., 2009: Maps and Diagrams, B.I. Publications Pvt. Ltd., New Delhi
3. Raisz, E., 2005: General Cartography, McGraw Hills Co., London
4. Robinson, A.H., et al, 2003: Elements of Cartography, John Wiley and Sons, New York

Web-Based:

1. https://mausam.imd.gov.in/
2. http://ncert.nic.in/textbook/pdf/kegy308.pdf
3. https://www.indiawaterportal.org/
4. https://www.weather.gov/media/epz/mesonet/CWOP-WMO8.pdf
5. https://nvlpubs.nist.gov/nistpubs/jres/25/jresv25n2p133_A1b.pdf

Semester V
ELECTIVE
Course Title: Oceans: Issues and Challenges (Theory)
Course Code: GEG-E10
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each

==========

Prerequisite Courses: Nil

Course Objectives:

1. To provide the basic conceptual framework of oceanography, its dynamism and the contemporary issues associated with Oceans.

Course outcomes:

At the end of this course, students will be able to:

CO1: Understand causes, effects and remedial measures for issues related to ocean.
CO2: Understand causes and effects of sea level changes and global warming
CO3: Understand the concept of CRZ
CO4: Understand the concept of coral formation, distribution and threats

Unit	Title	No. of hours	Marks
I	**Issues related to oceans** Exclusive Economic Zone (EEZ) Case study of Indian and Atlantic ocean Sea level change Coastal regulation zone	15	25
II	Ocean acidification – causes, effects and remedies Ballast water Coral reefs	15	25
III	Global warming and oceans	15	25
		45	75

References

Mandatory:

1. K. Siddhartha Oceanography, 2000: A Brief Introduction, Kislaya publishers
2. Defant, A., 2001: Physical Oceanography, Vol. I, Pergamon Press
3. Gautam, Alka. 2004. Climatology and Oceanography. Rastogi Publication-Meerut, UP.
4. Sharma R. C. and Vatal M., 2003: Oceanography for Geographers, Chaitanya Publishing House, Allahabad.
5. Lal, D.S., 2003: Oceanography, ShardaPustakBhavan, Allahabad

Supplementary:

1. Singh, S. 2005 : Geomorphology, PrayagPustakBhawan, Allahabad
2. Ahmed, E., 2005: Geomorphology, Kalyani Publishers, New Delhi
3. Bloom, Arthur L., 2004: Geomorphology – A Systematic Analysis of Late Cenozoic Landforms, Prentice Hall, Engle Wood Cliff, N.J
4. Kale V.S. and Gupta Avijit (2000): Introduction to Geomorphology, Orient Black Swan Publications
5. Strahler, A.N., 2000: Physical Geography, 3rd Ed., Wiley

Web-Based:

1. https://pubs.usgs.gov/gip/7000049/report.pdf
2. https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter13_FINAL.pdf
3. http://curry.eas.gatech.edu/Courses/6140/ency/Chapter10/Ency_Oceans/Sea_Level_Change.pdf
4. http://keralaczma.gov.in/pdfs/Coastal_Zones_of_India.pdf
5. https://oceana.org/sites/default/files/reports/Ocean_Acidification_The_Untold_Stories.pdf

Semester V
ELECTIVE
Course Title: Oceans: Issues and Challenges (Practical)
Course Code: GEG-E10
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
==========

Unit	Title	Practical sessions	Marks
I	Demarcating CRZ (using SOI Toposheet) Bathymetric studies using Eco sounder	10	15
II	Lab work in NIO - sea water analysis Sea sediment analysis, Sea surface temperature	05	05
III	Journal and Viva		05
		15	25

References
Mandatory:

1. Misra, R.P. and Ramesh, A., 2005: Fundamentals of Cartography, Concept Pub. Co., New Delhi
2. Singh, R.L., 2000: Elements of Practical Geography, Kalyani Publishers, New Delhi
3. Singh, R ; Singh L.R., 2001: Mapworks in Practical Geography,Central book Depot, Allahabad
4. Sarkar, Ashis, 2000: Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
5. Khullar, D. R. (2000: Essentials Of Practical Geography, New Academic Publishing Co., Jalandar

Supplementary

1. Bygot, J., 2001: An Introduction to Map Work and Practical Geography
2. Campbell, J., 2004: Introductory Cartography, Prentice Hall, Inc Englewood
3. Jackson, R.H. and Hudmar, L.E., 2001: Regional Geography: Issues for today
4. Monkhouse, I.J. and Wilkinson, H.R., 2001: Maps and Diagram, B.I. Publication, New Delhi
5. Raisz, E., 2005: General Cartography, McGraw Hills Co., London
6. Robinson, A.H., et al, 2003: Elements of Cartography, John Wiley and Sons, New York

Web-based:

1. https://teara.govt.nz/files/d11801enz.pdf
2. http://www.mpcb.gov.in/sites/default/files/water-quality/reports/LSD-NEERI-%20Water%20Quality%20Analysis.pdf
3. https://www.who.int/water_sanitation_health/dwq/2edvol3d.pdf
4. https://sednet.org/download/wg-282-inf-5-rev-1.pdf
5. https://www.nio.org/

ELECTIVE
Course Title: Geography of Rural Settlement (Theory)
Course code: GEG-E11
Marks: 75
Credit: 3
Duration: 45 sessions of 1 hour each
==========
Prerequisite Courses: Nil

Course Objective:
1. To acquaint the students with the spatial and structural characteristics of rural settlements and to bring about awareness on special issues related to rural settlements.

Course Outcomes:
At the end of this course, students will be able to:
CO1: Appreciate the role of topography and climate in shaping rural landscape
CO2: Understand the dynamics of fringe settlements
CO3: Evaluate the spatial organization of rural settlements
CO4: Analyze the impact of urbanization on rural settlements (any two case studies)
CO5: Infer the internal morphology of villages (any two case studies)

Unit	Course Content	No. Of hours	Marks
I	Introduction to settlement Geography, importance of settlement geography, Definition, Nature, approaches and scope of geography of rural settlements. Status and future of Rural Geography in India Evolution of Rural settlements and the process of settling. Role of sites in evolution of rural settlements, Functional Classification of rural Settlements.	15	25
II	Spatial organization of rural settlements: size, shape, distribution and hierarchy of settlements. Spacing of rural Settlements (Nucleated and Dispersed), Types of rural settlements.	15	25
III	Internal morphology of villages (Any one village-Goa), Material used , house types in different regions of India and field patterns(Primitive , rectangular and Contour type), Case Study of two villages of Goa .: Impact of urbanization on house types, pattern, functions and growth of rural settlements. Changing face of rural India.	15	25
		45	75

References:

Mandatory:

1. Singh R.L. et al: Reading in rural settlement: Geography Tara Publications, Varanasi.
2. Ghosh Sumita, 1998: Introduction to Settlement Geography, Orient Longman.
3. Cloke Paul, (2013), An Introduction to Rural Settlement Planning, Published by Routledge, Milton Park, Abingdon, Oxon OX14 4SB, UK
4. Mandal, R. B, (2001), Introduction to Rural Settlement, Concept Publishing Company, New Delhi.

Supplementary:

1. Clout Hugh (2007) Contemporary Rural Geographies, Routledge, Milton Park, Abingdon, Oxon OX144RN
2. Singh R.Y., 1998: Geography of Settlements, Rawat publications
3. Thomas Chris (2001) Rural Geography,Routledge, London
4. Woods Michael, (2005), Rural Geography: Processes, Responses and Experiences in Rural Restructuring, SAGE Publications Ltd, University of Wales, Aberystwyth
5. Woods Michael, Holloway Lewis &Panelli Ruth (2012) Key Concepts in Rural Geography, Sage Publication, London

Web-based:

1. https://www.kcesmjcollege.in/ICT/Geography/Settlement%20Geography_1.pdf
2. http://geography.learnontheinternet.co.uk/topics/characteristicsofsettlements.html
3. https://shodhganga.inflibnet.ac.in/bitstream/10603/108046/12/12_chapter%201.pdf
4. https://shodhganga.inflibnet.ac.in/bitstream/10603/107916/10/10_chapter%202.pdf
5. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.682.7010&rep=rep1&type=pdf
6. https://socialsci.libretexts.org/Bookshelves/Geography_(Human)/Book%3A_Introduction_to_Human_Geography_(Dorrell_and_Henderson)/12%3A_Human_Settlements/12.02%3A_Rural_Settlement_Patterns
7. https://www.jagranjosh.com/general-knowledge/rural-settlement-1448456206-1
8. https://www.yourarticlelibrary.com/geography/rural-settlement-of-people-types-and-patterns/12721
9. https://www.slideshare.net/PrvMKt/morphology-of-rural-settlements
10. https://shodhganga.inflibnet.ac.in/bitstream/10603/113008/13/13_chapter%205.pdf
11. https://www.indiatoday.in/magazine/cover-story/story/20100215-changing-face-of-rural-india-741950-2010-02-04
12. http://inclusion.skoch.in/story/375/the-changing-face-of-rural-india-675.html

ELECTIVE
Course title: Geography of Rural Settlement (Practical)
Course Code: GEG-E11
Marks: 25
Credits: 01
Duration: 15 Sessions of 2 hours each
==========

Unit	Title	Practical sessions	Marks
I	**Methods in Rural Settlement** • Methods of concentration of rural settlements • Methods for measuring spacing of settlements • Z test for environmental factors responsible for pattern variation of settlements • Measurement of shape (pattern) of rural settlements	8	10
II	**Village Survey: Pre-field work, Field work and Post Field work** • Case Study for report: 1. Collection of Socio-Economic and Physical Data 2. Classification and Tabulation of Data 3. Inter-relation and Analysis of Data, Maps and Diagrams	7	10
III	Journal/ Report writing		5
		15	25

References:
Mandatory:
1. Singh R.L. et al: Reading in rural settlement: Geography Tara Publications, Varanasi.
2. Ghosh Sumita, 1998: Introduction to Settlement Geography, Orient Longman
3. Cloke Paul, (2013), An Introduction to Rural Settlement Planning, Published by Routledge, Milton Park, Abingdon, Oxon OX14 4SB, UK
4. Mandal, R. B, (2001), Introduction to Rural Settlement, Concept Publishing Company, New Delhi.

Supplementary:
1. Clout Hugh (2007) Contemporary Rural Geographies, Routledge, Milton Park, Abingdon, Oxon OX144RN
2. Mandal. R. B, (2001), Introduction to Rural Settlement, Concept Publishing Company, New Delhi.
3. Thomas Chris (2001) Rural Geography,Routledge, London
4. Woods Michael, (2005), Rural Geography: Processes, Responses and Experiences in Rural Restructuring, SAGE Publications Ltd, University of Wales, Aberystwyth
5. Woods Michael, Holloway Lewis &Panelli Ruth (2012) Key Concepts in Rural Geography, Sage Publication, London

Web Based:
1. https://rashidfaridi.com/2019/09/16/characteristics-of-rural-settlements/
2. https://sites.google.com/site/projectjhabua/areas-of-study/ideas-and-solutions/survey-questionnaire/draft-1---questionnaire
3. http://ncert.nic.in/textbook/pdf/legy305.pdf
4. https://smallbusiness.chron.com/tabulate-survey-results-55613.html
5. https://shodhganga.inflibnet.ac.in/bitstream/10603/54430/14/14_chapter%20-iii.pdf
6. https://shodhganga.inflibnet.ac.in/bitstream/10603/140390/14/14_chapter%205.pdf

ELECTIVE
Course Title: Geography of Urban Settlement (Theory)
Course code: GEG-E12
Marks: 75
Credit: 3
Duration: 45 sessions of 1 hour each
==========
Prerequisite Courses: Nil

Course objective:
1. To acquaint the students with the spatial and structural characteristics of urban settlements and to bring about awareness on special issues related to urban settlements.

Course Outcomes:
At the end of this course, students will be able to:
CO1: Understand the various concepts of urbanization, urban systems, functions of urban places, site and situation
CO2: Understand certain issues of urban development.
CO3: Apply urban theories and models in the present day context.
CO4: Apply basic tools in demographic, urban hierarchy and ranking of urban settlement
CO5: Using tools of urban geography, conduct mini research of town or city.
CO6: Demonstrate urban network using α, β, γ index.
CO7: Create graphical representations of hierarchy of settlements using rank size rule and primate city concept.

Unit	Course Content	No. Of hours	Marks
I	Introduction to urban geography Nature, approach and scope of urban geography. Development of urban geography. Definition of urban places, problems of defining urban places in Indian Context. Site and situations of urban places (towns and cities) Functional classification of towns	15	25
II	Systems and Models in Urban Geography Hierarchy of Urban settlements, Urban morphology, theories related to urban landuse (concentric, multi nuclei and sector theory). urban systems – suburb, rural urban fringe	15	25
III	Problems of urbanization Problems of urbanization with special reference to slums, pollution, urban climate, garbage management	15	25
		45	75

References:

Mandatory:

1. Siddhartha & Mukherjee (2007) Cities, Urbanisation and Urban Systems, Kisalaya Publications, New Delhi
2. Hall T. & Barret L.H (2012) Urban Geography, Routledge, London

Supplementary:

1. Cater Harold (2002)The Study of Urban Geography, Arnold, London , U K
2. Fisher W.B (2013) Urban Geography, Elsevier Science
3. Hall Tim (2010) Urban Geography (Third Edition) Routledge, London

Web-based:

1. https://www.thoughtco.com/overview-of-urban-geography-1435803
2. https://ibis.geog.ubc.ca/~ewyly/g350.html
3. https://www.yourarticlelibrary.com/geography/urban-geography-meaning-scope-and-concepts-with-statistics/39922
4. http://www.yorku.ca/anderson/Intro%20Urban%20Studies/Unit1/what_is_urban.htm
5. https://www.thoughtco.com/site-and-situation-1435797
6. https://www.jagranjosh.com/general-knowledge/functional-classification-of-towns-1448687516-1
7. https://www.thoughtco.com/urban-geography-models-1435764
8. https://www.tutor2u.net/geography/reference/7-characteristics-of-the-rural-urban-fringe
9. https://www.yourarticlelibrary.com/urbanisation/11-major-problems-of-urbanisation-in-india/19880
10. https://www.habitatforhumanity.org.uk/blog/2018/09/urbanisation-slum-housing/
11. https://greentumble.com/environmental-problems-of-urbanization/
12. https://climatekids.nasa.gov/heat-islands/
13. https://www.opengeography.org/ch-9-urban-geography.html

ELECTIVE
Course Title: Geography of Urban Settlement (Practical)
Course code: GEG-E12
Marks: 25
Credit: 1
Duration: Session of 2 hours each
==========

Unit	Content	Practical sessions	Marks
I	**Demographic aspects of urban geography:** 1. Time series analysis of urban growth, rate of change and level of urbanization 2. Applicability of Rank Size rule and hierarchy with settlement data (normal and log), 3. Calculation of CBD by Vance and Murphy. 4. Calculation of Urban Sprawl.	8	10
II	**Mapping of Urban linkages:** 1. Network analysis (Alpha, Beta and Gamma indices), 2. Flow matrix, 3. Connectivity mapping, 4. Hierarchy of settlements based on population (using census data).	7	10
III	**Journal**		5
		15	25

References:
Mandatory:
1. Siddhartha & Mukherjee (2007) Cities, Urbanisation and Urban Systems, Kisalaya Publications, New Delhi
2. Hall T. &Barret L.H (2012) Urban Geography, Routledge, London

Supplementary:
1. Cater Harold (2002)The Study of Urban Geography, Arnold, London , U. K
2. Fisher W.B (2013) Urban Geography, Elsevier Science
3. Hall T. &Barret L.H (2012) Urban Geography, Routledge, London
4. Hall Tim (2010) Urban Geography (Third Edition) Routledge, London
5. Siddhartha & Mukherjee (2007) Cities, Urbanisation and Urban Systems, Kisalaya Publications, New Delhi

Web Based:
1. https://www.e-education.psu.edu/geog597i_02/node/688
2. https://population.un.org/wup/General/GlossaryDemographicTerms.aspx
3. https://transportgeography.org/?page_id=5981
4. https://rashidfaridi.com/2019/02/10/urban-primacythe-primate-city-and-rank-size-rule/
5. http://www.mrtredinnick.com/uploads/7/2/1/5/7215292/primate_cities_and_the_rank-size_rule.pdf

SYLLABUS FOR AUTONOMOUS COURSES IN GEOGRAPHY
BACHELOR OF ARTS
SEMESTER VI
UPDATED ON 16TH MARCH 2020

CORE
Course Title: Geography of Population Growth (Theory)
Course code: GEG-VI.C8
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objectives:
1. To understand and evaluate the basic concept of Population growth to enable students to identify different issues related to population growth.

Course Outcomes:
At the end of this course, students will be able to:
CO1: Understand the determinants of population growth
CO2: Analyze world population patterns of distribution and growth trends.
CO3: Calculate fertility, mortality, density of population.
CO4: Correlate population characteristics among LDC and MDC.
CO5: Evaluate family welfare programmes in India.
CO6: Graphically represent population trends and projections in LDC & MDC

Unit	Topic	No. of hours	Marks
I	**Determinants of population growth** Fertility and mortality: definition types and factors affecting Application of demographic transition: India and its States **Migration:** Nature, Types, Classification, Determinants, Consequences	15	25
II	Spatial Distribution of Population-factors, Measures of Population Density, World and India, Population Growth- Global Trends, Trends in India. Demographic Transition Model.	15	25
III	**Population Policies and Issues:** Population Policies in Context of Growth- Less Developed Countries & More Developed Countries. Evolution of Family Welfare Programme in India. National Population Policies in India Population Dividend in India	15	25
		45	75

References:

Mandatory:

1. Chandna R. C.(2000), Geography of Population:Concept, Determinants and Patterns, Kalyani Publishers, New Delhi
2. Bhende and Kanitkar (2011), Principles of Population Studies, Himalaya Publishing House, Delhi
3. Sundaram, K.V. &Nangia, Sudesh (1986), Population geography- Contributions to Indian Geography. Vol 6 , Heritage Publications

Supplementary:

1. Clarke J. I (1972), Population Geography, Pergamon Press, Oxford.
2. Mitra & Kamaljit Chandra, (2005) Population Studies and Demography: Vol. 4 Concept of Population Geography, Delhi

Web-based:

1. http://www.businessdictionary.com/definition/population-growth.html
2. https://humangeography.pressbooks.com/chapter/2-1/
3. https://www.bbc.co.uk/bitesize/guides/zpgjk2p/revision/1
4. https://www.britannica.com/science/population-biology-and-anthropology/Natural-increase-and-population-growth
5. https://www.toppr.com/guides/geography/population/population-of-india/
6. https://www.nature.com/scitable/knowledge/library/an-introduction-to-population-growth-84225544/

CORE
Course Title: Geography of Population Growth (Practical)
Course code: GEG-VI.C-8
Marks: 25
Credits: 1
Duration: 15 Session of 2 hours each
==========

Unit	Topic	Practical Session	Marks
I	a) Calculation of Fertility and mortality b) Calculation of rate of migration c) Arithmetic Density (calculation and representation) b) Rural and urban Density c) Population Concentration Indexes d) Proportional Circles.	5	10
II	a) Calculation of Population Projection. (any one method) b) Field visit to Census Department / mini project	10	10
III	Journal		5
		15	25

* All practicals to be done on computer

References:
Mandatory:

1. Chandna, R.C. (2010): Geography of Population : Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi,.
2. Monkhouse F.J. and Wilkinson H.R. (1966): Maps and Diagrams: Their Compilation and Construction, Methuen Publishing Ltd. London
3. Census of India Series – 1 India Provisional Population Tables, Published by Register General and Census Commissioner, India 2001.

Supplementary:

1. Beaujeu-Garnier J (1966): Geography of Population, Longmans, London
2. Clark, L. 1965: Population Geography, Permagon press, New York.
3. Singh Gopal (1998): Map Work and Practical Geography; Vikas Publishing House
4. Trewartha, G.T. 1969: A Geography of Population : World Patterns, John Willey and Sons, Inc. New York

Web Based:

1. http://ocw.jhsph.edu/courses/PopulationChange/PDFs/Lecture4.pdf
2. https://study.com/academy/lesson/net-migration-rate-definition-formula-statistics.html
3. https://www.cdc.gov/csels/dsepd/ss1978/lesson3/section3.html
4. https://www.medindia.net/health_statistics/general/birth-rate-death-rate-india-statistics.asp#
5. https://www.statisticshowto.com/population-density-definition/
6. https://www.ibrc.indiana.edu/ibr/2006/summer/article1.html
7. https://sites.google.com/site/skillsa229/proportional-circles
8. http://maps.unomaha.edu/Peterson/geog1000/PopulationProjections/Population_Projections_GEOG1000-Answers.pdf
9. https://sciencing.com/calculate-population-projections-8473012.html
10. https://owlcation.com/academia/How-to-Plan-a-Field-Trip

ELECTIVE
Course Title: Introduction to Regional Planning (Theory)
Course Code: GEG-E13
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========
Prerequisite Courses: Nil

Course Objectives:
1. To understand and evaluate the concept of regional planning, its role and relevance in region planning. To identify issues relating to the development of a region.
2. To identify the causes of regional disparities in development, perspectives and policy imperatives.

Course Outcomes:
At the end of this course, students will be able to:
CO1: Gain knowledge of basic concepts in regional planning from a geographer's perspectives
CO2: Understand the concept of Regional Planning and its variations across time and space
CO3: Correlate and distinguish various types of regional planning and apply the same to the local settings.
CO4: Delineate formal, functional and planning regions

Unit	Topic	No. Of hours	Marks
I	**Definition and methods:** Planning – definition, approach, Levels of planning (national, state, local planning) basis of planning.	15	25
II	**Types of planning** Concept of planning region Land use planning. Delineation of planning region Regional policy and regional planning Types of planning : sectoral /area , physical/perspective	15	25
III	**Levels of development, disparities and case studies:** Indicators of development, planning unit Economic, social, demographic and ecological implications	15	25
		45	75

References:
Mandatory:
1. Mishra R.P. Regional Planning, a Reader, Concept Tools, Techniques and Case Studies, Mysore University Press.
2. Sundaram K. V. (1977), Urban And Regional Planning In India, Vikas Publishing House, New House, New Delhi.

Supplementary:

1. Chand, Mahesh And Puri K(1983), Regional Planning In India, All Publishers, New Delhi
2. Freeman T. W.(1958), Geography And Planning, Hutchinsen University, London
3. Gadgild.R., Planning In India, Asia Publishing House
4. Glicksen A. (1955), Regional Planning And Development, Leiden
5. John Glasson And Timmarshall (2007): Regional Planning; Taylor And Francis

Web Based:

1. https://shodhganga.inflibnet.ac.in/bitstream/10603/47404/6/06_chapter%201.pdf
2. https://www.arl-net.de/de/commin/belarus/3-planning-levels-and-specific-aspects
3. https://www.drishtiias.org.in/multi-level-planning.html
4. http://egyankosh.ac.in/bitstream/123456789/31790/1/Unit-3.pdf
5. https://www.measureevaluation.org/resources/training/online-courses-and-resources/non-certificate-courses-and-mini-tutorials/population-analysis-for-planners/lesson-1
6. http://www.ncert.nic.in/ncerts/l/lebs104.pdf
7. https://planningtank.com/development-plan/land-use-planning
8. https://www.kullabs.com/classes/subjects/units/lessons/notes/note-detail/5681
9. https://www.tutor2u.net/geography/reference/the-8-key-gap-indicators-of-development

ELECTIVE
Course Title: Introduction to Regional Planning (Practical)
Course Code: GEG-E13
Marks: 25
Credits: 1
Duration: 15 session of 2 hours each
==========

Unit	Topic	Practical sessions	Marks
I	**Delineation of planning region** Five functional regions	7	10
II	**Delineation of planning region** Five formal regions	8	10
III	Journal		5
		15	25

References:
Mandatory:

1. William Ian Morrison, Peter Smith, 1977: Input-Output Methods In Urban And Regional Planning: A Practical Guide; Pergamon Press
2. Chand Mahesh & Puri, V.K. (2000), Regional Planning In India

Supplementary:

1. Kumar, et. Al., (2016): urban and regional planning education-learning for India. Springer, Singapore
2. Matthew Dalbey, (2002): Decentralization And Regional Planning: Practical And Ideological Problems, Springer, U.S.
3. United States. National Resources Planning Board(1940), Is Planning Practical For Your Town?: New England Regional Planning Commission, Boston, Mass

Web Based:

1. https://planningtank.com/regional-planning/delineation-of-formal-regions
2. https://www.coursehero.com/file/31907522/REGIONALISATION-AND-THE-DELINEATION-OF-REGIONSdocx/
3. https://planningtank.com/regional-planning/delineation-of-functional-regions
4. https://rashidfaridi.com/2017/04/04/planning-regions-of-india-conceptclassification-and-delineation/
5. https://unacademy.com/lesson/regionalisation-and-delineation-of-formal-and-functional-regions/DAY7U2XX

ELECTIVE
Course Title: Fundamentals of Economic Geography (Theory)
Course Code: GEG-E14
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
==========

Prerequisite Courses: Nil

Course Objectives:
1. The course introduces economic geography as a dynamic, diverse and contested body of knowledge**.**
2. Students will be familiar with basic concepts of economic geography.

Course Outcomes:
At the end of this course, students will be able to:
CO1: Gain insights into the concepts and theoretical approaches in Economic Geography.
CO2: Understand and apply theories and models of economic geography in present day context
CO3: Apply and compare the global economic patterns with local economic scenarios
CO4: Collect and analyze the spatial data of economic and commercial establishments to determine spatio-temporal changes.

Unit	Topic	No. Of hours	Marks
I	Fundamental concept in economic geography Classification of economic activity (primary to quinary) Standard industrial classification world and India Approaches in economic geography: traditional and modern	15	25
II	Concepts and models in economic geography Complementarity, intervening opportunity substitute, agglomeration. Location models : hotelling, Weber, central place	15	25
III	Applications of economic geography. Agriculture Industry Trade and transport	15	25
		45	75

References:
Mandatory:
1. Siddhartha K. (2016) Economic Geography, Kitabmahal
2. Combespierre-Philippe, Mayerthierry and Thissejacques-François (2008) Economic Geography the Integration of Regions and Nations. Princeton University Press Princeton And Oxford, Princeton, New Jersey

Supplementary:

1. Haninkdean M. (2012) Principles and Applications of Economic Geography: Economy, Policy, Environment, John Wiley& Sons
2. Miroslav N. Jovanovic(2009) Evolutionary Economic Geography, Location Of Production And The European union Routledge, London And New York
3. M. Sokol (2011) Economic Geography. Undergraduate Study In Economics, Management, Finance And The Social Sciences, University Of London.
4. Pachurapiotr (2011) The Economic Geography Of Globalization, (Ed) Intech Pub.
5. Sharmistha Bagchi-Sen And Helenlawton Smith (2006) Economic Geography Past, Present And Future (Edited). Routledge, USA.

Web Based:

1. https://www.e-education.psu.edu/geog597i_02/node/788
2. http://dl.booktolearn.com/ebooks2/science/economy/9781138924512_An_Introduction_to_Economic_Geography_0868.pdf
3. https://london.ac.uk/sites/default/files/uploads/gy2164-economic-geography-study-guide.pdf
4. https://www.economicsdiscussion.net/economics-2/classification-of-economic-activities/2149
5. https://www.yourarticlelibrary.com/economics/economic-activities-and-its-classifications/25429
6. http://mospi.nic.in/classification/national-industrial-classification
7. https://unstats.un.org/unsd/publication/seriesM/seriesm_4rev4e.pdf
8. https://www.e-education.psu.edu/geog597i_02/node/768
9. https://link.springer.com/chapter/10.1007/978-3-030-26626-4_7
10. https://transportgeography.org/?page_id=5260

ELECTIVE
Course Title: Fundamentals of Economic Geography (Practical)
Course Code: GEG-E14
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
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Unit	Topic	Practical sessions	Marks
I	Calculation of bid rent model Industrial location using Webbers Calculation of k3, k4 and k7	10	10
II	Field work: data collection, representation and report writing.	10	10
III	Journal		05
		15	25

References:
Mandatory:

1. Siddhartha K. (2016) Economic Geography, Kitabmahal
2. Combespierre-Philippe, Mayerthierry and Thissejacques-François (2008) Economic Geography the Integration of Regions and Nations. Princeton University Press Princeton And Oxford, Princeton, New Jersey

Supplementary:

1. Haninkdean M. (2012) Principles and Applications of Economic Geography: Economy, Policy, Environment, John Wiley& Sons
2. Miroslav N. Jovanovic (2009) Evolutionary Economic Geography, Location of Production and the European Union. Routledge, London And New York
3. M. Sokol (2011) Economic Geography. Undergraduate Study in Economics, Management, Finance and the Social Sciences, University of London.
4. Pachurapiotr (2011) The Economic Geography Of Globalization, (Ed) Intech Pub.
5. Sharmistha Bagchi-Sen and Helenlawton Smith (2006) Economic Geography Past, Present and Future (Edited). Routledge, USA.

Web Based:

1. https://www.e-education.psu.edu/geog597i_02/node/788
2. http://economics-files.pomona.edu/cconrad/LandRent.pdf
3. https://planningtank.com/settlement-geography/central-place-theory-walter-christaller
4. https://www.e-education.psu.edu/geog597i_02/node/681
5. http://uprav.ff.cuni.cz/?q=system/files/christaller.pdf
6. https://libguides.usc.edu/writingguide/fieldreport
7. http://visionpointnios.co.in/courses/316/E-JHA-31-10A.pdf

ELECTIVE
Course Title: Geography of Tourism (Theory)
Course Code: GEG-E15
Marks: 75
Credits: 3
Duration: 45 lectures of 1 hour each
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Prerequisite Courses: Nil

Course Objectives:
1. The course aims to understand the basics of tourism and its impact on physical and human environments.

Course Outcomes:
At the end of this course, students will be able to:
CO1: Understand the concepts of travel and tourism.
CO2: Analyze the role of geographic factors in tourism development
CO3: Evaluate the socio-cultural, economic and environmental factors and their impacts on tourism (any two case studies)
CO4: Evaluate the tourism development in Goa (historical to present)
CO5: Analyze the challenges of tourism industry in Goa

Unit	Title	No. of hours	Marks
I	**Introduction to Tourism:** • Meaning, definition and concept of Tourism • Characteristics and types of Tourism • Historical development of Tourism • Scope and importance of Tourism • Careers in Tourism • Trends in Tourism Geography	15	25
II	**Geographic factors in Tourism Development:** • Physical factors: Relief, climate, vegetation, water bodies • Socio-cultural factors: historical, cultural, economic, religious factors **Geographic Areas and tourism impacts:** • Economic, socio-cultural, environment and sustainable development of tourism	20	25
III	**Tourism resources in Goa** • Development of tourism in Goa • Types of tourism in Goa • Social Economic and Environmental issues • Emerging careers in tourism in Goa	10	25
		45	75

References:

Mandatory:

1. Bhatia, A.K., 2002: Tourism Development: Principles and Practices, Sterling Publishers Pvt. Ltd
2. Williams Stephen, 2009: Tourism Geography: A new synthesis, Routledge Taylor and Francis Group, London and New York

Supplementary:

1. Claude Alvares (2002): Fish Curry and Rice; A Goa Foundation Publication
2. Dhar Premnath, 2009: Development Of Tourism & Travel Industry: An Indian Perspective, Kanishka Publishers
3. Hall. C.M, Page Stephen, 2014: The Geography of Tourism and Recreation: Environment, Place, Space, Routledge Taylor and Francis Group, London and New York
4. Velvet Nelson, 2013: An Introduction to Geography of Tourism, Rowman & Littlefield Publishers

Web based:

1. https://www.economy.gov.ae/Publications/An%20Introduction%20to%20Tourism%2007506 19562.pdf
2. https://opentextbc.ca/introtourism/chapter/chapter-1-history-and-overview/
3. https://www.tandfonline.com/doi/full/10.1080/14616688.2017.1307442
4. https://www.diva-portal.org/smash/get/diva2:16436/FULLTEXT01.pdf
5. https://www.researchgate.net/publication/283487046_SUSTAINABLE_TOURISM_PLANNING_IN_GOA
6. https://shodhganga.inflibnet.ac.in/bitstream/10603/33015/11/11_chapter%2004.pdf

ELECTIVE
Course Title: Geography of Tourism (Practical)
Course Code: GEG-E15
Marks: 25
Credits: 1
Duration: 15 sessions of 2 hours each
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Unit	Title	Practical Sessions	Marks
I	Preparation and understanding of Tourist maps Preparation tourist circuit maps	05	10
II	Preparation of Information Charts of tourism sites of India and Goa Field visit, preparing a brochure and presentation	10	10
	Journal		5
		15	25

References:
Mandatory:

1. Bhatia, A.K., 2002: Tourism Development: Principles and Practices, Sterling Publishers Pvt. Ltd
2. Williams Stephen, 2009: Tourism Geography: A new synthesis, Routledge Taylor and Francis Group, London and New York

Supplementary:

1. Claude Alvares (2002): Fish Curry and Rice; A Goa Foundation Publication
2. Dhar Premnath, 2009: Development Of Tourism & Travel Industry: An Indian Perspective, Kanishka Publishers
3. Hall. C.M, Page Stephen, 2014: The Geography of Tourism and Recreation: Environment, Place, Space, Routledge Taylor and Francis Group, London and New York
4. Velvet Nelson, 2013: An Introduction to Geography of Tourism, Rowman & Littlefield Publishers

Web Based:

1. https://www.researchgate.net/publication/317032762_Tourist_maps_-_definition_types_and_contents
2. http://www.kaleyann.com/create-custom-travel-map/
3. https://www.tourismcouncilwa.com.au/guide-planning-tour-itinerary
4. http://tourism.gov.in/sites/default/files/chapter/PIDCC_scheme.pdf
5. https://www.india-tourism.net/maps.htm
6. https://www.kevinandamanda.com/create-a-custom-travel-map-with-google-maps/

ELECTIVE
Course Title: Quantitative Techniques in Geography
Course Code: GEG-E16
Marks: 100
Credit: 04
Duration: 60 hours
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Prerequisite Courses: Nil

Course Objectives:
1. To introduce statistical techniques, relevant to geographical research.
2. To acquaint students about the potentials and applications f statistical techniques.

Course Outcomes:
At the end of this course, students will be able to:
CO1: Acquire knowledge of drawing inferences using the geographical database
CO2: Develop an understanding and appreciation of the mutual dependence of different techniques and their relevance.
CO3: Formulate and test the hypothesis
CO4: Use of open source software for Statistical analysis
CO5: Estimate and predict trends and patterns of geographical phenomena.

Unit No.	Course Content	No. of hours	Marks
I	**Non- Parametric Statistics** Co-relation and Regression analysis a) Scatter Diagram b) Karl Person's Co-efficient correlation c) Spearman's rank correlation d) Kendall's rank correlation regression analysis. **Parametric** Hypothesis testing a) Meaning, types of hypothesis Testing of hypothesis i) Chi-square test ii) ANOVA iii) t-test	15	30
II	Index numbers Unweighted, weighted indices and Cost of Living Index	15	30
III	Analysis of geographical dataset using appropriate software, interpretation and report writing	30	40
		60	100

References:

Mandatory:

1. Zamir Alvi 2000: Statistical Geography: Method and Applications Rawat Publications, New Delhi
2. Gregory, 1963: Statistical methods and the Geographer, Longman S. London
3. Rastogi R.S.(2005): Elementary Statistics: Rohit Publications – Delhi-110 006
4. Johnson R.J. 1980: Multivariate statistical Analysis in Geography, Longman

Supplementary:

1. Gupta S.P.; 1979: Practical Statistics; S. Chand and Co.
2. Khan Z.A 1998: Text book of practical Geography – New Delhi
3. Pal Saroj K. 1982: Statistical Techniques: A basic approach to Geography: Tata –McGraw Hill, New Delhi.
4. P.K. Majumdar 2002: Statistics: A Tool for Social Sciences, Rawat Publications: Jaipur & New Delhi.
5. Succheti D.C. and Kapoor V.K. 2002 - statistics (Theory, methods and application)

Web Based:

1. https://www.statisticssolutions.com/correlation-pearson-kendall-spearman/
2. https://www.statisticssolutions.com/kendalls-tau-and-spearmans-rank-correlation-coefficient/
3. https://www.toppr.com/guides/economics/index-numbers/index-numbers-in-general/
4. https://wps.prenhall.com/wps/media/objects/9431/9657451/Ch_16/levine-smume6_topic_16-08.pdf
5. https://www.nap.edu/read/4913/chapter/6
6. https://www.who.int/entity/chp/steps/Part4.pdf?ua=1