SIKKIM UNIVERSITY

(A Central University Established by an Act of Parliament of India, 2007)

LEARNING OUTCOME - BASED CURRICULUM

POSTGRADUATE PROGRAMME IN GEOGRAPHY

(With effect from Academic Session 2023-24)

DEPARTMENT OF GEOGRAPHY

SIKKIM UNIVERISTY

6TH MILE, TADONG - 737102

GANGTOK, SIKKIM, INDIA

VICE-CHANCELLOR'S MESSAGE

Sikkim University stands at the forefront of embracing the transformative National Education Policy (NEP) 2020. In alignment with NEP 2020's vision and the guidelines of the Learning Outcomes-based Curriculum Framework (LOCF) mandated by the UGC, we have undertaken a comprehensive revision of our curriculum across all departments. This initiative ensures a holistic educational experience that transcends traditional knowledge delivery, emphasizing the practical application of knowledge in real-world scenarios.The shift towards LOCF marks a pivotal change from teacher-centric to learner-centric education, fostering a more active and participatory approach to learning. Our updated curriculum clearly defines Graduate Attributes, Programme Learning Outcomes (PLOs), and Course Learning Outcomes (CLOs), setting clear objectives for our students to achieve. This revision is designed to enable a teaching-learning environment that supports the attainment of these outcomes, with integrated assessment methods to monitor and encourage student progress comprehensively.

A key innovation in our curriculum is the mandatory integration of Massive Open Online Courses (MOOCs) through the SWAYAM platform, enhancing accessibility and the breadth of learning opportunities for students. Our approach encourages multidisciplinary studies through the curriculum while allowing for specialization. The curriculum embodies the policy's core principle of flexibility by enabling mobility for students, thereby allowing the exit and entry of students in the program.

I extend my heartfelt gratitude to our faculty, the Head of the Department, the Curriculum Development Committee members, the NEP coordinators, and the dedicated NEP Committee of Sikkim University for their relentless dedication to updating our curriculum. I appreciate Prof. Yodida Bhutia, the Chairperson, and all dedicated NEP Committee members for their thorough review and integration of LOCF and NEP components into our curriculum.

To our students, I convey my best wishes as we embark on this journey with our updated and inclusive curriculum, aiming not only to enrich their academic knowledge but also to nurture their personal growth, critical thinking, and ability to adapt and innovate in an ever-changing world.

Best wishes,



Prof. Avinash Khare
Vice Chancellor
Sikkim University

1. Preamble

The Department of Geography embarked on its journey in 2010 with a mandate to focus on teaching and research on Eastern Himalaya. The students, research scholars and faculty members, for more than a decade have been carrying out critical research in the field of cryosphere, water resources, food production systems, fluvial geomorphology, environmental degradation, climate change, disaster management, man-animal conflicts, tourism geography, borderlands, livelihood, migration, socio-spatial exclusions, equity and sustainable urbanisation in the Himalayas. The Department has been making concerted efforts to contribute to evidence-based policy formulation for sustainable solutions in areas of environmental concerns, climate change and development.

The Department offers M.A./M.Sc. in Geography with specialisation in *Geography of Himalayas* and *Geography of Development*. The Ph.D. programmes pays attention on agricultural geography, fluvial geomorphology, economic geography, population geography, social geography, geography of borderlands and urban geography. In keeping with the interdisciplinary tenor and focus of the Department, these programmes interface socio- economic, human, institutional, technological, infrastructural, and environmental factors with issues of development in hilly and mountainous regions of North-East India with a pluralistic viewpoint, social equity and sustainable development. In doing so, research and teaching in the Department over the years have evolved appropriate paradigms and tools of analyses including remote sensing and GIS.

The M.A./M.Sc. Geography curriculum in the Department is unique in terms of a judicious mix of courses which combine the classical with the modern and the theoretical with the practical in response to emerging disciplinary challenges, particularly in the context of Eastern Himalaya. As fieldwork occupies a prime place in geography in understanding and analysing spatial phenomena, the M. A./M.Sc. students are required to opt for one compulsory course of dissertation writing that is based on a combination of field work and usage of secondary sources of data. Apart from getting trained in specific methodologies and gaining first hand field observations - often in rural settings - prolonged group living under spartan conditions helps students to develop interpersonal skills and mutual interdependencies and team spirit.

2. Post-Graduate Attributes (PGA)

The Postgraduate attributes are primarily concerned with a fundamental and systematic or coherent understanding of the academic discipline of Geography, its different branches and applications, and its linkages with related disciplinary areas/subjects. The specific PGAs are as follows:

PGA 1: Demonstrate procedural knowledge that creates different types of professionals related to the disciplinary/subject area of Geography, including professionals engaged in research and development, teaching and government/public service.

PGA 2: Demonstrate the ability to use the knowledge of Geography in formulating and tackling spatial problems and identifying and applying appropriate geographical principles and methodologies to solve a wide range of problems associated with Geography.

PGA 3: Develop personal skills such as the ability to work both independently and in a group.

PGA 4: Demonstrate professional behaviour such as being objective, unbiased and truthful in all aspects of work and avoiding unethical behaviour such as fabricating, falsifying or misrepresenting data or to committing plagiarism.

PGA 5: Exercise the ability to identify the potential ethical issues in work-related situations.

PGA 6: Demonstrate appreciation of intellectual property, environmental and sustainability issues.

PGA 7: Promoting safe learning and working environment.

3. Programme Learning Outcomes (PLOs):

A postgraduate student of Geography should be able to:

PLO1: Demonstrate skills in areas related to one's specialisation within the disciplinary/subject area of Geography and current and emerging developments in the field of Geography.

PLO2: Recognise the importance of qualitative, quantitative, and remote sensing data and approaches/methods for fully comprehending the construction, re-construction and de-construction of geographical space and it's relation to human society.

PLO3: Plan and execute Geography-related experiments or field investigations, analyse and interpret data/information collected using appropriate methods, including the use of appropriate software such as programming languages and purpose-written packages, and report accurately the findings of the experiment/field investigations while relating the conclusions/findings to relevant theories of Geography.

PLO 4: Demonstrate relevant generic skills and global competencies such as problem solving skills that are required to solve different types of space-related problems with well-defined solutions, and tackle open-ended problems that may cross disciplinary-area boundaries;

PLO 5: Use investigative skills, including skills of independent investigation of Geography-related issues and problems;

PLO 6: Exhibit communication skills involving the ability to listen carefully, to read texts and research papers analytically and to present complex information in a concise manner to different groups/audiences.

PLO 7: Use analytical skills involving paying attention to detail and ability to construct logical arguments using correct technical language related to Geography.

PLO 8: Demonstrate ICT skills including Cyber Security.

4. Curriculum Structure:

SEMESTER I								
Course Code	**Title of the Course**	**L**	**T**	**P**	**Total Credit**	**Total Marks**	**IA**	**EA**
GEO-C-501	Geomorphology	3	1	0	4	100	50	50
GEO-C-502	Climatology and Biogeography	3	1	0	4	100	50	50
GEO-C-503	Economic Geography: Concepts, Principles and Techniques	3	1	0	4	100	50	50
GEO-V-504	Indian Contribution to the Advancement of Knowledge in Geography	3	1	0	4	100	50	50
GEO-S-505	Analytical Physical Geography Techniques	0	2	0	2	50	25	25
GEO-P-506	Quantitative Methods in Geography	0	0	4	4	100	50	50
TOTAL		**12**	**6**	**4**	**22**	**550**	**275**	**275**

SEMESTER – II								
Course Code	**Title of the Course**	**L**	**T**	**P**	**Total Credit**	**Total Marks**	**IA**	**EA**
GEO-C-551	Geography of India	3	1	0	4	100	50	50
GEO-C-552	Population and Settlement Geography	3	1	0	4	100	50	50

GEO-C-553	History of Ideas in Geography	3	1	0	4	100	50	50
GEO-O-554	Environment & Development	3	1	0	4	100	50	50
GEO-O-555	Geography of Heritage and Geo-Parks	3	1	0	4	100	50	50
GEO-O-556	SWAYAM COURSE	4	0	0	4	100	-	-
GEO-S-557	Data Acquisition, Analysis, Writing and Communication Skills	0	2	0	2	50	25	25
GEO-P-558	Remote Sensing and Geographic Information System	0	0	4	4	100	50	50
TOTAL		**12**	**6**	**4**	**22**	**550**	**275**	**275**
SEMESTER-III								
Course Code	**Title of the Course**	**L**	**T**	**P**	**Total Credit**	**Total Marks**	**IA**	**EA**
GEO-C-601	Urban Geography	3	1	0	4	100	50	50
GEO-O-602	Geography of Borderland with special reference to North-East India	3	1	0	4	100	50	50
GEO-O-603	Regional Development and Planning	3	1	0	4	100	50	50
GEO-O-604	SWAYAM/MOOC Course	4			4	100	-	-
GEO-S-605	Field Techniques	0	2	0	2	50	25	25
Specialisation: Stream A: **Geography of Himalayas**								
GEO-E-606	Glacio-Fluvial Processes in Geomorphology	3	1	0	4	100	50	50
GEO-E-607	Agriculture Geography and Sustainable Livelihoods	3	1	0	4	100	50	50
GEO-E-608	Natural Resource Management	3	1	0	4	100	50	50

GEO-E-609	SWAYAM/MOOC Course	4			4	100	-	-
Specialisation Stream B: Geography of Development								
GEO-E-610	Theories of Development	3	1	0	4	100	50	50
GEO-E-611	Rural Development and Planning	3	1	0	4	100	50	50
GEO-E-612	Sustainable Cities	3	1	0	4	100	50	50
GEO-E-613	SWAYAM/MOOC Course	4			4	100	-	-
TOTAL		**15**	**7**	**0**	**22**	**550**	**275**	**275**

Note: Students will choose either Stream A or B for their specialisation in IIIrd semester. The students opting for of Stream A will choose three (3) papers from GEO-E-606 to GEO-E-609;
Students of Stream B will choose three (3) papers from GEO-E-610 to GEO-E-613. Besides, the students need to opt for one of the open papers either offered by the Department or outside the Department.

SEMESTER-IV

Course Code	Title of the Course	L	T	P	Total Credit	Total Marks	IA	EA
GEO-V-651	Cyber Security (Compulsory)	3	0	1	4	100	50	50
Specialisation Stream A: Geography of Himalayas								
GEO-E-652	Indigenous Knowledge System in Resource Management	3	1	0	4	100	50	50
GEO-E-653	Population Dynamics in Himalayas	3	1	0	4	100	50	50
GEO-E-654	Natural Hazards and Disaster Management	3	1	0	4	100	50	50
GEO-E-655	Regional Geography of Nepal and Eastern Himalaya	3	1	0	4	100	50	50
Specialisation Stream B: Geography of Development								
GEO-E-656	Geography of Social Justice and Well-being	3	1	0	4	100	50	50
GEO-E-657	Gender and Space	3	1	0	4	100	50	50
GEO-E-658	Political Geography	3	1	0	4	100	50	50

GEO-E-659	Geography of Tourism	3	1	0	4	100	50	50
GEO-E-660	Social and Cultural Geography	3	1	0	4	100	50	50
GEO-S-661	Data Capturing and Analysis of Socio-Economic Data	0	2	0	2	50	25	25
GEO-P-662	Fieldwork and Dissertation (Compulsory)	0	0	8	8	200	100	100
TOTAL		**9**	**4**	**9**	**22**	**550**	**275**	**275**

In semester IV, the students will continue in the same stream as chosen in semester III. Students of Stream A will choose two (2) papers from GEO-E-652 to GEO-E-655;

Students of Stream B will choose two (2) papers from GEO-E-656 to GEO-E-660.

The following papers will be compulsory: i) GEO-V-651: Cyber Security; ii) GEO-P-662: Fieldwork and Dissertation

	L	**T**	**P**	**Total Credit**	**Total Marks**	**IA**	**EA**
TOTAL CREDITS/MARKS (I+II+III+IV Semesters)	**48**	**23**	**17**	**88**	**2200**	**1100**	**1100**

5. Details:

a) The Masters' Programme is of two years. The overall credit of MA/MSc Programme in Geography is 88 credits with 22 credits in each semester. Each paper shall have 4 credits.

b) The seven Core Papers in the 2 years Master's degree programme will be as follows:

Geomorphology, Climatology and Biogeography, Economic Geography, Geography of India, Population and Settlement Geography, History of Ideas in Geography, Urban Geography. These papers will be offered across I, II & III Semesters.

c) The students need to opt for one open paper in IInd and IIIrd semester each. The students will have an option to choose such open papers either from the papers offered by the Department/ other Departments. The Department would offer the following open papers in IInd & IIIrd Semeste as per the availability of faculty members:

Environment and Development, Heritage and Geo-Parks, Geography of Borderland, Regional Development and Planning.

However, the students may opt for courses from SWAYAM platform and/or any recognised MOOC courses of equal credits in place of open papers.

d) Two streams of specialization will be offered by the Department, viz. **Geography of Himalayas** and **Geography of Development**. Both the streams, students will choose 3 papers in IIIrd Semester and 2 papers in IVth Semester as elective papers of their specialisation.

e) The Ability/Skill Enhancement Papers will be Offered in I, II, III & IV Semester with 2 Credits each. The tentative titles of **Skill Development-I**: Analytical Physical Geography Techniques; **Skill Development-II**: Data Acquisition and Analysis, Writing and Communication; **Skill Development-III**: Field Techniques; **Skill Development-IV**: Data Capturing and Analysis of Socio-Economic Data.

f) Two Practical Papers would be offered by the department and would be offered in I & II Semester as follows:

Practical-I: Quantitative Methods in Geography;

Practical-II: Remote Sensing & Geographic Information System

g) The overall credit of the MA/MSc Programme (Two Years) would be 88 and Semester-wise credit distribution would be 22 in each semester.

h) There are four **Skill Development Papers** of 2 credits each spread over all the semesters. It would help students in acquiring applications of techniques, data capture and statistical analysis, software uses of SPSS and QGIS for digital data interpretations. With the help of skill enhancement courses, the students would receive an exposure of the major sources of data e.g. IMD, Census, NFHS, DHLS, IHDS etc. and improve their communication and analytical abilities resulting to be more employable in various sectors of the economy and development. Since application of RS & GIS technologies are advancing and increasingly being used in governance, monitoring resources, climate change, sustainable development and solutions, the students with a Master's degree in Geography will attract attention and receive preferential treatment for employment in different sectors.

SEMESTER I

GEO-C-501

Geomorphology

Semester: First Semester | Course Level: 500 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs. + Tutorial: 15 Hrs. + Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On completion of the course students will be able to:

CLO1: Articulate the concepts and ideas, trends and approaches of Geomorphology.

CLO2: Explain the geomorphological processes on the Earth and extra- terrestrial planets.

CLO3: Appraise various landforms and the factors associated with the changing landforms.

CLO4: Critically evaluate the various philosophies and theories of geomorphic phenomena.

Course Outline

Unit I: Introduction to Geomorphology

Relevance & Scope of geomorphology, Fundamental Concepts in Geomorphology, Different Sub-fields of Geomorphology. Development of Geomorphologic Thought: Classical and Modern; Catastrophism Vs Uniformitarianism, Neo-catastrophism, Recent Trends: Process studies, Structural, Quantitative approach and Models of Dynamic Equilibrium.

Unit II: Mega Geomorphic Forms and Processes

Isostasy: Argument of the Concept, Crustal Equilibrium in Major Relief Features of the Earth, Continental Drift, Sea Floor Spreading, Paleo-magnetism, Plate Tectonics and its associated phenomena, Neo-tectonic process and Expanding Earth.

Unit III: Geomorphic (Exogenic) Process and Landforms

Concept of Gradation: Degradation and Aggradation Weathering and Mass Movements: types and processes, Fluvial, Glacial, Coastal, Karst and Aeolian Processes and Landforms and topographic evolution. Applied geomorphology, Interaction between Landforms and Human Beings.

Unit IV: Planetary Geomorphology

Approach to Planetary Geomorphology, Solar System: Types (Terrestrial planets, The giant Planets and Dwarfs) and Exploration system.

Geomorphic Forms and Processes: The Moon, Mercury and Venus, Mars, Jupiter, Saturn, Uranus and Neptune.

Suggested Teaching- Learning Strategies: Lecture cum discussion, Group Project, Field Observation, individual and group presentation.

Assessment Framework

1. Classroom Participation
2. Oral Presentation
3. Group Discussion
4. Assignment
5. Sessional Test
6. Book/Article Review
7. End Term Examination (2 credits)

Suggested Readings:

1. Hugget, R.J. (2011). Fundamentals of Geomorphology. New York: Routledge.

2. Allison, R.J. (2002). Applied Geomorphology: Theory and Practice. New York: Wiley and Son Co.

3. Greelay, R. (2013). Introduction to Planetary Geomorphology. Cambridge, UK: Cambridge Press.

4. Colin, E. T (1988). An Introduction to Theoretical Geomorphology. New York: Boston Press.

5. Kale, V.S and Gupta A. (2010). Introduction to Geomorphology. New Delhi: Cambridge University Press.

6. Kale, V.S. (ed.) (2014). Landscape and Landform of India. New Delhi:Springer.

7. Piotr Migon (ed.) 2010). Geomorphological Landscapes of the World. London: Springer.

8. Robert P. Beckinsale and Chorley, J.R. (1991). The Development of Geomorphology, Volume - 1,2,3. New York: Routledge.

9. Summerfield, A.M. (1991). Global Geomorphology. New York: Routledge.

10. Andrew A. Snelling (2014). The Earth's Catastrophism Past: Geology, Creation and The Flood, Volume- 1 and 2. London: Master Book.

GEO-C-502

Climatology and Biogeography

Semester: First Semester | Course Level: 500 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs. + Tutorial: 15 Hrs. + Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of the course, the students will be able to:

CLO1: identify the basic concepts in climatology and biogeography.

CLO2: explain the basis of climatic classification schemes and interpret the theories related to Indian monsoon system and climate change.

CLO3: illustrate the methods for the computation of southern oscillation index (SOI)

CLO4: analyse linkages between climatic factors and flora & fauna (analysing)

Course Outline

Unit I: Introduction to Climatology and Biogeography

Evolution, scope and contemporary relevance of Climatology and Biogeography, Relationship between Climatology and Biogeography; Elements of Weather and Climate, Urban Heat Island, Atmospheric Instability

Unit II: Climate Classification and Climate Change

Principles of Climatic Classification (Macro, Meso, Micro); Classification of world climates by Koppen and Thornthwaite; Major climatic regions of the world, Climate Change: Concepts, Evidences and Theories of Climate Change, Global Warming Vs. Global Cooling and its impact on society; IPCC and global climate conventions; protocols; National Action Plan on Climate Change (NAPCC)

Unit III: Indian Monsoon

Indian Monsoon; Indian Ocean Dipole, El-nino, La-nina, El-nino/La-nina Modoki; Concepts and Classification of Drought, Floods; Indian Monsoon and Agriculture

Unit IV: Elements of Biogeography

Environment, Habitat and Plant-animal association, Biome types, Element of Plant Geography, Distribution of Forests and Major Communities, Zoogeography and Bio-diversity, its significance with special reference to India and bio-diversity resources, Conservation of Biotic Resources.

Teaching- Learning Strategies: Classroom lectures, individual /group presentation and discussions on case studies**.**

Assessment Framework

- Classroom Participation
- Sessional Test
- Seminar presentation
- Assignment/ Term Paper
- Group discussion
- End Term Examination (2 credits)

Suggested Readings:

1. Ahrens, C. Donald. (2016). Meteorology Today: An Introduction to Weather, Climate and the Environment, (11th Edition). Boston: Thomson Brook/Cole
2. Chritchfield, H.J. (1993) General Climatology. New Delhi: Prentice Hall of India
3. D.S Lal. (2006) Climatology. Allahabad: Chaitan Publication
4. Peake, S. and Joe Smith. (2009) Climate Change-From Science to Sustainability, New York: Oxford University Press
5. Rohli, Robert V. and Anthony J. Vega (2011). Climatology. Burlington: Jones & Bartlett Learning
6. Barry, R.G and Chorley, R.J. (1998) Atmosphere, Weather and Climate (7th Edition). London: Routledge
7. Maslin, M. (2004) Global Warming: A Very Short Introduction. New York: Oxford University Press Inc.
8. IPCC, (2022) Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. United Kingdom: Cambridge University Press
9. Huggett, R.J. (2004) Fundamentals of Biogeography. London: Routledge
10. Peake, S. and Joe Smith. (2009) Climate Change-From Science to Sustainability. New York: Oxford University Press

GEO-C-503

Economic Geography: Concepts, Principles and Techniques

Semester: First Semester Course Level: 500 Total Marks: 100

L+T+P: 3+1+0= 4 Credits Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On completion of the course students will be able to:

CLO1: learn the theories and concepts of development in relation to different geographic regions/geographies.

CLO2: explain the locational factors of economic activities e.g. Agriculture, Industry and Services.

CLO3: understand the classification of the workforces engaged in different sectors of the economy.

CLO4: express the pattern of spatial economic analysis from secondary sources of data.

Course Outline

Unit I: Introduction to Economic Geography

Definition, Scope and development of economic geography, Development of World Economic Systems, Development theories: Divergence Convergence Model (Myrdal-Hirschman), Dependency Theory (Frank-Amin), Concept of economic development, Sustainable development, Human Development, Disparities in world economic development, Micro-Economics, Concept and Classification of Economic Activities, Indian Economy

Unit II: Locational Analysis and Theories of Location

Industrial Location theories: Agricultural location model (Von Thunen), Weberian Location analysis, agglomerations and Post-Fordist localisation and Diffusion Theory (Haggerstrand) Spatial organization theories: Christaller's Central place theory and Losch's General theory, Ullman's Concept of Spatial Interaction, Cluster-Based Approach and SEZs,; Services and GIGs; Industrial Policy and MSMEs

Unit III: Resources and Economic Regions

Concept and taxonomy of resources, Resource Endowment and Economic Regions; World agricultural systems, agricultural regions and food-security, Industrial complexes and Dynamics of Industrial Regions of the world, World Trade in major commodities and services, GATT, WTO, EU and Emerging markets and Exchanges

Unit IV: Methods and Techniques in Economic Geography

Sectoral analysis of Indian Economy, Landuse and Land Rent Analysis, Isodapanes and Weight Triangle, Gravity Model and Trade Area Analysis, Networks Analysis. Human Development Index, Global Hunger Index

Teaching-Learning Strategies: Lecture method, activity learning, sectoral data extraction and analysis, case studies etc.

Assessment Framework

1. Classroom Participation
2. Presentation
3. Group Discussion
4. Assignment
5. Sessional Test
6. End Term Examination (2 credits)

Suggested Readings:

1. Basu, K. and Maertens, A. (2011). The Concise Oxford Companion to Economics in India, New Delhi, Oxford University Press.

2. Barnes, T.J. (2009). Economic Geography, Elsevier Ltd., pp. 315-326.

3. Coe, N.M., Kelly, P.F. & Yeung, H.W.C. (2012). Economic Geography: A Contemporary Edition, Boston: Blackwell Publishing

4. Hartshrone, T.A. and Alexander J.W. (1994). Economic Geography, New Delhi: Prentice Hall

5. Knox, P, J. Agnew J. & L. McCarthy. (2015). The Geography of the World Economy (7th Edition), London: Routledge.

6. Knowles, R. and Wareing, J. (2012). Economic and Social Geography. New Delhi: Rupa Publications India Pvt. Limited.

7. Peet, Richard and Hartwick, Elaine (2010). Theories of Development: Contentions, Argument and Alternatives (Second Edition), Jaipur: Rawat Publications. 4

8. Raza, M. & Aggarwal, Y. (1999). Transport Geography of India: Commodity Flows and the Regional Structure of the Indian Economy, New Delhi: Concept Publishing Company.

9. Sarkar, A. (2013), Quantitative Geography, New Delhi: Orient BlackSwan.

10. Webber, M. (2005). International Political Economy (Chapter 30) in A Companion to Economic Geography (ed.) by Sheppard & Barnes, Blackwell Publishing, pp. 499-518.

GEO-V-504

Indian Contribution to the Advancement of Knowledge in Geography

Semester: First Semester | Course Level: 500 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of this course, students will be able to:

CLO1: Know the concepts and measurements of latitudes and longitudes in Ancient India**.**

CLO2: Explain the emergence and evolution of Geography as a discipline in the Indian epics**.**

CLO3: Explain the contributions of Indians in understanding planets**.**

CLO4: Apply the traditional knowledge in sustainable environmental practices.

CLO5: Explain the traditional water management and transport systems.

CLO6: Assess the contributions made by the prominent explorers in the Himalayas**.**

Course Outline

Unit I: Planetary Longitudes and Latitudes

Revolution numbers of planets. Ahargaṇa and Mean longitudes, (Examples: Obtaining the true longitudes by applying corrections to mean longitudes). Epicycle models: Manda correction (Equation of center) in detail, Its significance, Latitude of Moon.

Śīghra correction to planets and their significance: Essential features only with the aid of diagrams and final formula, Latitudes of planets, Precession of equinoxes— Nirayana and Sāyana longitudes.

Unit II: World according to the Puranas

World Continents and Oceans; Mountain and River systems; The World Maps according to the Ramayana and Mahabharata; Seven Dwipas (Islands); Regions of the Jambu Dwipa; Bharatvarsha and its Regional Divisions; Janapadas and Mahajanapadas

Unit III: Water Management & Transportation

Harappan and Traditional Water Management System of Gujarat;

Historical Sites- Sringeverpur, South Indian Water Management System, Western Ghats Cave-Kanheri, etc.; Communities Involved in Water Management; Modes of Transportations and Reforms; Grand Trunk Road (Uttarapath & Dakshinapath); Development of Trading Techniques; Boat & Ship Building

Unit IV: Explorers and Traders of India in the Himalayas

Rahul Sankritayan (civilisations along the River Volga to Ganga), Kinthup Lepcha (Brahmaputra exploration), Pandit Nayal Singh and Pandit Saratchandra Das on Tibet

Suggested Teaching Learning Strategies:

Lecture-cum Discussion, Classroom Participation, Group Discussion, Individual/Group Presentation, Case Studies and Group Projects

Assessment Framework

- Sessional Test
- Presentation
- Assignment/ Term Paper
- Group Discussion
- End Term Examination (2 credits)

Suggested Readings:

1. Malville, J. M., & Gujra, L. M. (2000). *Ancient cities, sacred skies: cosmic geometries and city planning in ancient India*. New Delhi: IGNCA & Aryan Books International.
2. Mukherji, Anisha Shekhar (2010). *Jantar Mantar: Maharaja Sawai Jai Singh's Observatory in Delhi*, New Delhi: AMBI Knowledge Resources.
3. Ali, S.M. (1966). *The Geography of the Puranas*, New Delhi: People's Publishing House.
4. Agarwal, Anil & Narain, Sunita (1997) (eds), *Dying Wisdom: Rise, Fall and Potential of India's Traditional Water-Harvesting Systems*, Centre for Science and Environment, New Delhi
5. Sriram, M. S. (2019), *Elements of Indian astronomy - 5 Lectures*, Instructional Course on Indian Sciences, Prof. K.V. Sarma Research Foundation,. (Videos available at https://www.youtube.com/watch?v=Qzam3vEnD8&list=PLF72fmBZVDxlkv0Ih_aSHnax5S5-wug8v).
6. Sen, S. N. and Shukla, K. S. (2001) (eds.), *History of Astronomy in India*, 2nd Ed., INSA, New Delhi.
7. Lepcha, C. K., & Lal, U. (Eds.). (2022). *Communities, Institutions and Histories of India's Northeast*. New Delhi: Routledge.
8. Bhattacharya, P. (2023). *Bells of Shangri-La: Scholars, Spies, Invaders in Tibet*. Harper Collins.
9. Sankrityayan, R. (1942). *Volga se Ganga (From the Volga to the Ganges)*. Allahabad: Kitab Mahal.

10. Dey, L.N. (2005). *Geographical Dictionary of Ancient and Medieval India*, New Delhi: Low Price Publication.

GEO-S-505

Analytical Physical Geography Techniques

Semester: First Semester | Course Level: 500 | Total Marks: 50

L+T+P: 0+0+2= 2 Credits | Lecture: 0 Hrs.+ Tutorial: 0 Hrs.+ Practical: 60 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of the course, the students will be able to:

CLO1: identify the basic techniques/instruments used in geomorphological and climatological fields

CLO2: explain the methods related to the measuring of the earth's surface morphology and elements of weather and climate

CLO3: demonstrate and use the instrumental/gridded data related to geomorphology and climatology

CLO4: examine the utility of morphometric techniques in geomorphological and lineament mapping

CLO5: reconstruct the sedimentary history of a valley/floodplain by analysing the lithofacies

CLO6: predict the seasonal dispersal of pollutants by analysing the air mass trajectories and also the levels of energy in depositional environment by grain size analysis

Course Outline

Unit I: Techniques in Geomorphology

Identification of Rocks and Minerals; Dip and Strike Measurement; Interpretation of Geological Maps; Grain-Size and Febric Analysis; Stone Size and Geometry; Measurement and Analysis of Lithofacies; Creation of transverse and longitudinal profiles; Lineament and Geomorphological Mapping using Total Station; Drainage Basin Morphometric Techniques; Hydrological Cycle and Its components; Discharge Measurement in an Open Channel, Slope calculations.

Unit II: Techniques in Climatology

Data Representation Techniques: Isotherm, Isohytes, Bar and Line graphs, Rainfall Dispersion Diagrams, Climograph & Hythergraph; Mean Areal Depth of Precipitation; Aridity index; Heat Index; Climate Quality Index, Water Balance Analysis; Instruments for Measuring Elements of

Weather and Climate; Analysis of Gridded Climatological Data; Analysis and Applications of Air Mass Trajectories; Interpretation of Weather Maps; Synoptic Climatology and Weather Forecasting Methods.

Teaching-Learning Strategies: Classroom lectures; demonstration and hands-on training

Assessment Framework:

- Classroom Participation
- Sessional Test
- Seminar presentation
- Assignment/ Term Paper
- Laboratory/Field Visit

Suggested Readings:

1. Rakhecha, P.R. and Singh, V.P. (2009). Applied Hydrometeorology. New Delhi: Capital Publishing Company

2. Gregory, K.J. and Walling, D.E. (1973). Drainage Basin Form and Processes: A Geomorphological Approach. London: Edward Arnold

3. Comton, R.R. (1962). Manual of Field Geology. New York: John Wiley & Sons, Inc.

4. Pettijohn, F.J. (2004). Sedimentary Rocks. New Delhi: CBS Publishers & Distributors

5. Dixon, D. and Bernor, R.L. (ed.) (1992). The Practical Geologist. New York: Simon and Schuster Inc.

6. Raghunath, H.M. (2006). Hydrology. New Delhi: New Age International (P) Limited, Publishers.

7. Zăvoianu, I. (1985). Morphometry of Drainage Basins. Amsterdam: Elsevier.

8. Monkhouse, F.J. and Wilkinson, H.R. (1973). Maps and Diagrams. London: Methuen & CO Ltd.

9. Singh, L.R. (2018). Fundamentals of Practical Geography. Allahabad: Sharda Pustak Bhawan.

10. Mishra, R.P. and Ramesh, A. (2002). Fundamentals of Cartography. New Delhi: Concept Publishing Company.

Note: Learners are advised to use the latest edition of readings

GEO-P-506

Quantitative Methods in Geography

Semester: First Semester | Course Level: 500 | Total Marks: 100

L+T+P: 0+0+4= 4 Credits | Lecture: 0 Hrs.+ Tutorial: 0 Hrs.+ Practical: 120 Hrs.

Course Learning Outcomes (CLOs):

After completing this course, a student will demonstrate:

CLO1: an understanding of relationship between socio-economic variables with a spatial dimension,

CLO2: an ability to analyse the impact of independent variable on a dependent variable,

CLO3: ability to measure disparity and inequality,

CLO4: about the significance of difference between the means of samples

Course Outline

Unit I: Techniques of Bivariate Analysis

The Scatter Plot, Correlation Analysis, Significance of Correlation Coefficient, Regression Analysis, Goodness of fit, Analysis of Variance (ANOVA) for Simple Bivariate Linear Regression, F-Test for finding out significance of relationship between two variables.

Unit II: Indices and their Application

Sopher's Index, Concentration index, Location quotient, Lorenz Curve and Gini co-efficient

Unit III: Time Series Analysis

Types of Trends, Measurements of trend, Free-hand Method, Semi-Average Method and Curve Fitting method

Unit IV: Sampling Theory and Comparing of Means

Meaning and object of sampling, Types of sampling, Sampling Distribution, Standard Error, Testing of Hypothesis, Comparing of Means through Parametric tests- 'z', 't' and 'F' tests, Non-parametric test: Chi-Square.

Assessment Framework:

- Classroom/Lab Exercises
- Data acquisition, manipulation, tabulation and visual representation

- Sessional Test
- Seminar presentation
- Project work/Assignment

Suggested Readings:

1. David Ebdon: Statistics in Geography, Blackwell Publishers, 1991.

2. Goon Gupta and M.K. Gupta: Fundamental of Statistics, the World Press. And also McGraw Hills Book Company, Delhi, 1991.

3. Mehmood, Aslam: Quantitative Methods in Geography, New Delhi: Rajesh Publications, 1978.

4. Pal, Saroj: Statistics for Geoscientists: Techniques and Applications, New Delhi: Concept, 1998.

5. Sarkar, Ashis: Quantitative Geography: Techniques and Presentations, Hyderabad: Orient BlackSwan, 2013.

6. Yule, G. U. & Kendal, M.G.: An introduction to the Theory of Statistics, 14th Ed, Charles-Griffin, London.

QUEST KNOWLEDGE WISDOM
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ESTD 2007

SEMESTER II

GEO-C-551

Geography of India

Semester: Second Semester | Course Level: 500 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of the course, students shall be able to:

CLO1: Delineate India on a regional scale.

CLO2: Discuss the historical, cultural and economic attributes of India.

CLO3: Analyse the demographic makeup of India

CLO4: Illustrate regions and the regionalization basis.

CLO5: describe various components responsible for unity in the diversity of India.

CLO6: Articulate a detailed comprehension of Northeast India.

Course Outline

Unit-I Physical Basis of Geography of India

Relief, Geology and Physiographic, Divisions Climate and Climatic Divisions, Drainage System and Water Resources, Natural Vegetation and Soils Regions of India

Unit-II **Historical, Cultural and Economic Geography of India**

Evolution of regions and boundaries since the British period, Languages and Religions in India, Population: Growth, Density and Distribution; population problems; Indian Agriculture: Its regional distribution and problems; Industries, industrial locations and industrial regions; Transportation Systems and Routes

Unit-III Regional Geographies of India

Basis of Regionalisation of India: OHK Spate, RL Singh, and Asok Mitra, Macro Region: Extra-Peninsular India (The Himalayas) with emphasis on Eastern Himalaya, Selected Meso-regions: Uttaranchal Himalaya, Upper Ganga Plain, Chotanagpur Plateau, Meghalaya Plateau, Micro-regions: Kashmir Valley, Sikkim Himalaya, Kaveri Delta, and Konkon Coastal Plains

Unit-IV North-Eastern Region

North-East India as a region Physical divisions and characteristics (Physiography, drainage, climate, and bio-diversity); Population growth and distribution, Population issues in North-East India, Economic activities: agriculture (types and patterns) and Natural resources and manufacturing industries; Special Area Provisions (including 5th & 6th Schedule of the constitution) with respect to North-East India, Development issues and problems

Suggested Teaching Learning Strategies:

Lecture-cum discussion, Visuals-aid lectures, Classroom Participation, Group Discussion, Individual Presentation, Case Studies and Term Papers/Essays

Assessment Framework

The assessment may be done in any mode or combination as given below:

1. Classroom Participation
2. Presentation / Group Discussion
3. Assignment /Term paper/ Book Review
4. Sessional Test
5. End Term Examination (2 credits)

Suggested Readings:

1. Deshpande, C.D. (1992). *India – A Regional Interpretation.* New Delhi, ICSSR and Northern Book Centre

2. Lepcha C.K & U. Lal. (2021). *Communities, Institutions and Histories of India's Northeast.* New York, Routledge

3. R.L. Singh (1989) *India: A Regional Geography.* Delhi: UBSPD,

4. Sen Gupta, P. and Sdaysuk, Galina. (1968). *Economic Regionalisation of India – Problems Approaches*, Monograph No.8, New Delhi: Census Commissioner, Govt. of India

5. Spate, O.H.K (1967) *India and Pakistan*, (3rd edition) London: Methuen

6. Taher, M. and Ahmad, A.(1998) *Geography North East India.* New Delhi: El Dorado Publications

7. Bhattacharya N.N. (2009). *North East India: A Systematic Geography*. Delhi: Rajesh Publications

8. Chatterjee, S.P (1982) *An Introductory Regional Geography: India*. Delhi: Orient Longman Ltd.

9. Govt. of India (2017) *India.* New Delhi: Publications Division, Ministry of Information and Broadcasting.

10. Govt. of India (Yearly) *Economic Survey,* Ministry of Finance. New Delhi: Oxford University Press India

GEO-C-552

Population and Settlement Geography

Semester: Second Semester | Course Level: 500 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On completion of the course students will be able to:

CLO1: Articulate the Concepts in Population and Settlement geography.

CLO2: Discuss the factors for dynamics of population change and settlement pattern.

CLO3: **Examine** distributional pattern of population and settlement in the world.

CLO4: Outline the pattern and factor of population mobility and issues related to Population and settlement.

CLO5: Critically evaluate the various policies and perspectives of geography of population and Settlement.

Course Outline

Unit I: Introduction to Population and Settlement Geography:

Population and Settlement Geography: Evolution, Scope and Subject matter, Relationship with Demography and other Social Sciences, Source of Data. Demographic Perspectives.

Unit II: Population Dynamics:

Population Distribution and Growth: World Patterns and their determinants; Population distribution and growth in India; Demographic Transition Theory, Epidemiological Transition, Demographic Dividend. Mortality and its measures; Mobility; Factors affecting Population Change; World Patterns of Fertility, Fertility in India; Mortality Patterns in the world and India.

Unit III: Migration

Migration Types; Determinants of Migration; consequences of Internal and International Migration; Laws of Migration, Rural – Urban Migration, Refugee, Asylum, IDPs, Policies of Immigration.

Unit IV: Settlements: Rural and Urban

Settlements: Forms, Types and Patterns of rural settlements with special reference to India; Transformation of rural settlements; Urban Settlements: Urbanisation Process; Urbanization in India; Rank Size Rule; Size-Class Distribution of urban settlements; Distribution of cities in India, Rural-Urban migration, Mega-cities: opportunities and challenges; Slums and urban poor.

Teaching- Learning Strategies: Lecture cum Discussion Method, Comparative Analysis, Critical Discussion, Activities Methods.

Assessment/Evaluation

1. Classroom Participation
2. Oral Presentation
3. Discussion
4. Assignment
5. Sessional Test
6. Book/Article Review
7. End Term Examination (2 credits)

Suggested Readings:

1. Burcus, H.R. and Halfacree K. (2018). An Introduction to Population Geographies. London: Routledge.

2. Weeks, J.R. (2008). Population: An Introduction to Concepts and Issues. New York: Thomson Wadsworth.

3. Newbold, K.B. (2010). Population Geography: Tools and Issues. New York: Rowman and Littlefield Publishers Inc.

4. Samers, M. (2012). Migration. New York: Routledge.

5. Harari, Y.N., (2011). Sapiens: A Brief History of Humankind. London: Vintage Books.

6. Dyson, T. (2010). Population and Development: The Demographic Transition. London: Zed Books.

7. May, J.F. (2012). World Population Policies: Their Origin, Evolution, and Impact. New York: Springer.

8. Chandna, R.C. (2015). Geography of Population. New Delhi: Kalyani Publication.

9. Trewartha, G. T. (1969). A Geography of Population: World Patterns. New York: John Wiley.

10. Singh, R.Y. (2010). Geography of Settlement. Jaipur: Rawat Publication.

GEO-C-553

History of Ideas in Geography

Semester: Second Semester | Course Level: 500 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of this course, students will be able to:

CLO1: Know the trajectory of development of Geography as a discipline.

CLO2: Develop analytical abilities to **augment** the related concepts and subject matters of other branches of Geography**.**

CLO3: Ascertain the nature of Geography in relation to other social sciences like History, Sociology, Economics, Political Science, etc.

CLO4: Compare and contrast the nature of the discipline in between science and social science.

CLO5: Critically evaluate as to how individual subjectivities help in understanding the social reality.

Course Outline

Unit I: Emergence of the Discipline

Historical Development: Contribution of major proponents in Geography in the ancient world (the Greeks and the Romans); Development of Geography during the Middle Ages; Dark Age; Age of Discovery and Exploration; Pre-Modern geographies (Varenius and Kant); Geography of Reformation; Age of Enlightenment

Unit II: Shaping the Discipline

Nineteenth Century Geography: Ritter and Humboldt

School of Environmental Determinism: Ratzel, Semple, Huntington and Taylor

Possibilist School: de la Blache, Brunhes and the French school

Influence of Darwinism on Geography

Unit III: Towards Scientific Explanation and Theory Building

Early 20th Century Geographies: Sauer – Cultural School; Hartshorne – Regional School (areal differentiation); Dualisms – Regional vs. Systematic and Physical vs. Human; Positivism in Geography; Quantitative Revolution, Logical Positivism.

Unit IV: Geography as Social Science

Critical Revolution: Behaviouralism and Humanistic Geography, Radical and Marxist Geography; Paradigms in Geography; Time Geography, Gender and Feminist Geography; Postcolonial Geography

Suggested Teaching Learning Strategies:

Lecture-cum Discussion, Audio-Visuals, Classroom Participation, Group Discussion, Book Review, Individual/Group Presentation, Case Studies and Group Projects

Assessment Framework

- Classroom Participation
- Sessional Test
- Seminar presentation
- Assignment/ Term Paper
- Group Discussion
- Book Review
- End Term Examination (2 credits)

Suggested Readings:

1. Martin, G.J and T.S. Martin (2005). *All Possible Worlds: A History of Geographical Ideas*. New York: Oxford University Press
2. Adhikari, Sudeepta (2006). *Fundamentals of Geographical Thought*. Allahabad: Chaitanya Publishing House
3. Harvey, David (1969). *Explanation in Geography.* London: Edward Arnold
4. Castree, Noel, Alisdair Rogers, and Douglas Sherman, (2005). *Questioning Geography: Fundamental debates, (*edited). Boston: Wiley-Blackwell
5. Livingstone, David (1993). *The Geographical Tradition.* London: Oxford Blackwell
6. Dixit, R.D (2003). *Geographical Thought: A contextual History of Ideas*. New Delhi: Prentice Hall of India
7. Johnston, R. J. (1986). *Philosophy and Human Geography: An Introduction to Contemporary Approaches*. London: Edward Arnold.

8. Peet, R. (1978). *Radical Geography*, (2nd Edition). London: Methuen
9. Peet, R. And Thrift, N. (2002.). *New Models in Geography*, Vol. 1 and 2, (edited) London: Unwin Hyman
10. Kitchin, Rob, and Nigel Thrift. (2009). *International encyclopaedia of human geography (In 12 vols.) Elsevier.*

GEO-O-554

Environment and Development

Semester: Second Semester | Course Level: 500 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs)

On completion of the course students will be able to:

CLO1: describe the relationships of environment and development and extend ideas of ecosystem services and quality of life.

CLO2: explain the national and international agencies and their role in protecting the environment.

CLO3: assess the development projects through EIA and SIA techniques data from secondary sources.

CLO4: critically evaluate the NGT orders and legal bindings to the agencies of state in protecting the environment.

CLO5: identify and analyse the implementation of environmental regulations in India.

Course Outline

Unit I: Introduction

Basics of Ecology; Environment, Ecosystem, Ecosystem Services Deep Ecology, Environmental Ethics, Political Ecology, Green Economy Environmental Justice and Security, Resources and Development Sustainable Development Goals Urbanisation and Environment

Unit II: Environmental and Development

Global Environmental Degradation: Drivers of Ecosystem/Environment Change, Deforestation and Loss of Biodiversity, Pollution, Climate Change, Implications for Human Security, Global Events for Environmentally Sustainable Development: UN Convention on Human Environment,

Brundtland Commission, Montreal Protocol, Rio Summit, Agenda 21, UNFCC, Kyoto Protocol, WSSD 2001, 2011

Unit III: Mountain Ecosystem

Mountain ecology (eco-belts), risks and vulnerabilities, highland and lowland interactive systems, biodiversity and conservation

Unit IV: Evaluation and Implementation of EIA & SIA

Socio-environmental Movements, Environmental Leaders iv. Climate Change and Disasters with particular focus on the Himalaya v. Important Environmental Policies and Laws in India, Environmental and Social Impact Assessment: EIA Regulations in India; SIA: Legal Frameworks; Public Participation and Decision Making; Benefit Sharing Mechanisms in Development Projects; Case Study: Hydel Power Projects, Extraction Industry and Mining Reviewing Orders of NGT relating Environment, Environment Performance Index (EPI)

Teaching-Learning Strategies: Lecture method, case studies and presentations, Reviews of NGT Orders, Evaluation of EIA reports etc.

Assessment/Evaluation

- Classroom Participation
- Presentation
- Group Discussion
- Assignment
- Sessional Test
- End Term Examination (2 credits)

Suggested Readings:

1. Barrow, C. J. (1999). Environmental Management. London: Routledge.

2. CSE. (2017). Environment Reader for Universities. New Delhi: Centre for Science and Environment.

3. CSE. (2023). State of India's Environment. A Down to Earth Annual. New Delhi: Centre for Science and Environment.

3. Dawson, J. A., & J. C. Doomkamp (1975). Evaluating the Human Environment: Essays in applied geography, (Eds). London (reprint): Edward Arnold.

4. Finisterbusch, K. K., & Walf, C. P. (1997). Methodology of Social Impact Assessment, Downden, Strondsburg: Hutchinson & Ross.

5. Guha, R. (2014). Environmentalism: A Global History. Delhi: Penguin.

6. Ives, J. D. (2004). Himalayan perception: Environmental change and the well-being of mountain peoples. London (reprint 2006): Routledge .

7. Lohani, B. N. (1997). Environmental impact assessment for developing countries in Asia (Vol 1). Manila: ADB. 9

8. Odum, E. P. (1971). Fundamentals of Ecology. Philadelphia: W.B. Sanders. 9. Park, C. C. (1981). Ecology and Environmental Management: A Geographical Perspective. London: Butterworths.

10. World Bank. 2010. Environment and social management framework. Vol. 1, 2 and 3 of India.

GEO-O-555

Geography of Heritage and Geo-Parks

Semester: Second Semester | Course Level: 500 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On completion of the course students will be able to:

CLO1: Define the Concepts of heritage and geo park and their typology.

CLO2: Explain the potential implication of heritage and geo park in society and environment.

CLO3: Classify various heritage and geo parks and their promotion.

CLO4: Identify management and inventory strategies for various heritage and geo park.

CLO5: Plan and produce sustainable development strategies of Heritage and geo park**.**

Course Outline

Unit I: Introduction to Heritage and Tourism

Heritage: Concepts and classification (Tangible and Intangible, Movable and immovable), Typology (Natural, Cultural, Geo-heritage, Trails), Relationship between heritage and Society, Relationship between Heritage and Tourism.

Unit II: Sacred Landscape

Sacred Landscape: Natural (Cave, Springs, lake, Peaks river, Forest); Pilgrimage Route; Sacred Grooves: Kabi, megaliths, Monasteries. Use of resource pattern of sacred landscapes.

Unit III: Conflict and Contestation

Contestation and Commodification of heritage and Geo parks. Cultural, economic, political and environmental aspects of heritage and Geo Park. Case study of Heritage and Geo- park.

Unit IV: Heritage Conservation and Management

Policies: Govt. of India and Sikkim; Archaeological Survey of India, Ministry of culture and heritage, INTECH, museum, Private Sector, Role of State, Civil Society and community in Conserving Heritage; Heritage and SDGs. UNESCO, development, management and inventory with GIS

Teaching- Learning Strategies: Lecture cum Discussion, Case study and Group projects, Individual and group presentations by students on selected themes.

Assessment Framework

1. Classroom Participation
2. Oral Presentation
3. Group Discussion
4. Assignment
5. Sessional Test
6. Book/Article Review
7. End Term Examination (2 credits)

Suggested Readings:

1. Chen, A., Lu, Y. and Young, C.Y. (2015). Principles of GeoTourism. New York: Springer.

2. Dowling, R.K (2016). Geo-Tourism: The Tourism of Geology and Landscape. Oxfordshrine, UK: Goodfellow Publishers.

3. Panizza, M. (2014). Geomorphosites: Definition and Evolution. *Geoheritage*, Springer. Pp. 43-58.

4. Silva, K.D. and Chapagain, N.K (eds.) (2013). Asian Heritage Monument. Context, Concerns, Prospects, London and New York: Routledge.

5. UNESCO. (2014). World Heritage

6. UNESCO. (1999). GIS and Cultural Resource Management

7. Labani, S. and Long, C. (2010). Heritage and Globalization, New York, Routledge.

8. Rodney H. (2013). Heritage: Critical Approaches, London: Routledge.

9. Harold, K. (2014). Heritage. New York: Routledge.

10. Kale, V. (2020). Geomorphosites and Geoheritage of India. Landform and Landscape of India (eds.) New Delhi: Springer.

GEO-S-557

Data Acquisition, Analysis, Writing and Communication Skills

Semester: Second Semester | Course Level: 500 | Total Marks: 50

L+T+P: 0+0+2= 2 Credits | Lecture: 0 Hrs.+ Tutorial: 0 Hrs.+ Practical: 60 Hrs.

Course Learning Outcomes (CLOs):

On completion of the course students shall be able to:

CLO1: Explain the available sources of data;

CLO2: Visualize, Interpret and analyse the data;

CLO3: Apply various statistical tools and techniques and report writing;

CLO4: Communicate and present the analysis and findings;

Course Outline

Unit: Introduction of Sources of Data:

Introduction to various data sources: Data base on Indian Economy, Census of India, Ministry of Statistics and Programme Implementation (MOSPI), National Sample Survey (NSS), Annual Survey of Industries (ASI), District Level Household Survey (DLHS), National Family Health Survey (NFHS), India Human Development Survey (IHDS), Spatial Data available online sources etc.

Unit-II Typology, Interpretation and Analysis of Data:

Identification of Data, Household surveys, Enterprise surveys, Other surveys (e.g Village facilities), Types of data: Household demographics, socio-economic indicator, gender relations, employment, education, health, networks, agriculture, industry.

Collection of data, Data interpretation: process of reviewing of data, different ways of approaching data analysis, visualization of data, explanation and analysis of data.

Teaching-Learning Strategies: Discussion and Assignments, Exercises on Data Explorations and Visualization, Data Extraction Compilation and Analysis, Report Writing and Presentation etc.

GEO-P-558

Remote Sensing and Geographic Information System

Semester: Second Semester Course Level: 500 Total Marks: 100

L+T+P: 0+0+4= 4 Credits Lecture: 0 Hrs.+ Tutorial: 0 Hrs.+ Practical: 120 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of the course, the students will be able to:

CLO1: learn the basic concepts in remote sensing, aerial photography, GIS and GNSS.

CLO2: explain the techniques of photogrammetry, digital image processing, spatial analysis using GIS and GPS survey.

CLO3: demonstrate georeferencing of raster data, visual interpretation of aerial photographs/satellite images and also execute atmospheric correction, digital image classification and accuracy assessment of satellite image using GPS waypoint data.

CLO4: analyse spatial patterns and interlinkages of geographical phenomena by the integration of remote sensing, GIS and GPS data.

Course Outline

Unit I: Basics of Remote Sensing

History and Scope of Remote Sensing; Principles of Electromagnetic Radiation; Electromagnetic Spectrum; Interaction of Electromagnetic Radiation with Atmosphere and Earth's Objects; Atmospheric Window; Platforms: Ground, Space and Air; Satellite Orbit: Geostationary and Near-polar or Sun-synchronous; Sensor: Active and Passive; Modes of Multi-spectral Scanning: Across-Track and Along-Track; Resolution: Spatial, Spectral, Radiometric and Temporal; Operational Multi-Spectral Scanners and Active Microwave (RADAR) System

Unit II: Transformation and Analysis of Remotely Sensed Data

Visualisation and Visual Interpretation of Satellite Image; Remote Sensing Data Format; Atmospheric Correction; Spectral Signature; Digital Image Processing: Pre-processing, Image Enhancement, Image Transformation and Image Classification; Aerial Photography: Types, Geometric Properties, Determination of Scale and Photogrammetry

Unit III: Basics of Geographic Information Science and GNSS

History and Nature of GIS; Relevance of Space; Location; Phenomena and Time; Geoinformation and Spatial Data: Regular and Irregular Tessellations; Vector Representation, Topology and Spatial Relationships; Scale and Resolution; Data Processing Systems: Components and Processes of GIS, Data Models, Querying, Spatial Data Entry and Overlay/Spatial Analysis; Integration of Data: Various Sources of Spatial Data in Public Domain; Global Navigation Satellite System: Space, Ground and User Segment

Unit IV: Application of Remote Sensing, GIS and GPS in Geography

Techniques of Choroplething and Isoplething (Geostatistics); Delineation of Watershed; Land Use/Land Cover; City Planning: Urban Land Use and Application of GPS; Normalised Difference Indices: NDVI; NDWI, NDSI

Teaching-Learning Strategies: Classroom lectures; demonstration; hands-on training; poster presentation & preparation of project

Assessment Framework

- Classroom Participation
- Sessional Test
- Seminar presentation
- Project work/Assignment
- Lab/Field Visit
- End Term Examination (2 credits)

(Note: The End Term Examination will be conducted by an external examiner)

Suggested Readings:

1. Jensen, J.R. and Jensen, R.R. (2013). Introductory Geographic Information Systems. Noida: Pearson India Education Services (P) Ltd
2. Burrough, P.A. and McDonnell, R.A. (1 9 9 8). Principles of Geographic Information Systems. London: Oxford University Press
3. Jensen, J.R. (2016). Introductory Digital Image Processing: A Remote Sensing Perspective. Noida: Pearson India Education Services (P) Ltd
4. Lillesand, T.M., Kiefer, R.W. and Chipman, J.W. (2004). Remote Sensing and Image Interpretation. New Delhi: Wiley India (P) Ltd.
5. Verbyla, D.L. (1995). Satellite Remote Sensing of Natural Resources. Boca Raton: CRC

(Lewis) Publishers

6. Reddy, M.A. (2008). Remote Sensing and Geographical Information Systems. Hyderabad: BS Publications
7. Lo, C.P. and Yeung, A.K.W. (2002). Concepts and Techniques of Geographic Information Systems. New Jersey: Prentice Hall
8. Gopi, S., Sathikumar, R. and Madhu, N. (2018). Advanced Surveying: Total Station, GPS, GIS and Remote Sensing. Noida: Pearson India Education Services (P) Ltd.
9. Bhatta, B. (2008). Remote Sensing and GIS. New Delhi: Oxford University Press
10. George, J. (2013). Fundamental of Remote Sensing. New Delhi: Universities Press.

SEMESTER III

GEO-C-601

Urban Geography

Semester: Third Semester Course Level: 600 Total Marks: 100

L+T+P: 3+1+0= 4 Credits Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning outcomes (CLOs):

On completion of the course, the students will be able to:

CLO1: Learn concepts used to explain urbanisation

CLO2: Examine the spatial and temporal spread of urbanisation since industrialisation

CLO3: Find out the criteria for functional classification of cities

CLO4: Examine the progress of urbanisation in India and it's socio-economic determinants

CLO5: Critically reflect on urban issues and challenges.

Course Outline

Unit I: Introduction to Urban Geography and Urban Theory

Nature and scope of urban geography, Urban studies and urban theory, The Chicago School and Urban Ecology, Urban Geography and Spatial Analysis, Humanistic (urban) geography, Radical Approaches: Neo-Marxism

Unit II: The origins and growth of cities

Preconditions for urban growth; Theories of Urban origins; Early Urban Hearths; Spread of urbanism; Urban Revival in Western Europe; Nature of the cities during ancient, medieval and modern times

Unit III: The Global Context of Urbanisation and Urban Change

Urbanisation of the globe, Changing Distribution of world's Urban population; Causes of Urban Growth, Megacities and Million Cities; Urbanisation and Economic Growth; the urbanisation cycle; Kondratieff Cycle and Urban Decline; Types of urbanised regions; Urban morphology and theories regarding morphology; Changing city land use- urban sprawl and urban fringes, Urban environment: pollutions, heat island, urban flooding and urban crimes, Sustainable Urbanism

Unit IV: Processes and outcomes of urbanisation in India

Urbanisation and Urban expansion in India; Over-urbanisation debate, Hierarchy in urban systems; Economic base; functional classification of towns; Small and medium towns in India; Indian Mega-cities; Spatial Expression of Intra-urban inequalities, Contemporary issues in urban India: a) urban infrastructure b) housing, slums and urban poor; c) urban governance.
Policy responses: City planning, City Master Plan, JNNURM, Smart Cities and other relevant policies

Teaching- Learning Strategies: Class room lecture cum Discussion, Presentation by students on assigned topics, Field visits to a city, identification and application of data relating to urban development, Research based Term paper.

Assessment Framework

1. Classroom Participation
2. Oral Presentation
3. Discussion
4. Assignment
5. Sessional Test
6. Book/Article Review
7. End Term Examination (2 credits)

Suggested Readings:

1. Bhattacharya, B. (2006). *Urban Development in India: Since Pre-historic Times*, (edited) New Delhi: Concept Publishing Company.

2. Carter, Harold (1995). *The Study of Urban Geography*. London: Arnold

3. Gavin, Shatkin (2014). *Contesting the Indian City: Global Visions and the Politics of Local,* (edited) New York: Wiley Blackwell.

4. Harding, A. and Talja Blokland (2014). *Urban Theory: A critical introduction to power, cities and urbanism in the 21st century*, Sage Publications

5. Hall, Tim (1998). *Urban Geography*. London: Routledge

6. Jonas, Andrew E. G., Eugene McCann, Mary Thomas (2015). *Urban Geography: A Critical Introduction*. Boston: Wiley-Blackwell

7. Kaplan, Dave H. and Steven Holloway (2014). *Urban Geography*. Boston: Wiley-Blackwell

8. Mayer, J. M. & C.F. Kohn (eds., 1959). *Readings in Urban Geography.* Chicago: University of California Press.

9. Pacione, Michael (2005). *Urban Geography: A Global Perspective*. New York: Routledge

10. Ramachandran, R. (1993). *Urbanisation and Urban Systems of India*. New Delhi: Oxford University Press.

GEO-O-602

Geography of Borderland with special reference to North-East India

Semester: Third Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of the course, students shall be able to:

CLO1: Learn about the evolution of borders.

CLO2: Categories and comprehend complexities of borderlands and how it is significant to various disciplines in general and the country in particular.

CLO3: Delineate the scope and relevance of borderland studies; they will understand how borderland ethnicities, cultural milieu, economics, cross-border interactions, and border management are interlinked.

CLO4: Analyse the approaches and role of geography in development and borderland management.

Course Outline

Unit-I Concepts and Typology

Concepts, Theories, Typology of Borders, Border and trans-border region, problems of Border Studies

Unit-II Borders-Edges & Interface

Borderland societies and cross-border-cultural Identities, Trans-Border Mobility, Border Management-border, and trans-border policies: Environment and Resource Borders in Visual Media, Border and Health (Medicalising Borders with respect to Pandemic)

Unit-III Borders of North-East India: Issues & Challenges

Case studies: Indo-Myanmar, Ino-China/Indo-Nepal, Indo-Bhutan Indo-Bangladesh Border, Everyday Life, Borderland Tourism, Inner Line Permits (ILP).

Unit-IV Borderland Economics & Linkages

Border and Trans-border networks and linkages, Border crossings, Border Trade, Haats and Trade through borders, Informal Trade, Channels of communication in Border areas, Integrated Check Posts (ICPs) Borders and conflict resolution, Resource Sharing and Border

Suggested Teaching Learning Strategies:

Lecture-cum discussion, Visuals-aid lectures, Classroom Participation, Taking classroom to the community and community to the classroom, Group Discussion, Individual Presentation, Case Studies and Term Papers

Assessment/Evaluation

The assessment may be done in any mode or combination as given below:

- Classroom Participation
- Presentation / Group Discussion
- Assignment / Book Review
- Sessional Test
- End Term Examination (2 credits)

Suggested Readings:

1. Acharya, Alka. (2022). *Boundaries and Borderlands: A Century after the 1914 Shimla Convention.* Routledge

2. Cooper, Anthony & Soren Tinning. (2020). Debating *and Defining Borders Philosophical and Theoretical Perspectives*. London: Routledge
3. Helliwell, J. (1998). *How much do National Borders Matter?* New York: Brookings Institution Press,
4. Newman, D. (2002). "The lines that separate: boundaries and borders in political geography." In *A Companion to Political Geography*, edited by John Agnew, Katharyne Mitchell and Gerard Toal, 23–43. Oxford: Blackwell
5. Newman, D. (2012). "Contemporary Research Agendas in Border Studies: An Overview." In *Ashgate Research Companion to Border Studies*, edited by Doris Wastl-Water, 33–47. Farnham: Ashgate Publishers
6. Pine, Richard. & Vera Konidari (2021). Borders and Borderlands: *Explorations in Identity, Exile and Translation.* Newcastle*:* Cambridge Scholars Publishing
7. Rothenberg, Paula S. (2005). *Beyond Borders: Thinking Critically About Global Issues.* Boston: Worth Publishers
8. Sevastianov, S.V & Jussi P. Laine, Anton A. Kireev(2015). *Introduction to Border Studies.*, Vladivostok: Far Eastern Federal University
9. Chakraborty, G & S. Banerjee. (2023). Negotiating Borders and Borderlands: The Indian Experience. New Delhi: Orient Blackswan.
10. Trubeta, Sevasti & Christian Promitzer, Paul Weindling. (2021). Medicalising Borders: Selection, containment, and quarantine since 1800. *Manchester: Manchester University Press*.

GEO-O-603

Regional Development and Planning

Semester: Third Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On completion of the course students will be able to:

CLO1: express the importance of regional development and planning across developed and underdeveloped geographies

CLO2: explain the concepts and typology of regions and theories of regional planning

CLO3: describe the various types of planning implemented in India and policies of their execution

CLO4: analyse the pattern of village and urban development by accessing data from secondary sources as per 73rd & 74th Amendment guidelines

CLO5: critically evaluate the regional planning experiences through various policies and programmes and policies of Govt. of India

CLO6: formulate a village development plan through mapping the local resources

Course Outline

Unit I: Introduction to Regional Development and Planning

Concept of regional development and Planning, History of development of Regional Planning, Scope, objectives, Rationale and Principles of Regional planning, Remote Sensing /GIS and Regional Planning

Unit II: Concepts and Theories of Regional Planning

Concept and Typology of a Region: Formal, Functional, and Planning Regions; Theories of Regional Development, Top-Down and Bottom-up Approaches, Debate of Planning with respect of Developed and Underdeveloped world; Approaches to Regional Planning, Types of Planning Environment and Regional Planning Settlements (Christallar, Isard, Weber etc) with particular focus on Challenges of Mega City Regions, Levels of Regional Development in India, Resource Mapping and Planning; Disparities in Development: Migration, Health, Education, Employment, Transport Infrastructure,

Unit III: Regional Planning in India

Regional Planning practices in India Regional development planning in Indian National Plans Metropolitan Planning, Resource Development Region Planning, , Multi-level planning, Decentralized Planning Legislative Frameworks of Regional Planning (including 73rd and 74th Amendment Acts), Organisations/Institutions in Regional Planning in India

Unit IV: Regional Planning Experiences in India

National Capital Region Planning, Special Purpose Regions Planning- HADP, BADP, DPAP, NEC and NE Region Planning, Special Investment Plans, Agro-Climatic Regions and Planning, Concept of Aspirational Districts,

Teaching-Learning Strategies: Lecture Method, Developing Village Plans, Policy Specific Case Studies, Discussion and Presentation etc.

Assessment/Evaluation

- Classroom Participation
- Presentation
- Group Discussion
- Assignment
- Sessional Test
- End Term Examination (2 credits)

Suggested Readings:

1. Chand, M., & Puri, V. K. (1983). Regional Planning in India. New Delhi: Allied

2. Dawkins, D. J. (2003). Regional Development Theory: Conceptual Foundations, Classic Works, and Recent Developments. Journal of Planning Literature, 18 (2), 131-172.

3. Issard, W. (1956). Location and Space Economy. Massachuesetts: MIT Press.

4. Issard, W. (1971). Methods of Regional Analysis : An Introduction to Regional Science. Cambridge: MIT. 11

5. Maboguje, A. L., & Mishra, R. P. (1995). Regional Development Alternatives: International Perspectives. Nagoya: United Nations Centre for Regional Development Series (1-7), on Regional Development.

6. Mishra, R. P. (1992). Regional Planning: Concepts, Tools, Techniques and Case Studies. New DelhI (Revised Edition): Concept.

7. Mitra, A. (1968). Levels of Development in India, Census of India 1961. Monograph No.7.

8. Mohapatra, A. C., & Pathak, C. R. (2003). Economic Liberalisation and Regional Disparities in India. Shillong: Star Publication House.

9. Sundaram, K. V. (1985). Geography and Planning. New Delhi: Concept.

10. Richardson, H. W. (1969). Urban and Regional Economics. London: World Univ. Press

GEO-S-605

Field Techniques

Semester: Third Semester | Course Level: 600 | Total Marks: 50

L+T+P: 0+0+2= 2 Credits | Lecture: 0 Hrs.+ Tutorial: 0 Hrs.+ Practical: 60 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of the course, the students will be able to:

CLO1: Identify the basic concepts in writing field diaries and human-environment relationship

CLO2: Explain the techniques of sampling, field survey using GPS and integration of field data in GIS environment

CLO3: Analyse spatial patterns and interlinkages of geographical phenomena on the basis of field observation

CLO4: Design the components of a field report

Course Outline

UNIT I: Data Collection & Field Work Techniques

Collection of primary data through by direct observation: compasses, GPS devices, or cameras, as well as learning sampling methods through structured questionnaires, transect walks, or quadrat surveys, interviews, Daily (field) diaries & synoptic notes, surveys & measurement. (Physical Data - Landforms, Climate; Human aspects- Population, settlement pattern & economic activities. Ethics of Fieldwork. Integration of field data using data processing software (SPSS and GIS). Environmental Impact Assessment-habitat degradation, or deforestation

UNIT II: Spatial Investigation & Field Maps/Sketches

Natural Processes, urbanization patterns, migration trends, or the impact of natural disasters by charting out hypotheses, design experiments, and analyse data to draw conclusions, making detailed

sketches of landscapes, landforms, construction site/pattern of the fieldwork area. Topographic maps, aerial photographs, or satellite imagery of the area interpretation. Field reports.

Teaching-Learning Strategies: pre-and post-field survey lectures; hands-on training; poster presentation & preparation of questionnaires

Assessment Framework:

- Classroom participation
- Assignment and Sessional Examination

Suggested Readings:

1. Bonnett, A. (2019). What is Geography? (3rd ed.). Sage Publications
2. Clifford, N., & Valentine, G. (eds.). (2016). Key Methods in Geography (3rd ed.). Sage Publications.
3. Gerber, R., & Chuan, Goh. Kim. (2000). Fieldwork in Geography: Reflections, Perspectives and Actions. Springer ISBN: 978-0-7923-6329-3
4. Harvey, D. (2012). Rebel Cities: From the Right to the City to the Urban Revolution. Verso Books.
5. Hay, I. (2016). Qualitative Research Methods in Human Geography (4th ed.). Oxford University Press
6. Kitchin, R., & Tate, N. J. (eds.). (2019). Conducting Research in Human Geography: Theory, Methodology, and Practice (3rd ed.). Routledge.
7. Sidaway, J. D. (2017). Understanding Development: Theory and Practice in the Third World (4th ed. Tuan, Y. F. (1974). Topophilia: A Study of Environmental Perception, Attitudes, and Values. Prentice-Hal). Routledge
8. Tuan, Y. F. (1974). Topophilia: A Study of Environmental Perception, Attitudes, and Values. Prentice-Hall
9. Maity, S.K. (2021). Essential Graphical Techniques in Geography. Singapore: Springer Nature.
10. Goudie, A., Lewin, J., Richards, K., Anderson, M., Burt, T., Whalley, B., and Worsley, P. (1990). Geomorphological Techniques. London: Routledge

Stream of Specialization: Geography of Himalayas

GEO-E-606

Glacio-Fluvial Processes in Geomorphology

Semester: Third Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of the course, the students will be able to:

CLO1: identify the basic concepts in glacio-fluvial processes operating on the Earth's surface.

CLO2: explain the connectivity in a drainage basin and geomorphic effectiveness of flooding.

CLO3: classify landforms created by the glacio-fluvial processes and to execute the river style framework.

CLO4: examine how tectonics and anthropogenic activities are responsible for change in discharge and the sediment production and transformation of the channel pattern and its morphology.

CLO5: design the riverine flood and GLOF discharges.

Course Outline

Unit I: Introduction to Glacio-Fluvial Geomorphology

Basic Concepts; Approaches; Scales in Glacio-Fluvial Geomorphology: Spatial and Temporal

Unit II: Drainage Basin as a Geomorphic Unit

Drainage Basin: Internal and External Variables; Feedbacks; Thresholds and Complex Responses in Drainage Basin; Drainage Pattern; Evolution and Development of River; Connectivity in a Drainage Basin

Unit III: Flow Regimes and Sediment Sources

Glacial Dynamics; Formation and Types of Glacial Lakes; Annual Flow Regimes and Flood Climate Regions; Factors Influencing Hydrological Responses of a Basin; Geomorphic Effectiveness of Floods; GLOFs; Role of Geomorphic and Anthropogenic Processes in Sediment Production in a Basin; Types of Sediments; Sediment Yield; Factors Controlling Sediment Yield; Sediment Storage and Delivery Ratio; Sediment Budget

Unit IV: Open Channel Flow, Channel and Valley/Floodplain Morphology

Types and Behaviour of Flow and Its Governing Factors in an Open Channel; Processes of Erosion, Transportation and Deposition (Meltwater/River); Analysis of Channel Confinement; Channel: Pattern and Morphology; Valley and Floodplain Evolution and Morphology; River Health and River Style Framework; Role of Tectonics and Human in Changing Channel and Floodplain; River Restoration; Concepts of Hydrological and Hydraulic Modelling

Teaching-Learning Strategies: lectures cum discussion; hands-on training and individual/group presentation

Assessment Framework

- Classroom Participation
- Sessional Test
- Seminar presentation
- Assignment/ Term Paper
- Lab./Field Visit
- End Term Examination (2 credits)

Suggested Readings:

1. Rakhecha, P.R. and Singh, V.P. (2009) Applied Hydrometeorology. New Delhi: Capital Publishing Company

2. Kale, V.S. and Gupta, A. (2015) Introduction to Geomorphology. Kolkata: Universities Press (India) Pvt. Ltd.

3. Brierley, G.J. and Fryirs K.A. (2006) Geomorphology and River Management: Applications of the River Styles Framework. Oxford: Blackwell Publishing.

4. Chorley, R.J., Schumm, S.A. and Sugden, D.E. (1984) Geomorphology. London: Methuen

5. Gregory, K.J. and Walling, D.E, (1973) Drainage Basin Form and Processes: A Geomorphological Approach. London: Edward Arnold

6. Chorley, R.J. (ed.) (1969) Water, Earth and Man: A Synthesis of Hydrology, Geomorphology and Socio-Economic Geography. London: Methuen & CO Ltd.

7. Schumm, S.A. (1977) The Fluvial System. New York: John Wiley & Sons.

8. Schumm, S.A. (2005) River Variability and Complexity. Cambridge: Cambridge University Press

9. Charlton, R. (2008) Fundamentals of Fluvial Geomorphology. London: Routledge

10. Clowes, A. and Comfort, P. (1987) Process and Landform: An Outline of Contemporary Geomorphology. London: Oliver & Boyd

Note: Learners are advised to use the latest edition of readings

GEO-E-607

Agricultural Geography and Sustainable Livelihoods

Semester: Third Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On completion of the course students will be able to:

1. **describe** the origin of agriculture and agricultural development in relation to ecology and environment
2. **explain** the locational factors of agricultural activities and agricultural systems in different geographic regions / geographies
3. **identify** the types of agriculture and pattern of livelihoods in North East in relation to other areas of India
4. **articulate** the determinants of agriculture from the data gathered from secondary sources
5. **critically evaluate** the role of institutions in the development of agriculture planning and implementation
6. **analyse and suggest** livelihood planning, decent work and economic development in the village ecosystems in relation to local resources base.

Course Outline

Unit I: Introduction to Agricultural Geography

Nature, Scope and Significance of Agricultural Geography, Origin and development of agriculture, Livelihood Diversities and Linkages with Agriculture, diffusion and adoption of crops and animals and gene centres. Approaches to the study of Agricultural Geography: commodity, regional and systematic Political Economy of Agriculture in India and Agrarian distress

Unit II: Innovations in Agricultural Systems

Physical, Socio-economic and technological determinants, Agricultural Regionalization: Whittlesey's classification of agricultural regions and recent changes; Von Thunen's theory of agricultural location and recent modifications Agricultural Land use classes in India Land capability classification: methods and applications; Cropping pattern, crop combination, diversification and specialization, and degree of commercialization Crop intensity, efficiency and productivity patterns

with special reference to India; Green Revolution - its regional impacts and consequences, Land Scarce and Land Abundance Economies; Farm-Size Productivity Debate; Plantation Agriculture; Estate and Smallholder Farming; Pattern of Plantation Farming in the world

Unit III: Patterns and Processes of Agriculture in North-East India

Environment and Agriculture in NE, Shifting cultivation: system and patterns; consequences of shifting cultivation; Shifting cultivation and livelihoods; Peasant farming: small scale rice-farming in plains and hills, terrace farming, organic farming, land tenancy and rising landlessness in the region, Plantation farming in the North-East: Its colonial history, patterns of tea-plantation, Horticulture and Floriculture

Unit IV: Agriculture and Livelihood Planning

Agricultural Mechanisation and Implements in Farming, Agricultural and Farm Inputs, Agricultural Marketing and Access to Market, Measuring Institutional Finance and Agriculture in village ecosystems, Govt. of India Policies and Institutions (Role of ICAR, KVKs, Commodity Boards (Tea Board/Coffee Board/Marketing Organisations)

Teaching-Learning Methods: Lecture Method, Village Level Agricultural Planning, Case Studies and Livelihood Mapping through Field Observation, Sharing Rural Experiences of Mountain Agriculture etc.

Assessment Framework

- Classroom Participation
- Presentation
- Group Discussion
- Assignment
- Sessional Test
- End Term Examination (2 credits)

Suggested Readings:

1. Bhalla, G.S. (2011). Conditions of Indian Peasantry, New Delhi: National Book Trust, India

2. Bhalla, G. S. and Gurmail, S. (2001). Indian Agriculture: Four Decades of Development, New Delhi: Sage Publications,.

3. Burmon, A.K. (1977). "Tribal Agriculture in the North-Eastern Hill Region", Social Scientist, Vol. 6, No. 3, pp. 61-68.

4. Chakrabarti, A. (2011). "Transhumance, Livelihood and Sustainable Development and Conflict between Formal Institution and Communal Governance: An Evaluative Note on East Himalayan State of Sikkim, India, IPEDR, Vol. 5, LACSIT Press, Singapore, pp. VI-1 to VI-7

5. Gupta, R.D. (1986), "From Peasants and Tribesmen to Plantation Workers: Colonial Capitalism, Reproduction of Labour Power and Proletarianisation in North-East India, 1850s to 1947", Economic and Political Weekly, Vol. XXI, No. 4, pp. PE2 to PE10.

6. Mohammad, N (1992). New Dimensions in Agricultural Geography (Volume I to VIII). New Delhi: Concept Publishing Company

7. Shaffi, M. (2000). Agricultural Geography of South Asia, New Delhi: Macmillan India Ltd., 8. Vaidya, B.C. (1997). Agricultural Landuse in India, Delhi: Manak Publications Pvt. Ltd.

9. Sachchidananda (1989). Shifting Cultivation in India, New Delhi: Concept Publishing Company

10. Singh, S. (2012). "New Markets for Smallholders in India: Exclusion, Policy and Mechanisms", Economic and Political Weekly, Vol. XLVII, No. 52, pp. 95-105

GEO-E-608

Natural Resource Management

Semester: Third Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On completion of the course students will be able to:

CLO1: define the concept of 'resource' vis-à-vis 'waste' in relation to economic development

CLO2: explain the locational factors of distribution of resources in the world

CLO3: identify the resource surplus/deficit regions in India

CLO4: formulate socio-economic analysis regarding patterns and distribution of resources with the help of secondary data

CLO5: critically evaluate the reports from various committees and commissions regarding resource conservation

Course Outline

Unit I: Introduction

Definition, Scope and Classification of Resources; Natural resources and human societies,

Club of Rome studies and limits to availability of natural resources, Political economy of global natural resources

Unit II: Global distribution of energy resources

Coal, oil, natural gas and hydro-power resources, the energy deficit and surplus areas

Global energy trade and situation of India in global energy scenario

Global distribution of principal minerals: Ferrous (Iron), Non-ferrous (Aluminum) and Noble metals (Copper) India's production, distribution and consumption of principal minerals (Iron, Aluminum & Copper)

Unit III: Forest and Biodiversity resources and their significance to human societies

Global distribution of forest resources; The Equatorial Rainforests, the Tropics, the mid-latitude and high latitude forests; forest products and global trade, India's forest resources and their conservation, Significance of global fresh-water resources, confined, flowing and ground-water resources; their distribution, Identification of chronically water deficit and surplus areas; India's situation in global fresh-water resources, Natural Resource Accounting System.

Unit IV: Principles of conservation of resources

Recycling, efficient and multiple-use of natural resources, Principles of Sustainable Development and the Brundtland Report, Economic efficiencies and trade-offs in conservation strategies, Public policies for conservation strategies, market forces, fiscal methods, incentive systems and regulatory systems of management, India's resource management policies (energy, minerals, forests and water resources)

Suggested Teaching Learning Strategies:

Lecture-cum discussion, Audio-Visuals, Classroom Participation, Group Discussion, Individual/Group Presentation, Case Studies and Group Projects

Assessment Framework

- Classroom Participation
- Sessional Test
- Seminar presentation
- Assignment/ Term Paper
- Group Discussion

- End Term Examination (2 credits)

Suggested Readings:

1. Bruntland, G. (1987). *Our Common Future, World Commission on Environment & Development.* Oxford: Oxford University Press
2. Zimmermann, E. W. (1933). *World resources and industries; a functional appraisal of the availability of agricultural and industrial materials.* Harpers & Brothers.
3. Eherlich & Eherlich. (1977). *Ecoscience: Population Resource and Environment.* San Francisco: W.H. Freeman
4. Meadows, P. et. al.. (1972). *The Limits to Growth.* New York: Universe Books.
5. Mathew, R. Simons (2000). Revisiting the Limits to Growth: Could the Club of Rome Have Been Correct, After all? (Part I):, Published by Great Change.org, Archived Sep 30
6. Munshi, Sunil (1984). *Resource, regions and regional disparity in India.* New Delhi: People's Publishing
   house.
7. Barma, H. Naazneen and Kai Kaiser (2012). *Rents to Riches? The political Economy of Natural Resources led Development.* Washington D.C: the World Bank.
8. Gadgil, Madhav and Ramachandra Guha (2000). *The use and abuse of nature.* New Delhi: Oxford University Press
9. Collier, Paul (2010). *The Political Economy of Natural Resources, Social Research*, Vol 77, No. 4, Winter
10. Kate, R.W and Ian Burton (1986). *Geography, Resources and Environment Vol. II*. (ed). Chicago: Chicago University Press.

Stream of Specialization: Geography of Development

GEO-E-610

Theories of Development

Semester: Third Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of this course, students are expected to:

CLO1: Know the evolution of development discourse as a branch of knowledge.

CLO2: Define the basic concepts like growth, development, poverty, market, etc.

CLO3: Identify theoretically the factors responsible for uneven development in the society.

CLO4: Explain the processes of circulation and reconfiguration of capital and its effects on the society in the wake of globalisation.

CLO5: Formulate critical thoughts on the functioning of capital under different development paradigms.

Course Outline

Unit I: Introduction to Development

Concept of Development; Growth vs. Development; Understanding Market: Economic Sociology of Market; Vicious Cycle of Poverty; Economic Efficiency and Market Failure; Institutions – facilitator of prosperity or impoverishment? Basic understanding of Property

Unit II: Theories and Approaches

Classical approach, Keynesianism; Dependency and World-Systems theory; Modernisation Utilitarianism, Rawlsian Theory of Social Justice, and Capability Approach; Gender and Development, Post-Development

Unit III: Political Economy of Development

Oligopolistic Capitalism and Oligarchic Democracy; Social embeddedness of economic relations; Social Network, Production of Space; Production of Nature; Geography of Production and Labour; Accumulation and Dispossession

Unit IV: Scale of Development

Spatial Scale/Geographical Scale; Social Construction of Scale; Space-Time Compression; Formation of Region-State; Circuits of Capital; Spatial fix/ Scalar fix.

Suggested Teaching Learning Strategies:

Lecture-cum Discussion, Audio-Visuals, Classroom Participation, Group Discussion, Book Review, Individual/Group Presentation, Case Studies and Group Projects

Assessment Framework

- Classroom Participation
- Presentation
- Group Discussion
- Assignment
- Sessional Test
- Book Review
- End Term Examination (2 credits)

Suggested Readings:

1. Rist, Gilbert (2008). *The History of Development: From Western Origin to Global Faith (Translated by Patrick Camiller)*. Third Edition. London & New York: Zed Books

2. Peet, R., & Hartwick, E. (2015). *Theories of Development: Contentions, Arguments, Alternatives*. New York and London: The Guilford Press.

3. Sen, Amartya (2001). *Development as Freedom*. Oxford: Oxford Paperbacks.

4. Massey, Doreen (1995). *Spatial Division of Labour: Social Structures and the Geography of Production*. London: Palgrave Macmillan

5. Acemoglu, Daron and Robinson, James A. (2012). *Why Nations Fail? The Origins of Power, Prosperity and Poverty*. New York: Crown Publishers

6. Smith, Neil (2008). *Uneven Development: Nature, Capital and the Production of Space*, Athens and London: University of Georgia Press

7. Bagchi, Amiya Kumar (1982). *The Political Economy of Underdevelopment*. Cambridge: Cambridge University Press

8. Shepperd, Eric and Barnes, Trevor. J. (Eds.) (2003). *A Companion to Economic Geography*. Oxford: Blackwell Publishing

9. Harvey, David (2001). *Spaces of Capital: Towards a Critical Geography*. New York: Routledge.
10. Krugman, P. R. (1997). *Development, Geography, and Economic Theory*. Cambridge: MIT press.

GEO-E-611

Rural Development and Planning

Semester: Third Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On completion of the course students will be able to:

CLO1: Explain the various theories/ perceptions of rural and rural development.

CLO2: Classify various schemes and programmes of rural development in the nation and international.

CLO3: Critically evaluate contested ideas of rural space that produced and reproduced and schemes of rural development.

CLO4: Plan and produce strategic for sustainable rural development.

Course Outline

Unit-I: Introduction:

Rural- Concepts, Contestation and Dynamics Ideas of rural space: Imagination of rural, Exploitation of rural, Consumption of Rural, Developing Rural, Living with Rural, Performing of Rural, Regulation and Remaking of Rural.

Unit-II: Rural development: Principles and process:

Concept of rural Development, basic elements, dilemmas Paradigms/theories and rural development; Rural Development Processes in India: Major features of colonial and post- Independence period. Rural economy of India- size and structure (agriculture and non-agriculture) Rural-Urban Relations: Rural-Urban continuum, disparities and migration.

Unit III: Rural Development Programmes and Policies:

Rural Governance (73rd Amendment); Rural development policy in India, Rural Poverty Alleviation Programmes and sustainable livelihoods, Resource and infrastructural Development, Financing bodies of rural Development, Role of rural market (periodic and permanent) in rural economy.

Unit IV: Rural Development in North-East.

Rural Infrastructure planning: physical infrastructure-connectivity, Decentralised Planning for rural areas: DONER, Autonomous Hill Development Council, Village council, sixth schedule provision for local institutions in North-East. Traditional Institutions: Dzumsa, Darbar Shnong, ADC etc. Rural development programmes and policies in Sikkim.

Teaching - Learning Strategies: Lecture cum discussion, Case studies and group projects, Field studies, Comparative Analysis, Initiation of dialogue by the More Knowledgeable Other (MKO)

Assessment/Evaluation

1. Classroom Participation
2. Oral Presentation
3. Group Discussion
4. Assignment
5. Sessional Test
6. Book Review
7. End Term Examination (2 credits)

Suggested Readings:

1. Woods M. (2011). Rural. London: Routledge.

2.Chambers, R. (2013). Rural Development : Putting the Last First. London: Routledge.

3. Singh, K. (2009). Rural Development: Principles, Policies and Management. New Delhi: Sage.

4. Saturnimo, M.B. (2010). Critical Perspectives in Rural Development studies. London: Routledge.

5. Kristin B. and Micheal, M. (2020). Rural Modernity in Britain: A Critical Intervention. Edinburg: University Press.

6. Smith, P.J. et al, (2015). Critical Rural Theory: Structure, Space, Culture. Jaipur: Rawat Publication.

7. Francisco J. T (2008). Rural Analysis and Management: An Earth Science Approach to Rural Science. London: Springer.

8. NIRD (2016). India Rural Development Report 2015-/1. Hyderabad.

9. Bowler, I.R. and Bryant, C. R. (2002). The Sustainability Of Rural System: Geographical Interpretations. London : Springer.

10. Hugh D. Clout (1972). Rural Geography- An Introduction Survey. New York: Pergamon Press.

GEO-E-612

Sustainable Cities

Semester: Third Semester Course Level: 600 Total Marks: 100

L+T+P: 3+1+0= 4 Credits Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

A student will emerge from this course understanding the following:

CLO1: An overview of governance, land management, utilities, and other entities that make up urban systems,

CLO2: how poverty, health, economic opportunity, and other people-focused issues impact urban systems and development,

CLO3: how harnessing the power of urban development for global progress is imperative from infrastructure to culture to economic opportunity.

CLO4: How technology is shaping transportation, energy, urban resilience, and more

CLO5: the ways in which the governments, private stakeholders and other actors can improve urban development to heed the call of Sustainable Development Goal 11 – "making cities and human settlements inclusive, safe, resilient and sustainable" by 2030.

Course Outline

Unit I: Introduction

Definition of City, Sustainable City, The Urban opportunity, Cities: cultural and social transformation, Challenge of urban politics, Planning and governance, Urban research methods, Urban theory and history.

Understanding urban systems, Municipal, regional and national governance, Urban utilities, Urban public finance and taxation, Law, order and conflict, Land management and planning, Lessons from London and Mumbai

Unit II: Inclusive and Safe Cities

Marginalisation, Vulnerabilities and urban poverty, Factors and Processes of Marginalisation and Vulnerabilities, Measuring urban poverty, Poverty reduction in cities, Affordable and adequate housing, Housing and Service Provisions, Safety and violence, Urban vulnerabilities.

City production and consumption, Women in the informal economy, Migration, mobility and the urban-rural continuum, Wealth and inequality.

Case: SEWA, India

Migration and the refugee crisis

Unit III: Improving Human development in cities

Addressing the challenges of urban public health, Solutions for improving urban health, Education and skills, Higher education in cities, Gender in the city, Human rights and justice, Law and equality, Apartheid in South African cities.

Sustainable environmental services and infrastructure, Sustainable transport planning, ICT, Sustainable urban energy systems, Sustainable transport: Bangkok, Jerusalem

Unit IV: Resilient Cities

Air, water, food and natural resources, Urban age for sustainable cities, City risk exposure, Climate impacts, adaptation and mitigation, Building urban resilience, Environmental planning and the politics of change, Sustainable environmental practices: Durban, Urban disaster risk management, Post-disaster recovery.

SDGs and other global processes, New institutions and governance, Public participation and democracy, Financing sustainable development, Measuring and monitoring the SDGs, Understanding urban systems, Municipal, regional and national governance, Urban utilities, Urban public finance and taxation, Law, order and conflict, Land management and planning, Lessons from London and Mumbai

Teaching- Learning Strategies: Class room Lecture cum Discussion, Presentation by students on assigned topics, Field visits to a city, identification and application of data relating to sustainable cities, Research based Term paper.

Assessment Framework:

1. Classroom Participation
2. Oral Presentation
3. Discussion
4. Assignment

5. Sessional Test
6. Book/Article Review
7. End Term Examination (2 credits)

Suggested Readings:

1. Binder, C. R. Wyss, & E. Massaro (Eds. 2020), Sustainability Assessment of Urban Systems. Cambridge: Cambridge University Press.

2. Dixon, T., & Tewdwr-Jones, M. (2021). Urban Futures: Planning for City Foresight and City Visions. Bristol University Press. doi:10.46692/9781447336297.

3. Isenhour, C., McDonogh, G., & Checker, M. (Eds.). (2015). *Sustainability in the Global City: Myth and Practice* (New Directions in Sustainability and Society). Cambridge: Cambridge University Press. doi:10.1017/CBO9781139923316

4. Yanarella, E., & Levine, R. (2011). *The City as Fulcrum of Global Sustainability*. Anthem Press. doi:10.7135/UPO9780857284006.

5. Zhang, B., Sami, N., Parthasarathy, R., Rabé, P., & Bracken, G. (Eds.). (2019). *Future Challenges of Cities in Asia*. Amsterdam University Press. doi:10.1017/9789048544912

SEMESTER IV

GEO-V-651

Cyber Security Programme

Semester: Fourth Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+0+1= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 0 Hrs.+ Practical: 30 Hrs.

Course Learning Outcomes (CLOs):

Upon completion of the degree program, students will be able to:-

CLO1: Understand the cyber security threat landscape.

CLO2: Develop a deeper understanding and familiarity with various types of cyberattacks, cybercrimes, vulnerabilities and remedies thereto.

CLO3: Analyse and evaluate existing legal framework and laws on cyber security.

CLO4: Analyse and evaluate the digital payment system security and remedial measures against digital payment frauds.

CLO5: Analyse and evaluate the importance of personal data its privacy and security.

CLO6: Analyse and evaluate the security aspects of social media platforms and ethical aspects associated with use of social media.

CLO7: Analyse and evaluate the cyber security risks.

CLO8: Based on the Risk assessment, plan suitable security controls , audit and compliance.

CLO9: Evaluate and communicate the human role in security systems with an emphasis on ethics, social engineering vulnerabilities and training.

CLO10: Increase awareness about cyber-attack vectors and safety against cyber-frauds.

CLO11: Take measures for self-cyber-protection as well as societal cyber-protection.

Module	Module Name	Module Contents	Learning Outcome
Module-I	Overview of Cyber Security	Cyber security increasing threat landscape, Cyber security terminologies- Cyberspace, attack, attack vector, attack surface, threat, risk, vulnerability, exploit, exploitation, hacker., Non-state actors, Cyber terrorism, Protection of end user machine, Critical IT and National Critical Infrastructure, Cyberwarfare, Case Studies.	Students after completing this module will be able to understand the basic terminologies related to cyber security and current cyber security threat landscape. They will also develop understanding about the Cyberwarfare and necessity to strengthen the cyber security of end user machine, critical IT and national critical infrastructure.
Module-II	Cyber crimes	Cyber crimes targeting Computer systems and Mobiles- data diddling attacks,	After completion of the module, students will have complete understanding

		spyware, logic bombs, DoS, DDoS, APTs, virus, Trojans, ransomware, data breach., Online scams and frauds- email scams, Phishing, Vishing, Smishing, Online job fraud, Online sextortion, Debit/ credit card fraud, Online payment fraud, Cyberbullying, website defacement, Cybersquatting, Pharming, Cyber espionage, Cryptojacking, Darknet- illegal trades, drug trafficking, human trafficking., Social Media Scams & Frauds- impersonation, identity theft, job scams, misinformation, fake newscyber crime against persons - cyber grooming, child pornography, cyber stalking., Social Engineering attacks, Cyber Police stations, Crime reporting	of the cyberattacks that target computers, mobiles and persons. They will also develop understanding about the type and nature of cyber crimes and as to how report these crimes through the prescribed legal and Government channels.

		procedure, Case studies.	
Practical	1. Platforms for reporting cyber crimes. 2. Checklist for reporting cyber crimes online		
Module-III	Cyber Law	Cyber crime and legal landscape around the world, IT Act,2000 and its amendments. Limitations of IT Act, 2000. Cyber crime and punishments, Cyber Laws and Legal and ethical aspects related to new technologies- AI/ML, IoT, Blockchain, Darknet and Social media, Cyber Laws of other countries, Case Studies.	Students after completing this module will be able to understand the legal framework that exist in India for cyber crimes and penalties and punishments for such crimes, It will also expose students to limitations of existing IT Act,2000 legal framework that is followed in other countries and legal and ethical aspects related to new technologies.
Module IV	Data Privacy and Data Security	Defining data, meta-data, big data, nonpersonal data. Data protection, Data privacy and data security, Personal Data Protection Bill and its compliance, Data protection principles, Big data security	After completing this module, students will understand the aspects related to personal data privacy and security. They will also get insight into the Data Protection

		issues and challenges, Data protection regulations of other countries- General Data Protection Regulations(GDPR),2016 Personal Information Protection and Electronic Documents Act (PIPEDA)., Social media- data privacy and security issues.	Bill,2019 and data privacy and security issues related to Social media platforms.
Practical	1. Setting privacy settings on social media platforms. 2. Do's and Don'ts for posting content on Social media platforms. 3. Registering complaints on a Social media platform		
Module V	Cyber security Management, Compliance and Governance	Cyber security Plan- cyber security policy, cyber crises management plan., Business continuity, Risk assessment, Types of security controls and their goals, Cyber security audit and compliance, National cyber security policy and strategy.	Students after completing this module will understand the main components of cyber security plan. They will also get insights into riskbased assessment, requirement of security controls and need for cyber security audit and compliance.
Practical	1. Prepare password policy for computer and mobile device.		

	2. List out security controls for computer and implement technical security controls in the personal computer. 3. List out security controls for mobile phone and implement technical security controls in the personal mobile phone. 4. Log into computer system as an administrator and check the security policies in the system.

Notes:

1 C: 1 Hour for Lecture/Tutorial

1 C: 2 Hour for Practical/Projects

Terms of Reference for Credit Scheme (3+1)

• There are total of 90-96 working days (15 -16 Weeks) in a semester.

• 1 Credit = 15 Hours, therefore 3 Credits = 45 hours (3*15=45)

• In a week, 3 lectures of theory, each period of one hour duration every week, (45 hours in a semester) and 1 practical session of two hours. (30 hours in a semester)

Stream of Specialization: Geography of Himalayas

GEO-E-652

Indigenous Knowledge System in Resource Management

Semester: Fourth Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of this course, students are expected to:

CLO1: define the concept of indigenous knowledge in relation to other forms of knowledge.

CLO2: explain the socio-cultural factors responsible for the degeneration of indigenous knowledge in the society.

CLO3: extrapolate the resource management policies of the Indian state in relation to indigenous knowledge.

CLO4: acquire **procedural skills** to hone the indigenous people's uprising against the modern development paradigm.

CLO5: critically evaluate the lessons learnt on indigenous knowledge regarding resource management with the immediate surroundings.

Course Outline

Unit I : Introduction to Indigenous Knowledge

Concepts of Indigeneity, Scope and Importance of Indigenous Knowledge (IK)

Knowledge Commons, Indigenous Knowledge, Traditional Knowledge, Western Knowledge

Regional and Cultural contexts of IK development

IK and epistemic violence (knowledge paradigm and methodologies)

IK in ascertaining resource vis-à-vis waste; IK in tangible and intangible resources (resources categorisation)

UNIT II: Indigenous Knowledge and Resource Conservation Policies in India

Protection of IK: need and significance

IK in global economy, Indigenous Knowledge (IK) and IPR

Forest Rights Act, 2006

Plant Varieties Protection and Farmer's Rights Act, 2001

Biological Diversity Act, 2002; Protection of Traditional Knowledge Bill, 2016

Geographical Indications Act, 2003; Geographical Indication and Relevance of Traditional Knowledge

UNIT III: Indigenous Knowledge (IK) and Development

Traditional Institutions: self-governance, agricultural field and cultivation pattern, water harvesting, irrigation system

Modern infrastructure development and IK, Community Development, IK and Sustainable Development, Customary Law and legal-jurisprudence of state

Traditional medicinal herbs (hunters and foragers); Medicinal herbs and Faith-Healers; traditional medicines and modern medicines

UNIT IV: Management Practices

Terrace Farming; Paddy-Fish Culture; Fermentation Process; Common Property Resources and Management; Gender Dimension of resource management practices; Soil and Microbiota

conservation; Bamboo Craft; Community resilience and natural disaster; Culinary traditions and IK in the eastern Himalayas; Indigenous religions.

Suggested Teaching Learning Strategies:

Lecture-cum discussion, Audio-Visuals, Classroom Participation, Group Discussion, Field Work, Book Review, Individual/Group Presentation, Case Studies and Group Projects

Assessment Framework:

- Classroom Participation
- Presentation
- Group Discussion
- Assignment
- Sessional Test
- Field Work
- End Term Examination (2 credits)

Suggested Readings:

1. Raza, M., & Ahmad, A. (1990). *An atlas of tribal India: with computed tables of district-level data and its geographical interpretation*. Concept Publishing Company.
2. Shiva, V. (2016). *Biopiracy: The plunder of nature and knowledge*. North Atlantic Books.
3. Sengupta, N., Sengupta, N., & Ghosh. (2019). *Traditional knowledge in modern India*. Springer India.
4. Rai and Mishra (eds.) (2022). *Traditional Ecological Knowledge of Resource Management in Asia*. Springer
5. Mbah, M. F., Leal Filho, W., & Ajaps, S. (Eds.). (2022). *Indigenous Methodologies, Research and Practices for Sustainable Development*. Springer Nature.
6. Zutshi, B., Ahmad, A., & Srungarapati, A. B. (Eds.). (2019). *Disaster risk reduction: Community resilience and responses*. Palgrave Macmillan.
7. Singh, A., Punia, M., Haran, N. P., & Singh, T. B. (Eds.). (2018). *Development and Disaster Management: A Study of the Northeastern States of India*. Singapore: Springer Singapore.
8. Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge university press.
9. Hoppers, C. A. O. (Ed.). (2002). *Indigenous Knowledge and the Integration of Knowledge Systems: Towards a philosophy of articulation*. New Africa Books.

10. Bain, W. K (2019). Traditional Wisdom and Practices Involved in Bamboo Based Crafts of the Lepcha Community of North Sikkim – A Case Study from Dzongu Reserve Area. *Journal of Kolkata Society for Asian Studies*, Vol. 5(1), pp. 50-75

GEO-E-653

Population Dynamics in Himalayas

Semester: Fourth Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcome (CLOs):

On completion of the course students will be able to:

1. **Explain** dynamics of population in the region.
2. **Classify** distributional pattern of population and mobility.
3. **Identify** factors of population dynamics and involving issues in the region.
4. **Critically evaluate** resource development and population dynamics in the region.

Course Outline

UNIT-1: Introduction:

Population Profile in Himalaya, Change in Population, Different Social Groups, Peopling of Himalayas, Ethnicity, Language, Religion,

UNIT-II: Environment and Population dynamics:

Population Growth: Socio-economic, environmental and political factors for population growth, Population Density, Composition, Growth, Comparative Perspective of Western and Eastern Himalayas: Population, Density, Rural and Urban composition, Sex ratio, Age-Sex, Birth and Death Rate, Morbidity, Mortality, Resource and Environment

UNIT-III: Mobility in Himalayas:

Patterns of Migration, Gender Dimension, Factors responsible for Migration, Impacts on Society, Culture, Economy, Environment; Identity and Conflict related to Land

UNIT-IV Policies and Programmes:

Population Policies; Special Area Provisions; ILP

Teaching - Learning Strategies: Lecture cum discussion, Case studies and group projects, Field studies, Comparative Analysis, Individual and group presentations by student on selected themes.

Assessment Framework:

1. Classroom Participation
2. Presentation
3. Group Discussion
4. Assignment
5. Sessional Test
6. Book review

Suggested Readings:

1. Douglas, E. (2021). Himalaya: A Human History. UK: Vintage.
2. Dikshit, K.R and Dikshit, J.K (2013). North East India: Land, People and Economy. New Delhi: Springer.
3. Zurick, J. and Panchero, J (2006). Illustrated Atlas of the Himalaya. UK: The University Press of Kentuncky
4. Risley H.H. (1985). The Gazetteer of Sikkim. New Delhi:B.R. Publication.
5. Mayhew, B. et al. (2020). Lonely Planet Bhutan. UK: Lonely Planet.
6. Bamzai, P.N.K. (1994). Cultural and Political History of Kasshmir. New Delhi: M.D Publication.
7. Marshall, J. (2005). Britain and Tibet 1765-1947. UK: Routledge.
8. White, J.C. (2022). Sikkim and Bhutan: Twenty One year on North East Frontier 1887-1909. Sydney: Legare Street Press.
9. Rana, SJB. (2023). Kingdom Lost: Nepal's Tryst with Democracy (1951-2008). New Delhi: Rupa & Co.
10. Hussain, M. (1999). A Geography of Jammu and Kashmir. New Delhi: Rajesh.

GEO-E-654

Natural Hazards and Disaster Management

Semester: Fourth Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of the course, the students will be able to:

CLO1: Identify hazardous/disastrous geomorphic processes and anthropogenic activities

CLO2: Explain the occurrence, causes and spatial dimension of natural disasters

CLO3: Analyse effective disaster management techniques

CLO4: Check the effectiveness of existing disaster management policies

Course Outline

Unit I: Introduction to Natural Hazards/Disasters

Geomorphic Processes and Relationships among those Processes; Magnitude, Frequency and Intensity of Hazardous Natural Processes; Anthropogenic Processes and Natural Hazards; Concept of Natural Disasters, Exposure, Vulnerability, Risk, Resilience, Adaptation and Coping Capacity; Classification of Hazards/Disasters: Natural, Biological and Anthropogenic

Unit II: Occurrence, Causes and Spatial Dimension of Natural Hazards/Disasters

Riverine and Glacial Lake Outburst Floods; Earthquakes; Landslides; Tsunamis; Coastal Erosion; Disastrous Weather Events: Heat Wave, Cold Wave, Cloud Burst, Thunderstorm, Temperate and Tropical Cyclones; Forest Fires; Air Pollution; Drought; COVID-19; Famine; Adverse Impacts of Climate Change

Unit III: Disaster Management

Disaster Management Cycle; Management Techniques of the riverine floods, Earthquakes, Landslides, Glacial Lake Outburst Floods (GLOFs), Tsunami, Coastal Erosion, Tropical & Temperate Cyclones, Droughts, Forest Fires, Air Pollution, Adverse Impact of Climate Change; Training and Capacity Building; Application of Remote Sensing and GIS in Disaster Management

Unit IV: Policies/Institutions related to Disaster Management

National policy on Disaster Management (NPDM): Disaster Management Act 2005, NDMA, NIDM, State Disaster Management, District Disaster Management Plan; Disaster Management Frameworks: Hyogo and Sendai

Suggested Teaching-Learning Strategies: lecture cum discussion; demonstration ; field work and individual/group presentation

Assessment Framework

- Classroom Participation
- Sessional Test
- Seminar presentation
- Assignment/ Term Paper
- Group discussion
- End Term Examination (2 credits)

Suggested Readings:

1. Nath, S.K. (2006) Seismic Hazard and Microzonation Atlas of the Sikkim Himalaya. New Delhi: Seismology Division

2. Blaikie, P., Cannon, T., & Davis, I. (1994). At Risk: Natural Hazards, People's Vulnerability, and Disasters. London: Routledge.

3. Council, N. R. (2006). Facing Hazards and Disasters: Understanding Human Dimensions. Washington: National Academies Press.

4. Documents, G. O. (Various Years). Vulnerability Atlas (2004), Disaster Management Act (2005), Disaster Management Policy (2009).

5. Quarantelli, E. (1998). What is a Disaster? Perspectives on the Question. London: Routledge.

6. Paraswamam, S., & Unikrishnan, P. V. (2000). India Disaster Report. New Delhi: Oxford.

7. Schneid, T., & Collins, I. (1998). Disaster Management and Preparedness. UNU-EHS. Various years. World Risk Reports. Washington: Lewis.

8. Bryant, E. (2005). Natural Hazards. Cambridge: Cambridge University Press.

9. Agrawal, A. and Chak, A. (1991). Floods, Floodplains and Environmental Myths. New Delhi: Centre for Science and Environment.

10. Hyndman, D. and Hyndman, D. (2017). Natural Hazards and Disasters. Boston: Cengage Learning.

GEO-E-655

Regional Geography of Nepal, Bhutan and Eastern Himalaya

Semester: Fourth Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of the course, students shall be able to:

CLO1: Delineate the Eastern Himalayan region.

CLO2: Interpret the physiographic, drainage and climatic settings of the region.

CLO3: Describe the political history, ethnic and cultural milieu.

CLO4: Analyze the food production systems and livelihood.

CLO5: Explain the linkages and regional connections and cooperation.

Course Outline

Unit-I Introduction

General background to Nepal and Eastern Himalayas and its divisions, Nepal, Darjeeling-Sikkim and Bhutan Himalayas, Arunachal Himalayas, Geological evolution, Physiography and Drainage systems Climate, Natural Hazards, Natural Vegetation and Soils

Unit-II Diversities and Plurality

Cultural Evolution, Ethnicities and Cultural diversity and region Political history and state formations, Geo-political contexts of Nepal and Eastern Himalayas and cross-border issues. Population distribution, growth and Migration, Population problems, Rural and Urban settlements

Unit-III Economy

Agrarian economy, shifting cultivation, Terrace and plantation farming, Forestry and foraging economies, Rural livelihoods Industries, organized sectors and traditional products, occupations and employment

Unit-IV Trade & Commerce

Communications and trade with special emphasis on border trade with Nepal and Bhutan; Bilateral Relations and Agreements, Co-Operation and Regional Development Initiatives

Suggested Teaching Learning Strategies:

Lecture-cum discussion, Visuals-aid lectures, Classroom Partaking, Group Discussion,

Individual Presentation, Case Studies and Term Papers/Essays

Assessment Framework:

The assessment may be done in any mode or combination as given below:

- Classroom Participation
- Presentation / Group Discussion
- Assignment / Book Review
- Sessional Test
- End Term Examination (2 credits)

Suggested Readings:

1. Bhattacharya N.N. (2009). *North East India: A Systematic Geography*. Delhi: Rajesh
2. Chaudhury, S.K, S. Maiti & C.K. Lepcha. (2018). The *Cultural Heritage of Sikkim.* New Delhi, Manohar Publisher
3. Das, H.P. (1970). *Geography of Assam.* New Delhi: NBT.
4. Duff, Andrew (2015). *Sikkim: Requiem for a Himalayan Kingdom.* Berlin: Random House
5. Gopalakrishnan, R. (1996). *Socio-Political framework of North East India* New Delhi: Vikas.
6. Karan, Pradyumna and William M. Jenkins (1960). *Nepal, a cultural and physical geography*. Kentucky: University of Kentucky Press
7. Lama, M.P. (2001). *Sikkim: Human Development Report*. Government of Sikkim. Delhi: Social Science Press
8. Oinam, B & Dhiren.A.S (2018). North-East India: A reader. New York, Routledge
9. Sinha, A.C. (2009). *Sikkim: Feudal and Democratic.* New Delhi: Indus Publishing Company
10. Taher, M. and A. Ahmad. (1998). *Geography North East India.* New Delhi: El Dorado Publications

Stream of Specialization: Geography of Development

GEO-E-656

Geography of Social Justice and Well-being

Semester: Fourth Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On completion of the course students will be able to:

CLO1: Learn and outline the idea of welfare and social protection of citizens and people

CLO2: explain the socio-economic and terrestrial indicators of development in relation to Geography of Othering

CLO3: identify the levels of disparities among social groups and regions in terms of education and health care

CLO4: analyse the socially inclusive and social protection policies of government from secondary sources of data

CLO5: critically evaluate the idea of social justice and welfare deliveries of policies of Governments and legal protections

Course Outline

Unit I: Introduction to Social Justice and Well-being:

Welfare theme in human geography, Welfare Geography and Social Well Being: Theoretical approaches and development; Well-being and Level of Living, Social Justice, Discrimination, Deprivation and Poverty: Concept of absolute and relative deprivation, Social differentiation, Discrimination, Deprivation and exclusion, patterns of rural and urban poverty

Unit II: Indices of Social Justice and Well-being

Indicators of Social Well-being Economic vs Social Indicators of Well-being, Social Indicators Movement, Establishing criteria of Social Well-being and Terrestrial Well-being, Identification and choice of Indicators, Changing Social Priorities, Social Reporting and Planning, Terrestrial Social Indicators, Exclusion of Indicators of Well-Being.

Unit III: Access to Education and Well-being

Education and human resource development, education and enlarging choices, empowerment and wellbeing Education and literacy in developing countries, Social and spatial disparity in literacy attainment in India, female literacy in India, regional variations, social access to education, occupational changes, employment and un-employment in India Education and social change, Privatisation of education and its impacts, Review of legal Orders and Judgements of Courts relating to Education

Unit IV: Accessibility and Affordability of Health Care

Health and Well-being Health and social wellbeing; health care systems (public and private) in India; Disparity in healthcare provision in India. Disease, disease prevalence and disease ecologies in India; Environment and health with special reference to large urban areas of India; Occupational health and associated risks; Poverty and health in India, Privatisation of Health Care and Rural Geographies, Rising Cost of Health Care, Review of Legal Orders and Judgements of Courts relating to Health Care

Suggested Teaching-Learning Strategies: Lecture Methods, Activities on Social & Terrestrial Indicator Development, Case Studies and Measuring Disparities from Secondary Data, Review of HDRs etc.

Assessment Framework

- Classroom Participation
- Presentation
- Group Discussion
- Assignment
- Sessional Test
- End Term Examination (2 credits)

Suggested Readings:

1. Akhtar, R. and Izhar, N. (2010), Global Medical Geography (ed.), New Delhi: Rawat Publications

2. Butola, B.S. (2004). "Spatial Distribution of Crimes against Women in India: A Study in Crime Geography", The Deccan Geographer, Vol. 42, No.2, pp.25-34.

3. Elling, R.H. (1981). “The Capitalist World-System and International Health”, International Journal of Health Services, Vol 11, No. 1, pp.21-51.

4. Dreze, J. (2016). Social Policy (Readings on the Economy, Polity and Society), New Delhi: Orient BlackSwan,

5. Hasan, Z. & Hasan, M. (2013). India: Social Development Report (ed.), Council for Social Development, New Delhi: Oxford University Press.

6. Kundu, A. Mohanan, P.C. & Varghese, K. (2013). "Spatial and Social Inequalities in Human Development: India in the Global Context", United Nations Development Programme (UNDP), New Delhi.

7. Samaddar, R. & Begum, A.A. (2014). "New Fault Line in Conflict? Women's Emergence as the Subject of Peace in the North-East", Economic and Political Weekly, Vol. XLIX, No. 43 & 44, pp. 74-83.

8. Smith, D. (1971). The Geography of Social Well-Being in the United States: An Introduction to Territorial Social Indicators, New Delhi: McGraw Hill Book Company

9. Sujatha, V. & Srivastava, R. (2007). Learning from the Poor: Findings from Participatory Poverty Assessments in India, Manila: Asian Development Bank

10. Tilak, J.B. (2013). Higher Education in India: In Search of Equality, Quality and Quantity (Readings on the Economy, Polity and Society), New Delhi: Orient BlackSwan.

QUEST KNOWLEDGE WISDOM
SIKKIM UNIVERSITY
ESTD 2007

GEO-E-657

Gender and Space

Semester: Fourth Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On the successful completion of the course, students will be able to:

CLO1: Know the notions related to sex, gender, masculine and feminine etc.

CLO2: Conceptualise the varied gender norms and their spatial pattern**.**

CLO3: Identify the processes in the gender construction of spaces in the society**.**

CLO4: Explain how gender inequality, crimes against women etc. are linked with gender stereotypes in the society**.**

CLO5: Formulate a critique towards the existing gender related policies of India

Couse Outline

Unit I: Introduction

Social construction of the feminine and masculine;

Development of and theoretical approaches to the study of Gender in Geography;

Gender in Relation to Space: division of space into private and public, gendered environments, gendered access to and experience of space, spatial variations in the construction of gender

Unit II: Spatiality of Gender Norms

Patriarchy, Matriarchy, Matriliny and Matrilocality, Gender and social values;

Social space and gender, creation of gendered space and reproduction of gendered space

Unit III: Spatial Pattern of Gender Discrimination

Global pattern and the Indian situation; Women in occupations and employment; Social assignments of work and work preferences; Crime against women (home and work environment); Gender stereotypes and representation in media

Unit IV: Paradox of Gender Policy and Practice

Gender Policy and practices in India; Problems of empowerment of women in India;

Gender and Development

Suggested Teaching Learning Strategies:

Lecture-cum discussion, Audio-Visuals, Classroom Participation, Group Discussion, Book Review, Individual/Group Presentation, Case Studies and Group Projects.

Assessment Framework

- Classroom Participation
- Presentation
- Group Discussion
- Assignment
- Sessional Test
- End Term Examination (2 credits)

Suggested Readings:

1. Women and Geography Study Group. (1984). *Geography and Gender: An Introduction to Feminist Geography*. London: Hutchinson Education
2. Gillian, Rose. (1993). *Feminism and Geography: the limits of geographical knowledge.* Minnesota: University of Minnesota Press
3. McDowell, Linda (1999). *Gender, Identity and Place: Understanding Feminist Geographies*. Minnesota: University of Minnesota Press
4. Raju, Saraswati. (2011). *Gendered Geographies: Space and Place in the South Asia,* (*ed.*). New Delhi: Oxford University Press.
5. Raju, Saraswati, and Kuntala Lahiri-Dutt. (2011). *Doing Gender, Doing Geography: Emerging Research in India,* (ed.). London: Routledge
6. Morgan, Robin. (2016). *Sisterhood is Global: The International Women's Movement Anthology*. Open Road Media.
7. Agarwal, Bina. (1994). *A Field of One's Own: Gender and Land Rights in South Asia*. Vol. 58. Cambridge: Cambridge University Press
8. Ghadially, Rehana, (2007) *(ed.)*. *Urban Women in Contemporary India: A Reader*. New Delhi: Sage Publications.
9. Mies, Maria. (1998). *Patriarchy and accumulation on a world scale: Women in the international division of labour*. New York: Palgrave Macmillan.
10. Nongbri, Tiplut. (2003). *Development, ethnicity and gender: select essays on tribes in India*. Jaipur: Rawat Publications

GEO-E-658

Political Geography

Semester: Fourth Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On successful completion of this course, students will be able to:

CLO1: Define the nature and evolution of Political Geography and its relation with other branches of Geography**.**

CLO2: Explain the concepts like state, nation, nation-state and citizenship.

CLO3: Formulate perspective about India's presence in the global geopolitics.

CLO4: Locate the pathways through which the contemporary formation of nation and nationalism are reshaping the socio-political realities of India.

CLO5: Critically evaluate as to how globalisation restructures the world order into different regional economic blocks.

Course Outline

Unit I: Introduction

Emergence and development of political geography: History, Definition, and Scope; Approaches: World System, Power, State and Feminist; Geopolitics: Crush Zone and Sea Power Geo-strategy, Theory of Heartland, Rimland, Critical Geopolitics, Green Geopolitics; Basic Ideas of Electoral Geography

Unit II: Manifestations of State Sovereignty

Frontier, Border, Boundary, Borderland; Organic state and nation-state; Sovereignty: state space and non-state space; Nation: Primordialist and Constructivist; Nationalism; Territory, Territoriality, and Liminality; Governmentality, and Citizenship

Unit III: India and Its Situation in the Global Geopolitics

Origin and Evolution of Indian Geopolitics; Nature of Indian state (Unitary/federal/quasi-federal/confederation); Federalism as a geographic expression; Geopolitics of the Indian Ocean; Chinese geopolitics in the world and the Himalayas; India's position in global resource nationalism

Unit IV: Globalisation and Political Order

Globalisation and Territoriality: Scale (abstract, fetishized), Rescaling, and Jumping of Scale; Look-East Policy to Act East Policy; BASIC and BIMSTEC countries; Belt and Road Initiative (BRI) and Partnership for Global Infrastructure and Investment (PGII)

Suggested Teaching Learning Strategies:

Lecture-cum Discussion, Audio-Visuals, Classroom Participation, Group Discussion, Book Review, Individual/Group Presentation

Assessment Framework:

- Classroom participation
- Sessional Test
- Seminar presentation
- Assignment/ Term Paper
- Group Discussion
- Book Review
- End Term Examination (2 credits)

Suggested Readings:

1. Smith, S. (2020). *Political geography: A Critical Introduction*. Oxford: John Wiley & Sons.
2. Dikshit, Ramesh Dutta. (2000). Political *Geography: The Spatiality of Politics (3E)*. New Delhi: Tata McGraw-Hill Education.
3. Storey, David (2012). *Territories: The claiming of space.* London and New York: Routledge
4. Flint, Colin, and Peter J. Taylor. (2007). *Political geography: World-economy, nation-state, and locality*. Edinburgh: Pearson Education
5. Agnew, John A., Katharyne Mitchell, and Gerard Toal (2008) (ed.). *A Companion to Political Geography*, New Jersey: John Wiley & Sons.
6. Kaplan, R. D. (2013). *The Revenge of Geography: What the map tells us about coming conflicts and the battle against fate*. New York: Random House.
7. Agnew, John, and Luca Muscarà. (2012). *Making political geography*. Boston: Rowman & Littlefield Publishers
8. Chapman, Graham P., and Kathleen M. Baker, (1992)) *The changing geography of Asia, (ed.)*. New York: Routledge.
9. Short, John. R (1993). *An Introduction to Political Geography (2E).* London: Routledge

10. Gohain, Swargajyoti. (2020). *Imagined Geographies in the Indo-Tibetan Borderlands: Culture, Politics, Place*. Amsterdam: Amsterdam University Press.

GEO-E-659

Geography of Tourism

Semester: Fourth Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On completion of the course students will be able to:

CLO1: Explain the recreation activities embedded in everyday life

CLO2: Classify pattern of tourist mobility and implication of tourism on socio-economy and environment

CLO3: Identify inventory of various tourist spots

CLO4: Critically evaluate perspectives of tourism development and emerging issues.

CLO5: Plan and produce sustainable strategies of tourism development**.**

Course Outline

Unit-I: Introduction

Concepts and typology, Demand and Motivation: Theories and Models, Geography of Tourism Development, Emerging issues in tourism (Globalization, Modernity, Mobility, New Geographies of Production and Consumption, Identity, Sustainability etc.).

Unit-II: Trends and Tourism Geographies

Factors influencing in tourism development (Host and Place of origin), Spatial and temporal pattern of international tourism. Trends of tourism: Urban and Rural Tourism, Coastal tourism, Mountain tourism, Heritage tourism, Gastro- tourism, pro-poor tourism, Politics of tourism, Political Economy of Third World tourism.

Unit- III: Impacts of Tourism

Economic, Socio-cultural, and Environmental Impacts, Resource management and Carrying Capacity, the Limit of Acceptable Change,

Unit-IV: Tourism, Planning and Management

Trends and pattern, Typology, Infrastructure development, Network and information System, Potentials and Challenges, Tourism sites and locations; Tourism impacts on Socio- Economy and Environment, moral and ethical issues in high-tourist areas, Eco-tourism and alternative forms of tourism (Home Stay and Adventure Tourism,) Planning and management of Tourism: Policies, Programmes and Planning in Tourism, Role of NTA, ITDC, ICPB, National Tourism Board and Conservation Policy. Inventory of tourist spots with GIS.

Teaching - Learning Strategies: Lecture cum discussion, Case studies and group projects, Field studies, Individual and group presentations by student on selected themes.

Assessment Framework:

1. Classroom Participation
2. Presentation
3. Group Discussion
4. Assignment
5. Sessional Test
6. Book review
7. End Term Examination (2 credits)

Suggested Readings:

1. William S. and Lew A.A (2015). Tourism Geography. New York: Routledge

2. Hall, C.M. and S.J. Page (1999). The Geography of Tourism and Recreation: Environment, Place and Space. Landon: Routledge.

3. Hall, M.C. (2008). Tourism Planning Policies, Process and Relationships. London: Pearson Education Ltd.

4. Mowforth, M. and Munt, I. (2015). Tourism and Sustainability, London: Routledge.

5.Urry, J. and Larson, J. (2011). The Tourist Gaze 3.0, London: Sage

6. Pearce, D. G. (1995). Tourism today: A Geographical Analysis. London: Longman.

7. Shackly, M. (2006). Atlas of Travel and tourism Development, London: Elsevier.

8. Shaw, G. and William, A.M. (1994). Critical Issues in Tourism: A Geographical Perspective. London: Blackwell.

9. Stephen, J.P. and Connell J. (2009). Tourism: A Modern Synthesis. London: Cengage Learning.

10. Honey, M. (2008). Ecotourism and Sustainable Development. Washington: Island Press.

GEO-E-660

Social and Cultural Geography

Semester: Fourth Semester | Course Level: 600 | Total Marks: 100

L+T+P: 3+1+0= 4 Credits | Lecture: 45 Hrs.+ Tutorial: 15 Hrs.+ Practical: 0 Hrs.

Course Learning Outcomes (CLOs):

On the successful completion of the course, students will be able to:

CLO1: Know the evolution of social and cultural geography as a branch of Geography.

CLO2: Conceptualise the roles of geographic factors in socio-cultural regionalisation.

CLO3: Explain the notions related to the geographical elements in socio-cultural unity amidst diversity**.**

CLO4: Explain the geographic factors in the formation religious identity and the growth of languages**.**

CLO5: Formulate a critique towards the contemporary socio-cultural issues.

Syllabus Contents

Unit I: Introduction

Definition: Nature, Scope and evolution of Social Geography in the Anglo-Saxon World; Society and Environment, Social Evolution, Social Structure, Social Diversity and Plurality

Definition, Scope and evolution of Cultural Geography;

Concepts of Culture –Traits, Diffusion, Acculturation, Difference Between Social and Cultural Geography

Unit II: Concepts and Themes

Social Space and Social Area Analysis, Social exclusion and Social Justice; Geography of Social Well-being, Social Pathology and Social Action

Unit III: Concept in Cultural Geography

Themes and Concepts in Cultural Geography: Culture Area, Cultural Region, Cultural Diffusion and Assimilation, Cultural ecology, Cultural Interaction, Cultural Landscape, Planning and Policies for Multi-Culturalism

Unit IV: Components of Cultural Geography

Types and Pattern of World Cultural regions: Language, Religion, Ethnicity; Cultures and cultural regions in North East India in particular reference to religion; Ethnicities in North-East

Suggested Teaching Learning Strategies:

Lecture-cum discussion, Audio-Visuals, Classroom Participation, Group Discussion, Book Review, Individual/Group Presentation, Case Studies and Group Projects

Assessment Framework:

1. Classroom Participation/Group Discussion
2. Sessional Test
3. Presentation
4. Assignment/Term Paper
5. Book review
6. End Term Examination (2 credits)

Readings:

1. Ahmad, A. (1999*). Social Geography. Jaipur:* Rawat Publications.
2. Crang, Mike (2013). *Cultural Geography.* London: Routledge.
3. Duncan, J., Johnson, N. C., & Schein, R. H. (Eds.). (2008). *A Companion to Cultural Geography*. Oxford: John Wiley & Sons.
4. Dreze, Jean and A. Sen (2004). *An Uncertain Glory: India and its Contradiction. New Delhi: Penguin India.*
5. Eyles, John (1979). *An Introduction to Social Geography*. London: OUP
6. Mitchell, D. (2000). Cultural Geography: A Critical Introduction. Oxford: Blackwell Publishers Ltd.
7. Held, D., & Moore, H. L. (2007). Cultural Politics in a Global Age: Uncertainty, Solidarity and Innovation. *Oxford.*
8. Price, M., and M. Lewis (1993). "The Reinvention of Cultural Geography". Annals of the Association of American Geographers, 83 (1):1-17.
9. Robertson, I. and Richards, P. (2003). (eds.): *Studying Cultural Landscapes*. London: Arnold
10. Thrift, Nigel (2005). *Cultural Geography: Critical Concepts in the social Sciences*. London: Rutledge.

GEO-S-661

Data Capturing and analysis of Socio-Economic data

Semester: Fourth Semester | Course Level: 600 | Total Marks: 50

L+T+P: 0+0+2= 2 Credits | Lecture: 0 Hrs.+ Tutorial: 0 Hrs.+ Practical: 60 Hrs.

Course Learning Outcomes (CLOs):

Upon completion of this course, students will be able to:

CLO1: Locate the data sources required for their research,

CLO2: identify the different types of socio-economic data

CLO3: reveal deeper insights with visualizations and geographic spatial analysis.

CLO4: analyse the data in Excel and SPSS

Course Outline

Unit I: Nature and sources of Data

Data bases: Census of India, NSS, NFHS

Data tables from census: demographic, economic, social and cultural, migration, special tables for Scheduled Castes and Scheduled Tribe

Unit II: Playing with the Data

Data Extraction, manipulation, processing, analysis and visualisation of data in Excel and SPSS

Assessment framework

1. Identification of sources of socio-economic data
2. Extraction of socio-economic attributes
3. Application of statistical software for data analysis.

GEO-P-662

Fieldwork and Dissertation

Semester: Fourth Semester | Course Level: 600 | Total Marks: 200

L+T+P: 0+0+8= 8 Credits | Lecture: 0 Hrs.+ Tutorial: 0 Hrs.+ Practical: 240 Hrs.

There shall be two components under this paper as follows:

I: Field Visit and Report Writing (4 Credits/100 Marks)

II: Research Methodology and Dissertation Project (4 Credits/100 Marks)

A. Students will visit the field at the end of third semester for a period of 2-3 weeks. They shall gather data, tabulate and analyse depending on the theme of research selected by the concerned faculty as Field Coordinator of a particular year. Students shall be exposed to real-world situations and develop an understanding of theoretical knowledge with earth systems of physical and human phenomenon. The concerned faculty or Field Coordinator would explain the phenomenon in the field and students shall maintain Field Dairy on a daily basis. On return, data entry, tabulation and analysis and report writing would be completed under the supervision of the Field Coordinator.

B. Each Student shall be allotted Mentor/Supervisor from the faculties at the beginning of third Semester and students shall complete the Research Methodology/Dissertation Project during third and fourth semester.

C. Both the Field Report and Dissertation Project shall be evaluated by the External Examiner as recommended by the Department.