



**RAJIV GANDHI UNIVERSITY
(A CENTRAL UNIVERSITY)
RONO HILLS, DOIMUKH**

***Curriculum and Syllabus of*
FOUR-YEAR UNDERGRADUATE PROGRAMME (FYUP)
IN GEOGRAPHY**

AS PER NATIONAL EDUCATION POLICY (NEP)-2020

EFFECTIVE FROM THE ACADEMIC YEAR: 2023-24



**DEPARTMENT OF GEOGRAPHY
FACULTY OF ENVIRONMENTAL SCIENCES
RONO HILLS, DOIMUKH
ARUNACHAL PRADESH – 791112**


Head of Department
HOD, Geography
RGU, Arunachal Pradesh

1.1 INTRODUCTION

The One Year Certificate/Two Year Diploma/Three Year Under Graduate Degree/Four Year Under Graduate Degree (Honours Without Research)/Four Year Under Graduate Degree (Honours with Research) in Geography is a four-year (eight semesters) programme of credits including major courses, minor courses, multidisciplinary courses, skill enhancement courses, value-added courses and ability enhancement courses with multiple exits. Each semester offers students theory and practical courses. Students will be offered several major courses over four years, as per UGC guidelines. This programme will adopt a flexible curricular structure to enable creative combinations of disciplinary areas. The undergraduate degree programme of 4 year duration, with multiple exit points with appropriate certifications such as: a UG certificate after completing 1 year (2 semesters) and additional 4 credits training/internship, a UG diploma after 2 years (4 semesters) of study and additional 4 credits training/internship, a bachelor's degree after a 3-year (6 semesters) of study and UG degree with Honours and UG degree with Research and Honours degree after 4 years (8 semesters) of study. The evaluation and examination procedures shall be as per the regulations and guidelines imbibed in the Rajiv Gandhi University examination ordinances.

1.2 PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The Four-Year Undergraduate Programme (FYUP) in Geography aims to fulfill the following Programme Educational Objectives: -

PEO1: To provide learning scope by orienting students towards scientific study of human mind and behaviour.

PEO2: To develop knowledge of basic psychological concepts and methods, and develop the ability to appreciate the challenges in field settings.

PEO3: To promote self-understanding, reflexivity and personal growth of the students.

PEO4: To develop a strong sense of ethical and moral aptness in general and in the context of learning and its assessment in particular.

PEO5: To develop respect for social diversity and increasing social and cultural relevance of learning.

1.3 PROGRAMME OUTCOMES (POs)

PO1: Foundational Knowledge: Graduates will be capable of demonstrating competence in refining and employing the core ideas of the Social Science Languages in multidisciplinary contexts.

PO2: Critical Thinking and Problem Solving: The graduates will develop the ability to employ tools of critical thinking and methods of enquiry to identify, formulate, analyze, and evaluate complex problems and issues and arrive at effective solutions from first principles.

PO3: Community Engagement & Service: The graduates will demonstrate the capability to participate in community-engaged services/ activities to promote the well-being of society.

PO4: Indian Context and Good Citizenship: The graduates would be capable of taking a critical, informed, and action-oriented approach towards India's diversity encompassing its social, economic, political, historical, environmental, cultural aspects among others by enhancing the capacity to apply knowledge and skills to contribute positively to the creation of just, inclusive, tolerant, and environmentally sustainable communities, and demonstrate, by doing, the importance of participating in the governance structures of one's profession and society.

PO5: Coping with Real Life Situations: The graduates should be able to demonstrate the capability to solve different kinds of problems in familiar and non-familiar contexts and apply the learning to real-life situations.

PO6: Creativity: The graduates should be able to demonstrate the ability to create, perform, or think in different and diverse ways about the same objects or scenarios; deal with problems and situations that do not have simple solutions; innovate and perform tasks in a better manner; view a problem or a situation from multiple perspectives; think 'out of the box' and generate solutions to complex problems in unfamiliar contexts; adopt innovative,

imaginative, lateral thinking, interpersonal skills and emotional intelligence.

PO7: Communication Skills: The graduates should be able to demonstrate the skills that enable them to listen carefully, read texts and research papers analytically and present complex information clearly and concisely to different groups/audiences; express thoughts and ideas effectively in writing and orally and communicate with others using appropriate media, confidently share views and express herself/himself, construct logical arguments using correct technical language related to a field of learning, work/vocation, or an area of professional practice, and convey ideas, thoughts, and arguments using language that is respectful and sensitive to gender and other minority groups.

PO8: Analytical Reasoning and Thinking: The graduates should be able to demonstrate the capability to evaluate the reliability and relevance of evidence; identify logical flaws in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and address opposing viewpoints.

PO9: Research Related Skills: The graduates should be able to demonstrate a keen sense of observation, inquiry, and capability for asking relevant/ appropriate questions, the ability to problematize, synthesize, and articulate issues and design research proposals, the ability to define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inferences based on the analysis and interpretation of data, and predict cause-and-effect relationships, the capacity to develop appropriate methodology and tools for data collection, the appropriate use of statistical and other analytical tools and techniques, the ability to plan, execute and report the results of an experiment or investigation, the ability to acquire the understanding of basic research ethics and skills in practicing/doing ethics in the field/ in personal research work, regardless of the funding authority or field of study.

PO10: Leadership Qualities: The graduates should be able to demonstrate the capability for mapping out the tasks of a team or an organization and setting direction; formulating an inspiring vision and building a team that can help achieve the vision, motivating and inspiring team members to engage with that vision; using management skills to guide people to the right destination.

1.4 PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1: Understanding of Earth's Systems: Students will gain a comprehensive understanding of the physical aspects of the Earth, including its atmospheric, geological, and ecological systems. They will be able to analyze how these systems interact and influence the planet's overall environment.

PSO2: Spatial Analysis Skills: Students will develop strong spatial analysis skills, enabling them to interpret various geographical phenomena. They will be proficient in using Geographic Information Systems (GIS) and other spatial technologies for data collection, analysis, and presentation.

PSO3: Human-Environment Interactions: Students will understand the complex interactions between humans and their environment. They will be able to analyze how human activities impact the environment and how environmental changes, in turn, affect human societies.

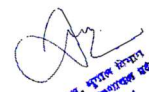
PSO4: Research and Fieldwork Competency: Students will gain hands-on experience in conducting geographical research and fieldwork. They will be able to design research projects, execute, collect, analyze data, and present their findings effectively.

Course Structure for Four-Year Undergraduate Programme (FYUP) in Geography (Honours)

NCrF Credit Level	Semester	Course Type	Course Code	Course Name	Credit (L:T:P)
4.5	B.A. I	Major Course (Core)	GEO-001-CC-1110	Physical Geography	4:0:0
		Minor course	GEO-001-MC-1110	General Physical Geography	4:0:0
		Multidisciplinary course	GEO-001-MD-1110	Disaster Management	3:0:0
		Ability Enhancement Course	XXX-001-AE-11XX		4:0:0
		Skill Enhancement Course	GEO-001-SE-1110	Fundamentals of Cartography	0:0:3
		Value Added Course	EVS-001-VA-1110		2:0:0
	B.A. II	Major Course (Core)	GEO-001-CC-1210	Human Geography I	4:0:0
		Minor course	GEO-001-MC-1210	General Human Geography	4:0:0
		Multidisciplinary course	GEO-001-MD-1210	Geography of Tourism	3:0:0
		Ability Enhancement Course	XXX-001-AE-12XX		4:0:0
		Skill Enhancement Course	GEO-001-SE-1210	Remote Sensing	0:0:3
		Value Added Course	EVS-001-VA-1210		2:0:0
Students exiting the programme after the 2 nd Semester with 40 credits will be awarded a UG Certificate in Geography provided they secure 4 credits in work-based vocational courses offered during the summer term or Internship/ Apprenticeship					
5.0	B.A. III	Major Course (Core)	GEO-001-CC-2110	Geography of India	4:0:0
			GEO-001-CC-2120	Geomorphology	4:0:0
		Minor course	GEO-001-MC-2110	General Geography of India	4:0:0
		Multidisciplinary course	GEO-001-MD-2110	Traditional Ecological Knowledge	3:0:0
		Skill Enhancement Course	GEO-001-SE-2110	Geographical Information System	0:0:3
		Value Added Course	XXX-001-VA-21XX		2:0:0
	B.A. IV	Major Course (Core)	GEO-001-CC-2210	Political Geography	4:0:0
			GEO-001-CC-2220	Geographical Analysis I	0:0:4
			GEO-001-CC-2230	Regional Planning	4:0:0
			GEO-001-CC-2240	Field Study	0:0:4
		Minor course	GEO-001-MC-2210	Population Geography	4:0:0
Students exiting the programme after the 4 th Semester with 80 credits will be awarded a UG Diploma in Geography provided they secure an additional 4 credits in skill-based vocational courses offered during the first-year or second-year summer term.					
5.5	B.A. V	Major Course (Core)	GEO-001-CC-3110	Climatology	4:0:0
			GEO-001-CC-3120	Agricultural Geography	4:0:0
			GEO-001-CC-3130	Human Geography II	4:0:0
			GEO-001-CC-3140	Geographical Analysis II	0:0:4

		Internship	GEO-001-IN-3110	Internship	0:0:2	
		Minor Course	GEO-001-MC-3110	Economic Geography	4:0:0	
	B.A. VI	Major Course (Core)	GEO-001-CC-3210	Remote Sensing and GIS	4:0:0	
			GEO-001-CC-3220	Geographic Thought	4:0:0	
			GEO-001-CC-3230	Settlement Geography	4:0:0	
			GEO-001-CC-3240	Geographical Analysis III	0:0:4	
			Minor Course	GEO-001-MC-3210	Basics of Remote Sensing and GIS	4:0:0
Students exiting the programme after the 6 th Semester with 122 credits will be awarded a 3-Year Bachelor’s Degree (Major) in Geography						
6.0	B.A. VII	Major Course (Core)	GEO-001-CC-4110	Geography of North-East India	4:0:0	
			GEO-001-CC-4120	Mountain Geography	4:0:0	
			GEO-001-CC-4130	Sustainable Geography and EIA	4:0:0	
			GEO-001-CC-4140	Social Geography	4:0:0	
		Minor Course	GEO-001-RC-4110	Research Methodology / MOOCs	3:1:0	
Semester-Wise Credit Structure for Four-Year Undergraduate Programme (FYUP) in Geography (Honours)						
6.0	B.A. VIII	Major Course (Core)	GEO-001-CC-4210	Analytical Methods and Statistical Analysis	4:0:0	
			GEO-001-DE-42010	Soil Geography	GROUP I (Physical Stream)	4:0:0
			GEO-001-DE-42020	Phytogeography		4:0:0
			GEO-001-DE-42050	Soil Analysis and Plant Survey Techniques		0:0:4
			GEO-001-DE-42030	Cultural Geography	GROUP II (Human Stream)	4:0:0
			GEO-001-DE-42040	Regional Development and Planning		4:0:0
			GEO-001-DE-42060	Cultural and Regional Analysis		0:0:4
		Minor Course	GEO-001-RC-4210	Research and Publication Ethics / MOOCs	3:1:0	
TOTAL CREDIT					162	

NB: Students have to choose either Group – I (Physical stream) or Group – II (Human stream)


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Course Structure for Four-Year Undergraduate Programme (FYUP) in Geography (Honours with Research)

NCrF Credit Level	Semester	Course Type	Course Code	Course Name	Credit (L:T:P)
4.5	B.A. I	Major Course (Core)	GEO-001-CC-1110	Physical Geography	4:0:0
		Minor course	GEO-001-MC-1110	General Physical Geography	4:0:0
		Multidisciplinary course	GEO-001-MD-1110	Disaster Management	3:0:0
		Ability Enhancement Course	XXX-001-AE-11XX		4:0:0
		Skill Enhancement Course	GEO-001-SE-1110	Fundamentals of Cartography	0:0:3
		Value Added Course	EVS-001-VA-1110		2:0:0
	B.A. II	Major Course (Core)	GEO-001-CC-1210	Human Geography I	4:0:0
		Minor course	GEO-001-MC-1210	General Human Geography	4:0:0
		Multidisciplinary course	GEO-001-MD-1210	Geography of Tourism	3:0:0
		Ability Enhancement Course	XXX-001-AE-12XX		4:0:0
		Skill Enhancement Course	GEO-001-SE-1210	Remote Sensing	0:0:3
		Value Added Course	EVS-001-VA-1210		2:0:0
Students exiting the programme after the 2 nd Semester with 40 credits will be awarded a UG Certificate in Geography provided they secure 4 credits in work-based vocational courses offered during the summer term or Internship/ Apprenticeship					
5.0	B.A. III	Major Course (Core)	GEO-001-CC-2110	Geography of India	4:0:0
			GEO-001-CC-2120	Geomorphology	4:0:0
		Minor course	GEO-001-MC-2110	General Geography of India	4:0:0
		Multidisciplinary course	GEO-001-MD-2110	Traditional Ecological Knowledge	3:0:0
		Skill Enhancement Course	GEO-001-SE-2110	Geographical Information System	0:0:3
		Value Added Course	XXX-001-VA-21XX		2:0:0
	B.A. IV	Major Course (Core)	GEO-001-CC-2210	Political Geography	4:0:0
			GEO-001-CC-2220	Geographical Analysis I	0:0:4
			GEO-001-CC-2230	Regional Planning	4:0:0
			GEO-001-CC-2240	Field Study	0:0:4
		Minor course	GEO-001-MC-2210	Population Geography	4:0:0
	Students exiting the programme after the 4 th Semester with 80 credits will be awarded a UG Diploma in Geography provided they secure an additional 4 credits in skill-based vocational courses offered during the first-year or second-year summer term.				
5.5	B.A. V	Major Course (Core)	GEO-001-CC-3110	Climatology	4:0:0
			GEO-001-CC-3120	Agricultural Geography	4:0:0
			GEO-001-CC-3130	Human Geography II	4:0:0
			GEO-001-CC-3140	Geographical Analysis II	0:0:4
		Internship	GEO-001-IN-3110	Internship	0:0:2

		Minor Course	GEO-001-MC-3110	Economic Geography	4:0:0
	B.A. VI	Major Course (Core)	GEO-001-CC-3210	Remote Sensing and GIS	4:0:0
			GEO-001-CC-3220	Geographic Thought	4:0:0
			GEO-001-CC-3230	Settlement Geography	4:0:0
			GEO-001-CC-3240	Geographical Analysis III	0:0:4
		Minor Course	GEO-001-MC-3210	Basics of Remote Sensing and GIS	4:0:0
Students exiting the programme after the 6 th Semester with 122 credits will be awarded a 3-Year Bachelor's Degree (Major) in Geography					
6.0	B.A. VII	Major Course (Core)	GEO-001-CC-4110	Geography of North-East India	4:0:0
			GEO-001-CC-4120	Mountain Geography	4:0:0
			GEO-001-CC-4130	Sustainable Geography and EIA	4:0:0
			GEO-001-CC-4140	Social Geography	4:0:0
		Minor Course	GEO-001-RC-4110	Research Methodology / MOOCs	3:1:0
Semester-Wise Credit Structure for Four-Year Undergraduate Programme (FYUP) in Geography (Honours with Research)					
6.0	B.A. VIII	Major Course (Core)	GEO-001-CC-4210	Geographical Field Work	0:0:4
		Major Course (Research)	GEO-001-RP-4210	UG Research Project	0:0:12
		Minor Course	GEO-001-RC-4210	Research and Publication Ethics / MOOCs	3:1:0
TOTAL CREDIT					162


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SEMESTER-WISE CREDIT STRUCTURE FOR THE UNDERGRADUATE PROGRAMME IN GEOGRAPHY

SEMESTER I

Course Code	Course Title	Course Type	Course Component	Contact Hour	Maximum Marks			Credit Distribution (L:T:P)	Credit	Total Credit
					End Semester	Internal Assessment	Total			
GEO-001-CC-1110	Physical Geography	Major	Theory	60	80	20	100	4:0:0	4	20
GEO-001-MC-1110	General Physical Geography	Minor	Theory	60	80	20	100	4:0:0	4	
GEO-001-MD-1110	Disaster Management	MDC	Theory	45	80	20	100	3:0:0	3	
XXX-001-AE-11XX	*	AEC	Theory	60	80	20	100	4:0:0	4	
GEO-001-SE-1110	Fundamentals of Cartography	SEC	Practical	90	80	20	100	0:0:3	3	
EVS-001-VA-1110	*	VAC	Theory	30	80	20	100	2:0:0	2	

**The titles of the courses will be adopted from the pool of papers provided by the University/Other Departments.*

SEMESTER II

Course Code	Course Title	Course Type	Course Component	Contact Hour	Maximum Marks			Credit Distribution (L:T:P)	Credit	Total Credit
					End Semester	Internal Assessment	Total			
GEO-001-CC-1210	Human Geography I	Major	Theory	60	80	20	100	4:0:0	4	20
GEO-001-MC-1210	General Human Geography	Minor	Theory	60	80	20	100	4:0:0	4	
GEO-001-MD-1210	Geography of Tourism	MDC	Theory	45	80	20	100	3:0:0	3	
XXX-001-AE-12XX	*	AEC	Theory	60	80	20	100	4:0:0	4	
GEO-001-SE-1210	Remote Sensing	SEC	Practical	90	80	20	100	0:0:3	3	
EVS-001-VA-1210	*	VAC	Theory	30	80	20	100	2:0:0	2	

**The titles of the courses will be adopted from the pool of papers provided by the University/Other Departments.*

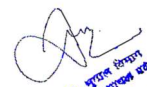
SEMESTER III

Course Code	Course Title	Course Type	Course Component	Contact Hour	Maximum Marks			Credit Distribution (L:T:P)	Credit	Total Credit
					End Semester	Internal Assessment	Total			
GEO-001-CC-2110	Geography of India	Major	Theory	60	80	20	100	4:0:0	4	20
GEO-001-CC-2120	Geomorphology	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-MC-2110	General Geography of India	Minor	Theory	60	80	20	100	4:0:0	4	
GEO-001-MD-2110	Traditional Ecological Knowledge	MDC	Theory	45	80	20	100	3:0:0	3	
GEO-001-SE-2110	Geographical Information System	SEC	Practical	90	80	20	100	0:0:3	3	
XXX-001-VA-21XX	*	VAC	Theory	30	80	20	100	2:0:0	2	

**The titles of the courses will be adopted from the pool of papers provided by the University/Other Departments.*

SEMESTER IV

Course Code	Course Title	Course Type	Course Component	Contact Hour	Maximum Marks			Credit Distribution (L:T:P)	Credit	Total Credit
					End Semester	Internal Assessment	Total			
GEO-001-CC-2210	Political Geography	Major	Theory	60	80	20	100	4:0:0	4	20
GEO-001-CC-2220	Geographical Analysis I	Major	Practical	120	80	20	100	0:0:4	4	
GEO-001-CC-2230	Regional Planning	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-CC-2240	Field Study	Major	Practical	120	80	20	100	0:0:4	4	
GEO-001-MC-2210	Population Geography	Minor	Theory	60	80	20	100	4:0:0	4	


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SEMESTER V

Course Code	Course Title	Course Type	Course Component	Contact Hour	Maximum Marks			Credit Distribution (L:T:P)	Credit	Total Credit
					End Semester	Internal Assessment	Total			
GEO-001-CC-3110	Climatology	Major	Theory	60	80	20	100	4:0:0	4	22
GEO-001-CC-3120	Agricultural Geography	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-CC-3130	Human Geography II	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-CC-3140	Geographical Analysis II	Major	Practical	120	80	20	100	0:0:4	4	
GEO-001-IN-3110	Internship	Internship	Practical	60	80	20	100	0:0:2	2	
GEO-001-MC-3110	Economic Geography	Minor	Theory	60	80	20	100	4:0:0	4	

SEMESTER VI

Course Code	Course Title	Course Type	Course Component	Contact Hour	Maximum Marks			Credit Distribution (L:T:P)	Credit	Total Credit
					End Semester	Internal Assessment	Total			
GEO-001-CC-3210	Remote Sensing and GIS	Major	Theory	60	80	20	100	4:0:0	4	20
GEO-001-CC-3220	Geographic Thought	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-CC-3230	Settlement Geography	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-CC-3240	Geographical Analysis III	Major	Practical	120	80	20	100	0:0:4	4	
GEO-001-MC-3210	Basics of Remote Sensing and GIS	Minor	Theory	60	80	20	100	4:0:0	4	

SEMESTER VII

Course Code	Course Title	Course Type	Course Component	Contact Hour	Maximum Marks			Credit Distribution (L:T:P)	Credit	Total Credit
					End Semester	Internal Assessment	Total			
GEO-001-CC-4110	Geography of North-East India	Major	Theory	60	80	20	100	4:0:0	4	20
GEO-001-CC-4120	Mountain Geography	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-CC-4130	Sustainable Geography and EIA	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-CC-4140	Social Geography	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-RC-4110	Research Methodology / MOOCs	Minor		75	80	20	100	3:1:0	4	

Semester-Wise Credit Structure for Four-Year Undergraduate Programme (FYUP) in Geography (Honours)

SEMESTER VIII

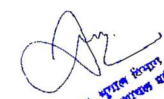
Course Code	Course Title	Course Type	Course Component	Contact Hour	Maximum Marks			Credit Distribution (L:T:P)	Credit	Total Credit
					End Semester	Internal Assessment	Total			
GEO-001-CC-4210	Analytical Methods and Statistical Analysis	Major	Theory	60	80	20	100	4:0:0	4	20
GEO-001-DE-42010	Soil Geography	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-DE-42020	Phytogeography	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-DE-42050	Soil Analysis and Plant Survey Techniques	Major	Practical	120	80	20	100	0:0:4	4	
GEO-001-DE-42030	Cultural Geography	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-DE-42040	Regional Development and Planning	Major	Theory	60	80	20	100	4:0:0	4	
GEO-001-DE-42060	Cultural and Regional Analysis	Major	Practical	120	80	20	100	0:0:4	4	
GEO-001-RC-4210	Research and Publication Ethics / MOOCs	Minor		75	80	20	100	3:1:0	4	

NB: Students have to choose either Group – I (Physical stream) or Group – II (Human stream)

Semester-Wise Credit Structure for Four-Year Undergraduate Programme (FYUP) in Geography (Honours with Research)

SEMESTER VIII

Course Code	Course Title	Course Type	Course Component	Contact Hour	Maximum Marks			Credit Distribution (L:T:P)	Credit	Total Credit
					End Semester	Internal Assessment	Total			
GEO-001-CC-4210	Geographical Field Work	Major	Practical	120	80	20	100	0:0:4	4	20
GEO-001-RP-4210	UG Research Project	Major		360	240	60	300	0:0:12	12	
GEO-001-RC-4210	Research and Publication Ethics / MOOCs	Minor		75	80	20	100	3:1:0	4	


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SEMESTER – I


Dr. P. V. S. Srinivasulu Reddy
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SEMESTER – I
GEO-001-CC-1110: PHYSICAL GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. Understanding the basic concepts and different dimensions of Physical Geography.
2. General overview of geomorphology, climatology, and oceanography.

Learning Outcomes:

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

1. Gain a perspective on various concepts of physical geography.
2. Have comprehensive knowledge of applicability and usage.

UNIT	COURSE CONTENT
UNIT 1	Nature and scope of Physical Geography: Basic concepts; Interrelationship with other branches of Earth Sciences; Historical development of Physical Geography.
UNIT 2	Geomorphic forms and processes: Agents of denudation and weathering; mass movement/wasting; fluvial; wind; glacial and Karst.
UNIT 3	Elements of weather and climate: Composition and structure of the atmosphere; atmospheric pressure and winds; insolation and heat budget; air masses and fronts (Cyclones and Anticyclones).
UNIT 4	Oceanography: Waves, Tides and Ocean currents; Temperature and Salinity; Ocean Relief (Continental shelf, slope, deeps and trenches, abyssal plain).

Suggested Readings:

1. Christopherson, R. W. and Birkeland, G. H. (2012). *Geosystems: An Introduction to Physical Geography* (8th edition), Pearson Education, New Jersey.
2. Critchfield, H. J. (1987). *General Climatology*. Prentice-Hall of India, New Delhi.
3. Das Gupta, A. and Kapoor, A. N. (2001). *Principles of Physical Geography*. S. C. Chand & Company Ltd., New Delhi.
4. Khullar, D. R. (2012). *Physical Geography*. Kalyani Publishers, New Delhi.
5. Lal, D. S. (2006). *Jalvayu Vigyan (Hindi)*. Prayag Pustak Bhavan, Allahabad.
6. Oliver, J. E. and Hidore, J. J. (2002). *Climatology: An Atmospheric Science*. Pearson Education, New Delhi.
7. Pinet, P. R. (2008). *Invitation to Oceanography* (Fifth Edition). Jones and Bartlett Publishers, USA, UK and Canada.
8. Singh, S. (2009). *Jalvayu Vigyan (Hindi)*. Prayag Pustak Bhawan, Allahabad.

GEO-001-MC-1110: GENERAL PHYSICAL GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. Understanding the basic concepts and different dimensions of Physical Geography.
2. General overview of geomorphology, climatology, and oceanography.

Learning Outcomes:

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

1. Gain a perspective on various concepts of physical geography.
2. Have comprehensive knowledge of applicability and usage.

UNIT	COURSE CONTENT
UNIT 1	Nature and scope of Physical Geography: Basic concepts; Interrelationship with other branches of Earth Sciences; Historical development of Physical Geography.
UNIT 2	Geomorphic forms and processes: Agents of denudation and weathering; mass movement/wasting; fluvial; wind; glacial and karst.
UNIT 3	Elements of weather and climate: Composition and structure of the atmosphere; atmospheric pressure and winds; insolation and heat budget; air masses and fronts (Cyclones and Anticyclones).
UNIT 4	Oceanography: Waves, Tides and Ocean currents; Temperature and Salinity; Ocean Relief (Continental shelf, slope, deeps and trenches, abyssal plain).

Suggested Readings:

1. Christopherson, R. W. and Birkeland, G. H. (2012). *Geosystems: An Introduction to Physical Geography* (8th edition), Pearson Education, New Jersey.
2. Critchfield, H. J. (1987). *General Climatology*. Prentice-Hall of India, New Delhi.
3. Das Gupta, A. and Kapoor, A. N. (2001). *Principles of Physical Geography*. S. C. Chand & Company Ltd., New Delhi.
4. Khullar, D. R. (2012). *Physical Geography*. Kalyani Publishers, New Delhi.
5. Lal, D. S. (2006). *Jalvayu Vigyan (Hindi)*. Prayag Pustak Bhavan, Allahabad.
6. Oliver, J. E. and Hidore, J. J. (2002). *Climatology: An Atmospheric Science*. Pearson Education, New Delhi.
7. Pinet, P. R. (2008). *Invitation to Oceanography* (Fifth Edition). Jones and Bartlett Publishers, USA, UK and Canada.
8. Singh, S. (2009). *Jalvayu Vigyan (Hindi)*. Prayag Pustak Bhawan, Allahabad.

GEO-001-MD-1110: DISASTER MANAGEMENT

Credit - 3 (Credit Hours per week: Lecture - 3)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. Understanding the basic concepts of disaster management.
2. Detailed analysis of the different types of disasters in India.
3. Evaluating the role of institutional frameworks to mitigate disasters in the country.

Learning Outcomes:

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

1. Gain a perspective of disasters and various dimensions of disaster management.
2. Have comprehensive knowledge of various natural and manmade disasters in India.
3. Examine the response and mitigation measures of disasters.

UNIT	COURSE CONTENT
UNIT 1	Disasters: Definition and Concepts; Risk and Vulnerability; Classification.
UNIT 2	Disasters in India: (a) Flood: Causes, Impact, Distribution and Mapping; Landslide: Causes, Impact, Distribution and Mapping; Drought: Causes, Impact, Distribution and Mapping (b) Earthquake and Tsunami: Causes, Impact, Distribution and Mapping, (c) Cyclone: Causes, Impact, Distribution and Mapping.
UNIT 3	Manmade disasters: Causes, Impact, Distribution and Mapping, Response and Mitigation to Disasters: Mitigation and Preparedness, NDMA and NIDM, Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts (During and Post-disasters).

Suggested Readings:

1. Government of India, (2008): *Vulnerability Atlas of India*. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Government of India (2011): *Disaster Management in India*, Ministry of Home Affairs, New Delhi.
3. Kapur, A. (2010). *Vulnerable India: A Geographical Study of Disasters*. Sage Publications, New Delhi.
4. Modh, S. (2010). *Managing Natural Disaster: Hydrological, Marine and Geological Disasters*. Macmillan, Delhi.
5. Singh, J. (2007). *Disaster Management Future Challenges and Opportunities*. I. K. International Publishing House Pvt. Limited, New Delhi.
6. Singh, R. B. (2005). *Risk Assessment and Vulnerability Analysis*, IGNOU, New Delhi.
7. Singh, R. B. (ed.) (2006). *Natural Hazards and Disaster Management: Vulnerability and Mitigation*, Rawat Publications, New Delhi.
8. Sinha, A. (2001). *Disaster Management: Lessons Drawn and Strategies for Future*. New United Press, New Delhi.

GEO-001-SE-1110: FUNDAMENTALS OF CARTOGRAPHY
(Practical)

Credit - 3 (Credit Hours per week: Practical - 3)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. Create professional and aesthetically pleasing maps through thoughtful application of cartographic conventions.
2. Develop an understanding of the concepts regarding scale and map projections to suit map purposes.
3. Better understand the techniques of interpretation of topographical and weather maps.

Learning Outcomes:

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

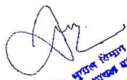
1. Read and prepare maps.
2. Comprehend locational and spatial aspects of the earth surface.
3. Use maps for regional development and decision-making.

UNIT	COURSE CONTENT
UNIT 1	Cartography: Nature, Scope and Development; Concepts and Types of Scales, Maps and Surveying.
UNIT 2	Graphical Construction of Plain, Comparative and Diagonal Scales; Topographical maps: Interpretation of topographical and Weather maps.
UNIT 3	Surveying: Plane table, prismatic compass and dumpy level.

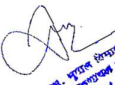
Suggested Readings:

1. Anson, R. and Ormelling, F. J. (1993). *Basic Cartography for students and technicians*. Published on behalf of the International Cartographic Association by Elsevier Applied Science Publishers.
2. Gupta, K. K. and Tyagi, V. C. (1992). *Working with Maps*. Survey of India, DST, New Delhi.
3. Khan, Z. A. (1998). *Textbook of Practical Geography*. Concept Publishing Company, New Delhi.
4. Kraak, M. J. (2010). *Cartography: Visualization of Geospatial Data* (3rd edition). Pearson Education Ltd., London.
5. Misra, R. P. (2014). *Fundamentals of Cartography* (Second Revised and Enlarged Edition). Concept Publishing, New Delhi.
6. Monkhouse, F. J. and Wilkinson, H. R. (1973). *Maps and Diagrams*. Methuen, London.
7. Rhind, D. W. and Taylor, D. R. F. (eds.) (1989). *Cartography: Past, Present and Future*. Elsevier, International Cartographic Association.
8. Robinson, A. H. (2009). *Elements of Cartography* (6th Edition). John Wiley and Sons, New York.
9. Sarkar, A. (2015). *Practical Geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi.

10. Sharma, J. P. (2010). *Prayogic Bhugol (Hindi)*. Rastogi Publishers, Meerut.
11. Singh, G. (1998). *Map Work and Practical Geography (4th Edition)*. Vikas Publishing House, Ahmedabad.
12. Singh, R. L. and Dutta, P. K. (2012). *Prayogatmak Bhugol (Hindi)*. Central Book Depot, Allahabad.
13. Singh, R. L. and Singh, R. P. B. (1991). *Prayogtmak Bhugolke Mool Tatva (Hindi)*. Kalyani Publishers, New Delhi.
14. Singh, R. L. and Singh, R. P. B. (1999). *Elements of Practical Geography*. Kalyani Publishers, New Delhi.
15. Steers, J. A. (1970). *An Introduction to the study of Map Projections*. University of London Press, London.


Dr. Arunima, M. Sc. in Geography
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SEMESTER – II


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SEMESTER – II
GEO-001-CC-1210: HUMAN GEOGRAPHY I

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. Understand the basic concepts of human geography in the context of population attributes, economic, cultural, and trade activities.
2. Understand the impact of population attributes on the development of a region.

Course Outcomes:

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

1. Learn how human, physical, and environmental components of the world interact with economic processes such as globalization and trade.
2. Gain insight into the social, economic, and cultural aspects of the region.

UNIT	COURSE CONTENT
UNIT 1	Introduction to Human Geography: Definition, nature, scope, and approaches to the study of human geography; Concepts in Human Geography (Place, Space, and Landscape); Understanding human-nature relationship: Determinism, Possibilism and Neo-determinism; Fields and sub-fields in Human geography.
UNIT 2	Population and Settlement: Growth of population, distribution, density of the world; Migration: causes, types, and consequences; Theory and Model of population growth: Malthus and Demographic Transition; Origin, function, and classification of rural and urban settlement types.
UNIT 3	Socio-economic and political dimensions: Languages, religion and races - definition and world distribution; Habitat and economy of selected communities (Eskimo, Bushmen); Economic activities: Concept and classification - primary, secondary and tertiary; Concept of Nation and State; Frontiers and Boundaries - Definition and Types.
UNIT 4	Geography and Development: Concept of development and Sustainable Development; Indicators and measures of development (economic, social and environmental); Global pattern of development.

Suggested Readings:

1. Husain, M. (2021). *Human Geography*. Rawat Publications, New Delhi.
2. Maurya, S. D. (2016). *Cultural Geography*. Sardha Pustak Bhawan, Allahabad.
3. Maurya, S. D. (2018). *Human Geography*. Pravalika Publications, Allahabad.
4. Patra, P., Abhay, R. K., Sikka, G., and Devi, G. R. (2020). *Perspectives in Human Geography*. Concept Publishing Company, Ltd., New Delhi.
5. Rubenstein, J. M. (2012). *Contemporary Human Geography*. Prentice Hall of India, New Delhi.
6. Saxena, H. M. (2018). *Economic Geography*, 2nd Edition. Rawat Publications, New Delhi.
7. Singh, L. R. (2018). *Fundamentals of Human Geography*. Sharda Pustak Bhawan, Allahabad.

GEO-001-MC-1210: GENERAL HUMAN GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. Understand the basic concepts of human geography in the context of population attributes, economic, cultural, and trade activities.
2. Understand the impact of population attributes on the development of a region.

Course Outcomes:

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

1. Learn how human, physical, and environmental components of the world interact with economic processes such as globalization and trade.
2. Gain insight into the social, economic, and cultural aspects of the region.

UNIT	COURSE CONTENT
UNIT 1	Introduction to Human Geography: Definition, nature, scope, and approaches to the study of human geography; Concepts in Human Geography (Place, Space, and Landscape); Understanding human-nature relationship: Determinism, Possibilism and Neo-determinism; Fields and sub-fields in Human geography.
UNIT 2	Population and Settlement: Growth of population, distribution, density of the world; Migration: causes, types, and consequences; Theory and Model of population growth: Malthus and Demographic Transition; Origin, function, and classification of rural and urban settlement types.
UNIT 3	Socio-economic and political dimensions: Languages, religion and races - definition and world distribution; Habitat and economy of selected communities (Eskimo, Bushmen); Economic activities: Concept and classification - primary, secondary and tertiary; Concept of Nation and State; Frontiers and Boundaries - Definition and Types.
UNIT 4	Geography and Development: Concept of development and Sustainable Development; Indicators and measures of development (economic, social and environmental); Global pattern of development.

Suggested Readings:

1. Husain, M. (2021). *Human Geography*. Rawat Publications, New Delhi.
2. Maurya, S. D. (2016). *Cultural Geography*. Sardha Pustak Bhawan, Allahabad.
3. Maurya, S. D. (2018). *Human Geography*. Pravalika Publications, Allahabad.
4. Patra, P., Abhay, R. K., Sikka, G., and Devi, G. R. (2020). *Perspectives in Human Geography*. Concept Publishing Company, Ltd., New Delhi.
5. Rubenstein, J. M. (2012). *Contemporary Human Geography*. Prentice Hall of India, New Delhi.
6. Saxena, H. M. (2018). *Economic Geography*, 2nd Edition. Rawat Publications, New Delhi.
7. Singh, L. R. (2018). *Fundamentals of Human Geography*. Sharda Pustak Bhawan, Allahabad.

GEO-001-MD-1210: GEOGRAPHY OF TOURISM

Credit - 3 (Credit Hours per week: Lecture - 3)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. To understand the various dimensions of geography of tourism.
2. To make the students aware of national and international trends and patterns of tourism and its impacts.

Learning Outcomes:

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

1. Equip students with a basic understanding of the nature and scope, trends and patterns of various types of tourism.
2. Have sound knowledge of geographical, environmental and socio-cultural aspects of tourism in India.

UNIT	COURSE CONTENT
UNIT 1	Scope and Nature: Concepts and Issues; Tourism, Recreation and Leisure Inter-Relations; Geographical Parameters of Tourism by Robinson.
UNIT 2	Trends and Patterns: Nature Tourism, Cultural Tourism, Medical Tourism, Eco-tourism, Geo-Tourism.
UNIT 3	Impact of Tourism: Economy, Environment, Society; Tourism in India: Tourism Infrastructure; Case Studies of Himalaya, Desert and Coastal Areas; India's World Heritage Sites and National Geological Monuments; National Tourism Policy.

Suggested Readings:

1. Alan, A. L. (2017). *New Research Paradigms in Tourism Geography*. Routledge, London.
2. Dhar, P. N. (2006). *International Tourism: Emerging Challenges and Future Prospects*. Kanishka, New Delhi.
3. Hall, M. and Stephen, P. (2006). *Geography of Tourism and Recreation-Environment, Place and Space*. Routledge, London.
4. Kamra, K. K. and Chand, M. (2007). *Basics of Tourism: Theory, Operation and Practice*. Kanishka Publishers, Pune.
5. Milton, D. (1993). *Geography of World Tourism*. Prentice Hall, New York.
6. Nelson, V. (2017). *An Introduction to the Geography of Tourism*. Rowman & Littlefield.
7. Page, S. J. (2011). *Tourism Management: An Introduction*. Butterworth-Heinemann, USA.
8. Raj, R. and Nigel, D. (2007). *Morpeth Religious Tourism and Pilgrimage Festivals Management: An International perspective by CABI*. Cambridge, USA.
9. Robinson, H. A. (1996). *Geography of Tourism*. Macdonald and Evans, London.
10. Singh, J. (2014). *Eco-Tourism*. I. K. International Pvt. Ltd., New Delhi, India.
11. Tourism Recreation and Research Journal, Centre for Tourism Research and Development, Lucknow.
12. Widawski, K. and Wyrzykowski, J. (2017). *The Geography of Tourism of Central and Eastern European Countries*, Springer.

GEO-001-SE-1210: REMOTE SENSING

Credit - 3 (Credit Hours per week: Practical - 3)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. This course shall introduce the basic concepts of remote sensing.
2. This paper shall elucidate about aerial photography, basic principles, types, and satellite remote sensing.
3. This course shall provide a detailed understanding related to the interpretation and application of remote sensing.

Learning Outcomes:

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

1. Appreciate the strength and application of remote sensing.
2. Map the resources, their location and availability.

UNIT	COURSE CONTENT
UNIT 1	Definition, concept, and development; EMR interaction with Atmosphere and Earth's Surface; Aerial Photography and Satellite Remote Sensing.
UNIT 2	Base map (Survey of India Toposheet); Visual interpretation using Aerial Photographs: Land use/ Landcover: Identification of hydrological features.
UNIT 3	Visual interpretation using Satellite Data: Forest monitoring, Water resources and Urban Sprawl analysis (Change detection).

Suggested Readings:

1. Anji Reddy, M. (2008). *Textbook of Remote Sensing and Geographic Information System*. B.S. Publication, Hyderabad.
2. Campbell, J. B. (2007). *Introduction to Remote Sensing*. Guildford Press.
3. Chauniyal, D. D. (2010). *Sudur Samvedanevam Bhogolik Suchana Pranali (Hindi)*. Sharda Pustak Bhawan, Allahabad.
4. Jensen, J. R. (2004). *Introductory Digital Image Processing: A Remote Sensing Perspective*. Prentice Hall Inc., New Jersey.
5. Jensen, J. R. (2007). *Remote Sensing of the Environment: An Earth Resource Perspective*. Prentice-Hall Inc., New Jersey.
6. Joseph, G. (2005). *Fundamentals of Remote Sensing*, United Press India.
7. Kumar, D., Singh, R. B. and Kaur, R. (2019). *Spatial Information Technology for Sustainable Development Goals*, Springer.
8. Lillisand, T. M. and Kiefer, P. W. (2007). *Remote Sensing and Image Interpretation*, 6th Edition. John Wiley & Sons, New York.
9. Nag, P. and Kudra, M. (1998). *Digital Remote Sensing*. Concept, New Delhi.
10. Rees, W. G. (2001). *Physical Principles of Remote Sensing*. Cambridge University Press.
11. Sarkar, A. (2015). *Practical Geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi.
12. Singh, R. B. and Murai, S. (1998). *Space-informatics for Sustainable Development*. Oxford and IBH Pub.


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SEMESTER – III

SEMESTER – III
GEO-001-CC-2110: GEOGRAPHY OF INDIA

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. Understanding the physical profile of the country.
2. To study the resource endowment and its spatial distribution.

Learning Outcomes:

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

1. Understand the physical and social dimensions of the country.
2. Utilize resources for sustainable development.

UNIT	COURSE CONTENT
UNIT 1	Physical: Physiographic divisions; Climatic characteristics; Drainage system; Soil and Natural vegetation.
UNIT 2	Demography: Growth and distribution; Population composition (age, sex, race, caste, religion, language and tribes).
UNIT 3	Economy: Agricultural regions; Area and production of rice, wheat, cotton; Mineral and power resources (Iron ore, coal and petroleum); Major industrial regions; Trade and Commerce.
UNIT 4	Environmental hazards: Flood, Drought, Landslide, and Soil erosion; Cyclone, Earthquake, Deforestation.

Suggested Readings:

1. Deshpande, C. D. (1992). *India: A Regional Interpretation*. ICSSR, New Delhi.
2. Douglas, L. J. (2009). *World Regional Geography*, Tenth edition. Pearson Education Inc, New Jersey.
3. Husain, M. (2009). *Geography of India*. Tata McGraw Hill, New Delhi.
4. Johnson, B. L. C. (2001). *Geographical Dictionary of India*. Vision Books, New Delhi.
5. Khullar, D. R. (2014). *India: A Comprehensive Geography*. Kalyani Publishers, New Delhi.
6. Mandal, R. B. (ed.) (1990). *Patterns of Regional Geography - An International Perspective. Vol. 3-Indian Perspective*.
7. Pathak, C. R. (2003). *Spatial Structure and Processes of Development in India*. Regional Science Assoc., Kolkata.
8. Sdyasuk, G. and Sengupta, P. (1967). *Economic Regionalisation of India*. Census of India.
9. Sharma, T. C. (2013). *Economic Geography of India*. Rawat Publications, Jaipur.
10. Singh, J. (2003). *India - A Comprehensive & Systematic Geography*. Gyanodaya Prakashan, Gorakhpur.
11. Singh, R. B. and Prokop, P. (2016). *Environmental Geography of South Asia*. Springer.
12. Singh, R. L. (1971). *India: A Regional Geography*, National Geographical Society of India.
13. Spate, O. H. K. and Learmonth, A. T. A. (1967). *India and Pakistan: A General and Regional Geography*, Methuen.
14. Tirtha, R. (2002). *Geography of India*. Rawat Publications, Jaipur & New Delhi.
15. Tiwari, R. C. (2007). *Geography of India*. Prayag Pustak Bhawan, Allahabad.

GEO-001-CC-2120: GEOMORPHOLOGY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. To understand the associations between geomorphological forms, concepts, and processes.
2. To critically evaluate and connect information about geomorphic processes.

Learning Outcomes:

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

1. Understand the functioning of Earth systems in real time and analyze how the natural and anthropogenic operating factors affect the development of landforms.
2. Distinguish between the mechanisms that control these processes.

UNIT	COURSE CONTENT
UNIT 1	Nature, Scope, Approaches and their relationship with other sciences; Landscape Evolution Theories: W. M. Davis, W. Penck, L. C. King, J. T. Hack; Geomorphic concepts: Uniformitarianism and Systems approach.
UNIT 2	Earth: Interior structure; Earth movements: Continental drift, Isostasy, Plate tectonics; Types of folds and faults; Earthquakes and volcanoes.
UNIT 3	Geomorphic processes and landforms: Weathering, Mass Wasting, Fluvial, Karst, Aeolian, Glacial, and Coastal.
UNIT 4	Applied Geomorphology: Urban planning, Resource management, Geo-hazards and Environmental management.

Suggested Readings:

1. Bloom, A. L. (2003). *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms*. Prentice-Hall of India, New Delhi.
2. Bridges, E. M. (1990). *World Geomorphology*. Cambridge University Press, Cambridge.
3. Christopherson, R. W. and Birkeland, G. H. (2012). *Geosystems: An Introduction to Physical Geography* (8th edition). Pearson Education, New Jersey.
4. Das Gupta, A. and Kapoor, A. N. (2001). *Principles of Physical Geography*. S. C. Chand & Company Ltd., New Delhi.
5. Dayal, P. (1996). *A Textbook of Geomorphology*. Shukla Book Depot, Patna.
6. Huggett, R. J. (2007). *Fundamentals of Geomorphology*. Routledge, New York.
7. Kale, V. S. and Gupta, A. (2001). *Introduction to Geomorphology*, Orient Longman, Hyderabad.
8. Khullar, D. R. (2012). *Physical Geography*, Kalyani Publishers, New Delhi.
9. Selby, M. J. (2005). *Earth's Changing Surface*. Indian Edition, OUP
10. Singh, S. (2009). *Bhautik Bhugol ka Swaroop (Hindi)*. Prayag Pustak, Allahabad.
11. Skinner, B. J. and Stephen C. P. (2000). *The Dynamic Earth: An Introduction to Physical Geology*. 4th Edition, John Wiley and Sons.
12. Strahler, A. H. and Strahler, A. N. (2001). *Modern Physical Geography*. (4/E), John Wiley and Sons, Inc., New York.
13. Summerfield, M. A. (2013). *Global Geomorphology*. Routledge, New York.
14. Thornbury, W. D. (2004). *Principles of Geomorphology*. Wiley, New York.
15. Tikka, R. N. (1989). *Bhautik Bhugol ka Swaroop (Hindi)*. Kedarnath Ram Nath, Meerut.

GEO-001-MC-2110: GENERAL GEOGRAPHY OF INDIA

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. Understanding the physical profile of the country.
2. To study the resource endowment and its spatial distribution.

Learning Outcomes:

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

1. Understand the physical and social dimensions of the country.
2. Utilize resources for sustainable development.

UNIT	COURSE CONTENT
UNIT 1	Physical: Physiographic divisions; Climatic characteristics; Drainage system; Soil and Natural vegetation.
UNIT 2	Demography: Growth and distribution; Population composition (age, sex, race, caste, religion, language and tribes).
UNIT 3	Economy: Agricultural regions; Area and production of rice, wheat, cotton; Mineral and power resources (Iron ore, coal and petroleum); Major industrial regions; Trade and Commerce.
UNIT 4	Environmental hazards: Flood, Drought, Landslide, and Soil erosion; Cyclone, Earthquake, Deforestation.

Suggested Readings:

1. Deshpande, C. D. (1992). *India: A Regional Interpretation*. ICSSR, New Delhi.
2. Douglas, L. J. (2009). *World Regional Geography*, Tenth edition. Pearson Education Inc, New Jersey.
3. Husain, M. (2009). *Geography of India*. Tata McGraw Hill, New Delhi.
4. Johnson, B. L. C. (2001). *Geographical Dictionary of India*. Vision Books, New Delhi.
5. Khullar, D. R. (2014). *India: A Comprehensive Geography*. Kalyani Publishers, New Delhi.
6. Mandal, R. B. (ed.) (1990). *Patterns of Regional Geography - An International Perspective. Vol. 3-Indian Perspective*.
7. Pathak, C. R. (2003). *Spatial Structure and Processes of Development in India*. Regional Science Assoc., Kolkata.
8. Sdyasuk, G. and Sengupta, P. (1967). *Economic Regionalization of India*. Census of India.
9. Sharma, T. C. (2013). *Economic Geography of India*. Rawat Publications, Jaipur.
10. Singh, J. (2003). *India - A Comprehensive & Systematic Geography*. Gyanodaya Prakashan, Gorakhpur.
11. Singh, R. B. and Prokop, P. (2016). *Environmental Geography of South Asia*. Springer.
12. Singh, R. L. (1971). *India: A Regional Geography*, National Geographical Society of India.
13. Spate, O. H. K. and Learmonth, A. T. A. (1967). *India and Pakistan: A General and Regional Geography*, Methuen.
14. Tirtha, R. (2002). *Geography of India*. Rawat Publications, Jaipur & New Delhi.
15. Tiwari, R. C. (2007). *Geography of India*. Prayag Pustak Bhawan, Allahabad.

GEO-001-MD-2110: TRADITIONAL ECOLOGICAL KNOWLEDGE

Credit - 3 (Credit Hours per week: Lecture - 3)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objective:

1. To acquaint the students with the importance of rich traditional ecological knowledge for sustainable management of natural resources.

Learning Outcomes:

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

1. Understand the importance of traditional ecological knowledge and apply it in their day-to-day life for natural resource management.

UNIT	COURSE CONTENT
UNIT 1	Meaning, concept, importance and development of TEK.
UNIT 2	TEK in farming, food gathering, hunting, fishing, craft, ethnomedicine and food preservation.
UNIT 3	TEK in conservation of biotic life; Change and continuity: responses, perception, constraints and prospects.

Suggested Readings:

1. Ancient Pathways, Ancestral Knowledge by Nancy J. Turner: A comprehensive two-volume set on ethnobotany and ecological wisdom of Indigenous Peoples of Northwestern North America.
2. Braiding Sweetgrass by Robin Wall Kimmerer: Interweaves indigenous wisdom and scientific knowledge, blending memoir, natural history, and philosophy.
3. Indigenous Critical Reflections on Traditional Ecological Knowledge (edited by Lara A. Jacobs): Presents Indigenous perspectives and critical analysis of TEK frameworks.
4. Sacred Ecology by Fikret Berkes: Widely considered foundational, this book explores the core theories and practical examples of TEK from diverse cultures.
5. The Value of Traditional Ecological Knowledge for the Environmental Health Sciences and Biomedical Research by S. Finn et al. (Environmental Health Perspectives): Discusses integration of TEK into health and biomedical research and the implications for Indigenous communities.
6. Traditional Ecological Knowledge (Cambridge University Press): Academic coverage of TEK, including Indigenous science, restoration ecology, and sustainability.
7. Traditional Ecological Knowledge (IUCN Working Group Report, 1989): A classic collection of scholarly articles that helped define the scope and importance of TEK in global conservation.
8. Traditional ecological knowledge and its role in biodiversity conservation: a systematic review by N.I. Sinthumule (Frontiers in Environmental Science): Reviews TEK's impact on biodiversity conservation, with emphasis on African case studies.
9. Traditional ecological knowledge and natural resource management: Examples from Bangladesh (NRCR, 2024): Outlines practical applications of TEK in resource management and agricultural systems.
10. Traditional Ecological Knowledge: Learning from Indigenous Practices for Environmental Sustainability (edited by Melissa K. Nelson & Dan Shilling): Focuses on the role of TEK in sustainable practices and environmental stewardship.

GEO-001-SE-2110: GEOGRAPHICAL INFORMATION SYSTEM

Credit - 3 (Credit Hours per week: Practical - 3)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. This course shall introduce the basic concepts of GIS.
2. To do analysis and application of geographical data resource management and land use land cover study.

Learning Outcomes:

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

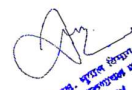
1. Appreciate the basic principles and components of GIS.
2. Analyze the basic resources, land use, and urban-related data using GIS software for meaningful interpretation.

UNIT	COURSE CONTENT
UNIT 1	Geographic Information System (GIS): Definition, Components and Principles; GIS Data Structures: Types (Spatial and Non-spatial), Raster and Vector Data Structure.
UNIT 2	GIS Data Analysis: Input, Georeferencing, Editing and Output; Overlays.
UNIT 3	Application of GIS in Natural Resource Management, Urban Sprawl, Land use/ Land cover.

Suggested Readings:

1. Anji Reddy, M. (2008). *Textbook of Remote Sensing and Geographic Information System*. B. S. Publication, Hyderabad.
2. Campbell, J. B. (2007). *Introduction to Remote Sensing*. Guildford Press.
3. Chauniyal, D. D. (2010). *Sudur Samvedanevam Bhogolik Suchana Pranali (Hindi)*. Sharda Pustak Bhawan, Allahabad.
4. Jensen, J. R. (2004). *Introductory Digital Image Processing: A Remote Sensing Perspective*. Prentice Hall Inc., New Jersey.
5. Jensen, J. R. (2007). *Remote Sensing of the Environment: An Earth Resource Perspective*. Prentice-Hall Inc., New Jersey.
6. Joseph, G. (2005). *Fundamentals of Remote Sensing*. United Press India.
7. Kumar, D., Singh, R. B. and Kaur, R. (2019). *Spatial Information Technology for Sustainable Development Goals*. Springer.
8. Lillisand, T. M., and Kiefer, P. W. (2007). *Remote Sensing and Image Interpretation*. 6th Edition, John Wiley & Sons, New York.
9. Nag, P. and Kudra, M. (1998). *Digital Remote Sensing*. Concept, New Delhi.
10. Rees, W. G. (2001). *Physical Principles of Remote Sensing*, Cambridge University Press.
11. Sarkar, A. (2015). *Practical Geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi.
12. Singh, R. B. and Murai, S. (1998). *Space-informatics for Sustainable Development*. Oxford and IBH Pub.

SEMESTER – IV


Dr. Arunima. Arunima Prasad
HOD, Geography
RGU, Arunachal Pradesh

SEMESTER – IV
GEO-001-CC-2210: POLITICAL GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. To critically understand the concepts of state, nation and nation-state.
2. To develop the linkages between electoral geography and political geography.

Learning Outcomes:

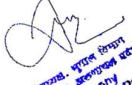
After the completion of the course, the students will have the ability to:

1. Learn the concept of nation and state and geopolitical theories.
2. Understand the different dimensions of electoral geography and resource conflicts.

UNIT	COURSE CONTENT
UNIT 1	Nature, scope, concepts, approaches, and development.
UNIT 2	Concept of State, Nation and Nation State; Attributes of State: Frontiers and Boundaries; Territory and Sovereignty; Concept of Geopolitics; Theories (Heartland and Rimland).
UNIT 3	Resource Conflicts: Disputes - Water sharing, Forest Rights, Minerals (National and International).
UNIT 4	Politics of Displacement: Issues of relief, compensation and rehabilitation: Dams, Highways and Forest with reference to North East India.

Suggested Readings:

1. Adhikari, S. (2007). *Political Geography*. Rawat Publication, New Delhi.
2. Adhikari, S. (2013). *Political Geography of India*. Sharda Pustak Bhawan, Allahabad.
3. Agnew, J. (2002). *Making Political Geography*, Arnold.
4. Agnew, J., Mitchell, K. and Toal, G. (2003). *A Companion to Political Geography*. Blackwell.
5. Cox, K. R., Low, M. and Robinson, J. (2008). *The Sage Handbook of Political Geography*. Sage Publications.
6. Gallaher, C., et al, (2009). *Key Concepts in Political Geography*. Sage Publications.
7. Hodder, D., Sarah, J. L. and Keith, S. M. (1998). *Land-Locked States of Africa and Asia*. Psychology Press.
8. Jones, M. (2004). *An Introduction to Political Geography: Space, Place and Politics*. Routledge.
9. Painter, J. and Jeffrey, A. (2009). *Political Geography*. Sage Publications.
10. Taylor, P. and Flint, C. (2000). *Political Geography*. Pearson Education.


Head of the Department
HOD, Geography
ROU, Arunachal Pradesh

GEO-001-CC-2220: GEOGRAPHICAL ANALYSIS I

Credit - 4 (Credit Hours per week: Practical - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. Introduce different areas of geographical inquiry and provide students with methods to develop broad and balanced analytical skills using practical geography techniques.
2. Familiarize students with data representation methods, thematic mapping, and interpretation of various physical and cultural features through hands-on exercises such as preparation of maps, diagrams, and cartograms.

Learning Outcomes:

1. Students will be able to represent, analyse, and interpret different types of geographical data using graphical, cartographic, and mapping techniques, including topographical and climate maps.
2. Students will gain practical competence in preparing and interpreting various geographical diagrams and thematic maps, and critically analysing physical and cultural features of landscapes.

UNIT	COURSE CONTENT
UNIT 1	Basic Cartography: Scales – Concept and application; Graphical Construction of Plain, Comparative and Diagonal Scales.
UNIT 2	Morphometric Analysis: Average Slope Analysis, Relief profiles, Stream ordering and Bifurcation ratio.
UNIT 3	Representation of Population data: Population growth, distribution, composition.
UNIT 4	Map Projections: Classification, properties and uses; Merits and Demerits of Polar Zenithal, Stereographic, Bonne's and Mercator's Projections.

Suggested Readings:

1. Anson, R. and Ormelling, F. J. (1994). *Basic Cartography*. Pergamon Press.
2. Gupta, K. K. and Tyagi, V. C. (1992). *Working with Maps*. Survey of India, New Delhi.
3. Khan, Z. A. (1998). *Textbook of Practical Geography*. Concept Publishing, New Delhi.
4. Kraak, M. J. (2010). *Cartography: Visualization of Geospatial Data*. (3rd edition), Pearson Education Ltd., London.
5. Misra, R. P. (2014). *Fundamentals of Cartography*. (Second Revised and Enlarged Edition), Concept Publishing, New Delhi.
6. Monkhouse, F. J. and Wilkinson, H. R. (1973). *Maps and Diagrams*. Methuen, London.
7. Rhind, D. W. and Taylor, D. R. F. (eds.) (1989). *Cartography: Past, Present and Future*. Elsevier, International Cartographic Association.
8. Robinson, A. H. (2009). *Elements of Cartography*. John Wiley and Sons, New York.
9. Sarkar, A. (2015). *Practical Geography: A systematic approach*. Orient Black Swan, New Delhi.
10. Singh, G. (1998). *Map Work and Practical Geography*. Vikas Publishing House, Ahmedabad.
11. Singh, R. L. and Singh, R. P. B. (1999). *Elements of Practical Geography*. Kalyani Publishers, New Delhi.
12. Steers, J. A. (1970). *An Introduction to the Study of Map Projections*. University of London Press, London.

GEO-001-CC-2230: REGIONAL PLANNING

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. To understand the concept of region and the planning process involved in it.
2. To examine factors responsible for development disparities and sustainable development.

Learning Outcomes:

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

1. Understand the techniques involved in regional planning and development.
2. Understand the key components of sustainable development.

UNIT	COURSE CONTENT
UNIT 1	Nature and scope of Regional Planning, Approaches, Methods, Techniques, Theories and models.
UNIT 2	Concept of Region; Types of Regional Planning; Role of Regional Planning in National Development; Planning regions of India.
UNIT 3	Concept and factors affecting rural development; Causes and measurement of regional disparity; Indicators of development and regional disparities in India.
UNIT 4	Sustainable Development: Indicators, Goals, Strategies, Policies and Programmes.

Suggested Readings:

1. Bernstein, H. (1979). Sociology of Development versus Sociology of Underdevelopment. In: D. Lehmann (ed.), *Development Theory: Four Critical Studies*, Cass, London.
2. Brookfield, H. C. (1975). *Interdependent Development*. Methuen, London.
3. Cary, J., Hudson, R. and Lewis, J. (ed.) (1980). *Regions in Crisis*. Croom Helm, London.
4. Dewar, D. et al. (1986). *Regional Development and Settlement Policy*. Allen and Unwin, Boston.
5. Forbes, D. K. (1984). *The Geography of Underdevelopment: A critical survey*. Croom Helm, London.
6. Hall, P. (1981). *Urban and Regional Planning*. Allan and Unwin, Boston.
7. Hansen, N. N. (1972). *Growth Centres in Regional Economic Development*. Macmillan, London.
8. Kuklinski, A. (1975). *Regional Development and Planning*. Sythoff, London.
9. Mishra, R. P., Sundaram, K. V. and Rao, V. L. S. P. (1974). *Regional Development Planning in India*. Viking, Delhi.
10. Stohr, W. B. and Taylor, D. R. F. (1981). *Development from above or Development from Below*. John Wiley, Chichester.

GEO-001-2240: Field Work


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GEO-001-MC-2210: POPULATION GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. It introduces the basic concepts of Population Geography to the students.
2. Develop an understanding of the importance and need for demographic data in understanding population dynamics.

Learning Outcomes:

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

1. Learn the role of demography and population studies as distinct fields of human geography.
2. Have sound knowledge of key concepts, different components of population along with its drivers, and examine population dynamics and characteristics with contemporary issues.

UNIT	COURSE CONTENT
UNIT 1	Nature, scope and approaches; Relation with demography and other social sciences; Population resource relationship.
UNIT 2	Population Growth and Distribution: Population growth, trend and distribution; Determinants of Population Change: fertility, mortality and migration.
UNIT 3	Population Theories: Malthus, Marx, Boserup, Demographic Transition Model.
UNIT 4	Population Composition: Age-sex composition, Rural-urban composition; Concept of ageing; Demographic dividend.

Suggested Readings:

1. Bhendea, A. and Kanitkar, T. (1985). *Principles of Population Studies*. Himalayan Publishing House, Mumbai.
2. Boserup, E. (1965). *The conditions of Agricultural Growth*. G. Allen and Unwin, London.
3. Chandana, R. C. and Sidhu, M. S. (1980). *Introduction to Population Geography*. Kalyani Publishers, Ludhiana.
4. Clarke, J. L. (1992). *Population Geography*. Pergamon Press, Oxford.
5. Demko, G. J., Rose, H. M. and Schnell, G. A. (1979). *Population Geography: A Reader*. McGraw-Hill, New York.
6. Dubey, R. M. (1981). *Population Dynamics in India*. Chugh Publications, Allahabad.
7. Malthus, T. R. and Gilbert, G. (1999). *An Essay on the principles of Population*. Oxford University Press, USA.
8. Mandal, R. B., Uyanga, J and Prasad, H. (1989). *Introductory Methods in Population Analysis*. Concept Publishing, New Delhi.
9. Samuel H. Preston (2000). *Demography: Measuring and modeling population processes*. Wiley-Blackwell.
10. Sundaram, K. V. and Nangia, S. (1985). *Population Geography*. Heritage, New Delhi.

SEMESTER – V

SEMESTER – V
GEO-001-CC-3110: CLIMATOLOGY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. Various dimensions of climatology, like structure and composition.
2. Detailed analysis of global atmospheric pressure and wind systems.

Learning Outcomes:

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

1. Understand the elements of weather and climate and their impacts at different scales.
2. Comprehend the climatic aspects and their bearing on planet Earth.

UNIT	COURSE CONTENT
UNIT 1	Nature, Scope and Approaches; Relationship with meteorology.
UNIT 2	Composition and Structure of Atmosphere; Insolation; Vertical and Horizontal distribution of Temperature; Heat Budget; Temperature Inversion.
UNIT 3	Atmospheric Pressure and Winds: Planetary Winds, General Circulation of Air, Jet Streams; Monsoon - Origin and Mechanism, El Niño, La Niña, Evaporation, Humidity, Condensation, Fog and Clouds, Precipitation Types, Stability and Instability; Climatic Regions.
UNIT 4	Atmospheric Disturbances and Classification of Climate: Cyclones and Fronts: Tropical Cyclones, Temperate Cyclones; Classification of Climate: Koppen classification; Contemporary Issues: Global warming, Ozone depletion, Climate Change.

Suggested Reading:

1. Anikouchine, W. A. and Sternberg, R. W. (1973). *The World Oceans: An Introduction to Oceanography*. Prentice-Hall.
2. Barry, R. G. and Chorley, R. J. (2009). *Atmosphere, Weather and Climate*. (9th Edition), Routledge, New York.
3. Bhutani, S. (2000). *Our Atmosphere*. Kalyani Publishers, Ludhiana.
4. Critchfield, H. J. (1987). *General Climatology*. Prentice-Hall of India, New Delhi.
5. Kershaw, S. (2000). *Oceanography: An Earth Science Perspective*. Stanley Thornes, UK.
6. Lal, D. S. (2006). *Jalvayu Vigyan (Hindi)*. Prayag Pustak Bhavan, Allahabad.
7. Lutgens, F. K., Tarbuck, E. J. and Tasa, D. (2009). *The Atmosphere: An Introduction to Meteorology*. Prentice-Hall, Englewood Cliffs, New Jersey.
8. Oliver, J. E. and Hidore, J. J. (2002). *Climatology: An Atmospheric Science*. Pearson Education, New Delhi.
9. Pinet, P. R. (2008). *Invitation to Oceanography*. (Fifth Edition), Jones and Bartlett Publishers, USA, UK and Canada.
10. Strahler, A. N. (1987). *Modern Physical Geography*. John Wiley and Sons, New York, Singapore.
11. Sverdrup, K. A. and Armbrust, E. V. (2008). *An Introduction to the World Ocean*, McGraw-Hill, Boston.
12. Trewartha, G. T., and Horne, L. H. (1980). *An Introduction to Climate*. McGraw-Hill.

GEO-001-CC-3120: AGRICULTURAL GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. To understand the concept of land use/landcover classification and determinants of agriculture.
2. To familiarize the students with agricultural regions/agriculture systems of India.
3. To analyze food security along with various agricultural revolutions and government policies in India.

Learning Outcomes:

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

1. Conceptualize agriculture and its determinants.
2. Get an overview of Indian and world agricultural regions and systems.
3. Have sound knowledge of agricultural revolutions and food security

UNIT	COURSE CONTENT
UNIT 1	Nature, Scope, significance and development; Approaches; Relationship with other allied disciplines.
UNIT 2	Determinants of agriculture: Physical, Social, Economic, Technological, Institutional.
UNIT 3	Agricultural Systems of the World (Whittlesey's classification); Agroclimatic regions of India; Agricultural Land Use model (Von Thünen), Modification and relevance.
UNIT 4	New Perspectives in agriculture development: Green Revolution, White Revolution, Blue Revolution and Sustainable Agriculture.

Suggested Readings:

1. Basu, D. N. and Guha, G. S. (1996). *Agro-Climatic Regional Planning in India*. Vol. I & II, Concept Publication, New Delhi.
2. Bryant, C. R. and Johnston, T. R. (1992). *Agriculture in the City Countryside*. Belhaven Press, London.
3. Burger, A. (1994). *Agriculture of the World*. Aldershot, Avebury.
4. Grigg, D. B. (1984). *Introduction to Agricultural Geography*. Hutchinson, London.
5. Hussain, M. (1996). *Systematic Agricultural Geography*. Rawat Publications, Jaipur.
6. Ilbery, B. W. (1985). *Agricultural Geography: A Social and Economic Analysis*. Oxford University Press.
7. Mohammad, N. (1992). *New Dimension in Agricultural Geography*. Vol. I to VIII, Concept Pub., New Delhi.
8. Roling, N. G. and Wagerutgers, M. A. E. (ed.) (1998). *Facilitating Sustainable Agriculture*. Cambridge University Press, Cambridge.
9. Shafi, M. (2006). *Agricultural Geography*. Dorling Kindersley India Pvt. Ltd., New Delhi.
10. Singh, J. and Dhillon, S. S. (1984). *Agricultural Geography*. Tata McGraw Hill, New Delhi.
11. Tarrant, J. R. (1973). *Agricultural Geography*. David and Charles, Devon.

GEO-001-CC-3130: HUMAN GEOGRAPHY II

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. To develop a comprehensive understanding of foundational and contemporary concepts in Human Geography.
2. To analyse patterns and processes shaping human populations, cultures, economic activities and political structure.
3. To encourage critical thinking and application of geographical methods and tools.

Learning Outcomes:

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

1. Explain and apply key human geography concepts and theories.
2. Critically analyze spatial patterns and processes.
3. Evaluate and propose solutions to issues related to development, equity, and sustainability.

UNIT	COURSE CONTENT
UNIT 1	Foundations of Human Geography: Evolution and Significance of Human Geography; Concept of Place, Space and Landscape. Human-Environment Interaction: Environmental Determinism, Possibilism, and Neo-determinism; Climate Change and Human Adaptation. Approaches and Methods: Qualitative and Quantitative approaches, Role of GIS and remote sensing in the study of Human Geography.
UNIT 2	Languages, Religions, and Ethnicities: Cultural landscapes and spatial expressions of diversity and identity with reference to North East India; Threats to Indigenous cultures and languages with reference to Arunachal Pradesh. Communities and Livelihoods: Focus on marginalized groups- women and indigenous peoples; Impact of technological change on traditional livelihoods.
UNIT 3	Economic Activities: Concept and Relevance of economic activities; Classification: Primary, Secondary, Tertiary, Quaternary and Quinary. Political Expression of Geographies: Nation, State, and Nation-State in a globalized world; Contemporary issues: Boundary disputes and geopolitics of resources.
UNIT 4	Development Discourses: Concept of Inclusive economic growth and sustainable development; SDGs (Sustainable Development Goals). Indicators and Measurement: Concept of Gender Development Index (GDI) and Multidimensional Poverty Index (MPI). Future Challenges and Management: Disaster management - mitigation, risk reduction, and resilience; Displaced communities and humanitarian issues.

Suggested Readings:

1. Alexander, J. W. (1963). *Economic Geography*. Englewood Cliffs, N.J.: Prentice.
2. Bergman, E. E. (1995). *Human Geography: Culture, Connections and Landscape*. Prentice Hall, New Jersey.
3. Carr, M. (1987). *Patterns, Process and Change in Human Geography*. MacMillan Education, London.

4. Daniels, P., Bradshaw, M., Shaw, D. and Sidway, J. (2001). *Human Geography: Issues for the Twenty-First Century*. Prentice Hall, New Jersey.
5. de Blij, H. J., Murphy, A. B. and Foubert, E. H. (1998). *Human Geography: Culture, Society and Space*. John Wiley & Sons.
6. DeBlij, H. J. (1996). *Human Geography, Culture, Society and Space*, John Wiley, New York.
7. Fellman, J. L. (1997). *Human Geography-Landscapes of Human Activities*. Brown and Benchmark Pub., U.S.A,
8. Gregory, D., Johnston, R., Pratt, G., Watts, M. and Whatmore, S. (2011). *The Dictionary of Human Geography*. John Wiley & Sons.
9. Johnston, R. J. (ed.) (1994). *Dictionary of Human Geography*, Blackwell, Oxford.
10. Knox, P. L. and Marston, S. A. (2015). *Human Geography: Places and Regions in Global Context*. Pearson Education.
11. McBride, P. J. (1996). *Human Geography: Systems, Patterns and Change*. Nelson, U.K. and Canada.
12. Michael, C. (1997). *New Patterns: Process and Change in Human Geography*, Nelson.
13. Rubenstein, J. H. (2013). *The Cultural Landscape - An Introduction to Human Geography*. 11th Edition, Prentice Hall, New Delhi.
14. Rubenstein, J. M. (2001). *An Introduction to Human Geography*. Prentice Hall, New Jersey.


 Associate Professor
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GEO-001-CC-3140: GEOGRAPHICAL ANALYSIS II

Credit - 4 (Credit Hours per week: Practical - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives

1. Develop an understanding of key statistical and graphical methods necessary for geographical data analysis.
2. Equip students to apply and interpret quantitative techniques, including agricultural indices and urban indicators for spatial and socio-economic analysis.

Learning Outcomes:

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

1. Analyse and represent various sets of geographical data using appropriate statistical tools and diagrams.
2. Demonstrate the ability to calculate and interpret agricultural indices and socio-economic measures, enhancing their skill in recognizing and articulating development disparities and spatial trends.

UNIT	COURSE CONTENT
UNIT 1	Measures of Central Tendency: Mean, Median, Mode, Range, Quartile, Standard Deviation.
UNIT 2	Representation of Climatic data: Hythergraph, Climatograph, Climograph, Ergograph, Water balance.
UNIT 3	Estimation of Agricultural Indices: Crop diversity, Crop combination, Cropping intensity, Crop specialization.
UNIT 4	Rank size rule, Lorenz Curve, Gini Coefficient, Z-score.

Suggested Readings:

1. Burt, J. E., Barber, G. M. and Rigby, D. L. (2009). *Elementary Statistics for Geographers*. Guilford Press.
2. Bygott, J. (1964). *An Introduction to Mapwork and Practical Geography*. HarperCollins Distribution Services.
3. Chorley, R. J. and Haggett, P. (2013). *Integrated Models in Geography*. Routledge Revivals.
4. Mahmood, A. (1977). *Statistical Methods in Geographical Studies*. Rajesh Publications, New Delhi.
5. McGrew, J. C. and Monroe, C. B. (2009). *An Introduction to Statistical Problem Solving in Geography*. Waveland Press.
6. Mishra, R. P. and Ramesh, A. (1969). *Fundamentals of Cartography*. Concept Publishing Company, New Delhi.
7. Rogerson, P. A. (2019). *Statistical Methods for Geography: A Student's Guide*. 5th Edition, Sage.
8. Singh, R. L and Singh, R. (1991). *Mapwork and Practical Geography*. Central Book Depot, Allahabad.
9. Singh, R. L. and Singh, R. P. B. (1991). *Elements of Practical Geography*. Kalyani Publishers, Ludhiana.
10. Wilkinson, H. R. and Monkhouse, F. J. (1952). *Maps and Diagrams*. B.I. Publications Pvt. Ltd, New Delhi.

GEO-001-MC-3110: ECONOMIC GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives

1. To introduce students to the fundamental concepts, nature, scope, and recent trends in economic geography and its relationship with economics and related disciplines.
2. To develop an understanding of resource classification, distribution, and the principles of conservation and sustainable management of natural and mineral resources.
3. To analyze the spatial distribution and factors influencing primary, secondary, and tertiary economic activities, including agriculture, industry, transport, and trade.

Learning Outcomes:

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

1. Define and explain key concepts in economic geography, including economic activities and their classifications.
2. Understand the types and global distribution of natural and mineral resources and the importance of sustainable resource management.
3. Acquire the ability to assess the geographic factors influencing the location and development of industries, transport systems, and trade patterns at both national and international levels.

UNIT	COURSE CONTENT
UNIT 1	Introduction 1. Definition, nature, scope and recent trends. 2. Relation with economics and allied subjects. 3. Economic Activities: Primary, Secondary and Tertiary.
UNIT 2	Resources: Definition, Concept and Classification of Resources 1. Classification of Natural Resources. 2. Classification of Minerals: ferrous and non-ferrous and world distribution; Energy: minerals and resources. 3. Conservation and management of resources for sustainable development.
UNIT 3	Primary Activities 1. Distribution of primary economic activities: mining, forestry, fishing. 2. Agriculture: physical, social, cultural, and environmental factors influencing crop production; Spatial distribution of major food and cash crops of the world.
UNIT 4	Secondary and Tertiary Activities 1. Industries: factors of localization; Major industries: Iron and steel, Textiles, Chemicals, Paper. 2. Transport: geographical factors in their development; major water, land and air transport 3. Internal and international trade.

Suggested Readings:

1. Baldwin, R., Rikard, F., Philippe, M., Gianmarco, O. and Frederic, R. N. (2005). *Economic Geography and Public Policy*. Princeton University Press, New Jersey.
2. Boesch, H. A. (1964). *Geography of World Economy*. D. Van Nostrand Co., New York.
3. Chapman, J. D. (1989). *Geography and Energy*. Longman, London.

4. Gregor, H. F. (1970). *Geography of Agriculture*. Prentice Hall, New Jersey, USA.
5. Griggs, D. B. (1974). *The Agricultural Systems of the World*. Cambridge University Press, New York.
6. Hartshorne, T. N. and Alexander, J. W. (1988). *Economic Geography*. Prentice Hall, New Delhi.
7. Jones, C. F. and Darkenwald, G. G. (1975). *Economic Geography*. McMillan Co., New York.
8. Millar, E. (1962). *Geography of Manufacturing*. Prentice Hall, New York.
9. Neil, C., Philip, K. and Henry, W-C. Y. (2007). *Economic Geography: A Contemporary Introduction*. Wiley-Blackwell, New York.
10. Raza, M. and Agrawal, Y. (1986). *Transport Geography of India*. Concept Publishing, New Delhi.


Dr. P. K. Singh
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GEO-001-IN-3110: INTERNSHIP (Mandatory)

Credit - 2 in Summer Break

All the students will also undergo internships / Apprenticeships **during the summer term** under a mentor.

The students will be provided with opportunities for internships in:

1. Research Institutes, Science Laboratories.
2. One-month training program.
3. Work with the government-registered local industry, business organizations, and health services.
4. Work with local governments (such as panchayats, municipalities, town committees, municipal committees).
5. Work with any government-sponsored project.
6. Work with media organizations, artists, craftspeople, etc.
7. Community engagement and service with government-registered NGOs.
8. Field-based work with Researchers.


HOD, Geography and
Geography and
ROU, Arunachal Pradesh

SEMESTER – VI


 दिनांक: १५.०५.२०२०
 Dr. J. K. Singh
 HoD, Geography
 RGU, Arunachal Pradesh

SEMESTER – VI
GEO-001-CC-3210: REMOTE SENSING AND GIS

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. This course shall introduce the basic concepts of remote sensing and GIS.
2. This paper shall elucidate aerial photography, its basic principles and types, and satellite remote sensing.

Learning Outcomes:

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

1. Appreciate the strength and application of remote sensing and GIS.
2. Gain knowledge of aerial photographs, satellite data, and their uses.

UNIT	COURSE CONTENT
UNIT 1	Bases of Remote Sensing: Definition and historical development; Interaction of Electromagnetic Radiation (EMR) with atmosphere and Earth surface; Satellites and Sensors; Concept of Resolution.
UNIT 2	Aerial Photographs and Photogrammetry: Types of aerial photographs; Fundamentals of air photo interpretation; Geometry of aerial photographs: tilt and relief displacement.
UNIT 3	Digital Image Processing: Rectification, Restoration, Enhancement; Classification: unsupervised and supervised.
UNIT 4	Geographical Information System and GNSS: Concepts and data capture; Spatial Analysis: single layer, multiple layer; Global Navigation Systems (GNSS); Application in Environmental Studies.

Suggested Readings:

1. Barret, E. C. and Curtis, L. F. (1976). *Introduction to Environmental Remote Sensing*. John Wiley and Sons, New York.
2. Campbell, J. B. (1983). *Mapping the Land*. American Association of Geographers, Reprint in India, Scientific Publisher, Jodhpur.
3. Cromley, R. G. (1992). *Digital Cartography*. Englewood Cliffs: Prentice Hall.
4. Kathuria, C. D. (2011). *Remote Sensing and Geographical Information System*. Centrum Press.
5. Luder, D. (1959). *Aerial Photography Interpretation: Principles and Applications*. McGraw-Hill, New York.
6. Markandey, K. (2009). *Urban Environment and Geoinformatics*. Rawat Publications, Jaipur.
7. Nag, P. and Sengupta, S. (2008). *Introduction to Geographical Information Systems*. Concept Publishing Company, New Delhi.
8. Ramaswamy, S. M. (2005). *Remote Sensing in Water Resources*. Rawat Publications, Jaipur.
9. Sabins, F. F. (1978). *Remote Sensing: Principles and Interpretation*. W. H. Freeman, San Francisco.

GEO-001-CC-3220: GEOGRAPHIC THOUGHT

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. To understand the historical evolution of geographic thought.
2. To explore different paradigms and contemporary trends in geography.

Learning Outcomes:

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

1. Understand geographical thinking in different regions of the world.
2. Distinguish paradigms and postmodern concepts in geography.

UNIT	COURSE CONTENT
UNIT 1	Development of Geographical Ideas: Indian, Greek, Roman and Arab.
UNIT 2	Development of Modern Geography: Impact of Explorations and Discoveries; Founders of Modern Geography: Humboldt and Ritter.
UNIT 3	Dichotomies in Geography: Physical and Human, Determinism and Possibilism, Regional and Systematic; Emergence of New Geography: Quantitative Revolution.
UNIT 4	Schools of Geographic Thought: German, French, Anglo-American; Modern themes: Behavioural, Radical, Humanistic and Postmodernism.

Suggested Readings:

1. Bunge, W. (1966). *Theoretical Geography*. Lund University, Series C.
2. Dickinson, R. G. (1969). *The Makers of Modern Geography*. Routledge Kegan Paul, London.
3. Dubey, B. (1967). *Geographical Concept in Ancient India*. NGSI, Varanasi.
4. Hartshorne, R. (1939). *The Nature of Geography*. Association of American Geographers, O. Lonchester.
5. Hussain, M. (2015). *Evolution of Geographical Thought*. 6th Edition. Rawat Publication, Jaipur.
6. Misra, R. P. (1983). *Contributions to Indian Geography Concepts and Approaches*. Heritage Publication, New Delhi.
7. Taylor, G. (1953). *Geography in the 20th Century*. Methuen, London.
8. Wooldridge, S. W. (1960). *Geographer as a Scientist*. Thomas Nelson and Sons Ltd., London.


Associate Professor
HOD, Geography
PGU, Arunachal Pradesh

GEO-001-CC-3230: SETTLEMENT GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. To acquaint the students with rural and urban settlements.
2. To understand theories, models, and approaches.

Learning Outcomes:

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

1. Appreciate the types and patterns of rural and urban settlement.
2. Apply various concepts and theories in rural and urban development.

UNIT	COURSE CONTENT
UNIT 1	Nature, scope and approaches of settlement geography; Human Settlements: Factors, Classification; Types and Patterns: Rural, Urban; Structure and morphology of Rural settlement types; Emergence of Patterns of house types and building materials.
UNIT 2	Classification of Settlements: Dichotomy of settlement: rural and urban; Rural: classification, function of village and environment relationship; Morphology of rural settlement; Rural service centers and market; Rural problems and planning; Urban: Definition, Salient features of Indian urbanization.
UNIT 3	Settlement System: Concept, origin, growth, and classification of town; Models and Theories of urban growth; Concept of rank-size rule and the primate city; Characteristics of urban centers, functions, population, transport and market.
UNIT 4	Urban hierarchy: Urbanization and conurbation; Rural-urban fringe and Umland, Rural-urban linkages in the context of the metropolitan system in India; Urban problems and urban slum; Urban planning and Smart City Project of India.

Suggested Readings:

1. Maurya, S. D. (2014). *Settlement Geography*. Sharda Pustak Bhawan, Allahabad.
2. Singh, K. P. (2012). *Population and Settlement Geography*. Axis Publications, New Delhi.
3. Singh, R. L. and Singh, K. N. (eds.) (1975). *Readings in Rural Settlement Geography*. Geographical Society of India, Varanasi.
4. Singh, R. Y. (2002). *Geography of Settlements*. Rawat Publications, Jaipur.
5. Sinha, V. N. P., Verma, U. and Sahay, A. (2017). *Introduction to Settlement Geography*. Rajesh Publications, New Delhi.
6. Trewartha, G. T. (1969). *A Geography of Population: World Patterns*. John Wiley, New York.

GEO-001-CC-3240: GEOGRAPHICAL ANALYSIS III

Credit - 4 (Credit Hours per week: Practical - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. This course shall introduce the basic concepts of remote sensing.
2. This paper shall elucidate aerial photography, its basic principles and types, and satellite remote sensing.
3. This course shall provide a detailed understanding related to the interpretation and application of remote sensing and GIS.

Learning Outcomes:

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

1. Appreciate the strength and application of remote sensing.
2. Map the resources, their location and availability.
3. Apply this knowledge for sustainable development.

UNIT	COURSE CONTENT
UNIT 1	Interpretation and Application of Remote Sensing: Base map, Land use/ Land Cover, Urban Sprawl Analysis.
UNIT 2	Interpretation and Application of Remote Sensing: Forest Monitoring, Water Resources and Natural hazards.
UNIT 3	Image Processing (Digital and Manual): Pre-processing (Radiometric and Geometric Correction); Enhancement (Filtering); Classification (Supervised and Unsupervised).
UNIT 4	GIS Data Analysis: Georeferencing of maps and images (coordinate & feature based) and Mosaicing; PCA and Band rationing (NDVI, NDWI).

Suggested Readings:

1. Anji Reddy, M. (2008). *Textbook of Remote Sensing and Geographic Information System*. B.S. Publication, Hyderabad.
2. Campbell, J. B. (2007). *Introduction to Remote Sensing*. Guildford Press.
3. Chauniyal, D. D. (2010). *Sudur Samvedanevam Bhogolik Suchana Pranali (Hindi)*. Sharda Pustak Bhawan, Allahabad.
4. Jensen, J. R. (2004). *Introductory Digital Image Processing: A Remote Sensing Perspective*. Prentice Hall Inc., New Jersey.
5. Jensen, J. R. (2007). *Remote Sensing of the Environment: An Earth Resource Perspective*. Prentice-Hall Inc., New Jersey.
6. Joseph, G. (2005). *Fundamentals of Remote Sensing*. United Press India.
7. Kumar, D., Singh, R. B. and Kaur, R. (2019). *Spatial Information Technology for Sustainable Development Goals*. Springer.
8. Lillisand, T. M. and Kiefer, P. W. (2007). *Remote Sensing and Image Interpretation*. 6th Edition, John Wiley & Sons, New York.
9. Nag, P. and Kudra, M. (1998). *Digital Remote Sensing*. Concept Publishing, New Delhi.
10. Rees, W. G. (2001). *Physical Principles of Remote Sensing*. Cambridge University Press.

GEO-001-MC-3210: BASICS OF REMOTE SENSING AND GIS

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. This course shall introduce the basic concepts of remote sensing and GIS.
2. This paper shall elucidate aerial photography, its basic principles and types, and satellite remote sensing.

Learning Outcomes:

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

1. Appreciate the strength and application of remote sensing and GIS.
2. Gain knowledge of aerial photographs, satellite data, and their uses.

UNIT	COURSE CONTENT
UNIT 1	Bases of Remote Sensing: Definition and historical development; Interaction of Electromagnetic Radiation (EMR) with atmosphere and Earth surface; Satellites and Sensors; Concept of Resolution.
UNIT 2	Aerial Photographs and Photogrammetry: Types of aerial photographs; Fundamentals of air photo interpretation; Geometry of aerial photographs: tilt and relief displacement.
UNIT 3	Digital Image Processing: Rectification, Restoration, Enhancement; Classification: unsupervised and supervised.
UNIT 4	Geographical Information System and GNSS: Concepts and data capture; Spatial Analysis: single layer, multiple layer; Global Navigation Systems (GNSS); Application in Environmental Studies.

Suggested Readings:

1. Barret, E. C. and Curtis, L. F. (1976). *Introduction to Environmental Remote Sensing*. John Wiley and Sons, New York.
2. Campbell, J. B. (1983). *Mapping the Land*. American Association of Geographers, Reprint in India, Scientific Publisher, Jodhpur.
3. Cromley, R. G. (1992). *Digital Cartography*. Englewood Cliffs: Prentice Hall.
4. Kathuria, C. D. (2011). *Remote Sensing and Geographical Information System*. Centrum Press.
5. Luder, D. (1959). *Aerial Photography Interpretation: Principles and Applications*. McGraw-Hill, New York.
6. Markandey, K. (2009). *Urban Environment and Geoinformatics*. Rawat Publications, Jaipur.
7. Nag, P. and Sengupta, S. (2008). *Introduction to Geographical Information Systems*. Concept Publishing Company, New Delhi.
8. Ramaswamy, S. M. (2005). *Remote Sensing in Water Resources*. Rawat Publications, Jaipur.
9. Sabins, F. F. (1978). *Remote Sensing: Principles and Interpretation*. W. H. Freeman, San Francisco.

SEMESTER – VII


 Assistant. Your letter
 recd. 14.11.2023
 HoD, Geography
 RGU, Arunachal Pradesh

SEMESTER – VII

GEO-001-CC-4110: GEOGRAPHY OF NORTH-EAST INDIA

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End Term Examination = 80 and Internal Examination = 20)

Course Objectives:

1. To create awareness about the North East Regions of India.
2. To make the students aware of the conceptual framework of the History and Geography of the region's formation.
3. To create understanding among the students about different aspects of Culture and Society.

Learning Outcomes:

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

1. Learn about the physiographical characteristics of NER like topography, soil, climate, and geological history.
2. Understand the diversity of the region.
3. Develop a critical understanding of resources and development of the region.
4. Know the social, cultural, and economic characteristics of the region.

UNIT	COURSE CONTENT
UNIT 1	Physiographic set up: i. Physiography and drainage ii. Climate and Soil iii. Flora, fauna and biodiversity iv. Changing Physiographical aspects
UNIT 2	Peopling of North-East India: i. Origin and migration ii. Ethnic composition iii. Linguistic composition iv. Religious composition
UNIT 3	Society, Economy and Culture: i. Traditional Village Councils ii. Marriage system and status of women iii. Economic aspects and changes iv. Social problems: Migration, unemployment, terrorism and impact of globalization
UNIT 4	Arunachal Pradesh: Land and People: i. Physical background ii. Major tribes and their culture iii. Economic activities iv. Continuity and changes of culture

Suggested Readings:

1. Bhagabati, A. K. et al. (2001). *Geography of Assam*. Rajesh Publications, New Delhi.
2. Das, H. P. (1972). *Geography of Assam*.
3. Singh, R. L. (ed.) (1972). *India: A Regional Geography*. Varanasi.
4. Taher, M. and Ahmed, P. (2001). *Geography of North-East India*. Mani Manik Prakashan, Guwahati.

GEO-001-CC-4120: MOUNTAIN GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. To create an understanding of the fundamental aspects of Mountain Geography.
2. To create awareness about the process of experimentation.

Course Outcomes:

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

1. Understand the distribution of the world's mountain systems, geology, topography, climate and soil.
2. Know the altitudinal and bioclimatic belts of the world's mountains with reference to the Andes, Alps, Rockies and Himalayas.
3. Gain insight into human adaptability in different mountainous areas and how fragile the mountain regions are.

UNIT	COURSE CONTENT
UNIT 1	Mountain Ecosystem: i. Distribution of major mountains of the world. ii. Characteristics of mountain ecosystem: Topography, climate, soil and vegetation. iii. Altitudinal/ vertical zones iv. Bioclimatic belts
UNIT 2	Case studies of Mountain Ecosystems: i. The Alps ii. The Andes iii. The Appalachians iv. The Himalayas: special reference to the Eastern Himalayas.
UNIT 3	Human Adaptation to Mountain Ecosystem: i. Physiological adaptation ii. Agriculture and pastoralism iii. Housing iv. Food habits and Dress
UNIT 4	Constraints of Mountain Ecosystem: i. Inaccessibility ii. Mountain hazards: Landslides and Avalanches iii. Deforestation and Soil erosion iv. Climate change and its impact

Suggested Readings:

1. Ollier, C. and Pain, C. (2000). *The Origin of Mountains*. Routledge, Taylor & Francis Group, London and New York.
2. Peattie, R. (1936). *Mountain Geography: A Critique and Field Study*. Harvard University Press, Cambridge, Massachusetts.
3. Price, M. F., Byers, A. C., Friend, D. A., Kohler, T. and Price, L. W. (2013). *Mountain Geography: Physical and Human Dimensions*. University of California Press, Berkeley, Los Angeles, London.
4. Price, M. F., Jansky, L. F. and Iastenia, A. A. (eds.) (2004). *Key issues for mountain areas*. United Nations University Press, Tokyo, New York, Paris.
5. Singh, V. and Sharma, M. L. (eds.) (1998). *Mountain Ecosystem: A Scenario of Unsustainability*. Indus Publishing Company, New Delhi.

GEO-001-CC-4130: SUSTAINABLE GEOGRAPHY AND EIA

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. To acquaint the students with the conceptual framework of Sustainable Development.
2. To enable the students to understand major approaches to Sustainable Development.

Course Outcomes:

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

1. Understand the concept of sustainable development.
2. Know issues related to sustainable mountain agriculture, community participation in decision-making, sustainable goals for development, and EIA.

UNIT	COURSE CONTENT
UNIT 1	Concepts of Sustainable Development i. Population Growth, Economic Development and their impact on Environment ii. History of Sustainable Development: Brundtland, Rio summit, Paris declaration iii. Basic Concepts, Strategies and Measurement iv. Efficiency and Innovation, Green Growth and Rebound
UNIT 2	Major Issues: i. Sustainable Mountain Agriculture ii. Community Participation in Development Projects iii. Integrated Watershed Development iv. Grassroots Planning
UNIT 3	Development Goals i. Sustainable Development Goals ii. Millennium Development Goals
UNIT 4	Environmental Impact Assessment i. Screening, Scoping, Baseline Studies ii. Index Approach iii. Multi-Attribute Theory iv. Sound Ecological Principles

Suggested Readings:

1. Bass, S. and Dalal-Clayton, B. (2012). *Sustainable development strategies: A resource book*. Routledge.
2. Brebbia, C. A. (2013). *Sustainable Development and Planning VI* (Vol. 173). Wit Press.
3. Carroll, B., Fothergill, J., Murphy, J. and Turpin, T. (2019). *Environmental impact assessment handbook: A practical guide for planners, developers and communities*. ICE Publishing.
4. Elliott, J. (2012). *An introduction to sustainable development*. Routledge.
5. McGillivray, M. (ed.) (2008). *Achieving the millennium development goals*. Springer.
6. Petts, J. (ed.) (2009). *Handbook of Environmental Impact Assessment: Volume 2: Impact and Limitations* (Vol. 2). John Wiley & Sons.
7. Roorda, N. (2017). *Fundamentals of sustainable development*. Routledge.
8. UN General Assembly (70th Session: 2015-2016). *Transforming our world: The 2030 Agenda for Sustainable Development*.

GEO-001-CC-4140: SOCIAL GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. To learn the emergence of Social Geography.
2. To know the concept of social space, social group, social structure, social differentiation, social diversity, and plurality.
3. To know social problems and spatial inequalities.

Course Outcomes:

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

1. Evaluate social issues such as racism, caste conflict, and social distance.
2. Understand the causes of social inequality and their impact on society.

UNIT	COURSE CONTENT
UNIT 1	Evolution and relevance: i. Emergence of Social Geography, meaning, scope ii. Significance of social geography iii. Approaches to study of social geography: Positivism, Marxism and post- structuralism iv. Social Geography as an applied branch of human geography
UNIT 2	Space and Society: i. Concept of social space, social group, social structure, social differentiation, social diversity, and plurality, ii. Social well-being and its indicators, iii. Social segregation, Social Pathology (caste division of India) iv. Social Action (Indian context)
UNIT 3	Social problems and Spatial inequalities: i. Patterns in developed and underdeveloped countries ii. Social Space, Social exclusion and Social Justice iii. Social well-being of disadvantaged groups iv. Gender inequality and Social Change (Indian context)
UNIT 4	Geographical basis of social region formation in India: i. Social diversity and spatial distribution: Tribes, Castes and Linguistic groups ii. Health care, Education and social security iii. Rural-urban divide, rural-urban interaction and social transformation iv. Public Policy and planning

Suggested Readings:

1. Ahmad, A. (1999). *Social Geography*. Rawat Publication, New Delhi.
2. de Blij, H. J., Murphy, A. B. and Foubert, E. H. (1998). *Human Geography: Culture, Society and Space*. John Wiley & Sons.
3. Dubey, S. C. (1991). *Indian Society*. National Book Trust, New Delhi.
4. Gregory, D. and Larry, J. (eds.) (1985). *Social relations and spatial structures*. McMillan.
5. Jean, D. and Sen, A. (1996). *Economic Development and Social Opportunity*. Oxford University Press, New Delhi.
6. Rao, M. S. A. (1970). *Urban Sociology in India*. Orient Longman.
7. Sen, A. and Jean, D. (1996). *Indian Development: Selected Regional Perspectives*. Oxford University Press.
8. Smith, D. (1977). *Geography: A Welfare Approach*. Edward Arnold, London.

GEO-001-RC-4110: RESEARCH METHODOLOGY

Credit - 4 (Credit Hours per week: Lecture - 3, Tutorial – 1)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. Equip students with the ability to effectively collect, analyze, and interpret data using sampling methods, descriptive statistics, and inferential statistics such as correlation.
2. Develop proficiency in using software tools like Excel, SPSS, ARCGIS, and QGIS for data analysis and spatial analysis, enhancing students' technical skills in geographical research.

Course Outcomes:

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

1. Demonstrate competence in applying quantitative techniques and statistical methods to analyze geographical data, showcasing their understanding of both descriptive and inferential statistics.
2. Gain hands-on experience with computer applications such as Excel, SPSS, ArcGIS, and QGIS, allowing them to conduct comprehensive data and spatial analyses.

UNIT	COURSE CONTENT
UNIT 1	Quantitative Techniques a) Sampling and Data Collection b) Descriptive Statistics c) Inferential Statistics
UNIT 2	Computer Application: a) Excel data analysis. b) SPSS. c) Spatial Analysis (ARCGIS, QGIS)
UNIT 3	Review of Published Research: a) Physical Geography b) Human Geography c) Regional Planning
UNIT 4	Training and Field Work: a) Interaction on preparation of questionnaires and schedule. b) Pilot study on the proposed theme. c) Seminar, Presentation and Discussion.

Suggested Readings:

1. Beard, R. M., Bligh, D. A. and Harding, A. G. (1978). *Research into Teaching Methods in Higher Education*. Society for Research into Higher Education Ltd., Guildford.
2. Corey, S. M. (1953). *Action Research to improve School Practices*. Bureau of Publication, Columbia University, New York.
3. Mackenzie, N., Eraut, M. and Jones, H. (1975). *Teaching and Learning: An introduction to New Methods and Resources in Higher Education*. UNESCO and International Association of Universities, Paris.
4. Siegel, S. (1956). *Non-Parametric Statistics for the Behavioral Sciences*. McGraw Hill, New York.
5. Tuckman, B. W. (1978). *Conducting Educational Research*. Harcourt Brace Jovanovich, Inc., New York.

SEMESTER – VIII

Four-Year Undergraduate Programme (FYUP) in Geography (Honours)


HOD, Geography
RGU, Arunachal Pradesh

GEO-001-CC-4210: ANALYTICAL METHODS AND SPATIAL ANALYSIS

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. Understand and apply statistical techniques like t-tests, ANOVA, and Chi-square tests to analyze data and draw inferences.
2. Gain proficiency in spatial interpolation techniques (IDW, Trend, Spline, Kriging) to estimate values at unsampled locations.
3. Develop skills in using geospatial analysis tools to analyze spatial data and extract meaningful insights.

Course Outcomes:

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

1. Learn varied approaches to scientific research in Geography.
2. Learn the principles of the research problem, hypotheses, and design.
3. Learn the basic skills of data collection and the do's and don'ts of the process.
4. Imbibe scientific approaches to Geographical problems in real-life settings.

UNIT	COURSE CONTENT
UNIT 1	Bases and applications i. Comparing means: t-test ii. Redundancies in Data: Collinearity iii. Comparing Variances: ANOVA
UNIT 2	Bases and applications i. Generating Clusters and classification: Cluster Analysis, dendrogram ii. Homogeneity Analysis: Chi-square Test iii. Projecting Trend: ARIMA
UNIT 3	Spatial Interpolation: Concepts, techniques and uses i. IDW ii. Trend iii. Spline iv. Kriging
UNIT 4	Spatial Statistics: Concepts, techniques and uses i. Spatial Autocorrelation ii. Hot Spot iii. Mean Centre, Median Centre, Standard distance iv. Geographically weighted regression.

Suggested Readings:

1. Albrecht, J. (2007). *Key Concepts and Techniques in GIS*. SAGE Publications, United Kingdom.
2. Arlinghaus, S. L. and Kerski, J. J. (2014). *Spatial Mathematics: Theory and Practice Through Mapping*. Taylor & Francis, United Kingdom.
3. Bagdonavicius, V., Kruopis, J. and Nikulin, M. S. (2013). *Nonparametric tests for complete data*. John Wiley & Sons.
4. Bisgaard, S. and Kulahci, M. (2011). *Time series analysis and forecasting by example*. John Wiley & Sons.
5. Boots, B., Okabe, A. and Thomas, R. (eds.) (2003). *Modelling geographical systems: Statistical and computational applications* (Vol. 70). Springer Science & Business Media.

6. Box, G. E., Jenkins, G. M., Reinsel, G. C. and Ljung, G. M. (2015). *Time series analysis: forecasting and control*. John Wiley & Sons.
7. Chatfield, C. and Xing, H. (2019). *The analysis of time series: an introduction with R*. Chapman and hall/CRC.
8. Chun, Y. and Griffith, D. A. (2013). *Spatial Statistics and Geostatistics: Theory and Applications for Geographic Information Science and Technology*. SAGE Publications, United Kingdom.
9. Dadson, S. J. (2017). *Statistical Analysis of Geographical Data: An Introduction*. John Wiley & Sons.
10. Gelfand, A. E., Diggle, P., Guttorp, P., & Fuentes, M. (2010). *Handbook of spatial statistics*. CRC Press.
11. Hartung, J., Knapp, G., & Sinha, B. K. (2011). *Statistical meta-analysis with applications*. John Wiley & Sons.
12. Huber-Carol, C., Balakrishnan, N., Nikulin, M. and Mesbah, M. (eds.) (2012). *Goodness-of-fit tests and model validity*. Springer Science & Business Media.
13. Janczyk, M. and Pfister, R. (2023). *Understanding Inferential Statistics: From A for Significance Test to Z for Confidence Interval*. Springer Nature.
14. Lacort, M. O. (2014). *Descriptive and Inferential Statistics-Summaries of theory and Exercises solved*. Lulu. com.
15. Lindman, H. R. (2012). *Analysis of variance in experimental design*. Springer Science & Business Media.
16. Murayama, Y. and Thapa, R. B. (2011). *Spatial Analysis and Modeling in Geographical Transformation Process: GIS-based Applications*. Springer Netherlands.
17. Nielson, D. (2014). *Geographic Information Systems (GIS): Techniques, Applications and Technologies*. Nova Science Publishers, Incorporated, United States.
18. Nyerges, T., McMaster, R. B. and Couclelis, H. (2011). *The SAGE handbook of GIS and society*. SAGE Publications, United Kingdom.
19. Pal, A. and Prakash, P. K. S. (2017). *Practical time series analysis: Master time series data processing, visualization, and modeling using Python*. Packt Publishing Ltd.
20. Rogerson, P. A. (2019). *Statistical Methods for Geography: A student's guide*. SAGE Publications, United Kingdom.
21. Rogerson, P. A. A. (2021). *Spatial Statistical Methods for Geography*. SAGE Publications, United Kingdom.
22. Sahai, H., & Ageel, M. I. (2012). *The analysis of variance: fixed, random and mixed models*. Springer Science & Business Media.
23. Thakur, J. K., Singh, S. K., Ramanathan, A. L., Prasad, M. B. K. and Gossel, W. (eds.) (2012). *Geospatial techniques for managing environmental resources*. Springer Science & Business Media.
24. Verma, J. P. and Abdel-Salam, A. S. G. (2019). *Testing statistical assumptions in research*. John Wiley & Sons.
25. Wilson, J. P. and Gallant, J. C. (eds.) (2000). *Terrain analysis: principles and applications*. John Wiley & Sons.

GROUP – I (PHYSICAL STREAM)

GEO-001-DE-42010: SOIL GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. Understand the basic concepts of soil science, including its formation, composition, and profile development under various environmental conditions.
2. Gain knowledge about the processes, mechanisms, and types of soil erosion.
3. Explore the geographical distribution of soils and their relationship with climate, topography, parent material, and vegetation.

Course Outcomes:

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

1. Understand basic concepts of soil geography and its relationship with other disciplines.
2. Learn the chemical and physical properties of the soil.
3. Learn about soil erosion processes and the different conservation techniques that are followed by different communities around the world.

UNIT	COURSE CONTENT
UNIT 1	Bases of Soil Geography: i. Nature, Scope and Relationship with other Sciences ii. Factors of Soil formation iii. Processes of Soil formation iv. Soil Profile Development under different environments
UNIT 2	Composition of Soil: i. Physical Composition: Structure, Texture, Colour and Pore space ii. Chemical Composition: pH, Organic matter and Clay minerals
UNIT 3	Soil Classification and Capability: i. Concepts and methods ii. USDA iii. Land Capability / Suitability classification: FAO
UNIT 4	Soil Erosion and Conservation: i. Erosion: Processes, mechanisms, and types ii. Methods for assessing Soil erosion (USLE) iii. Soil Conservation: Methods and Techniques

Suggested Readings:

1. Backman, H. O. and Brady, N. C. (1960). *The Nature and Properties of Soils*. McMillan, New York.
2. Bennet, H. H. (1939). *Soil Conservation*. McGraw-Hill, New York.
3. Bunting, B. T. (1973). *The Geography of Soils*. Hutchinson, London.
4. Clarke, G. R. (1957). *Study of the Soil in the Field*. Oxford University Press, Oxford.
5. Foth, H. D. and Turk, L. M. (1972). *Fundamentals of Soil Science*. John Wiley.
6. Govinda Rajan, S. V. and Gopala Rao, H. G. (1978). *Studies on Soils of India*. Vikas Publishing, New Delhi.
7. Mc. Bride, M. B. (1999). *Environmental Chemistry of Soils*. Oxford University Press.
8. Raychoudhuri, S. P. (1958). *Soils of India*. ICAR, New Delhi.
9. Russell, E. J. (1961). *Soil Conditions and Plant Growth*. Wiley, New York.

GEO-001-DE-42020: PHYTOGEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. Develop a comprehensive understanding of the meaning, scope, and development of ecology and ecosystems, including plant colonization, dispersal, speciation, and extinction.
2. Gain insights into the various factors influencing plant growth and distribution, such as topographic, climatic, edaphic, and biotic factors, and understand their interactions.
3. Learn about conservation status, diversity indices, eco-regions, and species distribution modelling, including bioclimatic modelling and habitat suitability analysis.

Course Outcomes:

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

1. Demonstrate a solid grasp of ecological concepts and processes, including plant colonization, dispersal, speciation, and extinction.
2. Analyze and interpret the impact of topographic, climatic, edaphic, and biotic factors on plant growth and distribution.
3. Acquire the ability to evaluate conservation status, apply diversity indices, and utilize species distribution modelling techniques to assess habitat suitability and bioclimatic conditions.

UNIT	COURSE CONTENT
UNIT 1	Meaning, scope and development: i. Concept of Ecology and Ecosystem ii. Plant colonization and dispersal iii. Plant speciation and extinction
UNIT 2	Determinants of plant growth and distribution: i. Topographic factors: Slope, Aspect, Altitude ii. Climatic factors: Light, Temperature, Precipitation iii. Edaphic factors: Soil pH, Moisture, and Texture iv. Biotic factors: Interactions between plants and animals
UNIT 3	Characterizing Biotas: i. Conservation status, Conservation units ii. Diversity indices and patterns iii. Ecoregions, endemism iv. Threatened species
UNIT 4	Species distribution modeling: i. Presence-only data vs. presence-absence data ii. Bioclimatic modelling iii. Habitat suitability analysis

Suggested Readings:

1. Abdurakhmanov, G. M., Myalo, E. G. and Ogureeva, G. N. (2014). Biogeography. Textbook for students. Academy, Moscow.
2. Brown, J. H. and Gibson, A. C. (1983). *Biogeography*. Mosby, St. Louis.
3. Cox, C. B., Ladle, R. and Moorem, P. D. (2016). *Biogeography: An Ecological and Evolutionary Approach*. John Wiley & Sons.

4. Franklin, J. (2009). *Mapping Species Distributions: Spatial inference and prediction*. Cambridge University Press, United Kingdom.
5. Gavin, D. G. (2012). Biogeography. In: J. P. Stoltman (eds.), *21st Century Geography: A Reference Handbook*. SAGE Publications, Thousand Oaks, CA.
6. Kumaresan, V. and Arumugam, N. (2016). *Plant Ecology and Phytogeography*. Sara Publication, Nagercoil, Tamil Nadu.
7. Lomolino, M. V., Riddle, B. R., Brown, J. H. and Whittaker, R. J. (2010). *Biogeography*. Fourth Edition. Sinauer Associates, Sunderland, MA.
8. McCarthy, D. (2011). *Here Be Dragons: How the study of animal and plant distributions revolutionized our views of life and Earth*. OUP Oxford.
9. Molles, M. C. (1999). *Ecology: Concepts and Applications*. WCB/McGraw-Hill.
10. Myers, A. A. and Giller, P. S. (1989). *Analytical Biogeography: An Integrated Approach to the Study of Animal and Plant Distributions*. Chapman and Hall, London.
11. Pielou, E. C. (1974). *Population and Community Ecology: Principles and Methods*. Gordon and Breach.


 Associate Prof. Dr. S. S. Senthil Kumar
 HOD, Geography
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GEO-001-DE-42050: SOIL ANALYSIS AND PLANT SURVEY TECHNIQUES

Credit - 4 (Credit Hours per week: Practical - 4)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. **Master Physical Soil Analysis:** Develop a comprehensive understanding of the methods for physical analysis of soil, including sampling techniques, soil texture, and moisture content.
2. **Conduct Chemical Soil Analysis:** Gain proficiency in chemical analysis of soil, focusing on pH, organic content, clay content, and spatial modeling techniques.
3. **Conduct Effective Survey and Fieldwork:** Learn the significance of fieldwork in geography, including the identification of research problems, data sources, sampling methods, and data analysis techniques.
4. **Understand Species Distribution and Habitat Analysis:** Students will be able to apply species distribution models, use MAXENT for predicting species distributions, and conduct habitat suitability analysis using the Analytic Hierarchical Process.

Course Outcomes:

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

1. Perform both physical and chemical analyses of soil, including sampling, texture, moisture, pH, organic content, and clay content.
2. Assess the annual soil loss by using the USLE soil loss model.
3. Conduct plant and animal surveys using various techniques, and perform soil analysis effectively.
4. Apply species distribution models, use MAXENT for predicting species distributions, and conduct habitat suitability analysis using the Analytic Hierarchical Process.

UNIT	COURSE CONTENT
UNIT 1	Physico-chemical analysis of Soil: sampling, soil texture, moisture, pH, organic content, clay content, spatial modeling
UNIT 2	Soil Loss Analysis using USLE and Geospatial techniques
UNIT 3	Plant survey techniques a. Quadrat b. Transect c. Soil Analysis
UNIT 4	Species Distribution Models a. Maximum Entropy (MAXENT) b. Habitat Suitability Analysis: Analytic Hierarchical Process

Suggested Readings:

1. Abdurakhmanov, G. M., Myalo, E. G. and Ogureeva, G. N. (2014). *Biogeography. Textbook for students*. Academy, Moscow.
2. Boulding, J. R. and Ginn, J. S. (2016). *Practical handbook of soil, vadose zone, and ground-water contamination: assessment, prevention, and remediation*. CRC Press.
3. Brown, J. H. and Gibson, A. C. (1983). *Biogeography*. Mosby, St. Louis.

4. Cox, C. B., Ladle, R. and Moorem, P. D. (2016). *Biogeography: An Ecological and Evolutionary Approach*. John Wiley & Sons.
5. Florinsky, I. (2016). *Digital terrain analysis in soil science and geology*. Academic Press.
6. Franklin, J. (2009). *Mapping Species Distributions: Spatial inference and prediction*. Cambridge University Press, United Kingdom.
7. Gavin, D. G. (2012). Biogeography. In: J. P. Stoltman, eds. 21st Century Geography: A Reference Handbook. SAGE Publications, Thousand Oaks, CA.
8. Gregory, K. (1980). Updating Geomorphology: Practical Fieldwork in Hydrology If It Moves, Measure It. *Teaching Geography*, 5(4), 170-174.
9. Kumaresan, V. and Arumugam, N. (2016). *Plant Ecology and Phytogeography*. Sara Publication, Nagercoil, Tamil Nadu.
10. Lindsay, J. B. (2005). The terrain analysis system: A tool for hydro-geomorphic applications. *Hydrological Processes*, 19(5), 1123-1130.
11. Lomolino, M. V., Riddle, B. R., Brown, J. H. and Whittaker, R. J. (2010). *Biogeography*. Fourth Edition. Sinauer Associates, Sunderland, MA.
12. McCarthy, D. (2011). *Here Be Dragons: How the study of animal and plant distributions revolutionized our views of life and Earth*. OUP Oxford.
13. Molles, M. C. (1999). *Ecology: Concepts and Applications*. WCB/McGraw-Hill.
14. Myers, A. A. and Giller, P. S. (1989). *Analytical Biogeography: An Integrated Approach to the Study of Animal and Plant Distributions*. Chapman and Hall, London.
15. Nag, P. and Saha, G.N. (1996). Geomorphological Mapping: Perspectives & dimensions (Vol 13).
16. National Atlas and Thematic Mapping Organization, Department of Science and Technology, Govt. of India.
17. Pielou, E. C. (1974). *Population and Community Ecology: Principles and Methods*. Gordon and Breach.
18. Singh, V. P. (2015). *Handbook of Applied Hydrology*. McGraw-Hill, New York.
19. Strahler, A. N. (1964). Part II. Quantitative geomorphology of drainage basins and channel networks.


 Head of Department
 HOD, Geography
 RCU, Anusachal Pradesh

GROUP – II (HUMAN STREAM)

GEO-001-DE-42030: CULTURAL GEOGRAPHY

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. Students will understand geographic epistemologies for analyzing culture.
2. Develop analytical capability to read contemporary cultural issues and contextually apply them.

Course Outcomes:

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

1. Understand the relationship of cultural geography with social sciences.
2. Know about the evolution and development of Cultural Geography.
3. Learn about the basic concepts in Cultural Geography and the processes in Cultural Geography.
4. Develop a critical understanding of the contemporary issues and the politics underlying them.

UNIT	COURSE CONTENT
UNIT 1	Concept of Culture; Nature, Scope and Significance, Development of Cultural Geography, Cultural Theory, Various Approaches to cultural geography: Cultural Area; Cultural Region; Cultural Hearth; Cultural Realm; Place of Cultural Geography within Geography
UNIT 2	Processes in Cultural Geography: Origin of Race, Ethnicity, language, and religion in culture; development of Cultural groups, cultural Landscape, and Cultural Spaces. Cultural Diffusion; Adaptation; Acculturation; Assimilation; and Cultural Resilience,
UNIT 3	Themes and Concepts of culture, Cultural History, Cultural Identity and place, Cultural ideology, Cultural hegemony, class and caste, Various economic activities and cultural adaptation. Spatial distribution of cultural groups, Cultural region of the World.
UNIT 4	Bases of Cultural diversity in India: Origin and spatial distribution of races, language, and Religion, Geographical factors as bases of cultural diversity, Cultural regions of India, concept of Modernization and change, Impact of Globalization and Cultural Continuity

Suggested Readings:

1. Anderson, K., Domosh, M., Pile, S. and Thrift, N. (eds.) (2002). *Handbook of Cultural Geography*. Sage Publications.
2. Blunt, A. (2005). Cultural geography: Cultural geographies of home. *Progress in Human Geography*, 29(4), 505-515.
3. Cavallaro, D. (2001). *Critical and Cultural Theory: Thematic Variations*. Athlone Press, London and New Brunswick, NJ.

GEO-001-DE-42040: REGIONAL DEVELOPMENT AND PLANNING

Credit - 4 (Credit Hours per week: Lecture - 4)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. Define and explain key concepts and theories related to regional planning, such as formal, functional, and planning regions.
2. Apply geographic information systems (GIS) and remote sensing techniques to analyze regional patterns and trends.
3. Develop innovative solutions to address regional challenges, such as poverty, unemployment, and environmental degradation.

Course Outcomes:

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

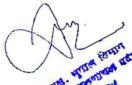
1. Comprehend and understand regional planning concepts and theories.
2. Equip the knowledge and skills to analyze regional disparities and formulate effective regional development strategies.
3. Learn about the basic concepts in Cultural Geography and the processes in Cultural Geography.
4. Develop a critical understanding of regional planning practices in India, with a particular focus on the challenges and opportunities in the North East region.

UNIT	COURSE CONTENT
UNIT 1	Concepts, Theories and Typology of a Region: Formal, Functional, and Planning Regions; Concept of regional development and Planning History of development of Regional Planning Scope, objectives, Rationale and Principles of Regional planning Theories of Regional Development
UNIT 2	Approaches to Regional Planning: Types of Planning Environment and Regional Planning Settlements (Christaller, Isard, Weber, etc.) with particular focus on Challenges of Mega City Regions Remote Sensing /GIS and Regional Planning Migration and Regional Planning Transport and Regional Planning
UNIT 3	Regional Planning practices in India Regional development planning in India, National Plans, Metropolitan Planning, Resource Development. Region Planning, National Capital Region Planning, Special Purpose Regions Planning- HADP, BADP, DPAP, NEC and NE Region Planning, Multi-level planning, Decentralized Planning, Legislative Frameworks of Regional Planning (including 73rd and 74th Amendment Acts)
UNIT 4	Levels of Regional Development in India Sources of Data; Measures of regional development and disparities in India; Human and State Development Reports; Case Studies: Urbanization, Migration, Health, Education, Employment and Infrastructure with particular focus on North East India.


Head of Department
HOD, Geography
ROU, Arunachal Pradesh

Suggested Readings:

1. Chand, M. and Puri, V. K. (1983). *Regional Planning in India*. Allied Publishers, New Delhi.
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*. MIT Press, Massachusetts.
4. Issard, W. (1971). *Methods of Regional Analysis: An Introduction to Regional Science*. MIT Press, Cambridge.
5. Maboguje, A. L. and 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*. (Revised Edition), Concept Publishing Company, New Delhi.
7. Mitra, A. (1968). Levels of Development in India. Census of India 1961. Monograph No.7.
8. Mohapatra, A. C. and Pathak, C. R. (2003). *Economic Liberalization and Regional Disparities in India*. Star Publication House, Shillong.
9. Richardson, H. W. (1969). *Urban and Regional Economics*. World University Press, London.
10. Sundaram, K. V. (1985). *Geography and Planning*. Concept Publishing Company, New Delhi.


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GEO-001-DE-42060: CULTURAL AND REGIONAL ANALYSIS

Credit - 4 (Credit Hours per week: Practical - 4)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. This course helps to develop an understanding of theoretical notions of socio-economic development/condition of sampled rural/urban households, and is expected to prepare a survey report on socio-economic attributes.
2. Understand the concept of regional analysis, grasp the theories of location and agglomeration, and evaluate the impact of federalism on economic growth.

Course Outcomes:

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

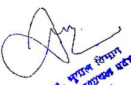
1. Understand ground reality through empirical studies in relation to the theory coursework.
2. Understand the cultural mosaic and process of Global distribution of cultural groups.
3. Develop a strong foundation in regional economics, enhance analytical skills, and cultivate critical thinking.

UNIT	COURSE CONTENT
UNIT 1	Socio-economic regionalization using Methods of: i. Rank-size distribution and correlation between associated variables ii. Measurement of inequality using Lorenz curve iii. Measurement of concentration of population using location quotient
UNIT 2	Determination of concentration of tribes and other communities by using i. Location quotient ii. Z-score iii. Combination of Tribes by using Weavers' combination Technique iv. Preparation of Gender disparity divide in India (HDR)Index using
UNIT 3	i. Threshold analysis; Input-Output analysis, SWOT analysis ii. Methods of population forecasts and projections iii. Gini Ratio, urban - rural, urban concentration, metropolitan concentration iv. Location dimensions of population groups – Social area and strategic choice approach – interconnected decision area analysis
UNIT 4	i. Factor Analysis: Identifies underlying factors or dimensions that explain the variation in a set of variables ii. Cluster Analysis: Groups similar objects or individuals based on their characteristics iii. Principal Component Analysis (PCA): Reduces the dimensionality of data by transforming a large number of variables into a smaller number of uncorrelated variables

Suggested Readings:

1. Archeer, J. E. and Dalton, T. H. (1968). *Fieldwork in Geography*. London.
2. Bhat, L.S. (1973). *Regional Planning in India*. Statistical Publishing Society, Calcutta.
3. Bhat, L.S. et al. (1976). *Micro-Level Planning: A Case Study of Karnal Area, Haryana-India*. K.B. Publications.
4. De Blij, H. J. (1971). *Geography: Regions and Concepts*. John Wiley and Sons.
5. Chorley, H. and Hagget P. (1976). *Models in Geography*. Methuen, London.

6. Claval P. (1998). *An Introduction to Regional Geography*. Blackwell Publishers, Oxford and Massachusetts.
7. Friedmann, J. and Alonso, W. (1975): *Regional Policy - Readings in Theory and Applications*. MIT Press, Massachusetts.
8. Stoddard, H. R. (1982). *Field Techniques and Research Methods in Geography*. Kendall/Hunt Pub. Co.
9. Gore, C. G. (1984). *Regions in Question: Space, Development Theory and Regional Policy*. Methuen, London.
10. Gore, C. G., Köhler, G., Reich, U-P. and Ziesemer, T. (1996). *Questioning Development; Essays on the Theory, Policies and Practice of Development Intervention*. Metropolis-Verlag, Marburg.
11. Haynes, J. (2008). Development Studies. Polity Short Introduction Series.
12. Johnson, E. A. J. (1970). *The Organization of Space in Developing Countries*. MIT Press, Massachusetts.
13. Jones, P. A. (1968). *Fieldwork in Geography*. London,
14. Misra, R. P. et al. (1974). *Regional Development in India-A Strategy*. Mysore.
15. Mitra, A. (1965). Levels of Regional Development. Census of India, Vol. I & II, New Delhi.
16. Mohammad, A. (1977). *Statistical Methods in Geographical Studies*. Rajesh Publication, Delhi.
17. Peet, R. (1999). *Theories of Development*. The Guilford Press, New York.
18. Raza, M. (1988). *Regional development*. Heritage Publisher, Delhi.
19. Misra, R. P. et al. (1980). *Multi-Level Planning*. Heritage.
20. UNDP 2001-04: Human Development Report, Oxford University Press.
21. Wheeler, K. S. and Harding, M. (1965). *Geographical Fieldwork: A Handbook*. Blond Educational, London.
22. World Bank 2001-05: World Development Report, Oxford University Press.


 Associate Professor
 HOD, Geography
 RGU, Anurachal Pradesh

GEO-001-RC-4210: RESEARCH AND PUBLICATION ETHICS

Credit - 4 (Credit Hours per week: Lecture - 3, Tutorial - 1)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

1. To bring awareness about publication ethics and publication misconduct.
2. To know the basics of the philosophy of science and ethics, research integrity, and publication ethics.

Course Outcomes:

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

1. Understand the nature of publication ethics and moral standards.
2. Develop an understanding of research integrity and publication guidelines.
3. Know standard-setting initiatives and guidelines popular in the field.
4. Identify research misconduct and predatory publications.

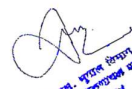
UNIT	COURSE CONTENT
UNIT 1	Ethics and Publication i. Introduction to Philosophy: Definition, Nature and Scope, Concept, Branches. ii. Ethics: Definition, Moral Philosophy, Nature of Moral Judgements and Reactions.
UNIT 2	Scientific Conduct i. Ethics with Respect to Science and Research. ii. Intellectual Honesty and Research Integrity. iii. Scientific Misconducts: Falsification, Fabrication, and Plagiarism (FFP).
UNIT 3	Publication Ethics i. Publication Ethics: Definition, Introduction and Importance. ii. Best Practices/Standards Setting Initiatives and Guidelines: COPE, WAME, etc. iii. Conflicts of Interest.
UNIT 4	Publication Misconduct i. Definition, Concept, Problems that Lead to Unethical Behavior and Vice-Versa, Types. ii. Violation of Publication Ethics, Authorship and Contributorship. iii. Identification of Publication Misconduct, Complaints and Appeals. iv. Predatory Publishers and Journals.

Suggested Readings:

1. Bird, A. (2006). *Philosophy of Science*. Routledge.
2. McIntyre, A. (1967). *A Short History of Ethics*. London.
3. Chaddah, P. (2018). *Ethics in Competitive Research: Do not get scooped; do not get plagiarized*. Self-Published.
4. The National Academies (2009). *On Being a Scientist: A Guide to Responsible Conduct in Research*: Third Edition. The National Academies Press, Washington, DC.
5. Resnik, D. B. (2008). What is ethics in research & why is it important. University of Arizona Program in Research Integrity Education Monthly Newsletter.

SEMESTER – VIII

**Four-Year Undergraduate Programme (FYUP) in Geography
(Honours with Research)**

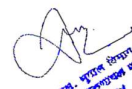

Dr. Ananta Kumar Singh
HOD, Geography
RGU, Kanchi

GEO-001-CC-4210: Geographical Field Work
CREDIT – 4


Dr. P. S. Srinivasan
Head, Geography
RGU, Kuvempu

GEO-001-RP-4210: UG RESEARCH PROJECT

CREDIT - 12


Dr. Arunima. K. Das
Head, Geography
RGU, Ranchi

GEO-001-RC-4210: RESEARCH AND PUBLICATION ETHICS

Credit - 4 (Credit Hours per week: Lecture - 3, Tutorial - 1)

Marks: 100 (End term examination = 80 and internal examination = 20)

Learning Objectives:

3. To bring awareness about publication ethics and publication misconduct.
4. To know the basics of the philosophy of science and ethics, research integrity, and publication ethics.

Course Outcomes:

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

5. Understand the nature of publication ethics and moral standards.
6. Develop an understanding of research integrity and publication guidelines.
7. Know standard-setting initiatives and guidelines popular in the field.
8. Identify research misconduct and predatory publications.

UNIT	COURSE CONTENT
UNIT 1	Ethics and Publication iii. Introduction to Philosophy: Definition, Nature and Scope, Concept, Branches. iv. Ethics: Definition, Moral Philosophy, Nature of Moral Judgements and Reactions.
UNIT 2	Scientific Conduct iv. Ethics with Respect to Science and Research. v. Intellectual Honesty and Research Integrity. vi. Scientific Misconducts: Falsification, Fabrication, and Plagiarism (FFP).
UNIT 3	Publication Ethics iv. Publication Ethics: Definition, Introduction and Importance. v. Best Practices/Standards Setting Initiatives and Guidelines: COPE, WAME, etc. vi. Conflicts of Interest.
UNIT 4	Publication Misconduct v. Definition, Concept, Problems that Lead to Unethical Behavior and Vice-Versa, Types. vi. Violation of Publication Ethics, Authorship and Contributorship. vii. Identification of Publication Misconduct, Complaints and Appeals. viii. Predatory Publishers and Journals.

Suggested Readings:

1. Bird, A. (2006). *Philosophy of Science*. Routledge.
2. McIntyre, A. (1967). *A Short History of Ethics*. London.
3. Chaddah, P. (2018). *Ethics in Competitive Research: Do not get scooped; do not get plagiarized*. Self-Published.
4. The National Academies (2009). *On Being a Scientist: A Guide to Responsible Conduct in Research*: Third Edition. The National Academies Press, Washington, DC.
5. Resnik, D. B. (2008). What is ethics in research & why is it important. University of Arizona Program in Research Integrity Education Monthly Newsletter.