CURRICULUM FRAMEWORK FOR UNDER GRADUATE PROGRAMME IN GEOGRAPHY

AS PER NATIONAL EDUCATION POLICY (NEP)-2020

RAJIV GANDHI UNIVERSITY - A CENTRAL UNIVERSITY
INSTITUTE OF UNDER GRADUATE STUDIES
DEPARTMENT OF GEOGRAPHY
RONO HILLS, DOIMUKH
ARUNACHAL PRADESH-791 112

WITH EFFECT FROM ACADEMIC YEAR: 2023-24

1.1 THE PREAMBLE

About the Department of Geography

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, skills enhancement courses, value-added courses and ability enhancement courses with multiple exists. In each semester the students will be offered theory and practical courses. The students will be offered several major courses throughout four years as per UGC guidelines. This programme will adopt a flexible curricular structure in order 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 with 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 ordinance.

1.2 PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The Under Graduate programme in Geography aims to fulfill the following objectives:

PEO1: This programme aims to provide learning scopes by orienting the students towards scientific study of human mind and behaviour.

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

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

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

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

1.3 PROGRAMME OUTCOMES (POs)

PO1: Foundational Knowledge

The graduates will be capable of demonstrating competence in distilling and employing the core ideas of the Social Sciences Languages in multi and interdisciplinary contexts.

PO2: Critical Thinking and Problem Solving

The graduates will develop the ability to employ the tools of critical thinking and methods of enquiry in identifying, formulating, analyzing, and evaluating complex problems and issues for arriving at effective solutions from first principles.

PO3: Community Engagement & Service

The graduates should be able to demonstrate the capability to participate in community-engaged services/ activities for promoting 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 enhance 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 in a clear and concise manner 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)

The learners who complete four years would earn an Under Graduate Honours/Honours with Research Degree in Geography. The learning outcomes that a student should be able to demonstrate on completion of a degree level programme may involve academic, rational and social competencies as described below.

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 with each other 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 capable of designing and executing research projects, collecting and analyzing data, and presenting their findings effectively.

1.5 Certification Criteria (Multiple Exit Options)

UG Certificate (Programme Code: GEO-1001)-Students exiting the programme after securing 40 credits will be awarded UG Certificate in the relevant discipline/subject provided they secure 4 credits in work-based vocational courses offered during the summer term or internship/apprenticeship in addition to 6 credits from skill-based courses earned during the first and second semester.

UG Diploma (Programme Code: GEO-2001)-Students exiting the programme after securing 80 credits will be awarded UG Diploma in the relevant discipline/subject. Out of 80 credits, students will have to secure 4 credits in skill-based vocational courses offered during the first year or second year summer term.

Three-Year UG Degree (Programme Code: GEO-3001)-Students who wish to undergo a three year UG programme will be awarded UG Degree in the Major discipline after successful completion of three years, securing 120 credits.

Four-Year UG Degree (Honours) (Programme Code: GEO-4001)- A four-year UG Honours Degree in the major discipline will be awarded to those who complete a four-year degree programme with 160 credits

Four-Year UG Degree (Honours with Research) (Programme Code: GEO-5001)- A four-year UG Degree in Honours with Research will be awarded to those students who complete a four-year degree programme with 160 credits, including 12 credits from a research project/dissertation in the major discipline.

1.6 Other Key Criteria for UG Programme

Selection of Minor Course: Students of Geography major would opt for minor courses from other majors being offered by other departments. Minor courses of Geography will be offered to Non-Geography Major Students.

Selection of Multidisciplinary Course: Students in Geography major would have to select a multidisciplinary course from the basket of multi-disciplinary courses provided in the common structure. However, students of Geography major would not be allowed to select multidisciplinary courses offered by the Department of Geography.

Selection of Compulsory Value-Added Course: Students in Geography major would have to select a compulsory value-added course from the basket of value-based courses provided in the common structure.

Research at UG Programme: Students who secure 75% marks and above in the first six semesters can undertake research at the undergraduate level/in the fourth year, as per NEP-2020.

For Honours students not undertaking Dissertation in VIII semester: Students in Geography not undertaking research project/dissertation work will have to do 3 courses of 12 credits in lieu of research project/dissertation.

Exit and Re-entry: Exit and re-entry option in the degree programme in Geography will be allowed at 2nd (first year) and 4th semester (second year) to those students who have awarded UG Certificate and UG Diploma, respectively. However, these students will be allowed to re-enter the 6 degree programme within 3 years after their exit and will have to complete the degree programme within the stipulated maximum period of seven years.

1.7**. Structure of the Four Year Undergraduate Programme in Geography**

***1 Credit for Lecture = 15 hours in a Semester**
****1 Credit for Tutorial = 15 hours in a Semester**
*****1 Credit for Practicum = 30 hours in a Semester**

CREDIT SYSTEM FOR UG PROGRAMME IN GEOGRAPHY (as per NEP-2020)

NCrf Credit Level		Major		Minor (Only for students other than Geography Major)		Multidisciplinary Course (MDC-Only for students other than Geography Major)		Ability Enhancement Compulsory Course (AECC)		Skill Enhancement Course (SEC) SEC		Value-added Courses (VAC) VAC		Total Credit/Sem
	Sem	Course Code & Name	Credit	Course Code & Name	Credit	Course Code & Name	Credit	Course Code & Name	Credit	Course Code & Name	Credit	Course Code & Name	Credit	
4.5	I	GEO-CC-1110 Physical Geography	4	GEO-MC-1110 Physical Geography	4	GEO-MD-1110 Disaster Management	3	*AECC-1	4	GEO-SE-1110 Fundamentals of Cartography	3	*VA-1	2	20
	II	GEO-CC-1210 Human Geography	4	GEO-MC-1210 Human Geography	4	GEO-MD-1210 Geography of Tourism	3	*AECC-2	4	GEO-SE-1210 Remote Sensing	3	*VA-2	2	20
		Total Credit (First Year)	**8**		**8**		**6**		**8**		**6**		**4**	**40**
Exit option with Undergraduate Certificate in Geography on completion of courses equal to a minimum of 40 credits+ #Summer Internship (GEO-1001)														
5.0	III	GEO-CC-2110 Geography of India GEO-CC-2120 Geomorphology	4 4	GEO-MC-2110 Geography of India	4	GEO-MD-2110 Traditional Ecological Knowledge	3	*AECC-3		GEO-SE-2110 Geographical Information System	3	*VA-3	2	20
	IV	GEO-CC-2210 Political Geography GEO-CC-2220 Geographical Analysis (Practical-1) GEO-CC-2230 Regional Planning GEO-CC-2240 Field Sudy-	4 4 4 4	GEO-MC-2210 Population Geography	4									20
		Total Credit (Second Year)	**24**		**8**		**3**				**3**		**2**	**40**
Exit option with Undergraduate Diploma in Geography on completion of courses equal to a minimum of 80 credits +4 Credit Skill Based Course during 1/2 Year Summer Terms (GEO-2001)														
5.5	V	GEO-CC-3110 Climatology GEO-CC-3120 Agricultural Geography GEO-CC-3130 Geography of North East India GEO-CC-3140 Geographical Analysis (Practical-2)	4 4 2 4	GEO-MC-3110 Economic Geography	4							GEO-IN-3110 Internship	2	20
	VI	GEO-CC-3210 Remote Sensing and GIS GEO-CC-3220 Geographic Thought GEO-CC-3230 Settlement Geography GEO-CC-3240 Geographical Analysis (Practical-3)	4 4 4 4	GEO-MC-3110 Remote Sensing and GIS	4									20
		Total Credit (Third Year)	**30**		**8**								**2**	**40**
Exit option with Three Years Bachelor's Degree in Geography on completion of courses equal to a minimum of 120 credits (GEO-3001)														

For VII Semester Students have to opt any 4 papers from Major course															
6.0	**VII**	GEO-CC-4110 Mountain Geography GEO-CC-4120 Biogeography GEO-CC-4130 Social Geography GEO-CC-4140 Urban Geography GEO-CC-4150 Advanced Geomorphology GEO-CC-4160 Soil Geography	4 4 4 4	GEO-MC-4110 Research Methodology	4										**20**
	VIII	GEO-CC-4210 Advanced Research Methods GEO-DE-4210 Cultural Geography GEO-DE-4220 Population Geography GEO-DE-4230 Geography of Health and Wellbeing	4 4 4 4	GEO-MC-4210 Research Methodology/ MOOCs	4										**20**
		Total Credit (Fourth Year)	**32**		**8**										**40**
Award of Four-Year Bachelor's Degree (Honours) in Geography on completion of courses equal to a minimum of 160 Credits (GEO-4001)															
6.0	**VIII**	GEO-CC-4210 Geographical Field Work-2 GEO-CC-4220 UG Research Project (Dissertation)	4 12	GEO-MC-4210 Research and Publication Ethics	4										**20**
		Total Credit (Eighth Sem)	**16**		**4**										**20**
Award of Four-Year Bachelor's Degree (Honours with Research) in Geography on completion of courses equal to a minimum of 160 Credits (GEO-5001)															

*Students can opt from the bouquet of courses offered by the University/Departments from time to time.

#Summer Internship: 8 Weeks Summer Internship should be completed by students who opt for UG Certificate programme.

Abbreviations: VAC- Value Added Course; MDC-Multi-Disciplinary Course; AECC-Ability Enhancement Compulsory Course; SEC- Skill Enhancement Course; MOOC's- Massive Open Online Courses.

CONTENT

SEMESTER WISE CREDIT STRUCTURE FOR THE UNDERGRADUATE PROGRAMME IN GEOGRAPHY

SEMESTER I

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-1110	Physical Geography (Core)	20	80	100	4:0:0	4	60
GEO-MC-1110	Physical Geography (Minor Course-1)	20	80	100	-	4	-
GEO-MD-1110	Disaster Management MDC-1*	20	80	100	2:1:0	3	45
XXX-AE-XXXX	AECC-1*	20	80	100	-	4	-
GEO-SE-1110	Fundamentals of Cartography (Skill Enhancement)	15	60	75	2:0:1	3	45
XXX-VA-XXXX	VAC-1*	20	80	100	-	2	-
					Total Credit	**20**	

**The title of the courses will be adopted from the pool of papers provided by the University/Other Departments.*
L=Lecture, T=Tutorial, P=Practical

SEMESTER II (UG Certificate)

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-1210	Human Geography (core)	20	80	100	4:0:0	4	60
GEO-MC-1210	Human Geography (Minor Course-2)	20	80	100	-	4	-
GEO-MD-1210	Geography of Tourism MDC-2*	15	60	75	2:1:0	3	45
XXX-AE-XXXX	AEC-2*	20	80	100	-	4	-
GEO-SE-1210	Remote Sensing	15	60	75	2:0:1	3	45
XXX-VA-XXXX	VAC-2*	20	80	100	-	2	-
					Total Credit	**20**	

**The title of the courses will be adopted from the pool of papers provided by the University/Other Departments.*
L=Lecture, T=Tutorial, P=Practical

SEMESTER WISE CREDIT STRUCTURE FOR THE UNDERGRADUATE PROGRAMME IN GEOGRAPHY

SEMESTER III

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-2110	Geography of India	20	80	100	4:0:0	4	60
GEO-CC-2120	Geomorphology	20	80	100	4:0:0	4	60
GEO-MC-2110	Geography of India (Minor course-3)	20	80	100	-	4	60
GEO-MD-2110	Traditional Ecological Knowledge (MDC-3)	15	60	75	2:1:0	3	45
GEO-SE-2110	Geographical Information System	15	60	75	2:0:1	3	45
EVS-VA-XXXX	VAC-3	20	80	100	-	2	-
					Total Credit	**20**	

**The title of the courses will be adopted from the pool of papers provided by the University/Other Departments.*
L=Lecture, T=Tutorial, P=Practical

SEMESTER IV (UG Diploma)

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-2210	Political Geography	20	80	100	4:0:0	4	60
GEO-CC-2220	Geographical Analysis (Practical 1)	20	80	100	0:0:4	4	60
GEO-CC-2230	Regional Planning	20	80	100	4:0:0	4	60
GEO-CC-2240	Field Study	20	80	100	0:0:4	4	120
GEO-MC-2210	Population Geography (Minor Course-4	20	80	100	4:0:0	4	60
					Total Credit	**20**	

**The title of the courses will be adopted from the pool of papers provided by the University/Other Departments.*
L=Lecture, T=Tutorial, P=Practical

CREDIT STRUCTURE FOR FOUR YEAR UNDERGRADUATE PROGRAMME IN GEOGRAPHY PER SEMESTER

SEMESTER V

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-3110	Climatology	20	80	100	4:0:0	4	60
GEO-CC-3120	Agricultural Geography	20	80	100	-	4	60
GEO-CC-3130	Geography of North East India	20	80	100	-	4	60
GEO-CC-3140	Geographical Analysis (Practical 2)	20	80	100	0:0:4	4	120
GEO-MC-3110	Economic Geography (Minor Course-5	20	80	100	4:0:0	4	60
GEO-IN-3110	Internship	20	80	100	0:0:2	2	
					Total Credit	**20**	

**The title of the courses will be adopted from the pool of papers provided by the University/Other Departments.*
L=Lecture, T=Tutorial, P=Practical

SEMESTER VI (UG Degree)

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T:P		
GEO-CC-3210	Remote Sensing and GIS	20	80	100	4:0:0	4	60
GEO-CC-3220	Geographic Thought	20	80	100	-	4	60
GEO-CC-3230	Settlement Geography	20	80	100	-	4	60
GEO-CC-3240	Geographical Analysis (Practical 3)	20	80	100	0:0:4	4	120
GEO-MC-3110	Remote Sensing and GIS (Minor Course-6)	20	80	100	4:0:0	4	60
					Total Credit	**20**	

**The title of the courses will be adopted from the pool of papers provided by the University/Other Departments.*
L=Lecture, T=Tutorial, P=Practical

STRUCTURE FOR FOUR YEAR UNDERGRADUATE PROGRAMME IN GEOGRAPHY

SEMESTER VII

(STUDENTS HAVE TO OPT ANY 4 PAPERS FROM MAJOR COURSE)

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-4110	Mountain Geography	20	80	100	4:0:0	4	60
GEO-CC-4120	Biogeography	20	80	100	-	4	60
GEO-CC-4130	Social Geography	20	80	100	-	4	60
GEO-CC-4140	Urban Geography	20	80	100	-	4	60
GEO-CC-4150	Advanced Geomorphology	20	80	100	-	4	60
GEO-CC-4160	Soil Geography	20	80	100	-	4	60
GEO-MC-4110	Research Methodology	20	80	100	-	4	60
					Total Credit	**20**	**-**

**The title of the courses will be adopted from the pool of papers provided by the University/Other Departments.*
L=Lecture, T=Tutorial, P=Practical

SEMESTER VIII (UG Degree with Honours)

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-4210	Advanced Research Methods	20	80	100	4:0:0	4	60
GEO-DE-4210	Cultural Geography	20	80	100	-	4	60
GEO-DE-4220	Population Geography	20	80	100	-	4	60
GEO-DE-4230	Geography of Health and Wellbeing	20	80	100	-	4	60
GEO-MC-4210	Research Methodology/MOOCs	20	80	100	-	4	60
					Total Credit	**20**	**-**

**The title of the courses will be adopted from the pool of papers provided by the University/Other Departments.*
L=Lecture, T=Tutorial, P=Practical

SEMESTER VIII (UG Degree with Honours & Research)

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T:P		
GEO-CC-4210	Geographical Field Work 2	20	80	100	4:0:0	4	60
GEO-CC-4220	UG Research Project (Dissertation)	20	80	100	0:0:12	12	360
GEO-MC-4210	Research and Publication Ethics	20	80	100	4:0:0	4	60
					Total Credit	**20**	

1st SEMESTER

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-1110	Physical Geography (Core)	20	80	100	4:0:0	4	60
GEO-MC-1110	Physical Geography (Minor Course-1)	20	80	100	-	4	-
GEO-MD-1110	Disaster Management MDC-1*	20	80	100	2:1:0	3	45
XXX-AE-XXXX	AECC-1*	20	80	100	-	4	-
GEO-SE-1110	Fundamentals of Cartography (Skill Enhancement)	15	60	75	2:0:1	3	45
XXX-VA-XXXX	VAC-1*	20	80	100	-	2	-
					Total Credit	**20**	

Semester 1

GEO-CC-1110: PHYSICAL GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives

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

Programmes Outcome:

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

1. Gain a perspective on various concepts of physical geography
2. Have comprehensive knowledge on 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 form 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 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.Das Gupta, A and Kapoor, A.N., (2001) *Principles of Physical Geography,* S.C. Chand & Co1mpany Ltd. New Delhi.

3. Khullar, D.R., (2012)*Physical Geography*, Kalyani Publishers, New Delhi.

4. Critchfield, H. J., (1987): *General Climatology*, Prentice-Hall of India, New Delhi

5. Oliver, J. E., and Hidore J. J., (2002): *Climatology: An Atmospheric Science*, Pearson Education, New Delhi.

6.Pinet, P. R., (2008): *Invitation to Oceanography* (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.

7.Lal, D. S., (2006): *Jalvayu Vigyan(Hindi),*, PrayagPustakBhavan, Allahabad

8.Singh, S., (2009): *Jalvayu Vigyan (Hindi),*, Prayag Pustak Bhawan, Allahabad

GEO-MC-1110: PHYSICAL GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives

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

Programmes Outcome:

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

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

UNIT	COURSE CONTENT
UNIT 1	Introduction to Physical Geography Overview of physical geography The Earth's physical systems: atmosphere, hydrosphere, biosphere, and geosphere
UNIT 2	Weather and Climate Overview of weather and climate Atmospheric processes and patterns
UNIT 3	Landforms and Soils Overview of landforms and soils Geomorphological processes and patterns
UNIT 4	Ecosystems and Biomes Overview of ecosystems and biomes Ecological processes and patterns

Suggested readings:

1.Christopherson, R. W, and Birkeland, G. H., (2012) *Geosystems: An Introduction to Physical Geography* (8th edition), Pearson Education, New Jersey.

2.Das Gupta, A and Kapoor, A.N., (2001) *Principles of Physical Geography,* S.C. Chand & Co1mpany Ltd. New Delhi.

3. Khullar, D.R., (2012)*Physical Geography*, Kalyani Publishers, New Delhi.

4. Critchfield, H. J., (1987): *General Climatology*, Prentice-Hall of India, New Delhi

5. Oliver, J. E., and Hidore J. J., (2002): *Climatology: An Atmospheric Science*, Pearson Education, New Delhi.

6.Pinet, P. R., (2008): *Invitation to Oceanography* (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.

7.Lal, D. S., (2006): *Jalvayu Vigyan(Hindi),*, PrayagPustakBhavan, Allahabad

8.Singh, S., (2009): *Jalvayu Vigyan (Hindi),*, Prayag Pustak Bhawan, Allahabad

GEO-MD-1110:DISASTER MANAGEMENT

Credit 3- (Credit Hours in a week: Lecture-2, Tutorial-1)
Marks: 75 (End term examination=60 and internal examination-15)

Programmes Objectives

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

Programmes Outcome:

After the completion of course, the students will have 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, Disasters in India: (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)

Suggestive 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. Govt. of India, (2011): *Disaster Management in India*, Ministry of Home Affairs, New Delhi.
3. Kapur, Anu., (2010): *Vulnerable India: A Geographical Study of Disasters*, Sage Publication, New Delhi.
4. Modh, S., (2010): Manag*ing Natural Disaster: Hydrological, Marine and Geological Disasters*, Macmillan, Delhi.
5. Singh, Jagbir., (2007): "*Disaster Management Future Challenges and Opportunities*", 2007.
6. Singh, R. B., (ed.), (2006): Nat*ural Hazards and Disaster Management: Vulnerability and Mitigation*, Rawat Publications, New Delhi.
7. Singh, R.B., (2005):*Risk Assessment and Vulnerability Analysis*, IGNOU, New Delhi. Chapter 1, 2 and 3
8. Sinha, A., (2001): *Disaster Management: Lessons Drawn and Strategies for Future*, New United Press, New Delhi.

GEO-SE-1110: FUNDAMENTALS OF CARTOGRAPHY

(Practical)

Credit 3- (Credit Hours in a week: Lecture-2, Practical-1)
Marks: 75 (End term examination=60 and internal examination-15.)

Programmes Objectives:

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

Programmes Outcome:

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

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

UNIT	COURSE CONTENT
UNIT 1	Cartography – Nature, Scope and development, Concept and types of Scales, map 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

Suggestive Readings

1. Anson, R., and Ormelling F. J.,(1994): *International Cartographic Association: Basic Cartographic, Vol.*Pregmen Press.
2. Singh, Gopal., (1998): *Map Work and Practical Geography (4th Edition)*, Vikas Publishing House, Ahmedabad.
3. Gupta, K.K. and Tyagi V.C.,(1992): *Working with Map*, Survey of India, DST, 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): *PrayogicBhugol(Hindi)*, Rastogi Publishers, Meerut.
11. Singh, R.L. and Singh R.P.B.,(1999): *Elements of Practical Geography*, Kalyani Publishers, New Delhi.
12. Singh, R.L. &Dutta, P.K., (2012):*PrayogatmakBhugol(Hindi)*, Central Book Depot, Allahabad

13. Singh,R.L.,& Singh, Rana. P.B.,(1991):*PrayogtmakBhugolkeMoolTatva(Hindi)*, Kalyani Publishers, New Delhi
14. Steers, J.A. (1970):*An Introduction to the Study of Map Projections*, University of London Press, London.
15. Khan, Zulfequar Ahmad., (1998):*Text book of Practical Geography*, Concept Publishing Company, New Delhi.

2nd SEMESTER

(UG CERTIFICATE)

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-1210	Human Geography (core)	20	80	100	4:0:0	4	60
GEO-MC-1210	Human Geography (Minor Course-2)	20	80	100	-	4	-
GEO-MD-1210	Geography of Tourism MDC-2*	15	60	75	2:1:0	3	45
XXX-AE-XXXX	AEC-2*	20	80	100	-	4	-
GEO-SE-1210	Remote Sensing	15	60	75	2:0:1	3	45
XXX-VA-XXXX	VAC-2*	20	80	100	-	2	-
					Total Credit	**20**	

Semester 2

GEO-CC-1210: HUMAN GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives

1.Understand the basics concepts of human geography in context of population attributes economic, cultural, and trade activities and

2. To understand the impact of population attributes on the development of a region.

Programmes Outcome:

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

1. Students will learn how human, physical, and environmental components of the world interact with economic processes such as globalization, trade and
2. Gain insight of the social, economic and cultural aspects of 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 of man 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 dimension: 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

Suggestive Readings

1. Husain, Majid (2021): Human Geography, Rawat Publications, New Delhi.
2. Maurya, S.D. (2018): Human Geography, Pravalika Publications, Allahabad.
3. Maurya, S.D. (2016): Cultural Geography, Sardha Pustak Bhawan, Allahabad.
4. Patra, Punyatoya et al (2020): Perspectives in Human Geography, Concept Publishing Company, Ltd., New Delhi.
5. Rubenstein, James M. (2012): Contemporary Human Geography, Prentice Hall of India, New Delhi.
6. Saxena, H.M. (2018): Economic Geography, 2 nd Edition, Rawat Publications, New Delhi.
7. Singh, Dr. L.R. (2018): Fundamentals of Human Geography, Sharda Pustak Bhawan, Allahabad

GEO-MC-1210: HUMAN GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

The objective of this course is to provide students with a comprehensive understanding of the key concepts and theories in human geography. Students will learn about the spatial aspects of human existence and how these are influenced by social, economic, and environmental factors.

Programmes Outcomes:

By the end of this course, students will be able to: Understand Key Concepts: Understand and explain key concepts in human geography such as population, migration, culture, urbanization, and economic development. Apply Theoretical Knowledge: Apply theoretical knowledge to analyze real-world geographical issues and phenomena. Spatial Analysis: Conduct spatial analysis using appropriate tools and techniques. Critical Thinking: Develop critical thinking skills to evaluate geographical information and arguments. Communication Skills: Effectively communicate geographical information and arguments in written and oral forms

UNIT	COURSE CONTENT
UNIT 1	Introduction to Human Geography Overview of human geography Historical context of human geography Human Impact on the Environment Overview of human-environment interactions
UNIT 2	Culture and Identity Overview of cultural geography Theories of identity and place
UNIT 3	Population and Migration Overview of population geography Migration patterns and theories
UNIT 4	Urbanization and Economic Development Overview of urban geography Theories of economic development

Suggestive Readings

1. Husain, Majid (2021): Human Geography, Rawat Publications, New Delhi.
2. Maurya, S.D. (2018): Human Geography, Pravalika Publications, Allahabad.
3. Maurya, S.D. (2016): Cultural Geography, Sardha Pustak Bhawan, Allahabad.
4. Patra, Punyatoya et al (2020): Perspectives in Human Geography, Concept Publishing Company, Ltd., New Delhi.
5. Rubenstein, James M. (2012): Contemporary Human Geography, Prentice Hall of India, New Delhi.
6. Saxena, H.M. (2018): Economic Geography, 2 nd Edition, Rawat Publications, New Delhi.
7. Singh, Dr. L.R. (2018): Fundamentals of Human Geography, Sharda Pustak Bhawan, Allahabad

GEO-MD-1210: GEOGRAPHY OF TOURISM

Credit 3- (Credit Hours in a week: Lecture-3)
Marks: 75 (End term examination=60 and internal examination=15)

Programmes Objective:

1. To Understand the various dimensions of geography of tourism
2. To make aware the students about national and international trends and patterns of tourism and its impact.

Programmes Outcome:

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

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

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

Suggestive Readings

1. Alan, A. Lew, (2017): *New Research Paradigms in Tourism Geography*, Routledge,.
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 Practise*, 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, Jagbir., (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-SE-1210: REMOTE SENSING

Credit 3- (Credit Hours in a week: Theory - 1, Practical - 2)
Marks: 75 (End term examination=60 and internal examination=15)

Programmes Objectives:

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

Programmes Outcomes:

After the completion of course, the students will have 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, development, EMR Interaction with Atmosphere and Earth Surface, Aerial Photography and Satellite Remote Sensing,
UNIT 2	Base map (Survey of India Toposheet), Visual Interpretation using Aerial Photograph: Land use/Landcover, identification of hydrological features
UNIT 3	Visual Interpretation using Satellite Data: Forest monitoring, Water resources and Urban Sprawl analysis (Change detection)

Suggestive 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): *SudurSamvedanevam 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, Dilip, Singh, R.B. and Kaur, Ranjeet (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.

3rd SEMESTER

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-2110	Geography of India	20	80	100	4:0:0	4	60
GEO-CC-2120	Geomorphology	20	80	100	4:0:0	4	60
GEO-MC-2110	Geography of India (Minor course-3)	20	80	100	-	4	60
GEO-MD-2110	Traditional Ecological Knowledge (MDC-3)	15	60	75	2:1:0	3	45
GEO-SE-2110	Geographical Information System	15	60	75	2:0:1	3	45
EVS-VA-XXXX	VAC-3	20	80	100	-	2	-
					Total Credit	**20**	

Semester 3

GEO-CC-2110: GEOGRAPHY OF INDIA

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives

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

Programmes Outcome:

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

1. Understand the physical and social dimensions of the country.
2. To utilise 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.

Suggestive Readings

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

GEO-CC-2120: GEOMORPHOLOGY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

1. To understand the associations between geomorphologic landforms, concepts andprocesses.
2. To critically evaluate and connect information about geomorphic processes.

Programmes Outcomes:

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

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

2.Distinguish between the mechanisms that control these processes

UNIT	COURSE CONTENT
UNIT 1	Nature, Scope, Approaches and its 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

Suggestive 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 & Co1mpany Ltd. New Delhi.

5.Dayal, P., (1996) A Text book 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.Mal, Suraj, Singh, R.B. and Huggel, Christian (2018): *Climate Change, Extreme Events and Disaster Risk Reduction*, Springer, Switzerland, pages 309.

10.Selby, M.J., (2005): *Earth's Changing Surface,* Indian Edition, OUP

11.Singh, S (2009):*BhautikBhugolkaSwaroop(Hindi)*, PrayagPustak,Allahabad.

12.Skinner, Brian J. and Stephen C. Porter (2000), *The Dynamic Earth: An Introduction to Physical Geology,* 4th Edition, John Wiley and Sons.

13.Strahler, A. H. and Strahler, A N., (2001):*Modern Physical Geography* (4/E), John Wiley and Sons, Inc., New York.

14.Summerfield M. A. (2013): Global Geomorphology, Routledge, New York

15.Thornbury, W. D., (2004): *Principles of Geomorphology*, Wiley, New York.

16.Tikka, R N (1989): *BhautikBhugolkaSwaroop(Hindi)*, Kedarnath Ram Nath, Meerut.

GEO-MC-2110: GEOGRAPHY OF INDIA

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives

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

Programmes Outcome:

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

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

UNIT	COURSE CONTENT
UNIT 1	Physical Features of India Overview of the physical features of India Geological structure and physiographic divisions
UNIT 2	Climate and Natural Resources Overview of India's climate and natural vegetation Distribution and utilization of natural resources
UNIT 3	Population and Settlement Population distribution, density, and growth Rural and urban settlement patterns
UNIT 4	Regional Development and Planning Overview of regional development and planning in India Case studies of regional planning in different parts of India

Suggestive Readings

1. Deshpande, C. D., (1992): *India: A Regional Interpretation*, ICSSR, New Delhi.
2. Douglas, L. Johnson.,(2009): World Regional Geography, Tenth edition, Pearson Education Inc, New Jersey.
3. Johnson, B. L. C., ed. (2001):*Geographical Dictionary of India*. Vision Books, New Delhi.
4. Khullar, D.R. (2014): *India: A Comprehensive Geography*, Kalyani Publishers, New Delhi.
1. Majid Husain (2009): *Geography of India*, Tata McGraw hill Education Private Ltd, New Delhi.
2. Mandal, R. B. (ed.), (1990): *Patterns of Regional Geography–An International Perspective. Vol. 3–Indian Perspective*.
3. Pathak, C. R. (2003): *Spatial Structure and Processes of Development in India*. Regional Science Assoc., Kolkata.
4. Sdyasuk, Galina and P, Sengupta., (1967): *Economic Regionalisation of India*, Census of India.
5. Sharma, T.C. (2013): *Economic Geography of India*. Rawat Publication, Jaipur.
6. Singh R. L., (1971): *India: A Regional Geography*, National Geographical Society of India.
7. Singh, Jagdish.,(2003): *India - A Comprehensive & Systematic Geography*, Gyanodaya Prakashan, Gorakhpur.
8. Singh, R. B. and Prokop, Pawel.,(2016): *Environmental Geography of South Asia,* Springer, Japan.

9. Spate O. H. K. and Learmonth A. T. A., (1967): *India and Pakistan: A General and Regional Geography*, Methuen.
10. Tirtha, Ranjit (2002): *Geography of India,* Rawat Publs., Jaipur & New Delhi.
11. Tiwari, R.C. (2007): *Geography of India*. PrayagPustakBhawan, Allahabad.

GEO-MD-2110: TRADITIONAL ECOLOGICAL KNOWLEDGE

Credit 3- (Credit Hours in a week: Lecture:2, Tutorial-1
Marks: 75 (End term examination=60 and internal examination=15)

Programmes Objective:

To acquaint the students about the importance of rich traditional ecological knowledge for sustainable management of natural resources

Programmes Outcome:

After the completion of course, the students will have ability to 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, Ethno-medicine and food preservation
UNIT 3	TEK in Conservation of biotic life, Change and Continuity: responses, perception, constraints and future prospects

Suggestive Readings

1. *TEK: Learning from the Indigenpous practices for environmental sustainabilityMelissa K. Nelson, Daniel Shiulling, 2018, Google book*
2. *TEK and Natural resources Management, 2006, Edited Charles Menzies*
3. *TEK : Concept and Cases, Editred Julian T. Inglis, International Development Research Center 1993*
4. *TEK of the Mountain People: Foundation for Sustainable Development in the Hindu Kush Himalaya, Reelendra K.Joshi and Vir Singh, 2010, Google Book*
5. *Wisdom of Elders by David Suzuki and Peter Knudtson, Bantam Book, New Yor- Toronto*
6. *Shifting Cultivation and Tribal Culture by Tomo Riba,2013 Rubi Publication, Dhaka Bangladesh*

GEO-SE-2110: GEOGRAPHICAL INFORMATION SYSTEM

Credit 3- (Credit Hours in a week: Theory - 1, Practical - 2)
Marks: 75 (End term examination=60 and internal examination=15)

Programmes 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

Programmes Outcomes:

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

1. Appreciate the basic principles and components of GIS
2. Analyse 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; Geo-Referencing; Editing and Output; Overlays
UNIT 3	Application of GIS in Natural Resource Management, Urban Sprawl, Land use/Land-cover.

Suggestive 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): *SudurSamvedanevam 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, Dilip, Singh, R.B. and Kaur, Ranjeet (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.

4TH SEMESTER

(UG DIPLOMA)

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-2210	Political Geography	20	80	100	4:0:0	4	60
GEO-CC-2220	Geographical Analysis (Practical 1)	20	80	100	0:0:4	4	60
GEO-CC-2230	Regional Planning	20	80	100	4:0:0	4	60
GEO-CC-2240	Field Study	20	80	100	0:0:4	4	120
GEO-MC-2210	Population Geography (Minor Course-4	20	80	100	4:0:0	4	60
					Total Credit	**20**	

Semester 4

GEO-CC-2210: POLITICAL GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

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

Programmes Outcomes:

After the completion of course, the students will have 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 and scope, concepts and approaches, 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

Suggestive Readings:

1. Adhikari, S. (2007): *Political Geography*, Rawat Publication, NewDelhi.
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 Total 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, Dick, Sarah, J, Llyod and Keith, S, McLachlan., (1998): *Land Locked States of Africa and Asia (vo.2),* Frank Cass
8. Jones, M., (2004): *An Introduction to Political Geography*: Space, Place and Politics, Routledg .
9. Painter, J. and Jeffrey, A., (2009): *Political Geography*, Sage Publications.
10. Taylor, P. and Flint, C., (2000): *Political Geography*, Pearson Education.

GEO-CC-2220: GEOGRAPHICAL ANALYSIS (Practical 1)

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

1. To develop practical skills on morphometric, population data and
2. To develop the linkages between electoral geography and political geography

Programmes Outcomes:

After the completion of course, the students will have 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	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

Suggestive Readings

1. Anson, R., and Ormelling F. J.,(1994): *International Cartographic Association: Basic Cartographic, Vol.*Pregmen Press.
2. Singh, Gopal., (1998): *Map Work and Practical Geography (4th Edition)*, Vikas Publishing House, Ahmedabad.
3. Gupta, K.K. and Tyagi V.C.,(1992): *Working with Map*, Survey of India, DST, 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): *PrayogicBhugol(Hindi)*, Rastogi Publishers, Meerut.
11. Singh, R.L. and Singh R.P.B.,(1999): *Elements of Practical Geography*, Kalyani Publishers, New Delhi.
12. Singh, R.L. &Dutta, P.K., (2012):*PrayogatmakBhugol(Hindi)*, Central Book Depot, Allahabad
13. Singh,R.L.,& Singh, Rana. P.B.,(1991):*PrayogtmakBhugolkeMoolTatva(Hindi)*, Kalyani Publishers, New Delhi

14. Steers, J.A. (1970):*An Introduction to the Study of Map Projections*, University of London Press, London.
15. Khan, Zulfequar Ahmad., (1998):*Text book of Practical Geography*, Concept Publishing Company, New Delhi.

GEO-CC-2230: REGIONAL PLANNING

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

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

Programmes Outcome:

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

1. Understand the techniques involve in regional planning and development.
2. Understand the key component of the 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

Suggestive 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., K. V. SUndaram and V.L.S.P. Rao (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-CC-2240 FIELD WORK

Credit 4- (Credit Hours in a week: Practical-4)
Marks: 100 (End term examination=80 and internal examination-20)

1

Content	
1	Field Work In Geographical Studies – Role, Value, Data and Ethics of Field-Work
2	Defining the Field and Identifying the Case Study – Rural / Urban / Physical / Human / Environmental.
3	Field Techniques – Merits, Demerits and Selection of the Appropriate Technique; Observation (Participant / Non Participant), Questionnaires (Open/ Closed / Structured / Non-Structured); Interview with Special Focus on Focused Group Discussions; Space Survey (Transects and Quadrants, Constructing a Sketch)
4	Use of Field Tools – Collection of Material for Physical and Socio-Economic Surveys.
5	Designing the Field Report – Aims and Objectives, Methodology, Analysis, Interpretation and Writing the Report.

Practical Record	
1	Each student will prepare an individual report based on primary and secondary data collected during field work.
2	The duration of the field work should not exceed 10 days.
3	The word count of the report should be about 8000 to 12,000 excluding figures, tables, photographs, maps, references and appendices.
4	One copy of the report on A 4 size paper should be submitted in soft binding.

Reading List

1. Creswell J., 1994: Research Design: Qualitative and Quantitative Approaches Sage Publications.
2. Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
3. Evans M., 1988: “Participant Observation: The Researcher as Research Tool” in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
4. Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publs. Co., New Delhi.
5. Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi
6. Robinson A., 1998: "Thinking Straight and Writing That Way", in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
7. Special Issue on “Doing Fieldwork” The Geographical Review 91:1-2 (2001).
8. Stoddard R. H., 1982: Field Techniques and Research Methods in Geography, Kendall/Hunt.
10. Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA

GEO-MC-2210: POPULATION GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

1. It introduces the basic concepts of population Geography to the students.
2. An understanding of the importance and need of Demographic data in understanding of population dynamics.

Programmes Outcome:

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

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

UNIT	COURSE CONTENT
UNIT 1	Nature, scope and approaches, relation with demography and other social science, 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 and Sex composition, rural-urban composition, concept of ageing, demographic dividend,

Suggested Readings:

1.Boserup, E. (1965): The conditions of Agricultural Growth, G. Allen and Unwin, London
2.Bhendea, A and Kanitkar, T. (1985): Principles of Population Studies, Himalayan Publishing House, Mumbai.
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, Mc Graw Hill, New York.
6.Dubey, R. M. (1981): Population Dynamics in India, Chugh Publications, Allahabad.
7.Mandal, R. B., Uyanga, J and Prasad, H. (1989): Introductory Methods in Population Analysis, Concept Publishing, New Delhi.
8.Sundaram, K. V. and Nangia, S. (1985): Population Geography, Heritage, New Delhi.
9.Samuel H. Preston (2000). Demography: Measuring and modeling population processes, Willey – Blackwell.
10.Thomas Robert Malthus and Geoffrey Gilbert (1999). An Essay on the principles of Population, Oxford University Press, USA.

5TH SEMESTER

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-3110	Climatology	20	80	100	4:0:0	4	60
GEO-CC-3120	Agricultural Geography	20	80	100	-	4	60
GEO-CC-3130	Geography of North East India	20	80	100	-	4	60
GEO-CC-3140	Geographical Analysis (Practical 2)	20	80	100	0:0:4	4	120
GEO-MC-3110	Economic Geography (Minor Course-5	20	80	100	4:0:0	4	60
GEO-IN-3110	Internship	20	80	100	0:0:2	2	
					Total Credit	**20**	

SEMESTER 5

GEO-CC-3110: CLIMATOLOGY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

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

Programmes Outcomes:

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

a. Understand the elements of weather and climate and its impacts at different scales.
a. Comprehend the climatic aspects and its bearing on planet earth.

UNIT	COURSE CONTENT
UNIT 1	Nature, Scope and Approaches, relationship with meteorology
UNIT 2	Composition and Structure of Atmosphere, Insolation and 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 Nino, La Nina, 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

Suggestive Reading:

a. Anikouchine, W. A. and Sternberg, R. W., (1973): *The World Oceans: An Introduction to Oceanography*, Prentice-Hall.
b. Barry, R. G., and Chorley, R. J., (2009): *Atmosphere, Weather and Climate (9th Edition)*,Routledge, New York.
c. Bhutani, S., (2000): *Our Atmosphere*, Kalyani Publishers, Ludhina.
d. Critchfield, H. J., (1987): *General Climatology*, Prentice-Hall of India, New Delhi
e. Gupta, L.S., (2000): *JalvayuVigyan(Hindi),*MadhyamKaryanvayNidishalya, Delhi VishwaVidhyalaya, Delhi
f. Kershaw, S., (2000): *Oceanography: An Earth Science Perspective*, Stanley Thornes, UK.
g. Lal, D. S., (2006): *JalvayuVigyan(Hindi),*, PrayagPustakBhavan, Allahabad
h. Lutgens, F. K., Tarbuck E. J. and Tasa D., (2009): *The Atmosphere: An Introduction to Meteorology*, Prentice-Hall, Englewood Cliffs, New Jersey.
i. Oliver, J. E., and Hidore J. J., (2002): *Climatology: An Atmospheric Science*, Pearson Education, New Delhi.
j. Pinet, P. R., (2008): *Invitation to Oceanography* (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.

k. Singh, S., (2009): *Jalvayu Vigyan (Hindi),*, Prayag Pustak Bhawan, Allahabad
l. Strahler, A.N., (1987) *Modern Physical Geography*, John Wiley and Sons, New York, Singapore.
m. Sverdrup, K. A. and Armbrust, E. V., (2008): *An Introduction to the World Ocean*, McGraw Hill, Boston.
n. Trewartha, G. T., and Horne L. H., (1980): *An Introduction to Climate*, McGraw-Hill.

GEO-CC-3120: AGRICULTURAL GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

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

Programmes Outcome:

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

1. Conceptualise the agriculture and its determinants.
2. Get the overview of Indian and World agriculture regions and systems.
3. Have sound knowledge of agriculture 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) and Agro climatic regions of India, Agricultural Land use model (Von Thunen, modification and relevance).
UNIT 4	New Perspective in agriculture development: Green revolution, white revolution, blue revolution and sustainable agriculture

Suggestive 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., 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 Agriculture Geography*, Vol. I to VIII, Concept Pub., New Delhi.
8. Roling, N.G., and Wageruters, M.A.E.,(ed.) (1998): *Facilitating Sustainable Agriculture*, Cambridge University Press, Cambridge.
9. Shafi, M., (2006): *Agricultural Geography*, Doring Kindersley India Pvt. Ltd., New Delhi
10. Singh, J., and Dhillon, S.S., (1984): *Agricultural Geography*, Tata McGraw Hill, New Delhi.
11.
12. Tarrant, J. R., (1973): *Agricultural Geography*, David and Charles, Devon.

GEO-CC-3130: GEOGRAPHY OF NORTH EAST INDIA

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Outcome-

The students will learn about the physiographical characteristics of NER like topography, soil, climate, geological history. They also will have knowledge of the social, cultural and economic characteristics of the region

Unit	Outline
I	Physiographic set up: i. Physiography and drainage ii. Climate and Soil iii. Flora, fauna and biodiversity iv. Changing Physiographical aspects
II	Peopling of North-East India: i. Origin and migration ii. Ethnic composition iii. Linguistic composition iv. Religious composition
III	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
IV	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 Amhed, P. (2001): Geography of North – East India: Mani Manik Prakash, Guwahati

GEO-CC-3140 : GEOGRAPHICAL ANALYSIS (Practical 2)

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

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

Programmes Outcome:

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

1. Understand the techniques involve in regional planning and development.
2. Understand the key component of the sustainable development

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 specialisation
UNIT 4	Rank size rule, Lorenz Curve, Ginni Coefficient, z- score

Suggestive Readings

1. Alvi Z. : Statistical Geography, Rawat Bookseller
1. Burt, J. E., Barber, G. M., & Rigby, D. L. (2009). *Elementary statistics for geographers*. Guilford Press.
2. J. Chapman McGrew, Charle: An Introduction to Statistical Problem solving in Geography
3. Mahmood, Aslam (1977): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi
4. Peter A. Rogerson: Statistical Methods for Geography: A Student's Guide
5. Bygott, G.L: Mapworks and Practical Geography
6. Mahmood, A. (1977): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
7. Mishra, R.P and Ramesh, A. (1969): Fundamentals of Cartography, Concept Publishing Company, New Delhi.
8. Singh, R.L. and Singh, Rana, P.B. (1991): Elements of Practical Geography, Kalyani Publishers, Ludhiana.
9. Singh, R.L and Singh, R. (1991): Mapwork and Practical Geography, Central Book Depot, Allahabad.
10. Wilkinson, H.R. and Monkhouse, F.J. (1952): Maps and Diagrams, B.I. Publications, Pvt. Ltd, New Delhi.
11. Chorley, R. J., & Haggett, P. (2013). Integrated Models in Geography (Routledge Revivals). Routledge.

GEO-MC-3110: ECONOMIC GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-3, Practical-1)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes objective-

The objective of this course is to provide students with a comprehensive understanding of the spatial aspects of economic activities. Students will learn about the distribution of resources, the location of economic activities, and the impacts of these activities on different regions. Course .

Programmes Outcomes:

By the end of this course, students will be able to: Understand Key Concepts: Understand and explain key concepts in economic geography such as resource distribution, economic development, and globalization. Analyze Economic Activities: Analyze the location and distribution of economic activities and their impacts on different regions. Apply Theoretical Knowledge: Apply theoretical knowledge to real-world economic issues and phenomena. Critical Thinking: Develop critical thinking skills to evaluate economic information and arguments. Communication Skills: Effectively communicate economic information and arguments in written and oral forms.

UNIT	COURSE CONTENT
UNIT 1	Introduction i. Definition, nature, scope and recent trends in economic geography. ii. Its relation with economics and allied subjects. iii. Concept and classification of Economic Activities – Primary, Secondary and Tertiary.
UNIT 2	Resources i. Definition, Concept and classification of Resources ii. Classification of Natural Resources. iii. Classification of minerals; ferrous and non-ferrous and their world distribution, energy minerals and resources; iv. Conservation and management of Resource for sustainable Development.
UNIT 3	Primary Activities i. Distribution primary economic activities- mining, forestry, fishing. ii. Agriculture-physical, social, cultural environment influencing crop production; spatial distribution of major food and cash crops of the world.
UNIT 4	Secondary and Tertiary Activities i.Industries- factors of localization, major industries-iron and steel, textile, chemicals, paper; ii. Transport: geographical factors in their development, major water, land and air transport; iii. Internal and international trade.

1. **Reading List**
2. 1. Boesch, H., A Geography of World Economy, D.Van Nostrand Co., New York, 1964
3. 2. Chapman, J.D., Geography and Energy, Longman, London, 1989

4. 3. Gregor, H.F., Geography of Agriculture, Prentice Hall, New Jersey, USA, 1970
5. 4. Griggs, D.B., The Agricultural Systems of the World, Cambridge University Press, New York, 1974
6. 5. Hartshorne, T.N. and Alexander, J.W., Economic Geography, Prentice Hall, New Delhi, 1988
7. 6. Jones, C.F. and Darkenwald, G.G., Economic Geography, McMillan Co., New York.1975
8. 7. Millar, E., Geography of Manufacturing, Prentice Hall, New York, 1962
9. 8. Neil Coe, Philip Kelly, and Henry Wai-Chung Yeung, Econonomic Geography: A Contemporary Introduction, Wiley-Blackwell, New York, 2007
10. 9. Raza, M. and Agrawal, Y., Transport Geography of India, Concept, New Delhi, 1986
11. 10. Baldwin, Richard, Rikard Forslid, Philippe Martin, Gianmarco Ottaviano, Frederic Robert Nicoud, Economic Geography and Public Policy, Princeton University Press, New Jersey, 2005

GEO-IN-3110: INTERNSHIP (Mandatory)

Credit 2 in Summer Break; Practical-2
Marks: 100 (End term examination=80 and internal examination-20)

All students will also undergo internships / Apprenticeships **during the summer term** under a mentor. Students will be provided with opportunities for internships

	Content
1	Research Institute, Science Laboratory
2	One month training program
3	Work with govt. registered local industry, business organizations, health services
4	Work with local governments (such as panchayats, municipalities, town committee, municipal committee),
5	Work with any Govt. sponsored project
6	Work with media organizations, artists, crafts persons etc.
7	Community engagement and service with Govt. Reg. NGO
8	Field-based Work with Researcher

6TH SEMESTER

(UG DEGREE)

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T:P		
GEO-CC-3210	Remote Sensing and GIS	20	80	100	4:0:0	4	60
GEO-CC-3220	Geographic Thought	20	80	100	-	4	60
GEO-CC-3230	Settlement Geography	20	80	100	-	4	60
GEO-CC-3240	Geographical Analysis (Practical 3)	20	80	100	0:0:4	4	120
GEO-MC-3110	Remote Sensing and GIS (Minor Course-6)	20	80	100	4:0:0	4	60
					Total Credit	**20**	

SEMESTER 6

GEO-CC-3210: REMOTE SENSING AND GIS

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

1. This course shall introduce the basic concepts of remote sensing and GIS

2. This paper shall elucídate about aerial photography, its basic principles and types, satellite remote sensing.

Programmes 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. To gain knowledge on aerial photographs, satellite data and its uses.

UNIT	COURSE CONTENT
UNIT 1	Bases of Remote Sensing: Definition and historical development, Interaction of Electro-Magnetic Radiation (EMR) with atmosphere and earth surface, Satellite and Sensors, Concept of Resolution
UNIT 2	Aerial Photographs and Photogrammetry: Types of Aerial photos, Fundamentals of air photographs 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

Suggestive Readings

1. Barret, E.C. and Curtis, L.F. (1976): Introduction to Environmental Remote Sensing, John Wiley and Sons, New York.
1. Camphell, J.B. (1983): Mapping the land, American Association of Geographers, Reprint in India, Scientific Publisher, Jodhpur.
2. Cromley, R. G. (1992). Digital cartography (p. 43). Englewood Cliffs: Prentice Hall.
3. Kathuria C.D.: Remote Sensing and Geographical Information System
4. Luder, D. (1959): Aerial Photography Interpretation: Principles and Applications, Mc Graw Hill, New York
5. Markandey K: Urban Environment and Geoinformatics
6. Nag P: Introduction to Geographical Information System.
7. Ramaswamy SM: Remote Sensing in Water Resources
8. Sabins Flyed, F. (1978): Remote Sensing: Principles and Interpretation, San Francisco, WH France

GEO-CC-3220: GEOGRAPHIC THOUGHT

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

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

Programmes Outcome:

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

1. Understand the geographical thinking in different regions of world
2. Distinguish paradigms and post modern 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 Post modernism

Suggestive Readings

1. Bunge, W. (1966): Theoritical Geography, Lund University, Series C
2. Dubey, B. (1967): Geographical Concept in Ancient India – NGSI, Varanasi
3. Dickinson, R.G. (1969): The Makers of Modern Geography, Routledege Kegan Paul, London
4. Harthshorne, R. (1939): The Nature of Geography, Association American Geography, O. Loncester
5. Hussain, M: Evolution of Geographical Thought, Rawat Publication, Jaipur
6. Misra, R.P. (1983 ed.): Contributions to Indian Geography Concepts and Approaches, Heritage Publication, New Delhi.
7. Taylor, G (1953 ed.): Geography in the 20th Century, Methuen, London
8. Tripathi, M.P: Development of Geographic Knowledge in Ancient India, Bharatiya Vidya Prakashan, Varanasi.
9. Wooldrige, S.W. (1960): Geographer as a Scientist, London

GEO-CC-3230: SETTLEMENT GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

1. To acquaint the students about the rural and urban settlement.
2. To understand theories, models and approaches

Programmes Outcomes:

After the completion of course, the students will have 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 centre 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 centres, functions, population, transport and market
UNIT 4	Urban hierarchy: Urbanization and conurbation; Rural urban fringe and Umland, Rural-urban linkages in context of metropolitan system in India, Urban problems and urban slum, Urban planning and Smart City Project of India

Suggestive Readings

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

GEO-CC-3240: GEOGRAPHICAL ANALYSIS (Practical 3)

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

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

Programmes Outcomes:

After the completion of course, the students will have 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: Forests Monitoring, Water Resources and Natural hazards
UNIT 3	Image Processing (Digital and Manual): Pre-processing (Radiometric and Geometric Correction); Enhancement (Filtering); Classification (Supervised and Un-supervised)
UNIT 4	GIS Data Analysis: Georeferencing of maps and images (coordinate & feature based) and Mosaicing, PCA and Band rationing (NDVI, NDWI)

Suggestive 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): *SudurSamvedanevam 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, Dilip, Singh, R.B. and Kaur, Ranjeet (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.

GEO-MC-3110: REMOTE SENSING AND GIS

Credit 4- (Credit Hours in a week: Lecture-4)

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

Programmes Objectives:

1. This course shall introduce the basic concepts of remote sensing and GIS

2. This paper shall elucidate about aerial photography, its basic principles and types, satellite remote sensing.

Programmes 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. To gain knowledge on aerial photographs, satellite data and its uses.

UNIT	COURSE CONTENT
UNIT 1	Bases of Remote Sensing: Definition and historical development, Interaction of Electro-Magnetic Radiation (EMR) with atmosphere and earth surface, Satellite and Sensors, Concept of Resolution
UNIT 2	Aerial Photographs and Photogrammetry: Types of Aerial photos, Fundamentals of air photographs 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

Suggestive Readings

1. Barret, E.C. and Curtis, L.F. (1976): Introduction to Environmental Remote Sensing, John Wiley and Sons, New York.
1. Camphell, J.B. (1983): Mapping the land, American Association of Geographers, Reprint in India, Scientific Publisher, Jodhpur.
2. Cromley, R. G. (1992). Digital cartography (p. 43). Englewood Cliffs: Prentice Hall.
3. Kathuria C.D.: Remote Sensing and Geographical Information System
4. Luder, D. (1959): Aerial Photography Interpretation: Principles and Applications, Mc Graw Hill, New York
5. Markandey K: Urban Environment and Geoinformatics
6. Nag P: Introduction to Geographical Information System.
7. Ramaswamy SM: Remote Sensing in Water Resources
8. Sabins Flyed, F. (1978): Remote Sensing: Principles and Interpretation, San Francisco, WH France

7TH SEMESTER

Students have to opt any 4 papers from major paper

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-4110	Mountain Geography	20	80	100	4:0:0	4	60
GEO-CC-4120	Biogeography	20	80	100	-	4	60
GEO-CC-4130	Social Geography	20	80	100	-	4	60
GEO-CC-4140	Urban Geography	20	80	100	-	4	60
GEO-CC-4150	Advanced Geomorphology	20	80	100	-	4	60
GEO-CC-4160	Soil Geography	20	80	100	-	4	60
GEO-MC-4110	Research Methodology	20	80	100	-	4	60
					Total Credit	**20**	**-**

Semester 7

GEO-CC-4110: MOUNTAIN GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Outcome-

This paper will have an understanding on the distribution of world mountain system- its geology, topography, climate and soil. The paper also highlights the altitudinal and bioclimatic belts of the world mountains with reference to the Andes, Alps, ROckies and Himalayas. The paper also covers the human adaptibilty in different mountainous area and how fragile the mountain regions are.

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

Suggested Readings:

1. A.S Rawat : Alternative Farming system in Dry Temperate Zone of Himachal: Study of Kinnaur District, Indus publishing.
2. Harish Kapadia : Across Peaks and Passes in Darjeeling & Sikim, , Indus publishing
3. Prem Singh Jina Ladakh : Land and people, Indus publishing .
4. H.C Pokhriyal : Agrarian Economy of Central Himalaya, Indus publishing .
5. P.N Pande : Drudgery of the Hill Women, Indus publishing company.
6. Vir Singh & M.L Sharma (Eds): Mountain Ecosystem: A scenario of Unsustainability, Indus publishing .

B.D Sharma & Tej Kumari Sharma (Eds

GEO-CC-4120: BIOGEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Outcome-

Students can learn the scope and significance of biogeography. Also know, factors affecting the growth and distribution of natural vegetation. They also gather knowledge about biome, ecotone and community, types and component parts of ecosystem, bio-energy cycle, food chain and trophic level. This can help them to predict the future change of biogeographical components.

Unit	Outline
UNIT 1	Concept of Biogeography: 1. Concepts, Scope and development 2. Biogeography and related sciences 3. Habitat (Aquatic and Terrestrial) 4. Biodiversity and Hotspots with reference to Eastern Himalayas
UNIT 2	Phytogeography: 1. Factors determining plant growth and distribution 2. Plant community and its vertical stratification 3. Phytogeographic regions of the world 4. Plant succession (Glacial, floodplain and agricultural land)
UNIT 3	Zoogeography: 1. Animal community and its vertical stratification 2. Geographical factors determining growth and distribution of Animals 3. Zoogeographic regions of the world & India 4. Endemic fauna of North East India
UNIT 4	Conservation of Plants and Animals: 1. Conservation (*in-situ* and *ex-situ*) 2. National Forest Policies: Forest Policy of India 1952 & 1988, Wild Life Protection Act, 1972 and Biodiversity Act, 2002 3 Conservation organizations: IUCN and WWF 5. Traditional Ecological Knowledge (TEK)

Suggested Readings:

1. Agarwal, D. P. (1992): Man and Environment in India through Ages, Books and Books
2. Andrew Millington: The Sage Handbook of Biogeography, Sage Publications
3. Bradshaw, M. J. (1979): Earth and Living Planet, ELBS, London.
4. Hugget, R. J. (1998): Fundamentals of Biogeography, Routledge, USA.
5. Illies, J. (1974): Introductory to Zoogeography, McMillan, London.
6. Pears, N. (1985): Basic Biogeography, 2nd Edn, Longman, London.
7. Abdurakhmanov, G. M., Myalo, E. G., Ogureeva, G. N. (2014). Biogeography. Textbook for students. Moscow, Academy. pp. 448.
8. Brown, J. H. and Gibson, A.C. (1983). Biogeography. St. Louis: Mosby.
9. Myers, A. A. and Giller, P. S. (1989). Analytical Biogeography: An Integrated Approach to the Study of Animal and Plant Distributions. London: Chapman and Hall.
10. Cox, C. B., Ladle, R. and Moorem, P. D. (2016). Biogeography: An Ecological and Evolutionary Approach. John Wiley & Sons.
11. Gavin, D. G. (2012). Biogeography. in J. P. Stoltman, eds. 21st Century Geography: A Reference Handbook. SAGE Publications, Thousand Oaks, CA. Pages 77-89.
12. Lomolino, M. V., Riddle, B. R., Brown, J. H. and Whittaker, R. J. (2010). Biogeography. Fourth Edition. Sinauer Associates, Sunderland, MA.

GEO-CC-4130: SOCIAL GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Outcome-

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

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

Suggested Readings:

1. Ahmad, Aijazuddin, Social Geography, Rawat Publication, New Delhi, 1999.
2. De Blij. H.D. Human Geography. John Wiley and son, New York.
3. Dreze Jean, Amartya Sen, Economic Development and Social opportunity, Oxford University Press, New Delhi, 1996.
4. Dubey. S.C : Indian Society, National Book Trust, New Delhi, 1991.
5. Gregory, D and J. Larry, (eds.). Social relations and spatial structures, McMillan, 1985.
6. Haq. Mahbubul: Reflections on Human Development, Oxford University Press, New Delhi.
7. Maloney, Clarence: People of South Asia, Winston, New York, 1974. .
8. Planning Commission, Government of India; Report on development of Tribal areas, 1981.
9. Rao, M.S.A.: Urban Sociology in India. Orient longman, 1970.
10. Schwartzberg Joseph; An Historical Atlas of South Asia, University of Chicago Press, Chicago, 1978.
11. Sen, Amartya & Dreze Jean, Indian Development: Selected Regional Perspectives, Oxford University Press, 1996.
12. Smith, David: Geography: A Welfare Approach, Edward Arnold, London, 1977.
13. Sopher, David.: An Exploration of India, Cornell University Press, 1980.

GEO-CC-4140: URBAN GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objective:

The objective of this course is to provide students with a comprehensive understanding of the spatial organization and evolution of cities. Students will learn about urban development, land use, urban social issues, and the impacts of urbanization on the environment.

Programmes Outcome:

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

Understand Key Concepts: Understand and explain key concepts in urban geography such as urbanization, gentrification, and urban sprawl.

Analyze Urban Development: Analyze the factors influencing urban development and land use patterns.

Apply Theoretical Knowledge: Apply theoretical knowledge to real-world urban issues and phenomena.

Critical Thinking: Develop critical thinking skills to evaluate urban planning strategies and policies.

Communication Skills: Effectively communicate urban geographical information and arguments in written and oral forms.

UNIT	COURSE CONTENT
UNIT 1	**Basic Concept and Approaches** Concept of Urban Area, Urban Environment and Smart City; Approaches of Urban Studies; Approaches to the study of Urban Environment.
UNIT 2	**Emerging Issues and Research Trends** Trends and Patterns of Urbanization in India: Post Independence Period; Functional Classification of Towns; Urban Problems and Environmental Degradation in India; Micro Climate of Cities; Urban Pollution (Air, Water and Noise) and Health Impacts; Urban Social Space and Urban crime.
UNIT 3	. **Urban and Environmental Planning** Techniques of Town Planning: Delhi or Chandigarh; Urban Transport Planning; Basis of EIA ; Concept of Urban Sustainability and Urban Environmental Conservation Strategies: International and National Conventions; Urban Governance Programmes in India; Implications of 74th CAA on urban governance; Future governance structure PPP.
UNIT 4	**Research Methodology** Models for Internal Structure, Hierarchy and Spacing of Cities; Urban Sprawl; Urban Poverty and Slums; Use of Remote Sensing Data for Urban Land uses and Change Detection; GPS and GIS for Urban Mapping; Socio-economic and Environmental Surveys for Urban Themes.

Suggested Readings:

1. Dutt, Ashok et. al. 1994. The Asian Cities: Processes of Development, Characteristics and Planning. GeoJournal Library, London.
2. Fyfe, Nicholas R. and Kenny, Judith T. (eds.) 2005. *The Urban Geography Reader*. Routledge, London.
3. Gallien, A. B. and S. Eisner 1963. Urban Pattern, New York.
4. HUDCO-HSMI. 2001. The States of Indian Cities, HUDCO HSMI, New Delhi.
5. Jha, R. and Nasreen Siddiqui 2000. Towards People Friendly Cities ,UNICEF Maharashtra State Office, Mumbai.
6. Knox, Paul and Pinch, Steven 2006. *Urban Social Geography*. Pearson Prentice-Hall, Englewood Cliffs NJ. 5th Ed.
7. Kumar, B. and R. B. Singh 2003. Urban Development and Anthropogenic Climatic Change. Manak Publications, New Delhi.
8. Kundu, A. 2005. Urban Development and Urban Research in India, Khama Publishers, New Delhi.
9. Mathur, M. P. 2007. Norms and Standards of Municipal Basic Services in India, National Institute of Urban Affairs, New Delhi available on www.niua.org accessed on 1st June 2010.
10. Pacione, Michael 2005. *Urban Geography: A Global Perspective*. 2nd ed. Routledge, London.
11. Prakasa Rao, V. L. S. 1983. Urbanisation in India: Spatial Dimensions, Concept, New Delhi.
12. Misra. R.P. and Misra, K. (eds.) 1998. Million Cities of India Vol.I/II Sustainable Foundation, New Delhi. 30
13. Ramachandran, R. 1989. Urbanisation and Urban System in India, Oxford University Press, New Delhi.
14. Singh, R.L. 1955. Bananas: A Study in Urban Geography, Nand Kishor and Brothers, Bananas.
15. Sivaramakrishnan, K. C. et al. 2005. A Hand Book of Urbanisation in India, Oxford University Press, New Delhi.
16. UNCHS-UN HABITAT 2001. Cities in a Globalising World. Global Report on Human Settlement, Earthscan, London and Sterling, VA.
17. UN-HABITAT 2003. Water and Sanitation in World Cities: Local Action for Global Goals, Earthscan London.
18. Vaidya, Chetan 2009. Urban Issues, Reforms and Way Forward in India working paper No. 4/2009-DEA available on www.niua.org accessed on 1st June 2010.

GEO-CC-4150: ADVANCED GEOMORPHOLOGY

Credit 4- (Credit Hours in a week: Lecture-4)

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

Programme Objective:

The objective of this programme is to provide students with a comprehensive understanding of fluvial dynamics, climate change and its impact on geomorphology, terrain analytical processes and mapping, and geomorphological hazards and mitigation strategies. The course aims to equip students with the knowledge and skills necessary to analyze and interpret sediment production, transport, and storage in rivers, types of channel adjustments, Rosgen's stream classification, drivers of climate change, watershed and springshed, predictor and process relations, topography and attributes, DEM based terrain analytical techniques, geomorphological mapping, natural disasters and geomorphology, vulnerability and disasters, and risk management and mitigation.

Programme Outcomes:

Upon successful completion of this programme, students should be able to:

Understand Fluvial Dynamics and Changes in Plan Form: Students will be able to understand sediment production, transport, and storage in rivers, types of channel adjustments, and Rosgen's stream classification. Analyze Climate Change and Geomorphology: Students will be able to understand the drivers of climate change, watershed and springshed, and predictor and process relations. Apply Terrain Analytical Processes and Mapping: Students will be able to understand and apply topography and attributes, DEM based terrain analytical techniques, and geomorphological mapping. Understand and Apply Geomorphological Hazards and Mitigation Strategies: Students will be able to understand natural disasters and geomorphology, vulnerability and disasters, and risk management and mitigation.

UNIT	OUTLINE
I	Fluvial dynamics and changes in plan form 1. Sediment Production, Transport, and Storage in the Working River 2. Types of Channel Adjustments in the Working River 3. Rosgen's stream Classification
II	Climate Change and geomorphology 1. Drivers of climate change 2. Watershed and springshed 3. Predictor and process relations
III	Terrain analytical processes and Mapping 1. Topography and attributes 2. DEM Based terrain analytical techniques 3. Geomorphological mapping
IV	Geomorphological hazards and mitigation strategies 1. Natural disasters and geomorphology 2. Geomorphology, Vulnerability and disasters 3. Risk management and mitigation

Suggested Reading:

1. "Fundamentals of Fluvial Geomorphology" by Ro Charlton "Fluvial processes and landforms" by Robert I. Ferguson, John Lewin, Richard J. Hardy
2. "Fluvial Forms and Processes: A New Perspective" by David Knighton
3. "Geomorphological hazards and global climate change" by Andrew S. Goudie
4. "Geomorphology and Global Environmental Change" by Olav Slaymaker, Thomas Spencer, and Simon Dadson
5. "Geomorphology and Global Environmental Change" by Cambridge University Press

6. “Terrain Analysis: Principles and Applications” by John P. Wilson, John C. Gallant
7. “Digital Terrain Analysis in a GIS Environment. Concepts and Development” by Gyozo Jordan
8. “An Integrated System of Terrain Analysis and Slope Mapping”
9. “Terrain Analysis: Principles and Applications” by Wiley
10. “Geomorphological Hazards and Disaster Prevention” by Irasema Alcántara-Ayala, Andrew S. Goudie
11. “Geomorphological hazards and sustainable development” by David Higgitt
12. “Geomorphology and Natural Hazards: Understanding Landscape Change for Disaster Mitigation” by Wiley

GEO-CC-4160: SOIL GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objective:

1. To understand the basic concept of soil and its relationship with other allied science
2. To understand soil classification, erosion and its conservation strategies

Programmes Outcome:

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

1. Understand and appreciate the nature of soil, its physical and chemical composition
2. Understand different ways of soil erosion and its conservation strategies.

UNIT	COURSE CONTENT
UNIT 1	Nature, Scope and Relationship with other Sciences, Factors and Processes of Soil formation
UNIT 2	Physical Composition: Structure, Texture, Colour and Pore space, Chemical Composition: pH, Organic matter and Clay minerals
UNIT 3	USDA Soil Classification, Land Capability / Suitability classification: FAO.
UNIT 4	Soil Erosion: Processes, mechanism and types, Soil Conservation: Methods and Techniques

Suggested Readings:

1. Backman, H.O and Brady, N.C. 1960: The Nature and Properties of Soils, Mc Millan New York,
2. Bennet, Hugh H.: 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, New York,
6. Govinda Rajan, S.V. and Gopala Rao, H.G. 1978: Studies on Soils of India Vikas, New Delhi,
7. Mc. Bride, M.B. 1999: Environmental Chemistry of Soils, Oxford University Press, New York.
8. Nye, P.H. and Greene, D.J. 1960: The Soil under Shifting Cultivation Commonwealth Bureau of Soil Science, Technical Communication, No. 51; Harpender, England,
9. Raychoudhuri, S.P. 1958: Soils of India, ICAR, New Delhi,
10. Russell, Sir Edward J. 1961: Soil Conditions and Plant Growth, Wiley, New York,

GEO-MC-4110: RESEARCH METHODOLOGY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes objective: Research Methodology covering the areas such as quantitative methods, computer applications, review of published research in the relevant field, training, field work etc.

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

Suggestive Readings:

1. Corey, Stephen M. : Action Research to improve School Practice, New York, Bureau of Publication, Columbia University.
2. Beard, R. Bligh D. Harding, A (1978) Research into Teaching Methods in Higher
3. Education, Guildford : Society for Research into higher Education.
4. Mackenzie, N. Eraut, M, Jones H. (1975) Teaching and Learning: An introduction to New Methods and Resource in Higher education, Paris : UNESCO and International Association of Universities.
5. Siegal, S. (1956) Non-Parametric Statistics for the Behavioral Science, New York: McGraw Hill.

Tuckman, B.W. (1978) Conducting Educational Research, New York: Harcount Brace Jovanovich, Inc.

8TH SEMESTER

(UG WITH HONOURS)
WITHOUT RESEARCH

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T: P		
GEO-CC-4210	Advanced Research Methods	20	80	100	4:0:0	4	60
GEO-DE-4210	Cultural Geography	20	80	100	-	4	60
GEO-DE-4220	Population Geography	20	80	100	-	4	60
GEO-DE-4230	Geography of Health and Wellbeing	20	80	100	-	4	60
GEO-MC-4210	Research Methodology/MOOCs	20	80	100	-	4	-
					Total Credit	**20**	**-**

SEMESTER 8

GEO-CC-4210: ADVANCED RESEARCH METHODS

Credit: 4; Lecture: 3 Hrs per week; Tutorial: 1 Hr per week; Contact Hours: 60;
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objective:

The objective of this course is to provide students with an in-depth understanding of advanced research methodologies. Students will learn about various research designs, data collection methods, and statistical analysis techniques. They will also gain hands-on experience in conducting research.

Programmes Outcome:

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

Understand Advanced Research Methods: Understand and explain various advanced research methods, including both qualitative and quantitative approaches.

Design Research Studies: Design research studies using appropriate methodologies, considering factors such as the research question, population, and resources.

Collect and Analyze Data: Collect data using advanced techniques and analyze data using appropriate statistical methods.

Interpret Results: Interpret the results of statistical analyses and draw valid conclusions.

UNIT	COURSE CONTENT
UNIT 1	Geographical Research Nature and Purpose Scientific Approach to Psychological Researches. Types of research- Descriptive, Exploratory and Causal Research; Ethical Issues
UNIT 2	Geographical Research Process Formulation of Research Problem and Hypothesis. Choosing Research Design. Identifying Variables; Control of Extraneous Variables Sampling Design and Data Collection. Data Analysis and Interpretation; Reporting Research Results & Referencing (APA Style).
UNIT 3	Research Tools for Data Acquisition Observation Interview, Questionnaires and Tests.
UNIT 4	Research Designs Experimental Research Designs - Randomized Groups, Matched Groups. Factorial Designs- between and Within Group Designs; A-priory and Post-hoc Comparisons. Non-experimental Research Designs: Correlational, Quasiexperimental and Ex-post-facto Designs. Single Subject Design; Longitudinal and Cross-sectional Designs.

Suggestive Readings:

- "Key Methods in Geography" by Nicholas Clifford, Meghan Cope, and Thomas Gillespie
- "The SAGE Handbook of Geographical Knowledge" by John A Agnew and David N Livingstone
- "Research Methodology: Best Practices for Rigorous, Credible, and Impactful Research" by Herman Aguinis
- "Research Methodology: A Step-by-Step Guide for Beginners" by Ranjit Kumar
- "Data Acquisition" edited by Michele Vadursi
- "Data Acquisition and Signal Conditioning" by Brian D. Hahn and Daniel T. Valentine
- "Quantitative Research with Nonexperimental Designs" by Janet Salmons
- "Experimental and Non experimental Designs in Social Psychology" by Abraham S. Ross
- "The Craft of Research (Chicago Guides to Writing, Editing, and Publishing)" recommended by Campus Career Club
- "Understanding Research Methods: An Overview of the Essentials
- "The Basics of Social Research"

GEO-DE-4210: CULTURAL GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Outcome-
They can define the cultural region of the world. Analysis the social-cultural set-up in Indian villages

Unit	Outline
UNIT 1	Introduction: 1. Definition and development of cultural geography. 2. Themes and concepts in cultural geography a. cultural history b. cultural landscape and cultural ecology c. cultural diffusion d. cultural integration.
UNIT 2	Evolution and growth of Cultural groups: 1. Evolution and Growth of Cultural Groups 2. Identity formation: role of Race, language, religion and ethnicity 3. Spatial distribution towards beginning of Cultural Practices, and, 4. Patterns of world cultural regions
UNIT 3	Cultural changes: 1. Various economic activities & cultural adaptations 2. Agriculture, industrialization and development 3. Impact of Globalization and Cultural continuity 4. Concept of Modernization Transformations and Changes.
UNIT 4	Bases of Cultural Diversity in India: 1. Origin, and Spatial distribution of Race, Language and Religion 2. Geographical factors as bases of Cultural diversity 3. Factors in formation of areas of attraction, isolation and nucleation in integration of India 4. Cultural regions of India

Suggested Readings:

1. Basham, A.L. The Wonder that was India, Picador, India,
2. Broek, J.C. and Webb, J.W: A Geography of Mankind, McGraw Hill, New York, 1978.
3. Crang, Mike: Cultural Geography, Routledge publicatins, London,1998.
4. Harmandorf, Tribes of India: The Struggle for Survival, Oxford University Press, Delhi,1989.
5. Hazra, (ed.), Dimensions in Human Geography, Rawat Publication, Jaipur, 1997.
6. Hutchinson, and Smith, D: Ethnicity; Oxford University press, Oxford,1996.
7. Jordon, & Lester G: The Human Mosaic, Harpar& Row, New York; 1979.
8. Kosambi, D.D. 1992, The Culture and Civilization of Ancient India in Historical Outline, Vikash Publishing, New Delhi
9. Massey, D & Jess P. A Place in the World: Places, Cultures and Globalization Oxford University, New York, 1995.
10. Massey, et.al (ed), Human Geography Today, Polity Press, Combridge, 1999.
11. Mukherjee, A.B. and Aijazuddin, A: India: Culture, society and Economy, Inter-India Publication, New Delhi, 1985.
12. Steve.P&Michael.K (ed): Places and the Politics of Identify, Routledge, London, 1993.
13. Schwartzberg, J.E: Historical Atlas of South Asia, University of Chicago, 1978.

GEO-DE-4220: POPULATION GEOGRAPHY

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Outcome-

Gain knowledge different aspects of population geography. Evaluate the population growth theory and migration theories

Unit	Outline
UNIT 1	Field of Population Geography: 1. Nature, Scope and Approaches 2. Relationship with Demography and other social sciences 3. Types and Sources of data 4. Population – Resources Relationship
UNIT 2	Population Growth and Distribution: 1. Population growth trend and distribution 2. Determinants of Population Change: fertility, mortality and migration 3. Population growth and associated issues in Developed and Developing Countries. 4. Depopulation, displacement.
UNIT 3	Population Theories: 1. Malthus 2. Marx 3. Boserup 4. Demographic Transition Model
UNIT 4	Population Composition: 1. Age and Sex composition 2. Occupational structure 3. Rural – Urban Composition 4. Concept of Ageing

Suggested Readings:

1. Boserup, E. (1965): The conditions of Agricultural Growth, G. Allen and Unwin, London
2. Bhendea, A and Kanitkar, T. (1985): Principles of Population Studies, Himalayan Publishing House, Mumbai.
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, Mc Graw Hill, New York.
6. Dubey, R. M. (1981): Population Dynamics in India, Chugh Publications, Allahabad.
7. Mandal, R. B., Uyanga, J and Prasad, H. (1989): Introductory Methods in Population Analysis, Concept Publishing, New Delhi.
8. Sundaram, K. V. and Nangia, S. (1985): Population Geography, Heritage, New Delhi.
9. Samuel H. Preston (2000). Demography: Measuring and modeling population processes, Willey – Blackwell.
10. Thomas Robert Malthus and Geoffrey Gilbert (1999). An Essay on the principles of Population, Oxford University Press, USA.

GEO-DE-4230: GEOGRAPHY OF HEALTH AND WELLBEING

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objectives:

The objective of this course is to provide students with a comprehensive understanding of the geographical aspects of health and well-being. Students will learn about the spatial distribution of health outcomes, the role of environmental factors in health, and the impact of health policies on different regions.

Programmes Outcomes:

Understand Key Concepts: Understand and explain key concepts in the geography of health and well-being, such as health disparities, environmental health, and health care accessibility.

Analyze Health Outcomes: Analyze the spatial distribution of health outcomes and identify patterns and trends.

Evaluate Health Policies: Evaluate the impact of health policies on different regions and populations.

Apply Theoretical Knowledge: Apply theoretical knowledge to real-world health issues and phenomena.

Critical Thinking: Develop critical thinking skills to evaluate health information and arguments.

UNIT	COURSE CONTENT
UNIT 1	Definition and concept of Medical Geography, Climate and Health (micro climatic realities, development and health) Topography and Health Geographical distribution of major diseases in India (communicable and non-communicable) Epidemics and Pandemics with special reference to COVID-19
UNIT 2	Health Care Delivery Systems: Impact of Geographical factors in Health Delivery Systems , Structure of health care services in India , Health inequality Problem of access and utilisation Investment in Health Public and Private Initiatives in health-care provisions Health Policy in Pre-independence & Post Independence India
UNIT 3	**Drivers of Health Disorders** Poverty, Hunger, Food Insecurity Population: Crowding, Congestion, Age and Sex Structure; Literacy and educational levels; Social and Economic Security; Hygiene; Basic Facilities and Amenities.
UNIT 4	**Measurement of Health and Health Disorders** Poverty and Hunger; Hunger Index, SNU and ICMR scale of nutrition, Morbidity, Mortality, BMI, WBI, HDI; Health GIS; Disease Mapping; Geo-statistical methods of Health issues.

Suggested Readings:

1. Bonita, R., Beaglehole, R., Kjellstrom, T. (2006) Basic epidemiology*(link is external), 2nd Ed. World Health Organization (WHO), Geneva, Switzerland. Pp 219*

2. Choudhary, B.K., Tuberculosis in India: A Political Ecology Approach, VDM Verlag, 2008

3. Clark, M., Riben, P. & Nowgesic, E., The association of housing density, isolation and tuberculosis in Canadian First Nations communities, International journal of epidemiology, vol. 31, no. 5, pp. 940-936. 2002

4. Cohen, M.L., Changing patterns of infectious disease, Nature, vol. 406, no. 6797, pp. 762-767. 2000

5. Cromley, E.K. & McLafferty, S.L. (2012) GIS and Public health*. 2nd Edition. Guilford Press. New York. pp 503. ISBN 978-1-60918-750-7. Available from the vendor of your choice or from Amazon.com* - GIS and Public Health*(link is external)*

. (This textbook will also be readily available through the Penn State Libraries E-Book program at no cost to the student. Students do not need to purchase a physical copy of the book.)

6. Elliott, P., Wakefield, J., Best, N., and D. Briggs, Spatial Epidemiology: Methods and Applications, Oxford University Press, 2000

7. Eyles, J. & Litva, A., Coming out: exposing theory in medical geography, Health and Place, vol. 1, pp. 5–14. 1993

8. Farmer, Paul. Infections and Inequalities: the Modern Plagues. Berkeley: University of California Press. 1999

9. Kalipeni, E., Craddock, S., Oppong, J.R., Ghosh, J., ed), HIV and AIDS in Africa: Beyond Epideminology, Blackwell Publishing Ltd, Oxford, 2004,

GEO-MC-4210: RESEARCH METHODOLOGY / MOOCs

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Objective: Research Methodology covering the areas such as quantitative methods, computer applications, review of published research in the relevant field, training, field work etc.

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

Suggestive Readings:

1. Corey, Stephen M. : Action Research to improve School Practice, New York, Bureau of Publication, Columbia University.
2. Beard, R. Bligh D. Harding, A (1978) Research into Teaching Methods in Higher
3. Education, Guildford : Society for Research into higher Education.
4. Mackenzie, N. Eraut, M, Jones H. (1975) Teaching and Learning: An introduction to New Methods and Resource in Higher education, Paris : UNESCO and International Association of Universities.
5. Siegal, S. (1956) Non-Parametric Statistics for the Behavioral Science, New York: McGraw Hill.

Tuckman, B.W. (1978) Conducting Educational Research, New York: Harcount Brace Jovanovich, Inc.

8 SEMESTER

(UG DEGREE)

(HONOURS WITH RESEARCH)

Paper Code	Title	Maximum Marks			Credit Distribution	Total Credits	Contact Hours
		Internal Marks	External Marks	Total	L: T:P		
GEO-CC-4210	Geographical Field Work 2	20	80	100	4:0:0	4	60
GEO-CC-4220	UG Research Project (Dissertation)	20	80	100	0:0:12	12	360
GEO-MC-4210	Research and Publication Ethics	20	80	100	4:0:0	4	60
					Total Credit	**20**	

SEMESTER 8

GEO-CC-4210 GEOGRAPHICAL FIELD WORK -2

Credit 4- (Credit Hours in a week: Lecture-4)
Marks: 100 (End term examination=80 and internal examination-20)

Programmes Description: This course provides students with hands-on experience in geographical fieldwork. Students will learn to apply geographical theories and methodologies in real-world settings.

Field Trips: Several field trips will be organized to provide students with practical experience in conducting geographical field studies. Locations, dates, and other details will be announced in class.

UNIT	COURSE CONTENT
UNIT 1	Introduction to Field Study Understanding the importance of field studies in geography Overview of field study methods and techniques Ethical considerations in field research
UNIT 2	Planning for Field Study Identifying research questions and objectives Selecting appropriate field study sites Preparing for fieldwork: logistics, equipment, and safety considerations
UNIT 3	Data Collection in the Field Techniques for geographical observation Conducting interviews and surveys in the field Use of geographical tools and technologies for data collection (e.g., GPS, GIS, remote sensing)
UNIT 4	Data Analysis and Interpretation Processing and analyzing field data Making sense of geographical patterns and relationships Use of statistical tools in geographical analysis

GEO-CC-4220 UG RESEARCH PROJECT (DISSERTATION)

Credit 12 Practical: 30 Hrs per week; Contact Hours: 360; Full Marks: 100

Background

Students who will secure 75% marks and above in the first six semesters and wish to undertake research at the undergraduate level can choose a research stream in the fourth year. They will do a research project or dissertation under the guidance of a faculty member of the Department of Geography. The research project/dissertation will be in the major discipline. The students, who secure 160 credits, including 12 credits from a research project/dissertation, will be awarded UG Degree (Honours with Research).

Objective of the Programmes:

The students will be taught how to write a project report/dissertation.

Programmes Outcomes:

The students will learn to write a project report/ dissertation, after duly, following all the steps in research methodology, which are taught in the course related to Research Methods in Geography.

Each student will have to prepare a dissertation under the guidance of respective teacher as per the respective optional papers following appropriate methodology, literature review, objectives, Hypothesis/ Research questions, data base and methodology..

1. The project work/dissertation will be on a topic in the disciplinary programme of study or an interdisciplinary topic.

2. The students are expected to complete the Research Project in the eighth semester. The research outcomes of their project work may be published in peer-reviewed journals or may be presented in conferences /seminars or may be patented.

3. Students may be permitted to carry out a research project or dissertation in another department of RGU or another institution provided the required facilities are available.

GEO-MC-4210 RESEARCH PUBLICATION AND ETHICS

Credit 4- (Credit Hours in a week: Lecture-4)

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

Programmes Objective:

The objective of this course is to provide students with a comprehensive understanding of research methodologies and the ethical considerations involved in conducting research. Students will learn about various research designs, data collection methods, and ethical guidelines in research.

Programmes Outcome:

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

Understand Research Methods: Understand and explain various research methods, including both qualitative and quantitative approaches.

Design Ethical Research Studies: Design research studies considering ethical guidelines and principles, such as informed consent, confidentiality, and avoidance of harm.

Apply Ethical Guidelines: Apply ethical guidelines in all stages of the research process, from data collection to reporting results.

Critical Thinking: Develop critical thinking skills to evaluate the ethical implications of research studies.

UNIT	COURSE CONTENT
UNIT 1	**Philosophy and Ethics** Introduction to philosophy: Definition, nature and scope, concept branches: Ethics: Definition, moral philosophy, nature of moral judgements and reactions.
UNIT 2	Scientific Conduct Ethics with respect to Science and Research, Intellectual honesty and Research integrity; Scientific misconducts Falsification, Fabrication and Plagiarism (FFP), Redundant publications:duplicate and overlapping publications, salami slicing; Selective reporting and misrepresentation of data.
UNIT 3	Publication Ethics Publication ethics: definition, introduction and importance; Best practices / standards setting initiatives and guidelines: COPE, WAME, etc;
UNIT 4	Conflicts of interest, publication misconduct: definition, concept,, problems that lead to unethical behaviour and vice-versa, types; Violation of Identification of Publication misconduct, complaints and appeals; predatory Publishers and journals.

Suggestive Readings:

1. Bird, A. (2006) Philosophy of Science Routledge

2. Macintrye, Alasdair (1967) A sport Histroy of Ethics London

3. P. Chaddah, (2018) Ethics in Competitive Research : do not get scooped ; do not get plagiarized, ISBN: 9789387480865

4. National Academy of Sciences, National Academy of Engineering and Institute of Medicine (2009). On being a Scientist: A Guide to Responsible conduct in Research third Edition, National Academies Press.

5. Resnik, d. B. (2011) what is Ethics in research & why is it important. National institute of Environmental Health Sciences, 1-10. Retrieved from https://wwwniehs.nih.gov/research/resources/bioethics/whatis/index.cfm

6. Geall, J. (2012) Predatory publishers are corrupting open access. Nature, 489 (7415), 179-179 https:??doi.org/10.1038/489179a
7. Indian National Science Academy (INSA), Ethics in Science Education, Research and Governance (2019), ISBN: 978-81-939482-1-7

http>://www.insaindia.res.in/pdf/Ethics Book. Pdf.