

**CURRICULUM FOR
FOUR YEARS UNDERGRADUATE PROGRAMME
(FYUGP)
BASED ON NEP-2020
DEPARTMENT OF GEOGRAPHY**



**BODOLAND UNIVERSITY, KOKRAJHAR
Rangalikhata, 783370**

Curriculum structure for Four Years Undergraduate Programme (FYUGP) based on NEP-2020
Department of Geography, Bodoland University, Kokrajhar

Semester	Major Course (4 credit)	Minor Course (4 credit)	IDC (3 credit)	AEC (2 credit)	SEC (3 credit)	VAC (4 credit)	Summer Internship	ADL/ Dissertation	Total credit
SEMI	GEOMAJ101-4 Basics of Geography	GEOMIN101-4 Physical Geography (Part I)	GEOIDC101-3 Introduction to Geography	AEC101-2	GEOSEC101-3 Map making & analysis	GEOVAC101-4 Geography of Environment & Sustainability Practical or NCC/NSS: NCC/NSS activity should incorporate exercises for Environment sustainability			20
SEMI	GEOMAJ102-4 Domains of Geography	GEOMIN102-4 Physical Geography (Part II)	GEOIDC102-3 Environmental Geography	AEC102-2	GEOSEC102A-3 Quantitative techniques for spatial analysis (Option-A) Or GEOSEC102B-3 Basics of Remote sensing and GIS (Option-B)	GEOVAC102-4 Cultural Geography Practical or NCC/NSS: NCC/NSS activity should incorporate exercises related to restoration of culture			20
Exit with a Certificate (40 credits and Internship of 4 credit)									

SEMIII	GEOMAJ201-4 Basics of Cartography	GEOMIN201-4 Fundamentals of Cartography	GEOIDC201-3 Natural Hazards and Disaster Management	AEC201-2	GEOSEC201-3 Geography of Assam Tourism				20
	GEOMAJ202-4 Climatology & Oceanography								
SEMIV	GEOMAJ203-4 Evolution of Geographical Thought	GEOMI202-4 Economic Geography		AEC202-2			Internship of 30 hours (Students need to submit a report on the completion of the assignment. The production of a certificate from the organization where the internship is performed is mandatory.)		20
	GEOMAJ204-4 Economic Geography								
	GEOMAJ205-4 Regional Planning and Development								
Exit with a Diploma (80 Credits and Internship of 4 Credits)									
SEM V	GEOMAJ301-4 Regional Geography of Asia	GEOMIN301-4 Geography of India							20
	GEOMAJ302-4 Geography of India								

	GEOMAJ303-4 Geography of N-E India with special reference to Assam & BTR								
	GEOMAJ304-4 Quantitative Methods in Geography								
SEMVI	GEOMAJ305-4 Geomorpholo gy	GEOMIN302-4 Human Geography							20
	GEOMAJ306-4 Population Geography								
	GEOMAJ307-4 Remote Sensing And Geographic Information System								
	GEOMAJ308-4 Soil and Biogeography Geography								
Exit with a Bachelor Degree in the subject studies (120 credits)									
SEMVII	GEOMAJ401-4 Urban and Settlement Geography	GEOMIN401-4 Social, Cultural and Political Geography							20

	GEOMAJ402-4 Social and Political Geography								
	GEOMAJ403-4 Health Geography								
	GEOMAJ404-4 Research Methodology								
SEMVIII	GEOMAJ405-4 World Geography	GEOMIN402-4 World Regional Geography						Dissertation/ Research project (12) ADL401-4 ADL402-4 ADL403-4	20
	GEOMAJ406-4 , GEOMAJ407-4 & GEOMAJ408-4 It may be planned once the UGC brings out P.G. NEP guidelines								
Exit Degree in Honours and Research (160 credit)									
Total Credits	80	32	9	8	9	8	2	12	160

Code explanation:

MAJ=Major; MIN=Minor; IDC=Interdisciplinary; AEC=Ability Enhancement Course; SEC=Skill Enhancement Course, VAC= Value Added Course

First digit Course level; Second & Third digit=Sl.no of course in the category (paper serial Number) and Last digit=Credits, e.g.: MAJ101-4

**Curriculum Structures for
Four Year Undergraduate Programme (FYUGP) based on NEP-2020
Department of Geography, Bodoland University, Kokrajhar
Total Credits= 160**

SEMESTER - I							
Course code	Course title	Credit	Credit Distribution (L+T+P)	End Semester Marks	Internal Marks	Practical	Total Marks
GEOMAJ101-4	Basics Of Geography	4	(4+0+0)	80	20	00	100
GEOMIN101-4	Physical Geography(Part I)	4	(4+0+0)	80	20	00	100
GEOIDC101-3	Introduction to Geography	3	(3+0+0)	50	00	00	50
AEC101-2	As opted by the student	2	(2+0+0)	50	00	00	50
GEOSEC101-3	Map making & Analysis	3	(2+0+1)	40	00	10	50
GEOVAC101-4	Geography of Environment & Sustainability	4	(3+0+1)	60	20	20	100
Total credits		20					450

SEMESTER - II							
Course code	Course title	Credit	Credit Distribution (L+T+P)	End Semester Marks	Internal Marks	Practical	Total Marks
GEOMAJ102-4	Domains of Geography	4	(4+0+0)	80	20	00	100
GEOMIN102-4	Physical Geography (Part II)	4	(4+0+0)	80	20	00	100
GEOIDC102-3	Environmental Geography	3	(3+0+0)	50	00	00	50
AEC102-2	As opted by the student	2	(2+0+0)	50	00	00	50
GEOSEC102A-3	Quantitative techniques for spatial analysis (Option A)	3	(2+0+1)	40	00	10	50
GEOSEC102B-3	Basics of Remote sensing and GIS (Option B)						
GEOVAC102-4	Cultural Geography	4	(3+0+1)	60	20	20	100
Total credits		20					450

SEMESTER - III							
Course code	Course title	Credit	Credit Distribution (L+T+P)	End Semester Marks	Internal Marks	Practical	Total Marks
GEOMAJ201-4	Basics of Cartography	4	(3+0+1)	60	20	20	100
GEOMAJ202-4	Climatology & Oceanography	4	(3+0+1)	60	20	20	100
GEOMIN201-4	Fundamentals of Cartography	4	(3+0+1)	60	20	20	100
GEOIDC201-3	Natural Hazards and Disaster Management	3	(3+0+0)	50	00	00	50
AEC201-2	As opted by the student	2	(2+0+0)	50	00	00	50
GEOSEC201-3	Geography of Assam Tourism	3	(2+0+1)	40	00	10	50
Total credits		20					450

SEMESTER - IV							
Course code	Course title	Credit	Credit Distribution (L+T+P)	End Semester Marks	Internal Marks	Practical	Total Marks
GEOMAJ203-4	Evolution of Geographical Thought	4	(4+0+0)	80	20	00	100
GEOMAJ204-4	Economic Geography	4	(3+0+1)	60	20	20	100
GEOMAJ205-4	Regional Planning and Development	4	(4+0+0)	80	20	00	100
GEOMIN202-4	Economic Geography	4	(3+0+1)	60	20	20	100
AEC202-2	As opted by the student	2	(2+0+0)	50	00	00	50
INTERNSHIP	Report Submission with certificate from concern organization	2	(2+0+0)	00	00	50	50
Total credits		20					500

SEMESTER - V							
Course code	Course title	Credit	Credit Distribution (L+T+P)	End Semester Marks	Internal Marks	Practical	Total Marks
GEOMAJ301-4	Regional Geography Of Asia	4	(3+0+1)	60	20	20	100
GEOMAJ302-4	Geography of India	4	(3+0+1)	60	20	20	100
GEOMAJ303-4	Geography of NE India with special reference to Assam & BTR	4	(3+0+1)	60	20	20	100
GEOMAJ304-4	Quantitative Methods In Geography	4	(3+0+1)	60	20	20	100
GEOMIN301-4	Geography of India	4	(3+0+1)	60	20	20	100
Total credits		20					500

SEMESTER - VI							
Course code	Course title	Credit	Credit Distribution (L+T+P)	End Semester Marks	Internal Marks	Practical	Total Marks
GEOMAJ305-4	Geomorphology	4	(3+0+1)	60	20	20	100
GEOMAJ306-4	Population Geography	4	(3+0+1)	60	20	20	100
GEOMAJ307-4	Remote Sensing and Geographic Information System	4	(3+0+1)	60	20	20	100
GEOMAJ308-4	Soil and Biogeography Geography	4	(3+0+1)	60	20	20	100
GEOMIN302-4	Human geography	4	(4+0+0)	80	20	00	100
Total credits		20					500

SEMESTER – VII							
Course code	Course title	Credit	Credit Distribution (L+T+P)	End Semester Marks	Internal Marks	Practical	Total Marks
GEOMAJ401-4	Urban and Settlement Geography	4	(3+0+1)	60	20	20	100
GEOMAJ402-4	Social and Political Geography	4	(4+0+0)	80	20	00	100
GEOMAJ403-4	Health Geography	4	(3+0+1)	60	20	20	100
GEOMAJ404-4	Research Methodology	4	(4+0+0)	80	20	00	100
GEOMIN401-4	Social, Cultural & Political Geography	4	(4+0+0)	80	20	00	100
Total credits		20					500

SEMESTER - VIII							
Course code	Course title	Credit	Credit Distribution (L+T+P)	End Semester Marks	Internal Marks	Practical	Total Marks
GEOMAJ405-4	World Geography	4					100
GEOMIN402-4	World Regional Geography	4					100
GEOMAJ406-4, GEOMAJ407-4 & GEOMAJ408-4							100 100 100
	Dissertation/ Research project/ ADL401-4 ADL402-4 ADL403-4	12	(12+0+0)				300
Total credits		20					500

List of minor courses in under Graduate Course in Geography:

Semester	Paper code	Credit	Paper title
SEMI	GEOMIN101-4	4+0+0=4	Physical Geography part I
SEMII	GEOMIN102-4	4+0+0=4	Physical Geography part II
SEMIII	GEOMIN201-4	3+0+1=4	Fundamentals of Cartography
SEMIV	GEOMIN202-4	3+0+1=4	Economic Geography
SEMV	GEOMIN301-4	4+0+0=4	Geography of India
SEMVI	GEOMIN302-4	3+0+1=4	Human Geography
SEMVII	GEOMIN401-4	3+0+1=4	Social, Cultural & Political Geography
SEMVIII	GEOMIN402-4	4+0+0=4	World Regional Geography

List of SEC:

Semester	Paper code	Credit	Paper title
SEMI	GEOSEC101-3	2+0+1=3	Map making and Analysis
SEMII	GEOSEC102A-3	2+0+1=3	Quantitative Techniques For Spatial Analysis-Option A
	GEOSEC102B-3	2+0+1=3	Or Basics of Remote Sensing and GIS- Option B
SEMIII	GEOSEC201-3	2+0+1=3	Geography of Assam Tourism

List of IDC:

Semester	Paper code	Credit	Paper title
SEMI	GEOIDC101-3	3+0+0=3	Introduction to Geography
SEMII	GEOIDC102-3	3+0+0=3	Environmental Geography
SEMIII	GEOIDC201-3	3+0+0=3	Natural Hazards & Disaster management

List of Value added course:

Semester	Paper code	Credit	Paper title
SEMI	GEOVAC101-4	3+0+1=4	Geography of Environment and Sustainability NCC/NSS activity should incorporate exercises for Environment sustainability
SEMII	GEOVAC102-4	3+0+1=4	Cultural Geography NCC/NSS activity should incorporate exercises related to restoration of culture

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-I

Total Credits- 20 (Including theory & Practical)

No of Classes- 255 (225 hours of theory classes of one hour + 60 hours of practical classes of two hours)



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FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-I

Core course

Course title: Basics of Geography

Course code: GEOMAJ101-4

Total Credits: 4 (Theory 4)

Course Objectives:

- The objective of this paper is to provide students with a foundational understanding of the discipline of Geography. It aims to familiarize students with the meaning, nature, and scope of Geography as a spatial science and emphasize its relevance in the present day.
- To provide general knowledge on the subject.
- To highlight the relationship of Geography with other disciplines.
- To introduce the development of the subject matter with time.
- To give the basic idea of the Earth's Coordinate System.

Course outcome: Upon completing this paper, students will be able to:

- Understand the meaning, definition, nature, and scope of Geography as a spatial science and recognize its relevance in contemporary society.
- Recognize Geography as an interdisciplinary and integrated discipline, understanding its various branches and the chronological advancement of the field.
- Comprehend fundamental concepts in Geography, such as spatial and temporal variation, spatial association, spatial interaction, spatial diffusion, spatial organization, human ecology, and the system concept
- Demonstrate proficiency in reading and interpreting maps, understanding their importance in Geography, and identifying different types of maps.
- Analyze and interpret the interrelationships among physical and cultural features using topographical maps. The course outcome focuses on equipping students with a strong foundational knowledge of Geography, enabling them to apply spatial thinking and analytical skills to understand and Interpret the world around them.

Course Content:

Units	Course Content	No. of Classes-60 (60 hours of classes)	Credits (4+0=4)
I	<ul style="list-style-type: none">• Meaning, nature and scope of Geography• Geography as a spatial science, present day relevance of Geography.• Relation of Geography with natural, social and earth sciences	15	1
II	<ul style="list-style-type: none">• Branches of Geography: Geography as interdisciplinary and integrated discipline.• Development of Geography: Chronological advancement and contemporary trends.	15	1

III	<ul style="list-style-type: none"> • Fundamental Concepts in Geography: Spatial and temporal variation, spatial association, spatial interaction, spatial diffusion, spatial organization, human ecology, system concept 	15	1
IV	<ul style="list-style-type: none"> • Map and Geography :Importance of map in Geography, Types of maps • Representation of interrelationship among the physical and cultural features from Topographical Maps and Interpretation. 	15	1

Suggested Books:

1. "Physical Geography" by James F. Petersen, Dorothy Sack, and Robert E. Gabler
2. "Human Geography: People, Place, and Culture" by Erin H. Fouberg, Alexander B. Murphy, and Harm J. de Blij
3. Hartshorne, R. (1955). The nature of geography.
4. Knox, P. L., & Marston, S. A. (2001). Places and regions in global context: human geography. Prentice Hall.
5. Getis, A., Fellmann, J. D., Getis, J., & Barker, B. W. (1994). Introduction to geography. William C. Brown Publishers.
6. Monkhouse, F. J. (2008). A dictionary of geography. Transaction Publishers.
7. Singh, G. (2009). Map Work and Practical Geography. Vikas Publishing House.
8. Singh, L. R. (2009). Fundamentals of Practical Geography. Sharda Pustak Bhavan.
9. Singh, R. L. (1979). Elements of practical geography.
10. "The New Geography of Jobs" by Enrico Moretti
11. "Prisoners of Geography: Ten Maps That Tell You Everything You Need to Know About Global Politics" by Tim Marshall "The Power of Place: Geography, Destiny, and Globalization's Rough Landscape" by Harm de Blij "The Revenge of Geography: What the Map Tells Us About Coming Conflicts and the Battle Against Fate" by Robert D. Kaplan
12. "Geography: A Very Short Introduction" by John A. Matthews and David T. Herbert "Why Geography Matters: More Than Ever" by Harm de Blij

Note: These recommended reading books provide students with additional resources to deepen their understanding of the subject and explore diverse topics within Geography.

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-I

Minor course

Course title: Physical Geography (Part-I)

Course code: GEOMIN101-4

Total Credits: 4 (Theory 4)

Course Objectives:

- To introduce students to the fundamental concepts and principles of physical geography.
- To familiarize students with the processes and features shaping the Earth's landforms, climates, and ecosystems.
- To develop students' understanding of the interconnectedness of physical systems and their impacts on human activities.
- To enhance students' ability to analyze and interpret spatial patterns and processes in physical geography.
- To cultivate students' appreciation for the dynamic nature of the Earth's physical environment and the importance of environmental sustainability.

Course Outcome: This course provides a comprehensive understanding of the physical processes and features that shape the Earth's surface. It covers the study of landforms, weather patterns, climate systems, ecosystems, and natural hazards. The course aims to develop students' knowledge of physical geography concepts and their ability to analyze and interpret spatial patterns and processes in the natural environment.

Course Content:

Units	Course Content	No. of Classes-60 (60 hours of classes)	Credits (4+0=4)
I	<ul style="list-style-type: none">• Introduction to Physical Geography: Scope, nature, and significance of physical geography; scientific methods in physical geography.• Earth's Structure and Composition: Layers of the Earth, plate tectonics, earthquakes, and volcanoes.	20	4
II	<ul style="list-style-type: none">• Geomorphology: Landforms, fluvial processes, weathering and erosion, coastal processes, and glacial landscapes.	14	
III	<ul style="list-style-type: none">• Weather and Climate: Atmospheric composition, elements of weather, climate classification, and global climate patterns.	14	
IV	<ul style="list-style-type: none">• Biogeography: Ecosystems, biodiversity, biomes, and ecological processes.	12	

Suggested Books:

1. "Physical Geography" by James F. Petersen, Dorothy Sack, and Robert E. Gabler.
2. "Physical Geography: The Global Environment" by Joseph Holden.

3. "Geosystems: An Introduction to Physical Geography" by Robert W. Christopherson and Ginger Birkeland.
4. "The Atmosphere: An Introduction to Meteorology" by Frederick K. Lutgens and Edward J. Tarbuck.
5. "Geomorphology" by Savindra Singh.
6. "Climatology" by John E. Oliver.
7. "Introduction to Hydrology" by Warren Viessman Jr. and Gary L. Lewis.
8. "Soil Science: An Introduction to the Properties and Management of Soils" by D. L. Rowell.
9. "Biogeography: An Ecological and Evolutionary Approach" by C. Barry Cox, Peter D. Moore, and Richard Ladle.
10. "Environmental Management: A Comprehensive Approach for Sustainable Development" by Erlet Shaq.

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-I

Interdisciplinary Course (IDC)

Course title: Introduction to Geography

Course code: GEOIDC101-3

Total Credits: 3 (Theory 3)

Course Objectives:

- This interdisciplinary paper intends to introduce the students to the evolution of the universe, solar system and our planet Earth. It will also elucidate the coordinate system to understand how to find the location of any place/object over the earth's surface.
- This paper shall provide a detailed understanding of earth movements and insight into different landform orders.
- This course shall develop an understanding of the man-environment relationship and the origin of human settlements.
- Students will be well-versed in population dynamics and migration.

Course Outcome:

- Students will learn about the origin of the universe, the solar system, and on Earth. They will learn about the geological time scale and the Earth's interior.
- Students will learn about the different landforms formed on the surface of the Earth and the forces responsible for their formation.
- Students will be able to identify the coordinate system and time zones, which are of utmost importance to know the position of any place or object on the Earth's surface.
- Students will learn and understand the interplay of humans and the environment, and the effects of humans on the environment, human settlements and patterns of urbanisation.

Course Content:

Units	Course Content	No. of Classes-45 (45 hours of classes)	Credits (2+1=3)
I	<ul style="list-style-type: none">• Origin of Universe: Solar System; Origin of Earth: Big Bang theory; concept of Geological Time scale.• The earth's coordinate system: latitudes and parallels; longitudes and meridians; Time zones: International Date Line (IDL), local and standard time zones, Indian Standard Time (IST).	15	3
II	<ul style="list-style-type: none">• Internal structure of the earth, earth's Movements, Plate Tectonics; Continental Drift theory• Order of Landforms: first, second and third order• Concepts of man-environment relationship: environmental Determinism, Possibilism and Neo-determinism;	15	
III	<ul style="list-style-type: none">• World Population: Growth, Distribution and density; Demographic Transition theory and Malthus theory• Migration: types and causes• Origin and evolution of human settlement: types, patterns and morphology of rural and Urban settlements	15	

Suggested Book:

1. Strahler A. N. and Strahler A. H., 2008: Modern Physical Geography, John Wiley & Sons, New York.
2. Husain M., 2002: Fundamentals of Physical Geography, Rawat Publications, Jaipur.
3. Monkhouse, F. J. 2009: Principles of Physical Geography, Platinum Publishers, Kolkata.
4. Goudie, A. 1984: The Nature of the Environment: An Advanced Physical Geography, Basil Blackwell Publishers, Oxford.
5. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
6. Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur
7. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
8. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
9. Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur.

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester – I

Skill Enhancement Course (SEC)

Course title: Map making and Analysis

Course code: GEOSEC101-3

Total Credits: 3 (Theory 2+ Practical 1)

Course Objective:

- This paper has been designed to enhance the skill of the students towards map making and analysis.
- It aims to help learners acquire knowledge about the basic cartographical aspects of map making and analysis.

Course Outcome:

- This paper will help to provide knowledge about the concept of scale, its different types and application in different fields of geography;
- It will help to develop intensive knowledge and skill about the basic concepts of map, its types and classification; thematic maps and their classifications
- The learners can explore the different methods of representations of geographic data with the help of map.
- This paper also assists to hand on experience to different techniques of map making and analysis.

Course Content:

Units	Course Content	No. of Classes-45 (30 hours of classes one hour + 30 hours of classes of two hours)	Credits (2+1=3)
Part-A (Theory)			
I	<ul style="list-style-type: none">• Concept of Scale, its types and Application, Conversion of scale, Concept of least count in Vernier Scale.• Concept of map, map classification and types;• Importance of map in Geography• Map Scale and Types,• Thematic maps and their classification,• Base map and its preparation• Elements of map reading and Interpretation of toposheet• Principles of Map Design and layout.• Mapping techniques and generalization principles	15	1
II	<ul style="list-style-type: none">• Concept of Geographical data representation through Chorochromatic, Choroschematic, Isopleths and Choropleth maps.• Concept of spot heights, Bench Mark, Triangulation stations, Contours and their use in Topographical Maps of India.• Cartogram and Diagrammatic Data Presentation by Line, Bar and Circle• Point, Line and Areal Data representation through Cartographic Overlays.	15	1

Part-B (Practical)			
III	<ul style="list-style-type: none"> Graphical Construction of Plain, Comparative and Diagonal Scale. Construction of Thematic Maps with the help of physical and socio-economic geographical data. Geographical data representation with the help of Bar diagram, pie chart and Block diagram Preparation of Isopleth and Choropleth maps with the help of Geographical Data Representation of interrelationship among the physical and cultural features from Topographical Maps and Interpretation. Drawing of a representative part from topographical map, such as - Mountain, Plateau, Hills and Ridges, Piedmont, Floodplain, Valley (U-shaped and V-shaped), spurs and their characteristics Survey of India topographical maps: Reference scheme of old and open series, Information on the margin of maps 	15	1

Suggested Book:

1. Cuff J. D. and Mattson M. T., 1982: *Thematic Maps: Their Design and Production*, Methuen Young Books
2. Dent B. D., Torguson J. S., and Holder T. W., 2008: *Cartography: Thematic Map Design* (6th Edition), Mcgraw-Hill Higher Education
3. Gupta K. K. and Tyagi V. C., 1992: *Working with Maps*, Survey of India, DST, New Delhi.
4. Kraak M.-J. and Ormeling F., 2003: *Cartography: Visualization of Geo-Spatial Data*, Prentice-Hall.
5. Mishra R. P. and Ramesh A., 1989: *Fundamentals of Cartography*, Concept, New Delhi.
6. Sharma J. P., 2010: *Prayogic Bhugol*, Rastogi Publishers, Meerut.
7. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers.
8. Slocum T. A., McMaster R. B. and Kessler F. C., 2008: *Thematic Cartography and Geovisualization* (3rd Edition), Prentice Hall.
9. Tyner J. A., 2010: *Principles of Map Design*, The Guilford Press.
10. Sarkar, A. (2015) *Practical geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-I

Value added course (VAC)

Course title: Geography of Environment and Sustainability

Course code: GEOVAC101-4

Total Credits: 4 (Theory 3 + Report writing 1)

Course Objectives:

This course provides an introduction to the fundamental concepts and principles of geography as they relate to the environment and sustainable development. It explores the complex interactions between human activities and the natural environment, focusing on the challenges and opportunities for achieving sustainable development. Students will develop a solid understanding of key environmental issues, spatial patterns, and sustainable development strategies through lectures, discussions, case studies, and fieldwork.

Course Outcome: By the end of the course, students should be able to:

- Understand the basic concepts and principles of geography related to the environment and sustainable development.
- Identify and analyze the major environmental challenges facing the world today.
- Examine the spatial patterns of environmental issues and their impacts on different regions.
- Evaluate the interrelationships between human activities and the natural environment.
- Explore and discuss sustainable development strategies and their implications.
- Apply geographic tools and techniques to analyze and solve environmental problems.
- Develop critical thinking and analytical skills in assessing environmental issues.
- Gain fieldwork experience and apply theoretical knowledge in practical scenarios.

Course Content:

Units	Course Content	No. of Classes-45 (30 hours of classes of one hour+ 30 hours of classes of two hours)	Credits (3+1=4)
Part-A (Theory)			
I	Introduction to Geography and Sustainable Development: <ul style="list-style-type: none">• Definition and scope of Environment Geography Concept of sustainable development,• Environmental Systems and Processes: Earth's physical systems: lithosphere, hydrosphere, atmosphere, biosphere; Natural processes and cycles: climate, weather, erosion, and soil formation	10	3
II	Environmental Challenges and Global Issues: <ul style="list-style-type: none">• Climate change and global warming: Biodiversity loss and conservation, Deforestation and land degradation, Pollution and waste management• Human-Environment Interactions: Population growth and environmental impacts, Urbanization and sustainable cities, Agriculture and food security• Sustainable Development Goals (SDGs): Overview of the	10	

	United Nations SDGs, Linking sustainable development to environmental issues		
III	<p>Environmental Policy and Governance:</p> <ul style="list-style-type: none"> • International agreements and conventions on the environment, National and local environmental policies and regulations, Stakeholder engagement and decision-making processes • Environmental Impact Assessment: Principles and process of environmental impact assessment Case studies of environmental impact assessments • Sustainable Development Strategies: Sustainable transportation and mobility, Waste reduction and recycling 	10	
Part-B (Report writing)			
IV	<p>Fieldwork and Practical Application:</p> <ul style="list-style-type: none"> • Field trip to a local environmental site or project: Data collection, analysis, and reporting 	15	1

Suggested Book:

1. Saxena, H.M.1999: Environmental Geography, Rawat Publication.
2. Mahapatra, A.C, Barik,S.K & Rao,C.S.1999 : Man and Environment, Star Publishing House, Shillong.
3. Chandna, R.C. 2002:Environmental Geography, Kalyani Publication , Ludhiana.
4. Singh, S. 2015: Environmental Geography,Pravalika Publications,Allahabad.
5. Goudie,A. 2001:The Nature of the Environment, Blackwell,Oxford.
6. MoEF,2006: National Environmental Policy-2006,Ministry of Environment and Forest, Government of India.
7. Odum,E.P et al.2005: Fundamentals of Ecology, Cengage Learning of India.
8. Monkhouse, F. J.2008: A dictionary of geography. Transaction Publishers.
9. "The Geography of Environmental Change: An Introduction to Sustainable Development" by R. J. Johnston and D. Gregory
10. "Environmental Science: Earth as a Living Planet" by Daniel B. Botkin and Edward A. Keller
11. "Sustainable Development: Principles, Frameworks, and Case Studies" by Nick Jenkins, Alastair Jones, and Michael Wallace
12. "Geography: Realms, Regions, and Concepts" by Harm J. de Blij, Peter O. Muller, and Jan Nijman
13. "Environmental Geography: Science, Land Use, and Earth Systems" by William M. Marsh and John Grossa
14. "Sustainable Development: Concepts, Rationalities, and Strategies" by Frans H. J. M. Coenen
15. "Introduction to Environmental Impact Assessment: Principles and Procedures" by John Glasson, Riki Therivel, and Andrew Chadwick"Sustainable Cities: Concepts and Strategies for Eco-City Development" by Yang Zhang and Yan Song

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-II

Total Credits- 20 (Including theory & Practical)

No of Classes- 255 (225 hours of theory classes of one hour + 60 hours of practical classes of two hours)



**DEPARTMENT OF GEOGRAPHY
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Rangalikhata, 783370**

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-II

Core course

Course title: Domains of Geography

Course code: GEOMAJ102-4

Total Credits: 4 (Theory 4)

Course Objectives:

- To introduce the significant branches of Geography.
- To provide dynamics of the spheres of the earth.
- To highlight the relationship between humans and the environment from the earth's inception.
- To provide an overview of humans and culture and to show how ethnicity, race and language play a vital role in forming the cultural landscape.

Course Outcome:

- This paper will help the students differentiate between physical and Human Geography.
- Students will understand human perception and behaviour concerning their environment.
- This paper will help the students learn how human, physical and environmental components of the earth interact.

Course Content:

Units	Course Content	No. of Classes-60 (60 hours of classes)	Credits (4+0=4)
Part-A (Physical Geography)			
I	<ul style="list-style-type: none">• Physical Geography : Nature, Scope, Contents, and Interrelationship• Biosphere: concept of biosphere; global distribution of flora and fauna; concepts and types of biodiversity	13	
II	Man and Environment Relationship; <ul style="list-style-type: none">• Elements of environment; physical and human environment; constraints and opportunities of the environment.• Impact of environment on man, Human adaptation to to environment: cold desert, mountain, plain, hot desert and riverine lands	16	
Part-B (Human Geography)			
III	<ul style="list-style-type: none">• Meaning, nature and scope of Human Geography• Schools of Human Geography: Environmental Determinism and Possibilism; concept of space and place• Concept of culture, ethnicity, race, religion and language	16	

IV	<ul style="list-style-type: none"> ● Mapping of major racial group in the world ● Mapping of major racial group of India ● Mapping of linguistic and religious region in the world ● Mapping of linguistic region of India. 	15	
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Suggested Books:

1. Conserva H. T., 2004: Illustrated Dictionary of Physical Geography, Author House, USA.
2. Goudie, A., 1984: The Nature of the Environment: An Advanced Physical Geography, Basil Blackwell Publishers, Oxford.
3. Hamblin, W. K., 1995: Earth's Dynamic System, Prentice-Hall, N.J.
4. Husain M., 2002: Fundamentals of Physical Geography, Rawat Publications, Jaipur.
5. Monkhouse, F. J. 2009: Principles of Physical Geography, Platinum Publishers, Kolkata.
6. Singh, Savindra (2017): Physical Geography, Pravallika Publications, Allahabad.
7. Strahler A. N. and Strahler A. H., 2008: Modern Physical Geography, John Wiley & Sons, New York.
8. Hussain, Majid (2021, Sixth Edition): Human Geography, Rawat Publication, Jaipur.
9. Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur
10. Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
11. Johnston R, Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
12. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, NewYork.
13. Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur.

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-II

Minor Course

Course title: Physical Geography (Part-II)

Course code: GEOMIN102-4

Total Credits: 4 (Theory 4)

Course Outcome:

This course provides a comprehensive understanding of the physical processes and features that shape the Earth's surface. It covers the study of weather patterns, climate systems, ecosystems, and natural hazards. The course aims to develop students' knowledge of physical geography concepts and their ability to analyze and interpret spatial patterns and processes in the natural environment.

Course Objectives:

- To develop students' understanding of the interconnectedness of physical systems and their impacts on human activities.
- To enhance students' ability to analyze and interpret spatial patterns and processes in physical geography.
- To cultivate students' appreciation for the dynamic nature of the Earth's physical environment and the importance of environmental sustainability.

Course Content:

Units	Course Content	No. of Classes-45 (45 hours of classes)	Credits (4+0=4)
I	<ul style="list-style-type: none">• Climatology: Climate change, atmospheric circulation, monsoons, El Niño, and natural hazards.	9	4
II	<ul style="list-style-type: none">• Hydrology: Water cycle, rivers, lakes, groundwater, and water management.	9	
III	<ul style="list-style-type: none">• Soils and Pedology: Soil formation, properties, classification, and soil erosion.• Biogeography and Biodiversity: Plant and animal distributions, conservation, and ecological restoration.	18	
IV	<ul style="list-style-type: none">• Environmental Management: Sustainable development, natural resource management, and environmental policies	9	

Suggested Books:

1. "Physical Geography" by James F. Petersen, Dorothy Sack, and Robert E. Gabler.
2. "Physical Geography: The Global Environment" by Joseph Holden.
3. "Geosystems: An Introduction to Physical Geography" by Robert W. Christopherson and Ginger Birkeland.
4. "The Atmosphere: An Introduction to Meteorology" by Frederick K. Lutgens and Edward J. Tarbuck.

5. "Geomorphology" by Savindra Singh.
6. "Climatology" by John E. Oliver.
7. "Introduction to Hydrology" by Warren Viessman Jr. and Gary L. Lewis.
8. "Soil Science: An Introduction to the Properties and Management of Soils" by D. L. Rowell.
9. "Biogeography: An Ecological and Evolutionary Approach" by C. Barry Cox, Peter D. Moore, and Richard Ladle.
10. "Environmental Management: A Comprehensive Approach for Sustainable Development" by Erlet Shaq.

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-II

Interdisciplinary Course (IDC)

Course title: Environmental Geography

Course Code: GEOIDC102-3

Total Credits: 3 (Theory 3)

Course Objective:

- This course aims to deliver its learners with both theoretical and practical knowledge on the relationship between society and environment.
- The course aims to develop values towards the environment among the learners and induce sensitivity towards environmental protection/preservation and restoration.

Course Outcome: After the successful completion of this course, students will be able to:

- Understand the various concepts related to the environment, and explore the scope and approach to society-environment relationship in geography.
- Able to acquire knowledge on principles of ecosystem and functioning that governs the stability and sustainability of the ecosystem.
- Identify the impacts of humans in degradation of environmental problems and the role of society to management and restoration of the environment.
- Analyse different environmental issues at regional and local context and assess impact on health and development.
- Acquire hand on skills to identify quality of water and soil, identify their causes, appreciate the possibility of conservation of biodiversity and practise precautionary measures to protect the environment.

Course Content:

Units	Course Content	No. of Classes-45 (45 hours of classes)	Credits (3+0=3)
I	Geography and Environment; <ul style="list-style-type: none">• Types of Environment, major elements of environment• Nature and Scope of Environmental Geography. Approach to study Environmental Geography: Earth System Science, Land Change (Systems) Science, Ecological Approach, Quaternary Geography, Environmental history• Meaning, Components and functions of ecosystem: trophic levels, energy flows, food chain and food web, ecological pyramids• Classification of ecosystem• Ecological concepts: level of organisation, native species, keystone species, population viability threshold, ecological resilience, disturbances, connectivity/fragmentation• Geo-biochemical cycles: (carbon, nitrogen, oxygen, phosphorous)• Meaning, levels of organisation and attributes of biodiversity	15	1

	<ul style="list-style-type: none"> Basic Ecological Principles 		
II	<p>Environment and society;</p> <ul style="list-style-type: none"> Human ecology: Concept, adaptation/interaction and influence/impact of human on ecology and environment Ecological change and environmental degradation: Global Warming, Urban Heat Island, Atmospheric Pollution, Water Pollution, Soil/Land Degradation Climate change and environmental hazards Management of Environment and resources: Principles of conservation Sustainable development: Concept, Value of biodiversity for development Environmental policies/programmes and international treaties: Global, national and local (Brundtland Commission, Kyoto Protocol, Agenda 21, Sustainable development goals, Paris Agreement) 	15	1
III	<p>Environmental Impacts;</p> <ul style="list-style-type: none"> Ecological footprints Carbon footprints Environmental issues in tropical ecosystem Environmental issues in temperate ecosystem Environmental issues in polar ecosystem Environmental Degradation and Human Health Concepts and Principles and importance of Environmental impact assessment Methods and procedures of EIA 	15	1

Suggested Books:

1. Castree, N. et. al. 2009 (edt.): A Companion to Environmental Geography, Blackwell Publishing Ltd, UK
2. Goudie, A. 2001: The nature of Environment, Blackwell, Oxford
3. Chapman J. L. and Reiss, M.J. 1993: Ecology: Principles and Applications, Cambridge University Press
4. Farmer, A. 1997: Managing Environmental Pollution, Routledge, London: 246p
5. Roberts, N 1994 (edt.): The changing Global Environment, Blackwell Pub. Co., London
6. Saxena, H.M. 1999: Environmental Geography, Rawat Publication
7. Mahapatra, A.C. et. al. 1999: Man and Environment, Star Publishing House, Shillong
8. Odum, E.P. et al. 2005: Fundamentals of Ecology, Cengage Learning of India
9. William, J. S. 2006: Ecological Census Techniques, Cambridge
10. Lagacherie, P et al. 2003: Digital soil mapping: an Introductory Perspective, Elsevier
11. Singh, R.L. and Singh, R.P.B. 1992: Elements of Practical Geography
12. Basu, R. and Bhaduri, s ed, 2007: Contemporary Issues and Techniques in Geography, Progressive Publishers, Kolkata

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-II

(Option A)

Skill Enhancement Course (SEC)

Course title: Quantitative Techniques for spatial Analysis

Course code: GEOSEC102A-3

Total Credits: 3 (Theory 2 + Practical 1)

Course Objectives-

- To provide learners theoretical and practical based exposure on dynamics of the course.
- To draw attention to the connection between two interdisciplinary course Quantitative techniques and spatial analysis.
- To give basic quantitative methods or techniques of different objects and its scientific based analysis in the field of geography.

Course Outcomes:

- By the end of this course on quantitative techniques for spatial analysis, students will be able to:
- Understand the fundamentals of spatial analysis: Students will grasp the core concepts and principles of spatial analysis, including spatial data types, coordinate systems, and spatial relationships.
- Apply statistical methods to spatial data: Students will develop a strong foundation in applying statistical techniques to spatial data.

Course Content:

Units	Course Content	No. of Classes -45 (30 hours of classes of one hour + 30 hours of classes of two hour)	Credits (2+1=3)
Part-A (Theory)			
I	Understanding spatial analysis: <ul style="list-style-type: none"> • Use of Data in Geography: Geographical Data Matrix, Significance of Statistical Methods in Geography; Sources of Data, Scales of Measurement (Nominal, Ordinal, Interval, Ratio). 	15	2
II	Spatial statistics: <ul style="list-style-type: none"> • Statistics and Statistical Data: Spatial and non-spatial; indices of inequality and disparity. • Determination of Spatial Mean and Median Centers of Settlements and Standard Distance, • Weighted Mean Centre of Population or any other attribute • Chi square test (Spatial analysis) 	15	
Part-B (Practical)			

III	<ul style="list-style-type: none"> • Determination of Spatial Mean and Median Centers of Settlements and Standard Distance • Weighted Mean Centre of Population or any other attribute • Chi square test and Variogram • Construction of population growth model and the distance decay model • Construction of Age-Sex pyramid • Mapping Settlement Types and Pattern - Construct a data matrix of about (30 x 10) with each row representing an areal unit (districts or villages or towns) and about 10 columns of relevant attributes of the areal units. - Based on the above table, a frequency table, measures of central tendency and dispersion would be computed and interpreted for any two attributes. - Histograms and frequency curve would be prepared on the five variables. 	15	1
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Suggested books:

1. "Spatial Analysis: Statistics, Visualization, and Computational Methods" by Manfred M. Fischer and Arthur Getis
2. "Geographic Information Analysis" by David O'Sullivan and David J. Unwin
3. "Spatial Data Analysis: Theory and Practice" by Robert Haining
4. "Spatial Analysis: Modelling in a GIS Environment" by Paul A. Longley, Michael F. Goodchild, David J. Maguire, and David W. Rhind
5. "Spatial Statistics: Methodological Aspects and Some Applications" edited by N.K. Taneja
6. "Applied Spatial Data Analysis with R" by Roger S. Bivand, Edzer J. Pebesma, and Virgilio Gómez-Rubio
7. "Geocomputation: A Practical Primer" by Chris Brunsdon and Alex Singleton
8. "Introduction to Geostatistics: Applications in Hydrogeology" by P.K. Kitanidis
9. "Spatial Analysis in Epidemiology" by Mark S. Carrothers
10. "Quantitative Geography: Perspectives on Spatial Data Analysis" edited by A. Stewart Fotheringham and Peter A. Rogerson

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-II

(Option B)

Skill Enhancement Course (SEC)

Course title: Basics of Remote Sensing and GIS

Course code: GEOSEC102B-3

Total Credits: 3 (Theory 2 + Practical 1)

Course Objective:

- The skill enhancement course on Basics of Remote Sensing and Geographic Information System has been designed specifically to equip its learners with both theoretical and practical Knowledge about the geographical spatial information technology to the students.
- The course has been designed to impart its learners with the basic knowledge and skills to aid them in securing a niche for themselves in the geospatial technology.
- It aims to develop understanding among the learners about applying geospatial technology in understanding geographical domain.

Course Outcome: After the completion of this course, learners will be able to:

- Working principles of Remote Sensing
- Know how Remote Sensing and GIS emergence and its advantages and limitations
- Understand types of Remote Sensing and data types in GIS
- Apply different processes of GIS, Geospatial analysis and application in planning and management
- Gain knowledge on sources of various Remote Sensing and GIS software and database
- Able to project and generate maps from different sources on various themes
- Relate emerging spatial technology in recent days as important domain in geography
- Able to use remote sensing and Geographic Information System as tool in understand geographical space for planning and management.

Course Content:

Units	Course Content	No of Classes-45 (30 hours of classes of one hour + 30 hours of classes of two hours)	Credits (2+1=3)
Part-A (Theory)			
I	<ul style="list-style-type: none">• Introduction of remote sensing: What is remote sensing, Defining remote sensing, History and development of remote sensing. Development of Indian Space Research Organization (ISRO), Advantages and limitations of remote sensing.• Principles of remote sensing: Wave and particle models of Electromagnetic Radiation, Electromagnetic spectrum, atmospheric window and remote sensing, Process of remote sensing, Electromagnetic Radiation and its interaction.• Types of remote sensing and sensor: Type of remote sensing; Based on platform, energy source, framing and scanning system, imaging media and number of bands,	15	1

	<p>Satellite orbit, swath and nadir, image referencing system, concept of image resolution, Different satellites: ESA/ISRO/NASA Landsat, Indian Remote Sensing satellites.</p> <ul style="list-style-type: none"> • Basic principles of Global Positioning System • Application of remote sensing and Global Positioning System 		
II	<ul style="list-style-type: none"> • Fundamentals of Geographic Information System: • History and concept of GIS, components of GIS, Relation of GIS with allied disciplines, • Spatial data model, Attribute data management, Processes in GIS, Geospatial analysis, Application of GIS in planning and management, Current trends in GIS 	15	1
Part-B (Practical)			
III	<ul style="list-style-type: none"> • Sources of open-source GIS software and database • Projection system in Remote Sensing and GIS: <ul style="list-style-type: none"> - Projected Coordinate System and World Graticule System- Projecting toposheet • What is shape file and attribute table - Drawing point, line and polygon features and labeling - Attribute table; creating new fields, calculating length and area- Generating choropleth and chorochromatic map, • Population density/Rice production etc, b. Soil type/vegetation/lithology etc • Satellite imagery and its characteristics Types of aerial and satellite imagery- Generating land use and land cover map from satellite imagery-Supervised and unsupervised method • Global Positioning System and its application on ground/field 	15	1

Suggested Books:

1. Basudeb, B. (2008): Remote Sensing and GIS, Oxford University Press, New Delhi
2. Bolstad, P. GIS Fundamentals: A first text on Geographic Information Systems, XenEdu
2. Fazal, S. (2006) Remote Sensing Basics, Kalyani Publishing, New Delhi.
3. George, J. and Jeganathan. C.: Fundamentals of Remote Sensing, University Press,
4. Reddy, M.A: Text book of Remote Sensing and Geographic Information System, B.S. Publication, New Delhi

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-II

Value added course (VAC)

Course title: Cultural Geography

Course code: GEOVAC102-4

Total Credits: 4 (Theory 3+ Practical 1)

Course Objectives:

- With regard to the interrelationship between culture and population, this course seeks to provide theoretical and practical based knowledge on population and its associated culture.
- It aims to instill cultural values in the students. And to give exposure on the dynamics of Cultural regions and growing population of the world to its students.

Course Outcomes:

- Students will gain a comprehensive understanding of the basic concepts, theories, and approaches in cultural geography. They will explore topics such as culture, identity, place, landscape, and the relationship between humans and their environment.
- They will learn to identify and analyze the cultural meanings, values, and practices embedded in these landscapes.

Course Content:

Units	Course Content	No. of Classes-60 (45 hours of classes of one hour + 30 hours of classes of two hour)	Credits (3+1=4)
Part-A (Theory)			
I	Understanding Cultural Geography: <ul style="list-style-type: none"> • Definition of and Major themes of Cultural Geography; Cultural Regions • Characteristics and Functions of Culture; Causes of Cultural Change, Cultural Diffusion • Definition of Civilization; Distinction between Culture and Civilization 	15	3
II	Relationship between Culture and Geography: <ul style="list-style-type: none"> • Major Cultural Regions of the World; Impact of Cultural Geography on House Types • Concept of Socialization; Theories of Socialization: CH Cooley's Theory and George Herbert Mead's Theory; Stages of Socialization; Role of Culture in Socialization • Definition and Characteristics of Caste; Definition, Distribution and Major problems of Scheduled Tribe population in India 	15	3
III	Social Institution : <ul style="list-style-type: none"> • Mores: Definition and Functions; Norms: Meaning and 	15	3

	Characteristics <ul style="list-style-type: none"> • Social Conformity and Deviance: Meaning and Causes • Marriage: Definition, Functions, and Forms • Family: Meaning, Characteristics, and Functions 		
Part-B (Practical)			
IV	Practical: <ul style="list-style-type: none"> • Mapping of Cultural Regions of the World. • House Types. • Finding of caste composition of population at Village level. • Calculation and Mapping of Distribution of Scheduled Tribe population by: name of the tribe, percentage to total state population, and percentage to total ST population. • Depiction of social conformity and deviance. • Depiction of various types of family. 	15	1

Suggested Book:

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
2. Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur
3. Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
4. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
5. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
5. Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
6. Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.
7. Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-III

Total Credits- 20 (Including theory & Practical)

No of Classes- 270 (210 hours of theory classes of one hour + 120 hours of practical classes of two hours)



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FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester – III

Core course

Course title: Basics of Cartography

Course code: GEOMAJ201-4

Total Credits: 4 (Theory 3+ Practical 1)

Course Objective:

- This paper has been designed to the students of undergraduate course in geography to familiarize about basic science behind the map making and their use.
- It also aims to help acquire knowledge about the dimensions of cartography from its nature and scope to its development and techniques behind the map making.

Course Outcome:

- This paper will help to understand the nature and scope of cartography, development trend and its relevance in the field of geography.
- The learner will acquire knowledge about the basic concept relating to earth, its different methods of measurement etc.
- It also caters the knowledge relating to map projection, different principles and methods of derivation.
- It will deliver hand on training of the learner towards different methods and techniques of cartography.

Course Content:

Units	Course Content	No. of Classes-60 (45 hours of classes of one hour + 30 hours of classes of two hours)	Credits (3+1=4)
Part-A (Theory)			
I	<ul style="list-style-type: none"> • Nature and scope of Cartography, trend of development and present day relevance of Cartography in Geography, traditional and digital cartography. • The concept of shape, size, latitude and longitude, direction and distance of earth. • Coordinate systems: Polar and rectangular, Concept of geoid and spheroid • Concept of generating globe; Grids: angular and linear systems of measurement • Bearing: Magnetic and true, whole-circle and reduced • Principle of Enlargement and Reduction of Maps by Graphical and Instrumental Methods. • Importance, scope and purpose of Digital Planimeter, principles of working and application of the instrument 	15	3
II	<ul style="list-style-type: none"> • Definition, need of Map Projection, Principles, Function and Classification of map projection, Choice of Map Projection; • Graphical Construction of Zenithal group of projection both polar and equatorial case, cylindrical group of projection, conical group of projection and conventional group of projection, their properties and uses. 	15	
III	<ul style="list-style-type: none"> • Concept and Principles of Geodetic and Plane Surveying, 	15	

	<ul style="list-style-type: none"> Principles of triangulation Principles and techniques of surveying by Plane Table (Radiation and Intersection Method), Prismatic Compass (Closed Traverse and Open Traverse), Dumpy Level (Profile) and Theodolite (Traversing). 		
Part-B (Practical)			
IV	<ul style="list-style-type: none"> Construction of graticules based on Mathematical derivation and calculation; <ul style="list-style-type: none"> Zenithal group (polar cases): Gnomonic, Stereographic, Orthographic, and Equal-area Cylindrical group: Cylindrical equal area and Mercator's projection Conical Group: Simple Conical Projection, Conical Projection with two standard parallels. Conventional Group: Sinusoidal, Principles of Surveying; <ul style="list-style-type: none"> Plane table surveying (Radiation & Intersection methods) Prismatic Compass and Theodolite Surveying (Open and Closed Traverse) (c) Dumpy Level (Profile) and Theodolite (Traversing and Profile); 	15	1

Suggested Books:

- Campbell, J., 1984: Introductory Cartography, Prentice Hall Inc., Englewood Cliff
- Misra, R.P. and Ramesh, A., 1995: Fundamentals of Cartography, Concept Publishing Company, New Delhi
- Robinson, A.H., et al: Elements of Cartography, John Wiley & Sons, New York
- Raisz, E. : Principles of Cartography, McGraw Hills, London
- Kenetkar, T.P. and Kulkarni, S.U.: Surveying and Levelling, Vol. I & II, VidyarthiGrithaPrakashan, Pune
- Kellaway, G.P.: Map Projection, Methuen & Co., London
- Steers, J.A., 1965: An Introduction to the Study of Map Projection, University of London, London
- Bygott, J., An Introduction to Map work and Practical Geography 17
- Talukder, S., 2008: Introduction to Map Projections, Eastern Book House, Guwahati.
- Mahmood, A., 1999: Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
- Hammond, R. and McCullagh, P. (1965): Quantitative Techniques in Geography, Clarendon Press, Oxford Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
- Elhance, D.N., 1972: Fundamentals of Statistics, KitabMahal, Allahabad
- Monkhouse, F.J. & Wilkinson, H.R., 1989: Maps & Diagrams, B.I. Publications, New Delhi
- Gregory, S., 1963: Statistical Methods and Geographers, Longman, London
- Singh, R. & Singh, R.: Map Work & Practical Geography, Central Book Depot, Allahabad.
- Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.

OUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-III

Core course

Course title: Climatology and Oceanography

Course Code: GEOMAJ202-4

Total Credits: 4 (Theory 3+Practical 1)

Course Objective:

- This course aims to deliver its learners with both theoretical and practical knowledge on the fundamentals of climate and its importance in geographical enquiry.
- The course aims to develop an understanding of the dynamics of climate that govern earth's process and affect landscape.
- It seeks to develop new insights among students on the relevance of climatic variable
- stangenting on climate change.

Course Outcome: After the successful completion of this course, students will :

- Be familiar with key concepts in meteorology and climatology.
- Be familiar with the composition and structure of the atmosphere.
- Understand how and why the distribution of gases varies with height, latitude and time.
- Know how atmospheric pressure, density and water vapour pressure vary with altitude.
- Know the effects of the atmosphere on solar and terrestrial radiation, understand heat budget and the importance of horizontal transfers of energy as sensible and latent heat.
- Be aware of the spatial and temporal characteristics of moisture in the atmosphere, evaporation and precipitation.
- Know what determines atmospheric stability/instability.
- Know the basic laws of horizontal motion in the atmosphere.
- Be familiar with the basic concepts of the general circulation of the atmosphere.
- Learn how and why pressure patterns and wind velocity change with altitude.
- Become familiar with the morphological and physical aspect of the ocean.
- Identify the relation between climate and ocean.
- Acquire hand on skills to handle climate data, analysis and forecasting of weather.
- Identify climate variables and climate types and predict climate change.

Course Content:

Units	Course Content	No. of Classes-60 (45 hours of classes of one hour + 30 hours of classes of two hours)	Credits (3+1=4)
Part-A (Theory)			

I	<p>Fundamentals of Climate:</p> <ul style="list-style-type: none"> • Climatology and Meteorology, Climate and weather, elements of weather • Composition of Atmosphere: Primary gases, Greenhouse gases, Reactive gases, Aerosols, • Variation with height, variation with latitudes, seasons and time • Structure of Atmosphere: Layering of atmosphere • Factors controlling Global energy budget: • Effect of solar radiation (solar output, distance from the sun, altitude of the sun, length of the day); • Surface receipt of solar radiation and it effects (energy transfer within the earth-atmosphere system, effect of the atmosphere, effect of cloud cover, effect of latitude, effect of land and sea, effect of elevation and aspect, variation of free-air temperature with height Terrestrial infra-red radiation and the Greenhouse effect • Heat budget of the earth • Horizontal transport of heat and spatial pattern of the heat components • Factors controlling horizontal and vertical distribution of global • Air pressure: Measurement of air pressure, Pressure gradient, vertical variation in air pressure (low pressure system and high pressure system) • Surface Pressure condition and global pressure belt (non-rotating homogenous earth, rotating non-homogenous earth) 	14	3
II	<p>Dynamics of climate:</p> <ul style="list-style-type: none"> • Factors affecting wind motion: horizontal pressure-gradient, the coriolis force, geostrophic wind, gradient wind, frictional force, centrifugal action of wind • Earth's Surface Wind Systems, Departure from idealised circulation pattern, circulation pattern in vertical and horizontal planes • Mean upper-air pattern and upper wind condition • Atmospheric moisture: the hydrological cycle, measures of humidity • Evaporation: process and factors affecting rate of evaporation • Processes and forms of condensation • Cloud formation and type of clouds • Bergeron-Findeisen theory of precipitation • Types and forms of precipitation • Distribution of precipitation and factors controlling distribution 	16	

	<ul style="list-style-type: none"> • Air Masses: classification and characteristics • Front: Frontogenesis and frontolysis, types • m) Monsoon: origin and mechanism 		
III	<p>Ocean and Climate:</p> <ul style="list-style-type: none"> • Morphology of Ocean bottom • Bottom topography of the Atlantic, Indian and Pacific Oceans • Chemical Composition of the oceans • Temperature, salinity and density of oceans: source of heat, factors of horizontal variation, vertical distribution, annual variation • Ocean deposits • Coral reefs: condition of growth, types and distribution • Circulations: Warm and cold currents, waves, tides • Cyclones: Tropical and Temperate; anticyclone and extra-tropical cyclone • ENSO Events: Effects of El Niño and La Niña and Southern Oscillation 	15	
Part-B (Practical)			
IV	<p>Climatic Data Analysis:</p> <ul style="list-style-type: none"> • Source of weather/climate data • Weather elements on a map (pressure, wind, cloudiness, rainfall, atmospheric phenomena, sea condition) • Interpretation of Indian Weather map for Monsoon and non-monsoon seasons/months • Short-range forecast of weather • Preparation of weather reports of Indian subcontinent by analysing the weather satellite • images of at least three consecutive days (e.g. INSAT 3D, NOAA satellite) • Point rainfall analysis: Calculation of average annual rainfall and variability of annual rainfall and preparation of rainfall distribution and variability maps • Evaporation estimation: use of evaporation pan and empirical equation using climatic data • Preparation of rainfall-temperature graphs; hythergraph, climograph, ergograph, water balance graph • Köppen, Thornthwaite, and Trewartha's classification of world climate (Classification Scheme and Mapping) • Analysis of Climate Change: Analysis of rainfall/temperature data of any station for 50 years using line graph (identify heat extremes) • Analysis and Interpretation of NASA's earth climate change map https://earthobservatory.nasa.gov/global- 	15	1

	<p>maps/MOD_LSTD_M</p> <ul style="list-style-type: none">• Analysis of climate change map of Google Earth Engine https://earthengine.google.com/timelapse/		
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Suggested Books:

1. Barry, R.G. and Chorley, R.J., 2003: Atmosphere, Weather and CLimate, Routledge, London and NeYork
2. Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge,
3. UK.
4. Critchfield H. J., 1987: General Climatology, Prentice-Hall of India,New Delhi
5. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to
6. Meteorology, Prentice-Hall, Englewood Cliffs, NewJersey.
7. Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson
8. Education, NewDelhi.
9. Trewartha G.T. and Horne L.H.,1980: An Introduction to Climate, McGraw-Hill.
10. Lal, D.S., 2023: Climatology, Sharda Pustak Bhawan, Prayagraj.
11. Lal, D.S., 2017: Oceanography, Sharda Pustak Bhawan, Prayagraj

Semester – III

Minor Course

Course title: Fundamentals of Cartography

Course Code: GEOMIN201-4

Total Credits: 4 (Theory 3+Practical 1)

Course Objective:

- This paper has been designed to the students of undergraduate course in geography to familiarize about basic science behind the map making and their use.
- It also aims to help acquire knowledge about the dimensions of cartography from its nature and scope to its development and techniques behind the map making.

Course Outcome:

- This paper will help to understand the nature and scope of cartography, development trend and its relevance in the field of geography.
- The learner will acquire knowledge about the basic concept relating to earth, its different methods of measurement etc.
- It also caters the knowledge relating to map projection, different principles and methods of derivation.
- It will deliver hand on training of the learner towards different methods and techniques of cartography

Course Content:

Units	Course Content	No. of Classes-60 (45 hours of classes of one hour + 30 hours of classes of two hours)	Credits (3+1=4)
Part-A (Theory)			
I	<ul style="list-style-type: none">• Nature and scope of Cartography, trend of development and present day relevance of Cartography in Geography, traditional and digital cartography.• The concept of shape, size, latitude and longitude, direction and distance of earth.• Concept of Scale, its types and Application, Conversion of scale, Concept of least count in Vernier Scale.• Concept of map, map classification and types;• Importance of map in Geography• Map Scale and Types,• Thematic maps and their classification,• Base map and its preparation• Elements of map reading and Interpretation of toposheet• Principles of Map Design and layout.• Mapping techniques and generalization principles	15	3
II	<ul style="list-style-type: none">• Definition, need of Map Projection, Principles, Function and Classification of map projection, Choice of Map Projection;• Graphical Construction of Zenithal group of projection both polar and equatorial case, cylindrical group of projection, conical group of projection and conventional group of projection, their properties and uses.	15	

III	<ul style="list-style-type: none"> • Concept and Principles of Geodetic and Plane Surveying, • Principles of triangulation • Principles and techniques of surveying by Plane Table (Radiation and Intersection Method), Prismatic Compass (Closed Traverse and Open Traverse), Dumpy Level (Profile) and Theodolite (Traversing). 	15	
Part-B (Practical)			
IV	<ul style="list-style-type: none"> • Construction of graticules based on Mathematical derivation and calculation; - Zenithal group (polar cases): Gnomonic, Stereographic, Orthographic, and Equal-area - Cylindrical group: Cylindrical equal area and Mercator's projection - Conical Group: Simple Conical Projection, Conical Projection with two standard parallels. - Conventional Group: Sinusoidal • Principles of Surveying; - Plane table surveying (Radiation & Intersection methods) - Prismatic Compass (Open and Closed Traverse) - Dumpy Level (Profile) and Theodolite (Traversing) 	15	1

Suggested Books:

1. Campbell, J., 1984: Introductory Cartography, Prentice Hall Inc., Englewood Cliff
2. Misra, R.P. and Ramesh, A., 1995: Fundamentals of Cartography, Concept Publishing Company, New Delhi
3. Robinson, A.H., et al: Elements of Cartography, John Wiley & Sons, New York
4. Raisz, E. : Principles of Cartography, McGraw Hills, London
5. Kenetkar, T.P. and Kulkarni, S.U.: Surveying and Levelling, Vol. I & II, VidyarthiGrithaPrakashan, Pune
6. Kellaway, G.P.: Map Projection, Methuen & Co., London
7. Steers, J.A., 1965: An Introduction to the Study of Map Projection, University of London, London
8. Bygott, J., An Introduction to Map work and Practical Geography 17
9. Talukder, S., 2008: Introduction to Map Projections, Eastern Book House, Guwahati.
10. Mahmood, A., 1999: Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
11. Hammond, R. and McCullagh, P. (1965): Quantitative Techniques in Geography, Clarendon Press, Oxford
- Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
12. Elhance, D.N., 1972: Fundamentals of Statistics, KitabMahal, Allahabad
13. Monkhouse, F.J. & Wilkinson, H.R., 1989: Maps & Diagrams, B.I. Publications, New Delhi
14. Gregory, S., 1963: Statistical Methods and Geographers, Longman, London
15. Singh, R. & Singh, R.: Map Work & Practical Geography, Central Book Depot, Allahabad.
16. Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.

Semester-III

Interdisciplinary course (IDC)

Course title: Natural Hazards and Disaster Management

Course Code: GEOIDC201-3

Total Credits: 3 (Theory 3)

Course Outcome:

This interdisciplinary course focuses on understanding natural hazards, their causes, and their impact on human populations and the environment. It explores strategies and measures for disaster management and mitigation. The course integrates knowledge from various fields, including geography, geology, meteorology, environmental science, social sciences, and engineering. It aims to develop students' understanding of natural hazards, their assessment, and effective disaster management strategies.

Course Objectives: To introduce students to the concepts and theories related to natural hazards and disaster management.

- To develop an understanding of the causes and characteristics of various natural hazards.
- To familiarize students with the methods and techniques for hazard assessment and vulnerability analysis.
- To explore strategies and measures for disaster preparedness, response, and recovery.
- To foster interdisciplinary thinking and collaboration in addressing natural hazards and disaster management.

Course Content:

Units	Course Content	No. of Classes-45 (45 hours of classes)	Credits (3+0=3)
I	<ul style="list-style-type: none">• Introduction to Natural Hazards and Disaster Management: Definitions, classifications, and global perspectives.• Geophysical Hazards: Earthquakes, volcanic eruptions, tsunamis, and landslides.• Meteorological Hazards: Tropical cyclones, thunderstorms, tornadoes, and droughts.• Hydrological Hazards: Floods, flash floods, and avalanches.• Assessment and Mapping of Natural Hazards: Hazard mapping, risk assessment, and vulnerability analysis.	15	1
II	<ul style="list-style-type: none">• Technological Hazards: Industrial accidents, nuclear disasters, and transportation-related hazards.• Environmental Hazards: Climate change, deforestation, and desertification.• Social and Economic Impacts of Disasters: Human vulnerability, social resilience, and economic consequences.	15	1
III	<ul style="list-style-type: none">• Disaster Preparedness and Mitigation: Early warning systems, emergency planning, and community resilience.	15	1

	<ul style="list-style-type: none"> Disaster Response and Recovery: Relief operations, rehabilitation, and post-disaster reconstruction 		
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Suggested Books:

1. "Introduction to Natural Disasters" by Patrick L. Abbott.
2. "Natural Hazards and Disasters" by Donald Hyndman and David Hyndman.
3. "Disasters and Public Health: Planning and Response" by Bruce W. Clements and Eric K. Noji.
4. "Natural Hazards: Earth's Processes as Hazards, Disasters, and Catastrophes" by Edward A. Keller and Duane E. DeVecchio.
5. "Introduction to Emergency Management" by George Haddow, Jane Bullock, and Damon P. Coppola.
6. "Living with Hazards, Dealing with Disasters: An Introduction to Emergency Management" by William L. Waugh Jr.
7. "Environmental Hazards: Assessing Risk and Reducing Disaster" by Keith Smith and David N. Petley.
8. "Community Resilience to Disasters: A Systematic Review of the Literature" by Anita Chandra et al. (National Academies Press, 2011).
9. "Social Vulnerability to Disasters" by Deborah S.K. Thomas.
10. "Disaster Risk Reduction: Cases from Urban Africa" edited by Jonathan P. Makuwira and Matthieu Kervyn.

Note: This syllabus is a general framework and can be adjusted as per the specific requirements and resources of the institution offering the course. It is recommended to select textbooks and additional readings based on the availability and relevance to the course content and learning objectives. Additionally, supplementing the readings with scientific journals, research papers, and case studies can enhance the students' understanding of the subject matter.

Semester-III
Skill Enhancement Course (SEC)
Course title: Geography of Assam Tourism
Course Code: GEOSEC201-3
Total Credits: 3 (Theory 2 + Practical 1)

Course objectives:

This syllabus is to provide students with a comprehensive understanding of the tourism geography of Assam and the Bodoland Territorial Area (BTR). It aims to familiarize students with the diverse tourism potential of Assam, including its natural, cultural, historical, and religious attractions. The syllabus also aims to introduce students to the concepts and principles of tourism development, planning, and management, with a focus on sustainable practices. Furthermore, the objective is to develop students' practical skills in map preparation, data analysis, and fieldwork, enabling them to apply their knowledge in a real-world context. The syllabus aims to equip students with the necessary knowledge and skills to contribute effectively to the tourism industry in Assam and the BTR, while promoting sustainable and responsible tourism practices.

Course outcomes: Upon completing this syllabus, students will be able to:

- Understand the tourism potential of Assam and the BTR, including its natural, cultural, historical, and religious attractions.
- Identify and classify different forms of tourism, such as natural, cultural, medical, adventure, and pilgrimage tourism.
- Analyze the significance of tourism as an industry, considering its economic and socio-cultural impacts in Assam.
- Examine the historical development of tourism in Assam and evaluate the factors that have influenced its growth.
- Understand the various forms of tourism, such as inbound, outbound, national, and international tourism, and their characteristics.
- Comprehend the basic components of tourism, including accessibility, attractions, and accommodation, and analyze their interrelationships.
- Explore tourism policies and initiatives in Assam and their implications for tourism development.
- Recognize the environmental impact of tourism and understand its linkages to ecology and the environment in Assam and the BTR.
- Understand the concept, nature, types, and significance of tourism planning and management.
- Apply planning approaches for different forms of tourism, including ecotourism, adventure tourism, rural tourism, etc., in Assam and the BTR.
- Develop practical skills in map preparation, including physiographic divisions, drainage, transport connectivity, and tourist attractions in Assam and the BTR.
- Analyze and interpret tourism-related data, such as tourist arrivals and seasonal variations, using appropriate tools and techniques.
- Demonstrate fieldwork skills, including data collection, observation, and documentation, in the context of tourism geography.
- The course outcomes aim to enable students to comprehend the diverse aspects of tourism geography in Assam and the BTR, develop critical thinking skills, and apply their knowledge and practical skills to contribute to the sustainable development of the tourism industry in the region.

Course Content:

Units	Course Content	No. of Classes-45 (30 hours of classes of one hour + 30 hours of classes of two hours)	Credits (2+1=3)
Part-A (Theory)			
I	<p>Introduction to Geography of Assam Tourism;</p> <ul style="list-style-type: none"> • Definition, meaning, nature, scope, and types of tourism • Forms of tourism: Natural, cultural, medical, adventure, and pilgrimage tourism • Overview of Assam's tourism potential: Cultural heritage, wildlife sanctuaries, tea gardens, national parks, archaeological sites, religious centers, etc. • Tourism resources and attractions in Assam: Monuments, museums, world heritage sites, religious shrines, fairs, and festivals <p>Tourism Development and Impacts in Assam;</p> <ul style="list-style-type: none"> • Historical development of tourism in Assam • Significance of tourism as an industry: Economic and socio-cultural impacts in Assam • Tourism policies and initiatives in Assam • Sustainable tourism practices and challenges in Assam 	15	2
II	<p>Tourism Planning and Management in Assam and BTR</p> <ul style="list-style-type: none"> • Concept, nature, types, and significance of tourism planning • Planning approaches for different forms of tourism: Ecotourism, adventure tourism, rural tourism • Tourism infrastructure and facilities: Accommodation, transportation, and attractions in BTR <p>Environmental Considerations in Tourism;</p> <ul style="list-style-type: none"> • Environmental impact of tourism: Ecological, cultural, and social perspectives • Sustainable tourism practices: Conservation, preservation, and responsible tourism • Role of ecotourism in promoting environmental conservation 	15	
Part-B (Practical)			
III	<p>Practical Exercises in Geography of Tourism</p> <ul style="list-style-type: none"> • Map preparation: Physiographic divisions and drainage of Assam/ Bodoland Territorial Region 	15	1

	<ul style="list-style-type: none"> • Identification and documentation of historical and religious tourism resources in Assam • Preparation of a transport connectivity map (road, railway, and air) for major tourist destinations in Assam/India • Locational mapping of tourist attraction points: National parks and sanctuaries in Northeast India/Assam • Data analysis: Trend of tourist arrivals in India/Assam since 2000, seasonal variation in tourist arrivals in capital cities of Northeast Indian states using line graphs and cartograms 		
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Suggested books:

1. "Tourism Geography: A New Synthesis" by Stephen Williams
2. "Tourism: Principles and Practice" by John Fletcher and Alan Fyall
3. "Geography of Tourism and Recreation: Environment, Place, and Space" by C. Michael Hall
4. "Tourism Geography: Critical Understandings of Place, Space, and Experience" edited by Stephen Williams and Alan A. Lew
5. "Geography of Tourism: Image, Impacts, and Issues" by Peter Mason
6. "Sustainable Tourism: A Geographical Perspective" by Martin Mowforth and Ian Munt
7. "Tourism and Climate Change: Impacts, Adaptation, and Mitigation" by Daniel Scott, C. Michael Hall, and Stefan Gössling
8. "Geography of Tourism in North East India" by A.K. Bhagabati
9. "Tourism in North East India: A Case Study of Assam" by Dharitri Sarma
10. "Geography of Assam: People, Culture, and Economy" by A.C. Bhagabati
11. "Tourism and Development in the Third World" by Richard Sharpley

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-IV

Total Credits- 20 (Including theory & Practical)

No of Classes- 240 (225 hours of theory classes of one hour + 30 hours of practical classes of two hours)



**DEPARTMENT OF GEOGRAPHY
BODOLAND UNIVERSITY, KOKRAJHAR
Rangalikhata, 783370**

**FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY
Semester-IV
Core Course**

Course title: Evolution of Geographic Thought

Course Code: GEOMAJ203-4

Total Credits: 4 (Theory 4)

Course Objective:

- This course aims to deliver its learners about the epistemology of Geography.
- The course aims to develop among students about understanding of the philosophical considerations underpinning the geographical enquiry.
- It seeks to develop insight understanding among students about development of philosophical ideas and methodologies used by geographers over time.

Course Outcome: After the successful completion of this course, students will:

- Be familiar with geographical thinking in classical and mediaeval period.
- Understand the foundational ideas of scientific geography.
- Be able to know the evolution of geographical thinking and major geographical considerations in the modern world.
- Know the paradigms of geographical thinking since the time of Greek to contemporary period.
- Will understand the difference of classical, modern and postmodern thoughts in geography.

Course Content:

Units	Course Content	No. of Classes-60 (60 hours of classes)	Credits (4+0=4)
I	Foundation of Geography; <ul style="list-style-type: none">• Geographic thoughts: Introduction and major school of thoughts• Pre-Modern - Early Origins of Geographical Thinking with reference to the Classical (Greek, Roman, Indian, Arab)• Medieval Geography and Renaissance: Arab and Chinese Geography; Impact of Voyages, Discoveries and Renaissance• Foundation of Scientific Geography: Rise of dualism; special geography vs general geography; Philosophies of Immanuel Kant• Contribution of Alexander Von Humboldt and Carl Ritter• Impact of Darwinism on Scientific Geography	15	1
II	Modern Geographical Thoughts; <ul style="list-style-type: none">• Evolution of Geographical Thinking and Disciplinary Trends in Germany• Development of Professional Geography in France• Modern British Geography• Professional Geography in former Soviet Union and Contemporary Russia• New Geography in the United States• Geography in Modern India	15	1

III	Philosophies in Geography: <ul style="list-style-type: none"> • Philosophy of Environmental Determinism and its present day relevance • Pioneers of possibilism and their philosophies • Neo-Determinism and changing perception on environmentalism • Paradigm in geography and paradigm shift • The Quantitative Revolution: major theoretical and methodological development • Positivism and logical positivism • Critical Revolution: Criticism to positivism; Humanistic Geography (Idealist, Hermeneutic and Phenomenological approach); Behavioural Geography; Time-Space Geography; Human Ecology; Welfare Geography; Radical Geography 	15	1
IV	New Synthesis in Geography: <ul style="list-style-type: none"> • Empirical philosophies of regional geography • Geographical Knowledge under globalisation • Pure and Applied Geography • Scientific Methods in Geography: Theory and fact; Role of theory; Scientific theory; routes to scientific explanation (induction and deduction) • Postmodernism: modernism and postmodernism; Postmodern Geographic thought; Feminism in Geography; Deconstruction and Spatiality 	15	1

Suggested Books:

1. Arentsen M., Stam R. and Thuijjs R., 2000: Post-modern Approaches to Space, ebook.
- Bhat, L.S. (2009) Geography in India (Selected Themes). Pearson Bonnett,. 2008: What is Geography? Sage
2. Dikshit R. D., 1997: Geographical Thought: A Contextual History of Ideas, Prentice– Hall India.
3. Hartshone R., 1959: Perspectives of Nature of Geography, Rand MacNally and Co.
4. Holt-Jensen A., 2011: Geography: History and Its Concepts: A Students Guide, SAGE.
5. Johnston R. J., (Ed.): Dictionary of Human Geography, Routledge.
6. Johnston R. J., 1997: Geography and Geographers, Anglo-American Human Geography since 1945, Arnold, London.
7. Kapur A., 2001: Indian Geography Voice of Concern, Concept Publications.
8. Martin Geoffrey J., 2005: All Possible Worlds: A History of Geographical Ideas, Oxford
9. Soja, Edward 1989. Post-modern Geographies, Verso, London. Reprinted 1997: Rawat Publication, Jaipur and New Delhi.

Course Title: Economic Geography

Course Code: GEOMAJ204-4

Total Credits: 4 (Theory 4)

Course Objectives:

This course provides an introduction to the field of Economic Geography, exploring the spatial patterns and processes of economic activities around the world. It examines the interplay between geography and economics, analyzing how regions, resources, trade, and globalization shape economic development and inequality. The course also addresses contemporary issues such as urbanization, sustainable development, and the impact of technology on economic geography.

Course Outcomes: By the end of the course, students should be able to:

- Understand the fundamental concepts and theories in Economic Geography.
- Analyze the spatial organization of economic activities and their implications.
- Evaluate the role of globalization, trade, and regional integration in economic development.
- Examine the impact of urbanization and rural-urban interactions on economic geography.
- Assess the challenges and opportunities of sustainable development in a globalized world.
- Apply geographic techniques and tools to analyze real-world economic issues.

Course Content:

Units	Course Content	No. of Classes-60 (60 hours of classes)	Credits (4+0=4)
I	Introduction to Economic Geography; <ul style="list-style-type: none">• Definition, scope, and significance of Economic Geography• Evolution of Economic Geography as a discipline• Key concepts and theories in Economic Geography• Spatial Patterns of Economic Activities	15	4
II	Location theory and industrial location; <ul style="list-style-type: none">• Clusters, agglomerations, and regional development• Global patterns of economic development and inequality• Globalization and Economic Geography	15	
III	Globalization and its impact on economic activities; <ul style="list-style-type: none">• Trade, multinational corporations, and global production networks• Regional integration and economic geography• Urbanization and Economic Geography	15	
IV	Resources, Environment, and Economic Geography: <ul style="list-style-type: none">• Natural resources and their role on economic development• Environmental impacts on economic activities• Sustainable development and economic geography• Technological Change and Economic Geography,	15	

	<ul style="list-style-type: none"> • Innovation, technology, and economic geography • Digitalization and the changing landscape of economic activities, Implications for employment and inequality. 		
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Suggested Books:

1. Economic Geography: A Contemporary Introduction by Neil Coe, Philip Kelly, and Henry W. C. Yeung
2. The New Oxford Handbook of Economic Geography edited by Gordon L. Clark, Maryann P. Feldman, Meric S. Gertler, and Dariusz Wojcik
3. Economic Geography: Places, Networks, and Flows by Danny MacKinnon and Andrew Cumbers
4. Global Economic Geography: A Marxist Critique by David Harvey
5. Economic Geography: The Integration of Regions and Nations by Pierre-Philippe Combes, Henry G. Overman, and Gianmarco I. P. Ottaviano.

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY
Semester – IV
Core Course

Course title: Regional Planning and Development

Course Code: GEOMAJ205-4

Total Credits: 4 (Theory 4)

Course Objective:

- This paper has been designed to provide knowledge about the conceptual aspects of regional planning and development, different theories relating to it etc.
- It aims to help learners acquire knowledge about the various planning strategies taken so far.

Course Outcome:

- This paper will help to acquire knowledge relating to different dimensions of regional planning and development, its relevance in the present day context.
- It will also cater the knowledge and skill relating to the measurements of different levels of development with the help of consideration of different indicators.

Course Content:

Units	Course Content	No. of Classes-60 (60 hours of classes)	Credits (4+0=4)
I	<ul style="list-style-type: none">• Definition of Region, Evolution and Types of Regional planning (Formal and Functional), Need for Regional Planning;• Regionalism and Types of regional Planning.• Concept of Development, Sectoral and sectional Development and developmental indicators.	15	1
II	<ul style="list-style-type: none">• Choice of a Region for Planning, Characteristics of an Ideal Planning Region; Delineation of Planning Region; Regionalization of India for Planning (Agro Ecological Zones)• Theories and Models for Regional Planning: Growth Pole Model of Perroux; Growth Centre Model in Indian Context; Myrdal, Hirschman, Rostow and Friedmann; Village Cluster.	15	1
III	<ul style="list-style-type: none">• Regional Disparities, Global Pattern of Development, Inter-regional variations.• Changing Concept of Development, Concept of underdevelopment; Efficiency-Equity Debate• Regional Planning in India, Regional Approach to Planning in India's Five Year Plans Decentralization and Multi-Level Planning - State, District and Block level planning in India.• Planning regions of India: Case Studies of a River Valley Development Plan eg. Damodar Valley and National Capital Region Plan.• Area Based Approach to Development: Green Revolution, Drought Prone Area Programmes, PMGSY• Need for Rural Development, Gandhian Concept of Rural Development.	20	1

IV	<ul style="list-style-type: none"> • Measuring development: Indicators (Economic, Social and Environmental) • Measures of Disparity Calculation for Indicators of Development • Measures of level of development with the help of Z-Scores and PCA techniques. • Delineation of Industrially backward regions of India with choropleth mapping. • Regional mapping of developmental activities in India with special reference to Assam. 	10	1
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Suggested Book:

1. Blij H. J. De, 1971: *Geography: Regions and Concepts*, John Wiley and Sons.
2. Claval P.I, 1998: *An Introduction to Regional Geography*, Blackwell Publishers, Oxford and Massachusetts.
3. Friedmann J. and Alonso W. (1975): *Regional Policy - Readings in Theory and Applications*, MIT Press, Massachusetts.
4. Gore C. G., 1984: *Regions in Question: Space, Development Theory and Regional Policy*, Methuen, London.
5. Gore C. G., Köhler G., Reich U-P. and Ziesemer T., 1996: *Questioning Development; Essays on the Theory, Policies and Practice of Development Intervention*, Metropolis- Verlag, Marburg.
6. Haynes J., 2008: *Development Studies*, Polity Short Introduction Series.
7. Johnson E. A. J., 1970: *The Organization of Space in Developing Countries*, MIT Press, Massachusetts.
8. Peet R., 1999: *Theories of Development*, The Guilford Press, New York.
10. World Bank 2001-05: *World Development Report*, Oxford University Press, New
11. Abler R., Adams J. S., and Gould P. R., 1971: *Spatial Organization: A Geographer's View of the World*, Englewood Cliffs, Prentice-Hall.
12. Blij H. J. De, 1971: *Geography: Regions and Concepts*, John Wiley and Sons.
13. Claval P.I, 1998: *An Introduction to Regional Geography*, Blackwell Publishers, Oxford and Massachusetts.
14. Friedmann J. and Alonso W. (1975): *Regional Policy - Readings in Theory and Applications*, MIT Press, Massachusetts.
15. Gore C. G., 1984: *Regions in Question: Space, Development Theory and Regional Policy*, Methuen, London.
16. Krishnamurthy, J. 2000: *Rural Development - Problems and Prospects*, Rawat Publs., Jaipur
17. Lee D. A. and Chaudhri D. P. (eds.), 1983: *Rural Development and State*, Methuen, London.
18. Misra R. P. and Sundaram, K. V. (eds.), 1979: *Rural Area Development: Perspectives and Approaches*, Sterling, New Delhi.
19. Misra, R. P. (ed.), 1985: *Rural Development: Capitalist and Socialist Paths*, Vol. 1, Concept, New Delhi.
20. Palione M., 1984: *Rural Geography*, Harper and Row, London.
21. Ramachandran H. and Guimaraes J.P.C., 1991: *Integrated Rural Development in Asia- Learning from Recent Experience*, Concept Publishing, New Delhi.

FOUR YEAR UNDERGRADUATE COURSE IN GEOGRAPHY

Semester-IV

Minor Course

Course title: Economic Geography

Course code: GEOMIN202-4

Total Credits: 4 (Theory 3+ Practical 1)

Course Objective:

- The minor course on Economic Geography has been designed specifically to equip its learners with theoretical Knowledge about the economic activities taking place among human society across the world.
- The course has been designed to impart its learners with the basic knowledge to aid them in securing a niche for themselves in ongoing issues and relevant factors controlling various economic activities.
- It aims to develop understanding among the learners how indifferent distribution of resources influence human and economic activities over the space and can be understood through the lens of geographical concepts on economic activities, resource distribution, enacted policies and trading rules across the globe.

Course Outcome: After the completion of this course, learners will be able to:

- Understand meaning and scope of Economic geography with various concepts and approaches
- Classify economic activities and its significance towards economy of the country
- Concepts of resource, resource distribution across the world and its role towards global world trade.
- Factors governing economic activities of agriculture and industries.
- Roles of international institutions in global trade regulation and activities.
- Able to relate world economic situation emerging at different time period over the space.

Course Content:

Units	Course Content	No. of Classes-60 (45 hours of classes of one hour + 30 hours of classes of two hours)	Credits (3+1=4)
Part-A (Theory)			
I	Introduction to Economic Geography ; <ul style="list-style-type: none">• Meaning and scope of economic geography, Approaches in economic geography: regional, systematic and sectoral.• Concept and classification of economic activity and its GDP share on national economy<ul style="list-style-type: none">- Primary Activities: Subsistence and Commercial agriculture, forestry, fishing and mining;- Secondary Activities: Manufacturing (Cotton Textile, Iron and Steel);- Tertiary Activities: Transport, Trade and Services; role of tertiary activity in economic development of a country.	15	3
II	Geography of Resource;	15	

	<ul style="list-style-type: none"> • Concept of resources and its classification; Distribution of renewable and non-renewable resources in global context: Forests, Hydro, Wind, Solar, Tidal, Nuclear, Coal, petroleum, Iron ore. • Conservation of resources, idea and concept of sustainability and resource management approaches. • International forums and resource sustainability. 		
III	<p>Geography of Economic Activity;</p> <ul style="list-style-type: none"> • Agriculture: Cropping season, physical and socio-economic factors influencing agricultural practice; types of agriculture; major food and cash crops, their distribution and production (Rice, wheat, Sugarcane, Tea, Cotton) • Industry: Factors of industrial location, classification of industries, distribution and production of iron and steel, textile, petro-chemicals. • Economic characteristics of developed and developing countries • WTO and role in global trade • Challenges of global/regional economy in contemporary world order 	15	
Part-B (Practical)			
IV	<ul style="list-style-type: none"> • Cartographic representation of economic data of India/N.E. India in spatio-temporal context: pie-graph, line graph, bar graph and choropleth mapping • Trend analysis of production of food crops, cash crops, ores, petroleum, etc. of India/N.E. India using moving average method • Transport network analysis using connectivity indices (alpha, beta & gamma). • Traffic Flow Cartogram, crop combination analysis 	15	1

Suggested Books:

1. Bishop, M.: Economics An A-Z guide, Profile books Ltd, London
2. Guha, J.L. and Chattoraj, P.R.: A New Approach to Economic Geography, The World Press Pvt. Ltd., Kolkata.
3. Leong, G.C. and Morgan, G.C.: Human and Economic Geography, Oxford University Press, New Delhi.
4. Roy, P. and Mukherjee, S.: Economic Geography – An Appraisal of Resources, Central Educational Enterprise, Kolkata.
5. Thoman, R.S. and Corbin, P.B.: The Geography of Economic Activity, McGraw Hill
6. Memoria, C.B.: Economic and Commercial Geography, Shivalal Agarwala and Company Educational Publishers, Agra-3