DEPARTMENT OF GEOGRAPHY

SYLLABUS FOR FOUR YEAR UNDERGRADUATE PROGRAMME (FYUGP)

(FIRST – EIGHT SEMESTER)

Approved by Academic Council vide Resolution no. AC – 03/2024/05 dated: 04 – 05– 2024 and AC – 06/2026/03 dated 28 – 02 - 2026

ARYA VIDYAPEETH COLLEGE (AUTONOMOUS)

ARYA NAGAR, GUWAHATI – 16

CONTENT

PREFACE

"Education is not preparation for life; education is life itself." —John Dewey

The aim of imparting education is not only to increase the knowledge but also to create the possibilities for a student to invent and discover. The purpose of this syllabus is to establish minimum basic concepts for each course to meet the needs of all our students. All the elements in this syllabus amalgamate to bring out the best in every student and enable them to be on the path of continuous progress.

The syllabus is framed based on Learning Outcome Based Education (LOCF) –the spirit of NEP, 2020. The programmes offered by the college are:

i. Bachelor Degree in Arts
ii. Bachelor Degree in Science
iii. Bachelor Degree in Commerce

Under the above programme, the following courses are offered by the college:

i. Core Course
ii. Minor Course
iii. Skill Enhancement Course
iv. Interdisciplinary Course
v. Ability Enhancement Course
vi. Value Added Course
vii. Internship

Programme outcome of each programme and Programme Specific Outcomes of each discipline/subject offered by the college is mapped with course learning outcome of each course. Graduate attributes of students obtaining Undergraduate Degree from the college are also incorporated in the syllabus.

The syllabus includes eight semesters where there will be 23 Core Courses, 8 Minor Courses, 2 Value Added Courses, 3 SEC Courses, 3 IDC Courses, 4 AEC courses and internship. The total credit offered for eight semesters is160.

The syllabus framed takes into account the different styles of learning – audio, visual and experiential. The syllabus correlates academics to real life situations balancing social and emotional stimulation among the students and imbibe human values. Also, the syllabus gives the opportunity for the theoretical knowledge to be pursued ensuring maximum application of it.

Structure of Four Year Undergraduate Course

Semester	Type	Core	Minor	SEC	IDC	AEC	VAC/FC	IN
	Credit	4	4	3	3	2	4(2 + 2)	2
I		CE-1114	MN-1114	SE-1113	ID-1113	AE-1112	VL-1112 (Two Courses)	-
II		CE-2114	MN-2114	SE-2113	ID-2113	AE-2112	VL-2112 (Two Courses)	-
III		CE-3214	MN-3214	SE-3213	ID-3213	AE-3212	-	-
		CE-3224						
IV		CE-4214	MN-4214	-	-	AE-4212	-	IN-4212
		CE-4224						
		CE-4234						
V		CE-5314	MN-5214	-	-	-	-	-
		CE-5324						
		CE-5334						
		CE-5344						
VI		CE-6314	MN-6214	-	-	-	-	-
		CE-6324						
		CE-6334						
		CE-6344						
VII		CE-7414*	MN-7314	-	-	-	-	-
		CE-7424**						
		CE-7434**						
		CE-7444**						
		CE-7454**						
VIII		CE-8414#	MN-8314	-	-	-	-	-
		CE-8424#						
		CE-8434#						
		CE-8444#						
		CE-8454#						

***Compulsory for all students in the 7th semester.**

****Students are required to choose any three courses from the remaining four core courses in the 7th semesters.**

 # Students who wish to pursue a Bachelor Degree with Honours must choose any four of the five core courses in the 8th semester.

NOTE: Students who secure a minimum of 7.5 CGPA at the end of the 6th semester (without any arrears) may opt for a Bachelor Degree with Honours and Research. Those students shall have to choose one core course out of the given five courses in the 8th semester and have to complete a Research Dissertation of 12 credits.

Course code: **First two letters is the abbreviation of course component**

First digit implies semester number

Second digit implies course level

Third digit implies course number

Fourth digit implies credit points per course.

Digit	Course Level
1	100 - 199
2	200 - 299
3	300 - 399
4	400 - 499

Semester Wise Credit Distribution

Semester	CREDIT DISTRIBUTION							
	CORE	MINOR	SEC	AEC	IDC	VAC/FC	IN	TOTAL
FIRST	1 x 4	1 x 4	1 x 3	1 x 2	1 x 3	2x 2	--	20
SECOND	1 x 4	1 x 4	1 x 3	1 x 2	1 x 3	2x 2	--	20
THIRD	2x 4	1 x 4	1 x 3	1 x 2	1 x 3	--	--	20
FOURTH	3x 4	1 x 4	--	1 x 2	--	--	1 x 2	20
FIFTH	4x 4	1 x 4	--	--	--	--	--	20
SIXTH	4x 4	1 x 4	--	--	--	--	--	20
SEVENTH	4x 4	1 x 4	--	--	--	--	--	20
EIGHT	4x 4	1 x 4	--	--	--	--	--	20

SEC: SKILL ENHANCEMENT COURSE

AEC: ABILITY ENHANCEMENT COURSE

IDC: INTERDISCIPLINARY COURSE

VAC/FC: VALUE ADDED COURSE

IN: INTERNSHIP

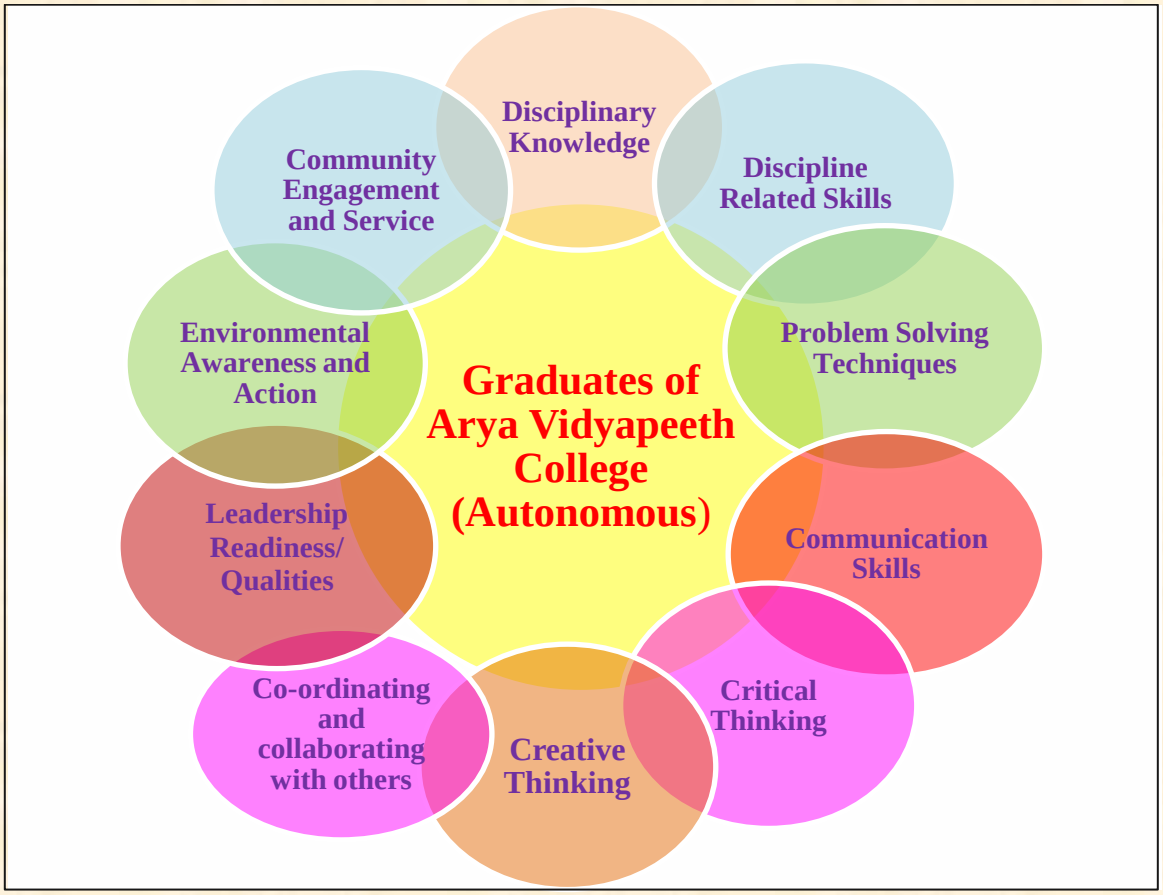
Abbreviation of Course Components:

CE (Core), MN (Minor), SE(Skill Enhancement Course), AE (Ability Enhancement Course), VL (Value added Course), ID (Interdisciplinary Course), IN (Internship)

GRADUATE ATTRIBUTES

Graduate Attributes:

Graduate Attributes are the qualities, skills and understandings that the students should develop during their time with the college. These attributes consequently shape the contribution they are able to make to their profession and society. They are the qualities that also prepare graduates as agents of social good in an unknown future. These attributes set them apart from those without a degree. The graduate attributes of Arya Vidyapeeth College (Autonomous) are:



Model of Graduate Attributes

1. **Disciplinary knowledge:** Graduates shall acquire comprehensive knowledge and understanding of their subject area, the ability to engage with different traditions of thought, and the ability to apply their knowledge in practice including in multi-disciplinary or multi-professional contexts.
2. **Discipline related skills:** Skills in areas related to specialization in the chosen disciplinary/interdisciplinary/major/minor area(s) of learning in a broad multidisciplinary context. In addition, create, select, and apply appropriate modern techniques, resources and IT tools.
3. **Problem solving skills:** A capacity for problem identification, the collection of evidence, synthesis and dispassionate analysis and apply one's learning in real – life situations.

4. **Communication Skills:** Ability to recognize and value communication as the tool for negotiating and creating new understanding, collaborating with others, and furthering their own learning.
5. **Critical thinking:** Graduates acquire the capacity for problem identification, collection of evidence, synthesis and dispassionate analysis. They also acquire the capacity for attentive exchange, informed argument and reasoning.
6. **Creative Thinking:** The graduates acquire an ability to create, perform or think in different and diverse ways about the same objects or scenarios and also the ability to communicate effectively for different purposes and in different contexts. They should also be able to work independently and as part of a team.
7. **Co-ordinating and collaborating with others:** The graduates need to possess the ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. They should also be able to work productively with others, no matter their culture, perspective or background, and complete joint projects and also to work in partnership.
8. **Leadership readiness/qualities:** The graduates should be able to lead and support others by inspiring them with a clear vision and motivating them to achieve goals.They also need to acquire ability to map out the tasks of a team or an organization and setting directions.
9. **Environmental Awareness and action:** The graduates shall earn the capacity to realize the individual's responsibility in protecting and conserving the environment. They need to gain the capacity to understand the impact of the professional solutions in societal and environmental contexts, and demonstrate the knowledge of need for sustainable development.
10. **Community engagement and service:** The graduates need to develop an understanding of social and civic responsibilities, and of the rights of individuals and groups. The graduates should be able to demonstrate the capability to participate in community-engaged services/ activities for promoting the wellbeing of the society which includes participation in NSS,NCC, adult literacy etc.

UNDERGRADUATE PROGRAMME OUTCOME (PO): BACHELOR DEGREE IN SCIENCE: (B.SC.)

1. **SPO-1 Knowledge:** Learners are encouraged to apply the knowledge of mathematics and science fundamentals to various solutions of complex problems. As such, knowledge of the subject is the sole objective of any student learner. A student is exposed to a wide range of topics in various subjects and is given intensive training in each of the courses that have laboratory related work. The learner is encouraged to use various mathematical methods (analytical and numerical) and experimental methods as an application to the acquired concepts and principles that help in studying various branches of sciences. At the end of the program, students are able to gain thorough knowledge in key areas in the subjects offered.
2. **SPO-2Problem Analyses**: Well equipped with an understanding of the analytical methods involved, they are in a position to interpret and analyze results so obtained from experiments and draw suitable conclusions against their supported data acquired. At the end of the program, students will be able to identify, formulate and analyze scientific problems and reach concrete solutions using various principles of mathematics and sciences.
3. **SPO-3 Designing Solutions**: Having acquired knowledge of subjects, students are trained to think out of the box, design and conduct an experiment or a series of experiments that demonstrate their understanding of the methods and processes involved.
4. **SPO-4 Modern tool usage**: Learners are trained to create, select, and apply appropriate techniques, resources and IT tools in the analysis and synthesis of data within limitations. (Outcome of final year project).
5. **SPO-5 Effective Communication**: Proficiency in speaking, reading, writing and listening in English and one Indian language and find meaning of the world by connecting people, ideas, books, media and technology.
6. **SPO-6 Employability**: This programme enables the learners to perform the jobs in diverse fields such as science, engineering, industries, survey, education, banking, development-planning, business, public service, self-business etc. efficiently. They will also be able to appear for competitive examinations
7. **SPO-7 Ethics:** While it is necessary to instil the spirit of competitiveness among students in a world of increasing competition, it is equally vital to develop a strong sense of ethics among learners that will help them develop some positive attitudes and values. This includes appreciation of the various principles and theories that evolved in science, the impact that science has on social, economic and environmental issues. One of the main objectives of any academic exercise, therefore, should be to produce well-groomed individuals who understand the significance of ethical values and abide by them even in the most pressing circumstances. In this

programme, this process is enabled through courses and facilitators who integrate the teaching of ethics in everyday pedagogy. As such, at the end of this programme students will be able to develop, internalise and exercise ethics in their professional as well as personal practices.

8. **SPO-8Environment and Sustainability**: 'Environmental sustainability' has become the watchword of the 21st century. An increased engagement with environment related concerns is appearing tangibly on global fronts; academics cannot and should not remain quarantined from this massive development. Through classroom discussions and research projects, this programme facilitates active dialogues with factors which influence human-ecology interactions. As such, at the end of this programme students will be able to identify and analyze socio-political, cultural and economic problems which act as deterrents to environmental sustainability and provide creative solutions towards the same.

9. **SPO-9 Soft-Skill Development**: Apart from the attainment of knowledge and hands on skills in practical applicability of the subject, learners need to be equipped with soft-skills and values which will help them function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary groups. These soft skills include leadership, teamwork, project-management, positive outlook, innovative approaches and effective articulation. Several soft skill programs are organized for learners through various agencies that tie up with the state government. As such, at the end of this programme, students will be able to hone the soft-skills required in positively enhancing their academic, professional and personal pursuits towards self and societal advancement.

10. **SPO-10 Science and Society**: The learners are encouraged to apply logical reasoning based on the knowledge, skills, designing solutions to assess societal, health, safety issues and the responsibilities that go along with the scientific practice. As an extension activity to society, learners are encouraged to take up specific projects such as impact of salinity on fresh water wells in an adopted village, and provide effective solutions.

11. **SPO-11Life-long learning**: With the pursuit of knowledge for either personal or professional reasons, learners are also encouraged to volunteer and be self motivated that not only enhances society values, active participation and personality development, but also enhances self-sustainability, competiveness and employability. As such, learners will be able to recognize the need for, and have the preparation and ability to engage in independent and life-long learning in every broad context of technological changes.

UNDERGRADUATE PROGRAMME OUTCOME (PO): BACHELOR DEGREE IN ARTS: (B.A.)

1. **APO-1 Critical Thinking:** Ability to analyse, synthesize and integrate knowledge. Capability to evaluate the validity of arguments and conclusion.
2. **APO-2 Effective Communication**: Proficiency in speaking, reading, writing and listening in English and one Indian language and find meaning of the world by connecting people, ideas, books, media and technology.
3. **APO-3 Social Interaction**: Link with society and intercede the disagreement and help to reach conclusion in group sitting. Demonstrate intellectual awareness and competencies. Reflect on one's cultural identities and values.
4. **APO-4 Effective Citizenship**: Promote active citizenship and community engagement. Ability to understand the national development, informed awareness of issues and participate in civic life.
5. **APO-5 Ethics:** Humanities education is designed in such a way that it lays particular emphasis on human values. Students on completion of the undergraduate degree will be better able to appreciate the literary and cultural diversity. It equips them to think critically about the issues of contemporary relevance and hold an informed opinion on them.
6. **APO-6Environment and Sustainability:** 'Environmental sustainability' has become the watchword of the 21st century. An increased engagement with environment related concerns is appearing tangibly on global fronts; academics cannot and should not remain quarantined from this massive development. Through classroom discussions and research projects, this programme facilitates active dialogues with factors which influence human-ecology interactions. As such, at the end of this programme students will be able to identify and analyze socio-political, cultural and economic problems which act as deterrents to environmental sustainability and provide creative solutions towards the same.
7. **APO-7 Life-long learning:** With the pursuit of knowledge for either personal or professional reasons, learners are also encouraged to volunteer and be self-motivated that not only enhances society values, active participation and personality development, but also enhances self-sustainability, competiveness and employability. As such, learners will be able to recognize the need for, and have the preparation and ability to engage in independent and life-long learning in every broad context of technological changes.
8. **APO-8 Individual and team work**: Function effectively as an individual and as a member or leader of diverse teams and in multi-disciplinary settings.
9. **APO-9 Evaluate and conduct research**: Engage in scholarly inquiry to identify and investigate questions of a theoretical and applied nature which identify gaps and limitations in the existing

literature, understand the principles of the research process, apply appropriate research methodologies to specific problems and develop intellectual independence and practices self-directed inquiry.

10. **APO-10 Depth of understanding**: Demonstrate detailed knowledge and perspectives across disciplinary boundaries. Develop a detailed understanding of the current state of knowledge in one or more disciplines. Recognise the value, use and limits of multi-disciplinary learning. Cultivate an openness to consider and engage alternative research perspectives.
11. **APO-11 Employability:** On graduating, the students will be eligible for employment in tourism, media, hospitality, and other industries. Students also become employable in non-governmental organizations. Their skills in comprehension of general social phenomena around them places them in ideal situation for such jobs. They will also be able to appear for competitive examinations

CORE

LIST OF COURSES:

Semester	Course Name	Course Code
1	Fundamentals of Geography	GG – CE – 1114
2	Geography as a Discipline	GG – CE – 2114
3	Physical Geography	GG – CE – 3214
	Human Geography	GG – CE – 3224
4	Geomorphology	GG – CE – 4214
	Climatology and Oceanography	GG – CE – 4224
	Introduction to Cartography and Surveying techniques	GG – CE – 4234
5	Social and Cultural Geography	GG – CE – 5314
	Political Geography	GG – CE – 5324
	Population and Settlement Geography	GG – CE – 5334
	Quantitative Techniques in Geography	GG – CE – 5344
6	Geography of India	GG – CE – 6314
	Economic Geography	GG – CE – 6324
	Remote Sensing, GIS and GPS	GG – CE – 6334
	Field Techniques in Geography	GG – CE – 6344
7	Research Methods in Geography and Project Work	GG – CE – 7414
	Advanced Cartography and Spatial Statistical Techniques	GG – CE – 7424
	Geography of North-East India and Assam	GG – CE – 7434

7	Agricultural Geography	GG – CE – 7444
	Soil and Biogeography	GG – CE – 7454
8	Geographical Thought	GG – CE – 8414
	Regional Planning and Development	GG – CE – 8424
	Urban Geography	GG – CE – 8434
	Environmental Geography and Disaster Management	GG – CE – 8444
	Geography of Tourism	GG – CE – 8454
	Dissertation	GG – DT – 812

Programme Specific Outcome of Bachelor of Science – GEOGRAPHY: Core (PSO)

PSO No.	Name	Outcome
PSO–1	Disciplinary Knowledge	Learners will develop a thorough understanding of human, physical, and economic geography, including the intricate relationships between physical landscapes, human societies, and cultural developments at local, regional, and global scales.
PSO–2	Discipline-Related Skills	Learners will acquire practical skills in representing and analyzing population data using various cartographic techniques, enabling them to create effective maps for regional development and decision-making.
PSO–3	Analytical Knowledge	Learners will enhance their ability to critically analyze population dynamics, industrial location factors, and international trade dynamics, fostering informed decision-making and problem-solving in economic and human geography.
PSO–4	Creative Thinking	Learners will improve their ability to articulate and present complex geographical concepts, including human-environment interactions and the principles of economic geography, through written and visual means.
PSO–5	Team work and Collaboration	Learners will engage in collaborative projects to investigate geographical issues, such as population distribution and resource utilization, promoting teamwork and shared problem-solving in geographical research.
PSO–6	Leadership Skills	Learners will develop leadership skills by taking initiative in group projects, guiding discussions on geographical topics, and leading efforts to address complex spatial and environmental challenges
PSO–7	Environmental Awareness and Stewardship	Learners will cultivate a strong environmental awareness, understanding the impact of human activities on the environment, and advocate for sustainable practices in resource management and industrial development.
PSO–8	Community Engagement and Service	Learners will apply their geographical knowledge to engage with communities, addressing local environmental issues, and contributing to sustainable development initiatives through informed spatial analysis and planning.
PSO–9	Spatial Problem-Solving	Learners will develop the ability to apply quantitative methods to solve spatial problems, enhancing their capacity to address real-world geographical challenges through data-driven analysis and decision-making.
PSO–10	Disciplinary Knowledge	Learners will develop a thorough understanding of human, physical, and economic geography, including the intricate relationships between physical landscapes, human societies, and cultural developments at local, regional, and global scales.

Course Learning Outcome (CLO) – Core

Semester	Course Name & Code	Course Learning Outcome(CLO)	
1	Fundamentals of Geography GG – CE – 1114	CLO - 1	The student will be able to impart basic knowledge on Geography as a spatial science.
		CLO - 2	This course will help the student to gain the knowledge of the planet earth
2	Geography as a Discipline GG – CE – 2114	CLO - 1	This course will help the students to differentiate between physical Geography and Human Geography.
		CLO - 2	Students will understand human perception and behaviour in relation to their environment.
		CLO - 3	This paper will help the students to learn how human, physical and environmental components of the earth interact one another.
3	Physical Geography GG – CE – 3214	CLO - 1	The learners will gather knowledge about the fundamental concepts of Physical Geography and also understand the dynamics of the earth like the motion types, its workings and their varied effects.
		CLO - 2	Learners will gain knowledge about the various movements and the different geomorphic processes of the earth that are responsible for the formation of various landforms and will be able to classifyrocks and minerals based on their characteristics and understand their significance in geological formations
		CLO - 3	Learners will also gain practical skills in interpreting the geological time-scale, representation of fold, fault and identify different rock
	Human Geography GG – CE – 3224	CLO - 1	The learners will be able to define human geography, identify its major themes while understanding its contemporary significance and critically evaluate the different schools of human geography.

3	Human Geography GG – CE – 3224	CLO - 2	Learners will be able to analyse different human adaptations across various geographical environments and interpret the cultural expressions.
	Human Geography GG – CE – 3224	CLO - 3	Learners will also be able to analyse the population dynamics, theories, global trends and insight into types of settlements and patterns of world migration
		CLO - 4	Learners will also be able to demonstrate practical skills in representation and spatio-temporal analysis of population data using various cartographic techniques.
4	Geomorphology GG – CE – 4214	CLO - 1	The learners will gain understanding on the various internal and external processes that shape the planet, their behavioural characteristics and resultant topography.
		CLO - 2	Acquire practical knowledge on delineating a drainage basin and stream ordering.
		CLO - 3	The learners will be able to impart knowledge on key concepts of plate tectonic, isostasy, sea floor spreading geosyncline and theories of continental drift and mountain building.
	Climatology and Oceanography GG – CE – 4224	CLO - 1	The learners will gain a theoretical understanding of the foundation of Climatology and Oceanographic principles and their related theories and concepts.
		CLO - 2	They will gain analytical skills by evaluating factors influencing the earth's atmospheric dynamics, including temperature, pressure and moisture along with various other atmospheric phenomena.
		CLO - 3	Learners will also gain expertise to examine the topographic characteristics of the ocean floor besides understanding the seafloor configurations and specific currents of the Atlantic, Pacific and the Indian Oceans.

4	Climatology and Oceanography GG – CE – 4224	CLO - 4	They will also gain practical skills in interpreting Indian weather maps with proficiency in using weather symbols and will also develop expertise in data analysis and graphical representation, creating various climatic graphs using
	Introduction to Cartography and Surveying techniques GG – CE – 4234	CLO - 1	Learners will be able to enhance their proficiency in creating effective maps.
		CLO - 2	They will also be able to prepare maps for regional development and decision making.
		CLO - 3	Learners will be able to investigate various geographical phenomena as well as solve various problems with the usage of different surveying equipment.
		CLO - 4	Learners will be able to apply various cartographic techniques to solve spatial problems
5	Social and Cultural Geography GG – CE – 5314	CLO - 1	Learners will acquire a comprehensive understanding of the broad field of Social and Cultural Geography along with gaining in-depth conceptual knowledge.
		CLO - 2	Learners will comprehend diverse social processes and associated challenges, examining the concepts of social inclusion and exclusion within geographical studies.
		CLO - 3	Further they will also be able to apply concepts of social justice and security in practical social contexts.
		CLO - 4	Learners will be able to investigate cultural concepts and will attain ability to explore global cultural diversity with a special focus on Northeast India as a cultural region while also gaining the ability to examine the impact of globalization and migration on cultural landscapes and change.
		CLO - 5	Learners will acquire the ability to apply theoretical knowledge through various practical assignments.

5	Political Geography GG – CE – 5324	CLO - 1	By the end of the course, learners will be able to demonstrate a deep understanding of key concepts and theories in political geography.
		CLO - 2	By the end of the course, learners will be able to analyse the spatial dimensions of political phenomena at local, national, and international levels.
		CLO - 3	By the end of the course, learners will be able to evaluate the role of geography in shaping political boundaries, statecraft, and geopolitical conflicts.
		CLO - 4	By the end of the course, learners will be able to apply critical thinking skills to analyse the geopolitical implications of global issues
	Population and Settlement Geography GG – CE – 5334	CLO - 1	Learners will gain an understanding of the field of Population Geography and its development. Learners will also understand basic concepts and theories and apply them to explain population dynamics
		CLO - 2	Learners will understand the challenges and implications of contemporary population issues, such as aging populations and declining sex ratios.
		CLO - 3	Learners will acquire knowledge on rural and urban settlements, including their factors, characteristics, and internal structures based on given theories.
		CLO - 4	Learners will acquire basic skill in quantitative analysis, spatial mapping, distribution analysis, demographic visualization, urbanization patterns, population distribution, and migration analysis through hands-on practical and will be able to apply them to analyse
	Quantitative Techniques in Geography GG – CE – 5344	CLO - 1	Learners will be able to compute and interpret measures of central tendency and dispersion for geographical data, facilitating effective data analysis and

5	Quantitative Techniques in Geography GG – CE – 5344	CLO - 2	They will also be able to apply sampling techniques to gather representative data sets, conduct time series analysis and correlation and regression analysis for geographical phenomena, enabling the identification of trends and patterns over time.
		CLO - 3	Further, learners will develop practical skills in computing and interpreting various statistical measures and conducting spatial analysis, enhancing proficiency in geographical research methodologies.
6	Geography of India GG – CE – 6314	CLO - 1	Learners will be able to understand the location of India with reference to its neighbouring countries and gain a general understanding of the physiography, drainage, climate, soil and natural vegetation of the country.
		CLO - 2	Learners will be able to analyse population distribution, composition, demographic trends and understand population problems and policies.
		CLO - 3	Learners will also be able to examine the resource base of different regions in India and investigate spatial patterns of economic activities, including agriculture, industry, and services.
		CLO - 4	Learners will possess a well-rounded understanding of India's geography, equipped with analytical skills to comprehend the intricate relationships between physical landscapes, human societies, and
	Economic Geography GG – CE – 6324	CLO - 1	Learners will develop a comprehensive understanding of Economic Geography, enabling critical analysis and interpretation of economic phenomena at local, regional, and global scales.
		CLO - 2	They will acquire knowledge of economic activity principles, including production systems and resource utilization, fostering a deeper understanding of economic processes and dynamics.

6	Economic Geography GG – CE – 6324	CLO - 3	Learners will be able to investigate the factors influencing industrial location and the distribution of key industries, enhancing comprehension of industrial geography and economic development strategies.
		CLO - 4	They will also develop analytical skills to assess international trade dynamics, including factors influencing trade patterns and India's trade relations with major global partners, contributing to informed decision-making in trade policy and international relations along with the ability to apply theoretical knowledge in practical applications in real life.
	Remote Sensing, GIS and GPS GG – CE – 6334	CLO - 1	Learners will be able to understand the principles of remote sensing systems, facilitating the interpretation of imagery and the selection of appropriate platforms and sensors for specific applications.
		CLO - 2	Learners will be able to analyse remote sensing data products and employing image interpretation techniques for extracting valuable information, such as land cover classification and spatial analysis.
		CLO - 3	Learners will be able to critically evaluate remote sensing techniques and their historical significance, enabling informed decision-making in geographical research and applications.
		CLO - 4	Learners will be able to utilize GIS tools and techniques for spatial data analysis, including data layer creation, digitization, and thematic representation, as well as managing spatial and non-spatial data types.
		CLO - 5	Learners will be able to apply geospatial techniques, including GPS data collection and mapping, in addressing real-world problems such as land use/land cover changes, urbanization trends, forest monitoring, and hydrological analysis, enhancing decision-making processes in various sectors.

6	Field Techniques in Geography GG – CE – 6344	CLO - 1	Learners will be equipped with the basic skills in surveying methodologies, including the practical application of ground surveying techniques and the accurate execution of traverse surveying, profile levelling, and contouring tasks.
		CLO - 2	Learners will be adept at addressing research problems, employing appropriate methodologies, and utilizing tools effectively for conducting quality research.
		CLO - 3	Learners will develop proficiency in identifying and conducting case studies across varying geographical contexts, fostering a deeper understanding of geographical processes and dynamics.
		CLO - 4	Learners will have competence in employing a wide range of tools and techniques for data collection, enabling effective observation, surveying, and interview processes in both physical and human geography.
7	Research Methods in Geography and Project Work GG – CE – 7414	CLO - 1	Learners will develop a sound understanding of the meaning, scope, and significance of research, and will be able to conceptualize research problems through effective review of literature and appropriate research design.
		CLO - 2	Learners will acquire the ability to systematically collect, process, and analyze qualitative and quantitative data using suitable methodologies, statistical techniques, and contemporary research tools.
		CLO - 3	Learners will demonstrate the competence to apply ethical research practices and digital tools to produce well-structured research reports, with proper citation, referencing, and clear presentation of findings in the form of tables, figures, and executive summaries.

	Advanced Cartography and Spatial Statistical Techniques GG – CE – 7424	CLO - 1	Explain and apply fundamental concepts of cartography, geodesy, map projections and cartographic design in geographical mapping.
7		CLO - 2	Apply geoinformatics and GPS-based techniques for spatial data collection, mapping and addressing practical geographical problems.
		CLO - 3	Apply appropriate statistical techniques to analyse, compare and interpret geographical data and identify significant spatial patterns, relationships and variations.
		CLO - 4	Use statistical software and quantitative methods to analyse complex geographical datasets, construct meaningful indices and derive evidence-based geographical interpretations.
	Geography of North-East India and Assam GG – CE – 7434	CLO - 1	Learners will be able to articulate the locational and strategic significance of Northeast India and Assam, considering their impact on regional and global contexts.
		CLO - 2	They will be able to demonstrate a comprehensive understanding of the physical characteristics of Northeast India and Assam.
		CLO - 3	Learners will be able to analyse the population dynamics of Northeast India in general and Assam in particular.
		CLO - 4	Learners will specifically be able to understand Assam's economic development prospects and challenges by analysing its resource and industrial profile alongside exploring biodiversity to assess the state’s tourism potential
	Agricultural Geography GG – CE – 7444	CLO - 1	Learners will be able to explain the concepts, theories, and types of agriculture at global and national levels, including India’s agricultural development and revolutions.
		CLO - 2	Learners will be able to analyze factors influencing agriculture and evaluate the relevance of modern, digital, and sustainable agricultural practices.

		CLO - 3	Learners will be able to assess agricultural modernization strategies and their impact on productivity, sustainability, and food security.
	Soil and Biogeography GG – CE – 7454	CLO - 1	Understand the key concepts of environmental geography and human–environment adaptation.
		CLO - 2	Analyse major environmental stresses and global environmental problems, their causes and impacts.
		CLO - 3	Describe different hazards and disasters, and analyse risk and vulnerability patterns in India
		CLO - 4	Apply disaster risk reduction strategies and governance frameworks, including traditional knowledge and relevant policies.
8	Geographical Thought GG – CE – 8414	CLO - 1	Explain the evolution of geographical thought and paradigm shifts in geography.
		CLO - 2	Critically evaluate major geographical schools, models, and theoretical traditions.
		CLO - 3	Apply classical spatial models to analyse real-world geographical and urban data.
		CLO - 4	Analyse radical and postmodern geographical perspectives and integrate theory and practice through spatial mapping and interpretation.
	Regional Planning and Development GG – CE – 8424	CLO - 1	Identify and classify different regions using basic regional concepts, criteria, and spatial characteristics to understand patterns of variation and organization in geographical space.
		CLO - 2	Explain how regional planning functions and why it matters, and interpret India's planning regions, including the North-East.
		CLO - 3	Apply major theories of regional development to explain the causes and processes of unequal development among regions, and to critically understand how historical, economic, social, and spatial factors shape regional disparities.
		CLO - 4	Analyse regional disparities using indicators and spatial understanding, and assess the roles of major

			institutions involved in regional development.
	Urban Geography GG – CE – 8434	CLO - 1	Learners will be able to explain the concepts, theories, and types of agriculture at global and national levels, including India's agricultural development and revolutions.
		CLO - 2	Learners will be able to analyze factors influencing agriculture and evaluate the relevance of modern, digital, and sustainable agricultural practices.
		CLO - 3	Learners will be able to assess agricultural modernization strategies and their impact on productivity, sustainability, and food security.
	Environmental Geography and Disaster Management GG-CE- 8444	CLO - 1	Understand the key concepts of environmental geography and human–environment adaptation.
		CLO - 2	Analyse major environmental stresses and global environmental problems, their causes and impacts.
		CLO - 3	Describe different hazards and disasters, and analyse risk and vulnerability patterns in India
		CLO - 4	Apply disaster risk reduction strategies and governance frameworks, including traditional knowledge and relevant policies.
	Geography of Tourism GG – CE – 8454	CLO - 1	Understand the concepts, nature, scope, and spatial dimensions of tourism geography, including the classification of tourism resources.
8		CLO - 2	Analyse spatial and economic patterns of tourism flow and evaluate tourism's impacts on the environment, society, and economy.
		CLO - 3	Apply geographical and analytical tools, including GIS, mapping, and statistical methods to prepare tourism maps, circuits, and field reports for tourism planning and development.

MAPPING OF PROGRAME OUTCOME (PO) OF BACHELOR DEGREE OF SCIENCE AND COURSE LEARNING OUTCOME (CLO)

Attributes: Co-relation Levels

"1" : Minimum Co-relation

"2" : Moderate Co-relation

"3" : Maximum Co-relation

"-" : No Co-relation

Course Code	CLO	PROGRAMME OUTCOME										
		SPO1	SPO2	SPO3	SPO4	SPO5	SPO6	SPO7	SPO8	SPO9	SPO10	SPO11
GG-CE-1114	CLO-1	3					2		2		2	3
	CLO-2	3	2	2			2		3		2	2
GG-CE-2114	CLO-1	3	2	3	3		2		3		3	3
	CLO-2	3	2	2			2	2	2		2	2
	CLO-3	2	3			2	2	3	3		3	2
GG-CE-3214	CLO-1	3	2	3		2	3	2	2	3	2	3
	CLO-2	3	3	3	3		3		2		3	2
	CLO-3	3					3		3		2	3
GG-CE-3224	CLO-1	3	2	2	2		2		2	2	2	3
	CLO-2	3					2	2	2		3	3
	CLO-3	3	3	3	2		3		3		3	3
	CLO – 4	3	3	3	2		3		3		3	3
GG-CE-4214	CLO-1	3	3	3	3	2	3	2	3		3	3
	CLO-2	3	3	3	3	2	3	2	3		3	3
	CLO-3	3	3	3	3		3	3			3	3
GG-CE-4224	CLO-1	3	3	3	3		3	3			3	3
	CLO-2	3	3	3	3	3	3	3	3	2	3	3
	CLO-3	3	3	3	3	3	3	3	3	2	3	3
	CLO – 4	3	3	3	2	2	3	3	3	2	3	3
GG-CE-4234	CLO-1	3	3	3	2	3	3	3	3	2	3	3
	CLO-2	3	3	3	2	2	3	3	2	2	3	3
	CLO-3	3	3	3	2	2	3	3	3	2	3	3
	CLO – 4	3	3	3	2	2	3	2	2	2	3	3
GG-CE-5314	CLO-1	3	3	3	2	2	3	2	2	2	3	3
	CLO-2	3	3	3	2	2	3	3	2	2	3	3
	CLO-3	3	3	3	2	3	3	3	3	2	3	3
	CLO – 4	3	3	3	2	3	3	2	2	2	3	3
	CLO – 5	3	3	3	3		3	2	3	2	3	3
GG-CE-5324	CLO-1	3	3	3	2	2	3	3	3	2	3	3
	CLO-2	3	3	3	3	3	3	3	3	2	3	3
	CLO-3	3	3	3	3		3		2	2	3	3
	CLO – 4	3	3	3	3		3	3	2	3	3	3
GG-CE-5334	CLO-1	3	3	3	3	3	3	3	2	3	3	3
	CLO-2	3	2	2	2		3	2	3		3	3
	CLO-3	3	3	3	2	3	3	2	2		3	3
	CLO – 4	3	3	3	3	2	3	2	3		3	3

COURSE CODE	CLO	PROGRAMME OUTCOME										
		SPO1	SPO2	SPO3	SPO4	SPO5	SPO6	SPO7	SPO8	SPO9	SPO10	SPO11
GG-CE-5344	CLO-1	3	3	3	3		3		2	2	3	3
	CLO-2	3	3	3	3		3	3	2	3	3	3
	CLO-3	3	3	3	3	3	3	3	2	3	3	3
GG-CE-6314	CLO-1	3	2	2	2		3	2	3		3	3
	CLO-2	3	3	3	2	3	3	2	2		3	3
	CLO-3	3	3	3	3	2	3	2	3		3	3
	CLO – 4	3	3	3	3	3	3	2	3	2	3	3
GG-CE-6324	CLO-1	3	3	2	3	2	3	3	3	2	3	3
	CLO-2	3	3	2	3	2	3	2	3	2	3	3
	CLO-3	3	2	2	2	2	3	2	3	2	3	3
	CLO – 4	3	3	3	3	3	3	3	3	3	3	3
GG-CE-6334	CLO-1	3	3	3	3		3		3	2	3	3
	CLO-2	3	3	3	3		3		3	2	3	3
	CLO-3	3	3	3	3	2	3	2	3	2	3	3
	CLO – 4	3	3	3	3	2	3	2	3	2	3	3
	CLO – 5	3	3	3	3	2	3	2	3	2	3	3
GG-CE-6344	CLO-1	3	3	3	3		3			2	3	2
	CLO-2	3	3	3	3	3	3	3	3	3	3	3
	CLO-3	3	3	3	3	3	3	3	3	2	3	3
	CLO – 4	3	3	3	3	3	3	3	3	2	3	3
GG-CE-7414	CLO-1	3	3	2	2	2	3	2	2	2	3	3
	CLO-2	3	3	3	3	2	3	2	3	3	3	3
	CLO-3	3	3	3	3	2	3	2	3	3	3	3
GG-CE-7424	CLO-1	3	2	2	2	2		3	2	3	3	3
	CLO-2	3	3	3	3		3	2	3	3	3	3
	CLO-3	3	3	3	2	2	2	2	2	2	3	3
	CLO-4	3	3	3	3		3	3	3	3	3	3
GG-CE-7434	CLO-1	3	2	3	2	2	2	2	3	3	2	3
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	CLO-3	3	3	2	2	3	2	3	2	2	2	3
	CLO-4	3	3	2	2	3	3	3	3	2	2	3
GG-CE-7444	CLO-1	3	2	2	2	2	2	2	2	2	3	3
	CLO-2	3	3	3	3	2	3	2	2	3	3	3
	CLO-3	3	3	3	2	2	3	2	3	3	3	3
	CLO-4	3		2	1		1	3	3	1	2	3
GG-CE-7454	CLO-1	3	1	1	2	2	2	1	2	2	2	3
	CLO-2	3	2	3	3	2	3	2	2	3	3	3
	CLO-3	3	3	3	2	2	3	2	3	3	3	3
	CLO-4	3	1	2	1	1	1	3	3	1	2	3
GG-CE-8414	CLO-1	3	1	1	1	1	1	3	3	1	2	3
	CLO-2	3	3	2	3	2	2	3	3	2	3	3
	CLO-3	3	1	1	2			3	3	2	2	3
	CLO - 4	3	1	1	1	2	1	3	3	2	1	2
GG-CE-8424	CLO-1	3	3	3	3	3	1	3	2	3	1	3
	CLO-2	3	3	3	3	2	2	3	2	3	1	3

	CLO-3	3	1	1	1	3	2	3	2	3	1	3
	CLO - 4	3	2	1	1	3	3	3	3	3	2	3
GG-CE-8434	CLO-1	3	2	3	2	3	3	3	3	2	2	3
	CLO-2	3	2	2	3	1	2	3	3	3	1	3
	CLO-3	2	3	3	3	2	3	3	3	2	1	3
GG-CE-8444	CLO-1	3	1	1	2	1	3	2	2	3	3	3
	CLO-2	3	3	3	3	1	3	3	3	3	3	3
	CLO-3	3	2	2	2	1	2	2	3	1	3	3
GG-CE-8454	CLO-1	2	3	3	3	2	3	3	3	2	1	3
	CLO-2	3	1	1	2	1	3	2	2	3	3	3
	CLO-3	3	3	3	3	1	3	3	3	3	3	3
	CLO-4	3	2	2	2	1	2	2	3	1	3	3

MAPPING OF PROGRAME OUTCOME (PO) OF BACHELOR DEGREE OF ARTS AND COURSE LEARNING OUTCOME (CLO)

Attributes: Co-relation Levels

"1" : Minimum Co-relation

"2" : Moderate Co-relation

"3" : Maximum Co-relation

"-" : No Co-relation

Course Code	CLO	PROGRAMME OUTCOME										
		APO1	APO2	APO3	APO4	APO5	APO6	APO7	APO8	APO9	APO10	APO11
GG-CE-1114	CLO-1	2					2	3		2	3	2
	CLO-2	2					3	2		2	3	2
GG-CE-2114	CLO-1	3					3	3	3	2	3	2
	CLO-2	3		2	3	2	2	2		2	3	2
	CLO-3	2	2	3	2	3	3	2		3	2	2
GG-CE-3214	CLO-1			3	3	2	2	3	2	3	3	3
	CLO-2	2					2	2	2	3	3	3
	CLO-3	2					3	3	2	3	3	3
GG-CE-3224	CLO-1	3					2	3	3	3	3	2
	CLO-2	2				2	2	3		3	3	2
	CLO-3	3					3	3	3	3	3	3
	CLO - 4	3					3	3	3	3	3	3
GG-CE-4214	CLO-1	3	2	2	2	2	3	3	3	3	3	3
	CLO-2	3	2	2	2	2	3	3	3	3	3	3
	CLO-3	3			3	3		3	3	3	3	3
GG-CE-4224	CLO-1	3			3	3		3	3	3	3	3
	CLO-2	3	3	3	3	3	3	3	3	3	3	3
	CLO-3	3	3	3	3	3	3	3	3	3	3	3
	CLO - 4	3	2	3	3	3	3	3	3	3	3	3
GG-CE-4234	CLO-1	3	3	3	3	3	3	3	3	3	3	3
	CLO-2	3	2	3	3	3	2	3	3	3	3	3
	CLO-3	3	2	3	3	3	3	3	3	3	3	3
	CLO - 4	3	2	2	2	2	2	3	3	3	3	3
GG-CE-5314	CLO-1	3	2	2	2	2	2	3	3	3	3	3
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	CLO-3	3	3	3	3	3	3	3	3	3	3	3
	CLO - 4	3	3	3	2	2	2	3	3	3	3	3
	CLO - 5	3		3	2	2	3	3	3	3	3	3
GG-CE-5324	CLO-1	3	3	3	3	3	3	3	3	3	3	3
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	CLO-3	3					2	3	3	3	3	3
	CLO - 4	3		2	2	3	2	3	3	3	3	3
GG-CE-5334	CLO-1	3	3	3	2	3	2	3	3	3	3	3
	CLO-2	2			2	2	3	3		3	3	3
	CLO-3	3	3	3	2	2	2	3	3	3	3	3
	CLO - 4	3	2	2	3	2	3	3	3	3	3	3

COURSE CODE	CLO	PROGRAMME OUTCOME										
		APO1	APO2	APO3	APO4	APO5	APO6	APO7	APO8	APO9	APO10	APO11
GG-CE-5344	CLO-1	3	3	3	2	2	2	3	3	3	3	3
	CLO-2	3		3	2	2	3	3	3	3	3	3
	CLO-3	3	3	3	3	3	3	3	3	3	3	3
GG-CE-6314	CLO-1	3	3	3	2	3	3	3	3	3	3	3
	CLO-2	3					2	3	3	3	3	3
	CLO-3	3		2	2	3	2	3	3	3	3	3
	CLO - 4	3	3	3	2	3	2	3	3	3	3	3
GG-CE-6324	CLO-1	2			2	2	3	3		3	3	3
	CLO-2	3	3	3	2	2	2	3	3	3	3	3
	CLO-3	3	2	2	3	2	3	3	3	3	3	3
	CLO - 4	3	3	3	2	2	3	3	3	3	3	3
GG-CE-6334	CLO-1	3	3	3	3	3	3	3	3	3	3	3
	CLO-2	3	2	2	2	2	3	3	3	3	3	3
	CLO-3	3	2	2	2	2	3	3	3	3	3	3
	CLO - 4	3	3	3	3	3	3	3	3	3	3	3
	CLO - 5		2		2		3	3	3	3	3	3
GG-CE-6344	CLO-1		2		3		3	3	3	3	3	3
	CLO-2	3	2	2	2	2	3	3	3	3	3	3
	CLO-3	3	2	3	2	2	3	3	3	3	3	3
	CLO - 4	3	2	3	2	2	3	3	3	3	3	3
GG-CE-7414	CLO-1	3	3	2	2	2	3	2	2	2	3	3
	CLO-2	3	3	3	3	2	3	2	3	3	3	3
	CLO-3	3	3	3	3	2	3	2	3	3	3	3
GG-CE-7424	CLO-1	2	2	2	2	3	2	3	3	2	3	2
	CLO-2	3	2	2	2	3	3	3	3	3	3	3
	CLO-3	3	2	2	2	3	3	3	3	3	3	3
	CLO-4	3	2	2	2	3	3	3	3	3	3	3
GG-CE-7434	CLO-1	2	1	2	2	2	3	3	2	3	3	2
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	CLO-3	3	2	3	3	3	3	2	3	3	3	2
	CLO-4	3	3	2	3	3	3	2	2	3	3	3
GG-CE-7444	CLO-1	3	2	2	2	2	2	2	2	2	3	3
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	CLO-3	3	3	3	3	2	3	2	2	3	3	3
	CLO-4	3	2	2	2	2	3	3	3	3	2	2
GG-CE-7454	CLO-1	3	1	2	3	2	3	2	2	2	3	3
	CLO-2	3	2	2	3	2	3	2	2	3	3	3
	CLO-3	3	2	2	3	1	3	2	2	3	3	3
	CLO-4	3	2	2	2	2	3	3	3	3	2	2
GG-CE-8414	CLO-1	3	2	2	3	3	3	3	2	3	3	2
	CLO-2	3	2	3	2	3	1	3	2	3	3	2
	CLO-3	3	2	3	2	3	3	3	2	3	3	2
	CLO - 4	3	3	2	2	3	2	2		3	3	2
GG-CE-8424	CLO-1	3	2	3	1	2	2	3		3	3	2
	CLO-2	3	2	3	2	3	2	3	1	3	3	2

	CLO-3	3	1	3	2	3	3	3	1	3	3	2
	CLO - 4	3	2	2	3	3	3	3	2	3	3	2
GG-CE-8434	CLO-1	3	2	3	2	3	3	3	3	3	3	2
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	CLO-3	3	2	2	2	3	3	3	2	3	3	3
GG-CE-8444	CLO-1	3	1	2	2	1	2	3	1	2	3	3
	CLO-2	3	1	1	2	2	3	3	2	3	3	3
	CLO-3	3	2	2	1	1	2	3	1	3	3	3
GG-CE-8454	CLO-1	3	2	2	2	3	3	3	2	3	3	3
	CLO-2	3	1	2	2	1	2	3	1	2	3	3
	CLO-3	3	1	1	2	2	3	3	2	3	3	3
	CLO-4	3	2	2	1	1	2	3	1	3	3	3

MAPPING OF PROGRAMME SPECIFIC OUTCOME (PSO) AND COURSE LEARNING OUTCOME(CLO)

Attributes: Co-relation Levels

"1" : Minimum Co-relation
"2" : Moderate Co-relation
"3" : Maximum Co-relation
"-" : No Co-relation

Course Code	CLO	PROGRAMME SPECIFIC OUTCOME									
		PSO1	PSO2	PSO 3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
GG-CE-1114	CLO-1	3					2	3		2	3
	CLO-2	3					3	2		2	3
GG-CE-2114	CLO-1	3					3	3	3	2	3
	CLO-2	3		2	3	2	2	2		2	3
	CLO-3	3	2	3	2	3	3	2		3	2
GG-CE-3214	CLO-1	3		3	3	2	2	3	2	3	3
	CLO-2	3					2	2	2	3	3
	CLO-3	3					3	3	2	3	3
GG-CE-3224	CLO-1	3					2	3	3	3	3
	CLO-2	3				2	2	3		3	3
	CLO-3	3					3	3	3	3	3
	CLO - 4	3					3	3	3	3	3
GG-CE-4214	CLO-1	3	2	2	2	2	3	3	3	3	3
	CLO-2	3	2	2	2	2	3	3	3	3	3
	CLO-3	3			3	3		3	3	3	3
GG-CE-4224	CLO-1	3			3	3		3	3	3	3
	CLO-2	3	3	3	3	3	3	3	3	3	3
	CLO-3	3	3	3	3	3	3	3	3	3	3
	CLO - 4	3	2	3	3	3	3	3	3	3	3
GG-CE-4234	CLO-1	3	3	3	3	3	3	3	3	3	3
	CLO-2	3	2	3	3	3	2	3	3	3	3
	CLO-3	3	2	3	3	3	3	3	3	3	3
	CLO - 4	3	2	2	2	2	2	3	3	3	3
GG-CE-5314	CLO-1	3	2	2	2	2	2	3	3	3	3
	CLO-2	3	2	2	3	3	2	3	3	3	3
	CLO-3	3	3	3	3	3	3	3	3	3	3
	CLO - 4	3	3	3	2	2	2	3	3	3	3
	CLO - 5	3		3	2	2	3	3	3	3	3
GG-CE-5324	CLO-1	3	3	3	3	3	3	3	3	3	3
	CLO-2	3	3	3	2	3	3	3	3	3	3
	CLO-3	3					2	3	3	3	3
	CLO - 4	3		2	2	3	2	3	3	3	3
GG-CE-5334	CLO-1	3	3	3	2	3	2	3	3	3	3
	CLO-2	3			2	2	3	3		3	3
	CLO-3	3	3	3	2	2	2	3	3	3	3
	CLO - 4	3	2	2	3	2	3	3	3	3	3

COURSE CODE	CLO	PROGRAMME SPECIFIC OUTCOME									
		PSO1	PSO2	PSO 3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
GG-CE-5344	CLO-1	3	3	3	3	3	2	2	3	2	3
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	CLO-3	3	3	3	3	3	2	2	3	2	3
GG-CE-6314	CLO-1	3	3	3	3	2	2	3	3	2	3
	CLO-2	3	3	3	3	3	2	3	3	2	2
	CLO-3	3	3	3	3	3	2	3	3	2	2
	CLO - 4	3	3	3	3	3	2	3	3	3	3
GG-CE-6324	CLO-1	3	3	3	3	3	3	3	3	2	3
	CLO-2	3	3	3	3	3	3	2	3	2	3
	CLO-3	3	3	3	3	3	3	2	3	2	3
	CLO - 4	3	3	3	3	3	3	2	3	2	3
GG-CE-6334	CLO-1	3	3	3	3	2	2	3	2	3	3
	CLO-2	3	3	3	3	2	2	3	2	3	3
	CLO-3	2	3	3	3	3	2	2	3	3	3
	CLO - 4	3	3	3	3	2	2	3	2	3	3
	CLO - 5	3	3	3	3	2	2	3	3	3	3
GG-CE-6344	CLO-1	3	3	3	3	3	3	2	2	2	3
	CLO-2	3	3	3	3	3	3	2	2	2	3
	CLO-3	3	3	3	3	3	3	2	2	2	3
	CLO - 4	3	3	3	3	3	3	2	3	2	3
GG-CE-7414	CLO-1	3	2	2	2	2	2	2	2	2	3
	CLO-2	3	3	3	3	2	2	2	2	3	3
	CLO-3	3	3	3	3	2	3	2	2	3	3
GG-CE-7424	CLO-1	3	3	3	3	3	2	2	2	2	2
	CLO-2	3	3	3	2	3	2	2	2	3	3
	CLO-3	3	3	3	2	3	2	3	2	2	2
	CLO-4	3	3	3	3	3	3	2	2	3	3
GG-CE-7434	CLO-1	3	1	3	2	1	1	2	2	3	2
	CLO-2	3	3	2	3	2	2	2	2	2	3
	CLO-3	3	2	3	1	3	2	2	1	2	3
	CLO-4	3	2	3	1	2	3	2	3	2	3
GG-CE-7444	CLO-1	3	2	2	2	2		2	2	2	3
	CLO-2	3	3	3	3	2	2	3	3	3	3
	CLO-3	3	3	3	3	2	2	3	3	3	3
	CLO-4	3	1	3	2	1	1	2	2	3	2
GG-CE-7454	CLO-1	3	1	2	2	2	1	2	2	1	1
	CLO-2	3	3	3	3	2	2	3	3	3	3
	CLO-3	3	3	3	3	2	2	3	3	3	3
	CLO-4	3	1	3	2	1	1	2	2	3	2
GG-CE-8414	CLO-1	3	3	2	3	2	2	2	2	2	3
	CLO-2	3	2	3	1	3	2	2	1	2	3
	CLO-3	3	2	3	1	2	3	2	3	2	3
	CLO - 4	3	1	3	3	1	1	2	2	2	3
GG-CE-8424	CLO-1	3	2	3	3	1	1	2	3	2	3
	CLO-2	3	3	2	3	1	1	2	1	2	3

	CLO-3	3	1	3	3	1	1	2	2	1	3
	CLO - 4	3	1	3	3	1	2	2	2	2	3
GG-CE-8434	CLO-1	3	3	2	3	3	3	3	3	2	3
	CLO-2	3	2	3	3	3	3	3	2	3	3
	CLO-3	3	2	3	3	3	2	3	3	3	3
GG-CE-8444	CLO-1	3	1	1	1	3	3	1	1	2	2
	CLO-2	3	3	3	2	3	3	3	3	3	3
	CLO-3	3	3	3	2	3	3	2	2	3	3
GG-CE-8454	CLO-1	3	1	3	2	2	2	2	2	2	2
	CLO-2	3	1			3	3	1	1	2	2
	CLO-3	3	3	3	2	3	3	3	3	3	3
	CLO-4	3	3	3	1	3	3	2	2	3	3

COURSE NAME: Fundamentals of Geography
COURSE CODE: GG – CE – 1114
Total Credits:4 (Theory:3+Practical/Tutorial:1)

THEORY: 3 CREDITS

Total Lectures: 45

COURSE OBJECTIVE:

The course objectives of this course are as follows:

- *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 the passage of time.*
- *To provide the basic idea on the Earth's Coordinate System.*

Course Learning Outcome:

The course outcomes of this course are as follows:

CLO-01:*The student will be able to impart basic knowledge on Geography as a spatial science*

CLO-02:*This course will help the student to gain the knowledge of the planet earth.*

Unit-I: Scope of Geography (Lectures:10)

Meaning, definition, nature and scope of Geography.

Unit-II: Branches of Geography (Lectures:10)

Branches of Geography; its relationship with other disciplines.

Unit-III: Development of Geography(Lectures:15)

Development of Geography: Historical progression (ancient, medieval and modern) and recent trends (quantitative revolution, logical positivism, locational school of thought, behaviouralism, humanism and post-modernism).

Unit-IV: Approaches in Geography (Lectures:10)

Approaches in Geography: regional and systematic; idiographic and nomothetic.

Practical:

Lectures:30

1. Diagrammatic representation of branches of Geography and its relationship with other disciplines.
2. Preparation of a world map indicating the major contributions and contributors along with the year (Greek, Arab, French, German, USA and Asia) to track the development of Geography as a discipline.
3. Representation of Map elements in a map: Scale, Legend, Boundaries, Extensions (Latitude and longitude), etc.
4. Construction of graphical scale (linear, diagonal and comparative); conversion of map scale.

5. Topographical map interpretation and numbering system.

RECOMMENDED BOOKS:

1. Holmes, A.(1927).The Unstable Earth.
2. Hartshorne, R. (1955). The nature of geography.
3. Husain, M.(2012).Evolution of geographical thought. Rawat Publications.
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. Khullar, D.R.(2011). Essentials of Practical Geography.
9. Singh, L.R.(2009).Fundamentals of Practical Geography. Sharda Pustak Bhavan.
10. Singh, R.L.(1979).Elements of Practical Geography.

COURSE NAME: Geography as a Discipline

COURSE CODE: GG – CE – 2114

TotalCredits:4 (Theory:3+Practical/Tutorial:1)

THEORY:3 Credits

TOTAL LECTURES:45

COURSE OBJECTIVE:

The course objectives of this course are as follows:

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

Course Learning Outcome:

The course outcomes of this course are as follows:

CLO-01:*This paper will help the students to differentiate between physical Geography and Human Geography.*

CLO-02:*Students will understand human perception and behaviour in relation to their environment.*

CLO-03: *This course will help the students to learn how human, physical and environmental components of the earth interact one another.*

PART A: Physical Geography

Unit- I: Lithosphere (Lectures: 6)

Lithosphere: composition, internal structure of the earth; order of landforms

Unit-II: Atmosphere (Lectures: 6)

Atmosphere: origin and composition; structure; elements of weather and climate.

Unit- III: Hydrosphere (Lectures: 6)

Hydrosphere: major relief features; temperature and salinity density variation; tides, waves and currents.

Unit- IV: Biosphere (Lectures: 6)

Biosphere: concept of biosphere; global distribution of flora and fauna; concepts and types of biodiversity.

PART B: Human Geography

Unit-V: Scope of Human Geography (Lectures:4)

Meaning, nature and scope.

Unit-VI: Schools of Human Geography (Lectures:6)

Schools of Human Geography: Environmental Determinism and Possibilism, Neo-determinism and cultural determinism; concept of space and place.

Unit-VII: Concepts of culture: (Lectures:6)

Concept of culture, ethnicity, race (types and characteristics), religion (major groups and global distribution) and language (major families and global distribution).

Unit-VIII: Settlements: (Lectures:5)

Settlements: types, patterns and morphology of rural and urban settlements.

PRACTICAL:

Lectures:30

1. Diagrammatic representation of the interior structure of the Earth
2. Representation of vertical layers of the atmosphere
3. Diagrammatic representation of major reliefs of ocean
4. Religious and linguistic composition of population in the world using pie-diagram.
5. Mapping of distribution of major racial and linguistic groups of population in the world.

RECOMMENDED 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'sDynamicSystem,Prentice-Hall,N.J.
4. HusainM.,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. StrahlerA.N.andStrahlerA.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 etal. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W.H. Freeman and Company, New York.
13. Hussain, Majid (2012)Manav Bhugol. Rawat Publications, Jaipur.

COURSE NAME: Physical Geography

COURSE CODE: GG- CE - 3214

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objectives:

- *To introduce the learners to the fundamental concepts physical geography including origin of the earth, its universe and its motions.*
- *To provide an understanding on the various forces shaping the earth's surface including endogenetic and exogenetic process as well as geological processes like earthquakes and volcanoes.*
- *To familiarise the learners with the classification and characteristics of different rocks and minerals*
- *To impact applied scientific knowledge on landform development based on geomorphic concepts, principles and theories.*
- *To elucidate the processes of weathering and erosion and their associated effects on the earth's surface.*
- *To develop practical skills in interpreting geological time-scale, diagrammatic representation of the rotation and revolution of the earth and relief.*

Course Learning Outcome:

After completion of the course

CLO-1: *The learners will gather knowledge about the fundamental concepts of Physical Geography and also understand the dynamics of the earth like the motions types, its workings and their varied effects.*

CLO-2: *Learners will gain knowledge about the various movements and the different geomorphic processes of the earth that are responsible for the formation of various landforms and will be able to classify rocks and minerals based on their characteristics and understand their significance in geological formations.*

CLO-3: *Learners will also gain practical skills in interpreting the geological time-scale, representation of fold, fault and identify different rock types.*

Unit- I:Physical Geography (Lectures: 6)

Meaning, nature, scope and significance

Unit-II: Origin of the Universe: (Lectures: 6)

Solar system; origin of the Earth, Big Bang Theory; concept of geological time scale.

Unit-III: Motions of the Earth (Lectures: 6)

Rotation, revolution and their effects.

Unit-IV: Earth Movements (Lectures: 7)

Endogenetic and exogenetic forces, types of folds and faults, earthquakes and volcanoes.

Unit-V: Rocks and minerals (Lectures: 6)

Classification and characteristics

Unit-VI: Landforms ordering (Lectures: 7)

Classification of mountains, plateaus and plains

Unit-VII: Concept of Geomorphic Processes (Lectures: 7)

Weathering and erosion

Practicals:

Total Lectures: 30

1. Diagrammatic representation of Geological time scale (1 Assignment)
2. Diagrammatic representation of rotation and revolution of the earth (2 Assignments)
3. Identification of rocks and their interpretation (1 Assignment)
4. Relief representation from the topographical sheet (v- shaped valley, u-shaped valley, conical hill, cliff, uniform slope). (5 Assignments)
5. Representation of fold and fault types. (4 Assignments)

Recommended Books:

1. Conserva H. T., 2004: Illustrated Dictionary of Physical Geography, Author House, USA.
2. Gabler R. E., Petersen J. F. and Trapasso, L. M., 2007: Essentials of Physical Geography (8th Edition), Thompson, Brooks/Cole, USA.
3. Garrett N., 2000: Advanced Geography, Oxford University Press.
4. Goudie, A., 1984: The Nature of the Environment: An Advanced Physical Geography, Basil Blackwell Publishers, Oxford.
5. Gupta and Kapur A. N., 2000, Physical Geography
6. Hamblin, W. K., 1995: Earth's Dynamic System, Prentice-Hall, N.J.
7. Husain M., 2002: Fundamentals of Physical Geography, Rawat Publications, Jaipur.
8. Monk house, F. J. 2009: Principles of Physical Geography, Platinum Publishers, Kolkata.
9. Singh Savindra, 2000, Physical Geography, PragPustak Bhawan, Allahabad
10. Strahler A. N. and Strahler A. H., 2008: Modern Physical Geography, John Wiley & Sons, New York.
11. Tikka R.N 2010: Physical Geography, Kedar Nath Ram Nath & Co. Meerut , Delhi

COURSE NAME: Human Geography

COURSE CODE: GG- CE - 3224

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *To introduce the learners to the foundational concepts and major themes pertaining to human geography emphasizing its contemporary relevance.*
- *It explore the various schools of thought in human geography including human ecology, landscape and locational theories and to analyse human-adaptations in different geographic environment and their cultural expressions.*
- *To understand the various concepts and theories of population dynamics and their relationship with resources.*
- *To familiarise the learners with the concept of HDI*
- *To impart the students with the knowledge of various types of rural and urban settlements and the pattern of world migration.*

Course Learning Outcome

The expected outcomes of this course are:

CLO-1:*The learners will be able to define human geography, identify its major themes while understanding its contemporary significance and critically evaluate the different schools of human geography.*

CLO-2:*Learners will be able to analyse different human adaptations across various geographical environments and interpret the cultural expressions.*

CLO-3:*Learners will also be able to analyse the population dynamics, theories, global trends and insight into types of settlements and patterns of world migration*

CLO-4: *Learners will also be able to demonstrate practical skills in representation and spatio-temporal analysis of population data using various cartographic techniques.*

UNIT-I: Definitions (Lectures: 6)

Defining human geography; fields, contemporary relevance and importance

UNIT-II: Schools of human geography (Lectures: 6)

Human ecology, landscape and locational

UNIT-III: Human adaptations (Lectures: 6)

Human adaptations in different geographical locations and their socio-cultural expression.

UNIT-IV: Population (Lectures: 7)

Growth and distribution; population composition; Demographic Transition Theory; population-resource relationship.

UNIT-V: Migration (Lectures: 7)

Types, causes (centripetal and centrifugal forces) and consequences

UNIT-VI: Human development (Lectures: 6)

Meaning and concept of human development

UNIT-VII: Settlement (Lectures: 7)

Types of rural and urban settlements; factors of settlement growth (rural and urban)

Practicals:
Total Lectures: 30

1. Mapping of growth and distribution of world population (2 Assignments)
2. Mapping of India's population distribution and density pattern. (2 Assignments)
3. Population migration of India/World using flow cartogram. (1 Assignment)
4. Human Development Index map of World. (1 Assignment)
5. Drawing of major rural settlement types and patterns. (2 Assignments)
6. Spatial patterns of urban population in N.E. India at state level through choropleth map. (1 Assignment)

Recommended Books:

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.
6. Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
7. Maurya, S.D.(2012). Manav Bhugol, Sharda Pustak Bhawan., Allahabad.
8. Hussain, Majid (2012). Manav Bhugol. Rawat Publications, Jaipur.

COURSE NAME: Geomorphology

COURSE CODE: GG- CE - 4214

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *To introduce the learners to the fundamental concepts and significance of geomorphology in understanding the earth's surface and landforms*
- *To impart knowledge on the key concepts of plate tectonic, isostasy, sea floor spreading geosyncline and theories of continental drift and mountain building.*
- *The course will offer in-depth knowledge on natural factors shaping the landform developments at different environmental dimensions and associated theories.*
- *The learners will gain knowledge on practical utility on drainage basin delineation and stream ordering.*

Course Learning Outcome:

CLO 1:*The learners will gain understanding on the various internal and external processes that shape the planet, their behavioural characteristics and resultant topography.*

CLO 2: *Acquire practical knowledge on delineating a drainage basin and stream ordering.*

CLO 3: *The learners will be able to impart knowledge on key concepts of plate tectonic, isostasy, sea floor spreading geosyncline and theories of continental drift and mountain building.*

Unit-I: Geomorphology(Lectures: 7)

Meaning, nature and scope; its significance

Unit-II: Concepts (Lectures: 7)

Plate tectonics, Isostasy (Airy and Pratt); continental drift theory; sea-floor spreading.

Unit-III: Mountain building(Lectures: 8)

Concept of geosyncline; theories of Holmes and Kober; classification of mountains based on age.

Unit-IV: Slope(Lectures: 7)

Elements, classification, forms and processes.

Unit-V: Evolution of Landforms(Lectures: 8)

Theories of Davis and Penck; landform development under different conditions – fluvial, aeolian, karst and glacial.

Unit-VI: Drainage patterns (Lectures: 8)

Dendritic, trellis, rectangular, circular.

Practical:

Total Lectures: 30

1. Profile drawing (serial, superimposed, projected and composite) (4 Assignments)
2. Preparation of relative relief map using Smith's method (1 Assignment)
3. Preparation of average slope map using Wentworth's method (1 Assignment)
4. Delineation of drainage basin and drainage network, construction of cross and long profiles (4 Assignments)
5. Stream ordering by Horton's and Strahler's method (2 Assignments)

Recommended Books:

1. Anderson, R.S. and Anderson, S.P. (2010): Geomorphology: The Mechanics and Chemistry of Landscapes, CUP, Cambridge
2. Bierman, P.R. and Montgomery, D.R. (2014): Key Concepts in Geomorphology. W.H. Freeman and Co
3. Charlton, R. (2007): Fundamentals of Fluvial Geomorphology. Routledge, USA
4. Fryirs, K.A. and Brierley, G.J. (2013): Geomorphic analysis of river systems: An approach to reading the landscape. Wiley-Blackwell, Chichester, UK
5. Goudie, A.S. (ed.) (2004): Encyclopaedia of Geomorphology. Routledge, London
6. Gregory K.J., Goudie A.S. (eds.) (2011): The SAGE Handbook of Geomorphology
7. Harvey, A. (2012): Introducing Geomorphology: A guide to landforms and processes. Dunedin, London.
8. Huggett, R.J. (2011): Fundamentals of Geomorphology. Routledge, New York 11. NATMO (2000): Geomorphological Mapping, Monograph No. 010MONO, NATMO, Kolkata
9. Bloom A. L., 2003: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.

COURSE NAME: Climatology and Oceanography

COURSE CODE: GG- CE - 4224

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *This course is specifically designed to furnish learners with a scientific understanding of the earth's climatic and oceanic systems, illustrating the crucial interconnection between these two physical components of the earth.*
- *The basic objective is to delve into the intricacies of the earth's climatic and oceanic processes and phenomena, providing students with a comprehensive understanding of the underlying scientific principles.*
- *The course aims to impart the learners with the understanding of theories and concepts related to climatic and oceanographic dynamics.*
- *It also aims to enable them to apply theoretical concepts in real-world scenarios for a comprehensive learning experience.*

Course Learning Outcome:

The expected outcomes of this course are:

CLO-1:*The learners will gain a theoretical understanding of the foundation of Climatology and Oceanographic principles and their related theories and concepts.*

CLO-2:*They will gain analytical skills by evaluating factors influencing the earth's atmospheric dynamics, including temperature, pressure and moisture along with various other atmospheric phenomena*

CLO-3: *Learners will also gain expertise to examine the topographic characteristics of the ocean floor besides understanding the seafloor configurations and specific currents of the Atlantic, Pacific and the Indian Oceans.*

CLO-4:*They will also gain practical skills in interpreting Indian weather maps with proficiency in using weather symbols and will also develop expertise in data analysis and graphical representation, creating various climatic graphs using regional data.*

Unit I: Climatology(Lectures: 30)

1. Climatology: Meaning, nature, scope and importance.
2. Insolation and Temperature: Factors and distribution; Heat Budget; Temperature Inversion.
3. Atmospheric Pressure and Winds: Factors affecting Winds, Planetary Winds, General Circulation and Jet Streams.
4. Atmospheric Moisture: Evaporation, Humidity, Condensation, Fog and clouds; Precipitation and its types; Air Masses and Fronts.
5. Atmospheric Disturbances: Cyclones and Anti-Cyclones; Tropical Cyclones, Extra Tropical Cyclones; Monsoon: Origin and its Mechanism.

6. Classification of Climate: Koppen's Classification; Trewartha's Classification; Climatic Types and its Global Distribution.

Unit- II: Oceanography(Lectures: 15)

1. Oceanography: Meaning, Nature and Scope.
2. Oceanic Movements: Currents of Pacific, Atlantic and Indian Oceans.
3. Bottom Configuration of Pacific Ocean, Atlantic Ocean, and Indian Ocean.
4. Marine Deposits: classification on the basis of sources, depth and location; Ocean Resources.
5. Coral reefs and Islands – Types and Theories of Origin (Subsidence Theory by Charles Darwin and Non-subsidence or 'Stand-still' Theory by Murray).

Practicals:

Total Lectures: 30

1. Interpretation of Indian Weather map for Monsoon and non–Monsoon seasons/months based on various weather symbols depicted on maps. (2 Assignments)
2. Preparation of Rainfall-Temperature Graph, Hythergraph, Climograph and Ergograph taking data from India/N.E.India/Assam. (4 Assignments)
3. Preparation of bottom configuration maps of Atlantic Ocean; Pacific Ocean and Indian Ocean. (3 Assignments)
4. Preparation of maps depicting the dynamics of ocean currents of Atlantic, Pacific and Indian oceans. (3 Assignments)

Recommended Books:

1. Barry R. G. and Corley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.
2. Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi
3. Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.
4. Trewartha G. T. and Horne L. H., 1980: An Introduction to Climate, McGraw-Hill.
5. Lal, D S (2006): Climatology, Sharda Pustak Bhavan, Allahabad
6. Anikouchine W. A. and Sternberg R. W., 1973: The World Oceans: An Introduction to Oceanography, Prentice-Hall.
7. Garrison T., 1998: Oceanography, Wordsworth Company, Belmont.
8. Kershaw S., 2000: Oceanography: An Earth Science Perspective, Stanley Thornes, UK.
9. Pinet P. R., 2008: Invitation to Oceanography (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.
10. Sharma R. C. and Vatal M., 1980: Oceanography for Geographers, Chaitanya Publishing House, Allahabad.
11. Sverdrup K. A. and Armbrust, E. V., 2008: An Introduction to the World Ocean, McGraw Hill, Boston.

COURSE NAME: Introduction to Cartography and Surveying techniques

COURSE CODE: GG- CE - 4234

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *To provide students with a comprehensive understanding of different methods and techniques used in geographical studies.*
- *To facilitate the students to learn skills of map making.*
- *To guide students to learn the science and art of collecting, processing and interpreting the data.*
- *To make the studies more scientific and applicable.*

Course Learning Outcome:

CLO 1: *Learners will be able to enhance their proficiency in creating effective maps..*

CLO 2: *They will also be able to prepare maps for regional development and decision making.*

CLO 3: *Learners will be able to investigate various geographical phenomena as well as solve various problems with the usage of different surveying equipment.*

CLO 4: *Learners will be able to apply various cartographic techniques to solve spatial problems.*

Unit-I: Cartography(Lectures: 30)

1. Cartography: meaning and scope; types (traditional and modern, theoretical and applied); development and importance of cartography.
2. Map: elements, types and classification; map design and layout; concept of base map.
3. Thematic mapping: concept and type; uses and limitations.
4. Map Projection: concept, classification and choice of map projection

Unit-II: Surveying techniques(Lectures:15)

1. Surveying: meaning, types and significance in geography.
2. Principles of surveying: plane and geodetic surveying; Principles of triangulation.
3. Concept of surveying by Plane Table, Prismatic Compass, Theodolite and Dumpy Level.

Practical:

Total Lectures – 30

1. Construction of graticules of (using Mathematical derivation)
2. Zenithal Polar Gnomonic, Stereographic and Orthographic, Simple Cylindrical, Conical One standard parallel along with their properties, uses and limitations. (5 Assignments)
3. Preparation of a plan or a map of an area within the college campus or any suitable area using Plane Table (applying both radiation and intersection methods) (2 Assignments)

4. Open and Closed Traverse Surveying with Prismatic Compass (2 Assignments)
5. Profile levelling and contouring in a selected area by Dumpy Level

Recommended Books:

1. Misra, R.P.,(2014): Fundamentals of Cartography(Revised and Enlarged), Concept Publishing, New Delhi.
2. Monk house, F. J. and Wilkinson, H. R.,(1973): Maps and Diagrams, Methuen, London.
3. Rhind, D. W. and Taylor D. R. F., (eds.) (1989): Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
4. Robinson, A. H.,(2009): Elements of Cartography (6th Edition), John Wiley and Sons, New York.
5. Sarkar, A.,(2015):Practical geography: A systematic approach, Orient Black Swan Private Ltd., New Delhi.
6. Singh, R.L. and Singh R.P.B.,(1999): Elements of Practical Geography, Kalyani Publishers, New Delhi.
7. Talukdar, S.,(2008): Introduction to Map Projections, EBH Publishers(India),Guwahati.
8. Mahmood, A.,(1977): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.

COURSE NAME: Social and Cultural Geography

COURSE CODE: GG- CE - 5314

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *This course aims to provide learners with a comprehensive understanding of the intricate relationship between social and cultural dynamics within geographical contexts.*
- *It also aims to provide the learners with the understanding of the scope, trends, and spatial distributions of major social groups.*
- *To impart in-depth understanding of social processes and challenges in rural and urban settings, in addition to concepts of social justice and security.*
- *To enhance the understanding of cultural geography concepts, emphasizing their relevance to the unique cultural landscape of North East India.*

Course Learning Outcome:

CLO 1: *Learners will acquire a comprehensive understanding of the broad field of Social and Cultural Geography along with gaining in-depth conceptual knowledge*

CLO 2: *Learners will comprehend diverse social processes and associated challenges, examining the concepts of social inclusion and exclusion within geographical studies.*

CLO 3: *Further they will also be able to apply concepts of social justice and security in practical social contexts.*

CLO 4: *Learners will be able to investigate cultural concepts and will attain ability to explore global cultural diversity with a special focus on Northeast India as a cultural region while also gaining the ability to examine the impact of globalization and migration on cultural landscapes and change.*

CLO 5: *Learners will acquire the ability to apply theoretical knowledge through various practical assignments.*

Unit I: Social Geography(Lectures: 20)

1. Social Geography: meaning, nature and scope; approaches and contemporary trend of its development.
2. Concept and types of social space.
3. Social Categories- caste, tribes, class, gender and their spatial distribution.
4. Social Process- Urbanization, Industrialization and Migration; Problems of Urban areas – poverty and crime; problems of Rural Areas – Marginalization and Deprivation.
5. Social Geographies of Inclusion and Exclusion, Slums, Gated Communities, Communal Conflicts and Crime.

6. Concepts of Social Justice and Social Security

Unit II: Cultural Geography

1. Cultural Geography: meaning, nature, scope and evolution
2. Concepts: acculturation, assimilation, cultural ecology, cultural hearth, cultural realm, cultural diffusion, cultural subjugation, cultural integration and diversity, Folk Culture
3. Region as a Cultural Entity – Humanistic Approach and Historical Evolution; North East India as a Cultural Region; Cultural Regions of India and the World.
4. Concept of Cultural Landscape by Carl O Sauer; Impact of Globalization on Cultural Landscapes; Migration and Cultural Change.

Practical:

Total Lectures: 30

1. Construction of Ternary Diagram representing social composition of population in India/North East India. (1 Assignment)
2. Analysis of level of Social well-being with the help of composite Z-score in India /North-East India. (1 Assignment)
3. Mapping of Sex disparity in literacy in India/North-East India using Sopher's Disparity Index. (1 Assignment)
4. Mapping of rural-urban population composition of North-East India using pie-diagram. (1 Assignment)
5. Mapping of cultural regions of India and world. (2 Assignments)

Recommended Books:

1. Ahmed A., 1999: Social Geography, Rawat Publications.
2. Casino V. J. D., Jr., 2009) Social Geography: A Critical Introduction, Wiley Blackwell.
3. Cater J. and Jones T., 2000: Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.
4. Panelli R., 2004: Social Geographies: From Difference to Action, Sage.
5. Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: Introducing Social Geographies, Oxford University Press.
6. Smith S. J., Pain R., Marston S. A., Jones J. P., 2009: The SAGE Handbook of Social Geographies, Sage Publications.
7. Valentine G., 2001: Social Geographies: Space and Society, Prentice Hall.
8. Rubenstein, James M. (2012) Contemporary Human Geography, Pearson Education, U.S.A.
9. Sen, J, (2012) Social and Cultural Geography, Kalyani Publishers, New Delhi.
10. Maurya, S.D. (2016), Cultural Geography, Sharda Pustak Bhawan, Allahabad.

11. Cosgrove Denis (1984) Social Transformation and Symbolic Landscape, Croom Helen, London.
12. Crang, Mike (1998) Cultural Geography, Routledge, London.
13. Robertson Iaian and Penny Richards, (2003) Studying Cultural Landscapes, Oxford University Press, London and New York.
14. Said, E. (1993) Culture and Imperialism, Alfred Knopf, New York.
15. Peet, R. and Thrift, N., (2002), New Models in Geography-Volumes I & II, London, Unwin Hyman.

COURSE NAME: Political Geography

COURSE CODE: GG- CE - 5324

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *It aims to provide learners with a comprehensive understanding of the spatial aspects of politics, governance, and geopolitics.*
- *It explores the interconnections between geography and political processes, helping learners analyse how spatial factors influence political behaviour, international relations, and geopolitical dynamics.*

Course Learning Outcome:

By the end of the course, learners will be able to:

CLO 1: *Demonstrate a deep understanding of key concepts and theories in political geography.*

CLO 2: *Analyse the spatial dimensions of political phenomena at local, national, and international levels..*

CLO 3: *Evaluate the role of geography in shaping political boundaries, statecraft, and geopolitical conflicts*

CLO 4: *Apply critical thinking skills to analyse the geopolitical implications of global issues..*

Unit I: Political Geography(Lectures – 7)

Meaning, nature and scope; its approaches

Unit II: Concepts(Lectures – 8)

State, Nation and Nation-state; Attributes of State.

Unit III: Boundaries and frontiers (**Lectures – 8)**

Concepts and types; Concept of buffer zone

Unit IV: Concept of Geopolitics(**Lectures – 7)**

Theories (Heartland and Rimland).

Unit V: Resource Conflicts(**Lectures – 8)**

Political Geography of Resource Conflicts: disputes and conflicts related to water and forest.

Unit V: Boundary problems(**Lectures – 7)**

Boundary problems with reference to India and North-East India

Practical:

Total Lectures – 30

1. Reorganization of the states of North-East India during Pre and Post-Independence periods. (2 Assignments)
2. Diagrammatic representation of the classification of boundaries. (1 Assignment)
3. Construction of map of India and North-East India highlighting the major inter-state boundary conflict zones. (2 Assignments)
4. Computation of Shape Index for selected states of India and countries. (2 Assignments)

Recommended Books:

1. Agnew, J., & Mitchell, K. (eds.). (2017). The Routledge Handbook of Political Ecology.
2. Cox, K. R. (2017). The Routledge Handbook of Political Geography.
3. O'Loughlin, J., & Flint, C. (eds.). (2017). The Routledge Research Companion to Political Geography.
4. Klaus Dodds. (2015). Geopolitics: A Very Short Introduction.
5. Kaplan, R. D. (2012). The Revenge of Geography: What the Map Tells Us About Coming Conflicts and the Battle Against Fate.

COURSE NAME: Population and Settlement Geography

COURSE CODE: GG- CE - 5334

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *The objective of this course is to introduce students to the basic concepts of population and settlement geography and how the differential characteristics of population and settlement influence the overall development process of an area.*
- *It seeks to develop understanding among the learners about the significance of population and settlement geography and their inter-relationship.*

Course Learning Outcome:

After completion of the course students will be able to:

CLO 1:*Learners will gain an understanding of the field of Population Geography and its development. Learners will also understand basic concepts and theories and apply them to explain population dynamics.*

CLO 2:*Learners will understand the challenges and implications of contemporary population issues, such as aging populations and declining sex ratios.*

CLO 3:*Learners will acquire knowledge on rural and urban settlements, including their factors, characteristics, and internal structures based on given theories.*

CLO 4:*Learners will acquire basic skill in quantitative analysis, spatial mapping, distribution analysis, demographic visualization, urbanization patterns, population distribution, and migration analysis through hands-on practical and will be able to apply them to analyse population dynamics.*

Unit 1: Population Geography (**Lectures: 30**)

1. Population geography: nature, scope and development
2. Sources, characteristics and problems of population data; perspectives on Census of India publications – Primary Census Abstract, District Census Hand-Book, Sample Registration System)
3. Population Size, Distribution and Growth: Determinants and Patterns; theories of population growth- Malthusian Theory
4. Population Composition and Characteristics: age-sex, rural-urban, religious, linguistic
5. Population Dynamics: Fertility, Mortality and Migration- measures, determinants and implications.
6. Issues and policies -ageing population, declining sex ratio; Population policies of India

Unit 2: Settlement Geography (Lectures: 15)

1. Settlement geography: Meaning, Nature and Scope; factors influencing growth and distribution of settlements; importance of settlement studies in geography.
2. Rural and urban settlement: components, characteristics and morphology
3. Concepts: settlement hierarchy, primate city and urban fringe.
4. Theories: Christaller's Central Place Theory; Burgess theory of internal structure of a town

Practicals

Total Lectures: 30

1. Trend of population growth in Assam/N.E. India/India through line graph. (1 Assignment)
2. Choropleth map showing spatial pattern of population density in Assam/N.E. India/India. (1 Assignment)
3. Construction of Age-Sex Pyramid of selected developed and developing nations – compare and contrast. (2 Assignments)
4. Diagrammatic representation of Town Planning during Indus Valley Civilization. (1 Assignment)
5. Calculation of distribution pattern of settlements in an area using Nearest Neighbour Analysis. (1 Assignment)
6. Map showing distribution of towns and their varied population size with spheres in Assam/N.E. India. (1 Assignment)

Recommended Books:

1. Chandna, R. C., 2015: Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers.
2. Barrett H. R., 1995: Population Geography, Oliver and Boyd.
3. Bhende A. and Kanitkar T., 2000: Principles of Population Studies, Himalaya Publishing House.
4. Chandna R. C. and Sidhu M. S., 1980: An Introduction to Population Geography, Kalyani Publishers.
5. Clarke J. I., 1965: Population Geography, Pergamon Press, Oxford.
6. Jones, H. R., 2000: Population Geography, 3rd ed. Paul Chapman, London.
7. Lutz W., Warren C. S. and Scherbov S., 2004: The End of the World Population Growth in the 21st Century, Earthscan.
8. Newbold K. B., 2009: Population Geography: Tools and Issues, Rowman and Littlefield Publishers.
9. Pacione M., 1986: Population Geography: Progress and Prospect, Taylor and Francis.
10. Wilson M. G. A., 1968: Population Geography, Nelson.
11. Panda B P (1988): JanasankyaBhugol, M P Hindi Granth Academy, Bhopal.
12. Maurya S D (2009) JansankyaBhugol, Sharda Pustak Bhawan, Allahabad.

COURSE NAME: Quantitative Techniques in Geography

COURSE CODE: GG - CE - 5344

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *To understand the importance of quantification in geographical studies and its role in enhancing analytical rigor and explore the types and sources of data used in geographical research, along with understanding the scales of measurement.*
- *To learn the various measures of central tendency and dispersion, enabling the analysis and interpretation of geographical data variability.*
- *To familiarize learners with sampling techniques, time series analysis techniques and correlation and regression analysis and their relevance in geographical research.*

Course Learning Outcome:

CLO 1:*Learners will be able to compute and interpret measures of central tendency and dispersion for geographical data, facilitating effective data analysis and interpretation.*

CLO 2:*They will also be able to apply sampling techniques to gather representative data sets, conduct time series analysis and correlation and regression analysis for geographical phenomena, enabling the identification of trends and patterns over time.*

CLO 3:*Further, learners will develop practical skills in computing and interpreting various statistical measures and conducting spatial analysis, enhancing proficiency in geographical research methodologies.*

Unit I: Quantification in geographical studies (Lectures 7)

Quantification in geographical studies; its significance and relevance

Unit II: Data types (Lectures 7)

Types and sources of data; scale of data classification (nominal, ordinal, interval and ratio)

Unit III: Central Tendency (Lectures 8)

Measures of Central Tendency (mean, median and mode) and dispersion (range, quartile deviation, mean deviation, standard deviation and coefficient of variation).

Unit IV: Sampling techniques (Lectures 7)

Sampling techniques: concept of sample size and sample; types (random, systematic and stratified)

Unit V: Time Series(Lectures 8)

Time Series Analysis and its applications in geographical studies; basic techniques of time series data analysis (semi-average, moving average and least squares)

Unit VI: Correlation and Regression (Lectures 8)

Meaning and types of correlation; Spearman's Rank Correlation, Product Moment Correlation; linear regression analysis; and their application in geographical studies.

Practicals:

Total Lectures: 30

1. Computation of mean, median and mode for ungrouped and grouped geographical data; Determination of median and mode using graphical methods and skewness. (3 assignments)
2. Determination of the location of mean centre of settlements (using centrographic measure). (1 assignment)
3. Computation of the values of standard deviation and coefficient of variation of ungrouped and grouped data relating to some geographical phenomena (rainfall, landholding, income, production, etc.) for comparison of distribution patterns. (2 assignments)
4. Analysis of time series data of some geographical phenomena (rainfall, production, export value, import value, etc) using moving average and least squares methods. (2 assignments)
5. Computation of coefficient of correlation between two logically associated geographical phenomena using Spearman's rank correlation and Pearson's product-moment correlation formulae; Preparation of scatter diagram and fitting the line of linear regression of Y on X for any set of bi-variate data relating to meaningful geographical phenomena. (2 assignments)

Recommended Books:

1. Hammond P. and McCullagh P. S., 1978: Quantitative Techniques in Geography: An Introduction, Oxford University Press.
2. Sarkar, A. (2013) Quantitative Geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi.
3. Yeates M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
4. Mathews, J.A., 1987: Quantitative and Statistical Approaches to Geography: A Practical Manual Pergamon, Oxford.
5. Mahmood, A., 1999: Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
6. Elhance, D.N., 1972: Fundamentals of Statistics, Kitab Mahal, Allahabad
7. Monkhouse, F.J. & Wilkinson, H.R., 1989: Maps & Diagrams, B.I. Publications, New Delhi
8. Gregory, S., 1963: Statistical Methods and Geographers, Longman, London.

COURSE NAME: Geography of India

COURSE CODE: GG- CE - 6314

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *The primary objective of the course is to provide students with a comprehensive understanding of the geographical features, environmental diversity, and spatial dynamics of India.*
- *Through a multidisciplinary approach, students will explore the physical, human, and cultural landscapes that shape the nation.*
- *The course aims to cultivate critical thinking, analytical skills, and a nuanced perspective on the complex interactions between natural and human elements within the Indian geographical context.*

Course Learning Outcome:

CLO 1: *Learners will be able to understand the location of India with reference to its neighbouring countries and gain a general understanding of the physiography, drainage, climate, soil and natural vegetation of the country.*

CLO 2: *Learners will be able to analyse population distribution, composition, demographic trends and understand population problems and policies.*

CLO 3:*Learners will also be able to examine the resource base of different regions in India and investigate spatial patterns of economic activities, including agriculture, industry, and services.*

CLO 4:*Learners will possess a well-rounded understanding of India's geography, equipped with analytical skills to comprehend the intricate relationships between physical landscapes, human societies, and cultural developments.*

Unit-I: Significance of India's Location (Lectures – 6)

India's location and its significance; administrative divisions

Unit-II: Physiography and Drainage (Lectures – 6)

Physiographic divisions; river systems- Himalayan and Peninsular (west flowing and east flowing rivers)

Unit-III: Vegetation(Lectures – 7)

Climate, Soil and Natural Vegetation: factors determining the climate of India; climatic regions of India; Indian Monsoon- origin and its mechanisms; major soil groups and their distribution; classification of natural vegetation

Unit-IV: Population (Lectures – 6)

Size, distribution and growth; composition (ethnic, linguistic, age-sex, and religious); population problems and policies.

Unit-V: Resources (Lectures – 7)

Distribution and utilization of mineral (iron ore, bauxite) and power resources - conventional (coal, petroleum, natural gas) and non-conventional (solar, hydro, thermal and wind).

Unit-VI: Industries (Lectures – 7)

Iron and steel, cotton; transport and communication; Special Economic Zones and Technology Parks.

Unit-VII: Agriculture (Lectures – 6)

Agricultural production and distribution of rice, wheat, tea, sugarcane and cotton; Agro-climatic zones of India.

Practicals:

Total Lectures – 30

1. Trend of population growth and growth rates in India and N.E. India since 1901 using Census data (1 Assignment)
2. Choropleth mapping to show spatial variation in decennial population growth rate in India. (1 Assignment)
3. Social composition of population (SC, ST and General) in N.E. India using Ternary Diagram. (1 Assignment)
4. Trend of rice, wheat and iron & steel production in the India/NE India since 1950 using Moving Average and Least Squares Method. (2 Assignments)
5. Inter-city/Inter-state movement of traffic/bus in India/NE India through flow cartogram. (1 Assignment)
6. Map showing SEZ and Industrial/Economic Corridors in India. (1 Assignment)

Recommended Books:

1. Khullar D. R., 2022: India: A Comprehensive Geography, Kalyani Publishers.
2. Hussain M. (Edited by Tasawwur Hussain Zaidi), 2022 (10thEdn.): Geography of India, McGraw Hill.
3. Mamoria C. B., 1980: Economic and Commercial Geography of India, Shiva Lal Agarwala.
4. Miller F. P., Vandome A. F. and McBrewster J., 2009: Geography of India: Indo- Gangetic Plain, Thar Desert, Major Rivers of India, Climate of India, Geology of India, Alphascript Publishing.
5. Nag P. and Sengupta S., 1992: Geography of India, Concept Publishing.
6. Pichamuthu C. S., 1967: Physical Geography of India, National Book Trust.
7. Sharma T. C. and Coutinho O., 1997: Economic and Commercial Geography of India, Vikas Publishing.
8. Singh Gopal, 1976: A Geography of India, Atma Ram.

9. Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.
10. Rana, Tejbir Singh, 2015, Diversity of India , R.K. Books, Delhi.

COURSE NAME: Economic Geography

COURSE CODE: GG- CE - 6324

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *This course aims to provide an in-depth understanding of fundamental concepts of the field of Economic Geography.*
- *It also provides knowledge on various economic activities, concepts and theories, involved in the understanding of Economic Geography.*
- *Besides, the course aims to enable the learners to apply the various theoretical knowledge of the field in the real-life scenarios by developing different practical skills.*

Course Learning Outcome:

CLO 1: *Learners will develop a comprehensive understanding of Economic Geography, enabling critical analysis and interpretation of economic phenomena at local, regional, and global scales.*

CLO 2: *They will acquire knowledge of economic activity principles, including production systems and resource utilization, fostering a deeper understanding of economic processes and dynamics.*

CLO 3: *Learners will be able to investigate the factors influencing industrial location and the distribution of key industries, enhancing comprehension of industrial geography and economic development strategies.*

CLO 4: *They will also develop analytical skills to assess international trade dynamics, including factors influencing trade patterns and India's trade relations with major global partners, contributing to informed decision-making in trade policy and international relations along with the ability to apply theoretical knowledge in practical applications in real life.*

Unit-I: Economic Geography (Lectures: 7)

Meaning, scope and approaches

Unit-II: Economic Activity(Lectures: 7)

Meaning and classification; production system: land, labour and capital; resource: concept and classification.

Unit-III: Agriculture(Lectures: 8)

Factors influencing agriculture; types of agriculture; factors influencing cultivation of wheat, rice, tea, coffee and their distribution and production in different parts of the world; Agricultural Location Theory of Von Thunen.

Unit-IV: Manufacturing(Lectures: 8)

Factors influencing industrial location; classification of industries; Industrial Location Theory of Weber; Factors, distribution and production of Cotton Textile, Iron and Steel and Information technology industries in the world.

Unit-V: Transport system(Lectures: 8)

Modes of transport, factors influencing transport development and role of transport in resource mobilization and economic development.

Unit-VI: Trade(Lectures: 7)

Factors influencing trade in different countries of the world; trade relations of India with countries like USA, Russia and Japan.

Practical:

Total Lectures: 30

1. Trend of rice, wheat, iron and steel, cotton production in the world/India since 1960 using moving average and least squares method. (2 Assignments)
2. Trend of Agricultural production in the world/India/North East-India using Band-graph. (1 Assignment)
3. Trend of balance of Trade relations (export and import value) of India with USA, China and Japan in respect of major commodities since 1990 using bar graph. (2 Assignments)
4. Regional variation in fertilizer consumption and agricultural productivity in rice, wheat and barley in selected countries of the world using bar graph. (1 Assignment)
5. Inter-state/Inter-nation volume of movement of selected commodities and Inter-city movement of traffic/ bus in N.E. India through flow cartogram. (1 Assignment)

Recommended Books:

1. Agnew, J., & Mitchell, K. (eds.). (2017). The Routledge Handbook of Political Ecology.
2. Cox, K. R. (2017). The Routledge Handbook of Political Geography.
3. O'Loughlin, J., & Flint, C. (eds.). (2017). The Routledge Research Companion to Political Geography.
4. Klaus Dodds. (2015). Geopolitics: A Very Short Introduction.
5. Kaplan, R. D. (2012). The Revenge of Geography: What the Map Tells Us About Coming Conflicts and the Battle Against Fate.
6. Mitchell B., 1997: Resource and Environmental Management, Longman Harlow, England.
7. Owen S. and Owen P. L., 1991: Environment, Resources and Conservation, Cambridge University Press, New York.
8. Rees J., 1990: Natural Resources: Allocation, Economics and Policy, Routledge. London.
9. Gilg A. W., 1985: An Introduction to Rural Geography, Edwin Arnold, London.

10. Krishnamurthy, J. 2000: Rural Development - Problems and Prospects, RawatPubls., Jaipur.
11. Lee D. A. and Chaudhri D. P. (eds.), 1983: Rural Development and State, Methuen, London.
12. Misra R. P. and Sundaram, K. V. (eds.), 1979: Rural Area Development: Perspectives and Approaches, Sterling, New Delhi.

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COURSE NAME: Remote Sensing, GIS and GPS

COURSE CODE: GG- CE - 6334

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *To understand the concept and historical development of remote sensing, including its application in geographical studies and provide learners with the principles underlying remote sensing systems*
- *To familiarize with remote sensing data products, their sources, and characteristics, and to gain proficiency in image interpretation techniques, both visual and digital, as well as basics of photogrammetry.*
- *To comprehend the definition and components of Geographic Information Systems (GIS) and Global Positioning System (GPS), along with their data types, structures, and management systems.*
- *To explore the application of geospatial techniques in various fields such as land use/land cover analysis, urban sprawl analysis, forest monitoring, and hydrology.*

Course Learning Outcome:

CLO 1: *Learners will be able to understand the principles of remote sensing systems, facilitating the interpretation of imagery and the selection of appropriate platforms and sensors for specific applications.*

CLO 2: *Learners will be able to analyse remote sensing data products and employing image interpretation techniques for extracting valuable information, such as land cover classification and spatial analysis.*

CLO 3: *Learners will be able to critically evaluate remote sensing techniques and their historical significance, enabling informed decision-making in geographical research and applications.*

CLO 4: *Learners will be able to utilize GIS tools and techniques for spatial data analysis, including data layer creation, digitization, and thematic representation, as well as managing spatial and non-spatial data types.*

CLO 5: *Learners will be able to apply geospatial techniques, including GPS data collection and mapping, in addressing real-world problems such as land use/land cover changes, urbanization trends, forest monitoring, and hydrological analysis, enhancing decision-making processes in various sectors.*

Unit I: Remote Sensing (Lectures 15)

1. Remote Sensing: Definition and history of development
2. Principles of Remote Sensing system: aerial and satellite remote sensing; energy sources, EMR and its interaction with atmosphere and earth features; platforms, sensors and resolutions;

3. Remote Sensing data products, sources and characteristics
4. Basics of photogrammetry
5. Image Interpretation: Visual and Digital

Unit II: GIS and GPS (Lecture 30)

1. GIS: definition and components
2. GIS Data types and Structures: spatial and non-spatial, raster and vector; Database Management System (DBMS)
3. Georeferencing: Image classification- supervised and unsupervised; buffer creation, techniques of buffer creation.
4. Creation of thematic layers; application of GIS techniques in Land use/ Land Cover change analysis and Urban Sprawl analysis
5. Global Navigation Satellite System; GPS: principles, components, functions and operational procedures.

Practicals:

Total Lecture:30

1. Geo-referencing and Data layer creation: Map scanning, digitization (point, line & polygon), geometric correction, attribute data input and their thematic representation; map layout; buffer creation (3 assignments)
2. Preparation of land use/ land cover; image classification techniques – Unsupervised and Supervised (2 assignments)
3. Visual interpretation of aerial photograph and satellite imagery and preparation of thematic maps using appropriate classification scheme. (3 assignments)
4. GPS data collection, plotting and mapping various features within college campus.

(3 assignments)

Recommended Books:

1. Campell, J. B. (2003): Introduction to Remote Sensing. 4th edition. Taylor and Francis, London.
2. Chang, K.,(2006) : Introduction to Geographic Information Systems, Tata McGraw-Hill.
3. Chaunial, D. D. (2004): Remote Sensing and Geographical Information System (in Hindi), Sharda Pustak Bhawan, Allahabad.
4. Heywood, I. et al. (2004): An Introduction to Geographic Information Systems, Pearson.
5. Lillesand, T.M. and Kiefer, R.W. (2000): Remote Sensing and Image Interpretation. John Wiley and Sons, New York.
6. Fazal, S. (2024): GIS Basics. 2nd edition, New Age International Publishers.

COURSE NAME: Field Techniques in Geography

COURSE CODE: GG- CE - 6344

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *The Field Techniques in Geography paper holds significant pedagogical value by providing learners with first-hand exposure to the geography of specific regions.*
- *It equips learners with various field data collection techniques and enhances their understanding of predefined issues within the discipline.*

Course Learning Outcome:

After completion of the course students will be able to:

CLO 1: *Learners will be equipped with the basic skills in surveying methodologies, including the practical application of ground surveying techniques and the accurate execution of traverse surveying, profile levelling, and contouring tasks.*

CLO 2: *Learners will be adept at addressing research problems, employing appropriate methodologies, and utilizing tools effectively for conducting quality research.*

CLO 3: *Learners will develop proficiency in identifying and conducting case studies across varying geographical contexts, fostering a deeper understanding of geographical processes and dynamics.*

CLO 4: *Learners will have competence in employing a wide range of tools and techniques for data collection, enabling effective observation, surveying, and interview processes in both physical and human geography.*

Unit I: Geography and Field Studies (Lectures 6)

Geography as a field science; Need of field work in geography; Nature of field studies in physical geography and human geography.

Unit II: Case Study (Lectures 6)

Concept of case study and its relevance in varying geographical context. (Physical/Human/Rural/ Urban/Environmental)

Unit III: Tools and Techniques in Field Studies (Lectures 15)

Nature of data and their collection techniques relating to various geographical phenomena (Physical and Human); Structure of field survey questionnaire; Collection of Physical geographic data: Observations and photography, field interview, questionnaire survey, etc.; Collection of Human geographic data: Questionnaire survey, Participant observation, PRA, Focus group interview/discussion, etc.

Unit IV: Surveying (Lectures 15)

Concept of ground surveying and mapping; Conduct of traverse surveying with Prismatic Compass; Profile levelling and contouring with Dumpy Level

Unit V: Preparation of Field Study Report and its broad design (Lectures 3)

Basis of selection of the theme of field study; Objectives, Methods of data collection, Location/Situation of the study area, Data Analysis and mapping, Interpretation/Findings.

Practicals /Field Study:

Credit: 1 = 25 marks

Total Lectures: 30

Unit I: Field Report Preparation and Evaluation (15 Marks)

Preparation of field report based on field study based on field study with applications of necessary surveying equipment including GPS by studying the geographical personality of any part of India/NE India under the guidance of teacher(s).

Unit 2: Viva-voce (10 Marks)

Recommended Books:

1. Creswell J., 1994: Research Design: Qualitative and Quantitative Approaches Sage Publications.
2. Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice- Hall of India, New Delhi.
3. Evans M., 1988: “Participant Observation: The Researcher as Research Tool” in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
4. Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publs. Co., New Delhi.
5. Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi.
6. Robinson A., 1998: "Thinking Straight and Writing That Way", in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
7. Special Issue on “Doing Fieldwork” The Geographical Review 91:1-2 (2001)
8. Stoddard R. H., 1982: Field Techniques and Research Methods in Geography, Kendall/Hunt.
9. Wolcott, H. 1995. The Art of Fieldwork.Alta Mira Press, Walnut Creek, CA.
10. Monkhouse, F.J. and Wilkinson, H.R., 1989: Maps and Diagrams, B.I. Publications Ltd., Mumbai.
11. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.

COURSE NAME: Research Methods in Geography and Project Work

COURSE CODE: GG-CE-7414

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY
Total Lectures: 45

Course Objective:

- *To familiarize students with the fundamentals of research, including types of research, research design, literature review, and formulation of research problems.*
- *To develop students' ability to collect, process, and analyze qualitative and quantitative data using appropriate methods and techniques.*
- *To provide hands-on exposure to contemporary research tools, including statistical software, GIS and Remote Sensing, survey instruments, AI tools, and reference management systems.*
- *To enable students to prepare an ethical, well-structured research/project report based on fieldwork and primary data, following standard academic writing and referencing practices.*

Course Learning Outcome:

The expected outcomes of this course are:

CLO 1: *Learners will develop a sound understanding of the meaning, scope, and significance of research, and will be able to conceptualize research problems through effective review of literature and appropriate research design.*

CLO 2: *Learners will acquire the ability to systematically collect, process, and analyze qualitative and quantitative data using suitable methodologies, statistical techniques, and contemporary research tools.*

CLO 3: *Learners will demonstrate the competence to apply ethical research practices and digital tools to produce well-structured research reports, with proper citation, referencing, and clear presentation of findings in the form of tables, figures, and executive summaries.*

PART I: THEORY (Lectures: 45)

Unit 1: Introduction: (Lectures 7)

Meaning and significance of research; types of research; basics of research methodology; review of literature and its need.

Unit 2: Research Design: (Lectures 10)

Research problem- meaning, characteristics, statement of the problem, formulation of research problem; review of research works; objectives; research question and hypotheses; database and methodology; significance; organization of the work and referencing.

Unit 3: Data Collection/Acquisition and Analysis: (Lectures 10)

Types and sources of data; methods and techniques of data collection (qualitative and quantitative); data processing (manual and computerised); qualitative and quantitative data analysis.

Unit 4: Contemporary Research Tools: (Lectures 7)

Reference management tools (Mendeley); statistical and analytical software (Excel, SPSS, R); GIS and Remote Sensing; survey tools (GPS, mobile-based surveys, Google Forms); AI tools in research.

Unit 5: Structure of a Research Report: (Lectures 7)

Preliminaries; Text; Tables, Figures and Appendices; Citations, References and Bibliography; Research/Project Report Writing; Executive Summary.

Unit 6: Research Ethics: (Lectures 4)

Ethical principles; plagiarism and use of plagiarism detection tools.

PRACTICAL

PART II: PROJECT REPORT WRITING/FIELDWORK

Total Hours: 30

Project Report Preparation and Evaluation

Every student needs to participate in fieldwork and prepare a field report according to the following guideline:

1. Each student will prepare a report based on primary data collected from field survey and secondary data collected from different sources.
2. A study area to be selected to investigate a problem of Geographical significance.
3. A copy of the bound report, duly signed by the concerned teacher, will be submitted during examination.
    a) Length of the Report: 20-30 printed A4 size pages (font size 12 in Times New Roman with 1.5 spacing) including text, tables, figures, references, etc.
    b) The project report in binding form (Kutcha or Spiral binding) duly signed by the guide concerned has to be submitted to the department.
4. The marks distribution of the Project Report in the final semester examination is as follows:

a) Evaluation of Content: 15 (average between external examiner and internal teacher guide)
b) Viva-voce: 5 (exclusively by the external examiner)

RECOMMENDED BOOKS:

1. Clifford, N., Cope, M., Gillespie, T.W., French, S. (Eds) 2016. Key Methods in Geography, 3rd ed, Sage.
2. Gomes, B., Jones III, J.P. (Eds) 2010. Research Methods in Geography: A Critical Introduction, WileyBlackwell.
3. Lenon, B., Cleves, P. 2015. Geography Fieldwork and Skills, Harper-Collins.
4. Montello , D.R, Sutton, P. 2012. An Introduction to Scientific Research Methods in Geography and Environmental Studies, 2nd ed, Sage.
5. Murthy , K.L.N. 2004. Research Methodology in Geography: A Text Book, Concept Publishing Co.
6. Northey, N., Draper, D., Knight, D.B. 2015. Making Sense in Geography and Environmental Sciences: A Student's Guide to Research and Writing, 6th ed, Oxford University Press.
7. Parsons, T., Knight, P.G. 2015. How To Do Your Dissertation in Geography and Related Disciplines, 3rd ed, Routledge.
8. Riordan, D. 2013. Technical Report Writing Today, 10th ed, Wadsworth Publishing.
9. Phillips, R., Johns, J. 2012. Fieldwork for Human Geography, Sage.
10. Thornbush, M.J., Allen, C.D., Fitzpatrick, F.A. (Eds) 2014. Geomorphological Fieldwork, Elsevier.

COURSE NAME: Advanced Cartography and Spatial Statistical Techniques

COURSE CODE: GG-CE-7424

Total Credits: 4 (Theory: 3 + Practical: 1)

THEORY

Total Lectures: 45

Course Objective:

- *To develop a sound understanding of cartographic principles, geodesy, map projections and cartographic design for the effective representation of geographical information.*
- *To introduce geoinformatics and GPS-based techniques for spatial data collection, mapping and geographical applications.*
- *To develop proficiency in applying statistical methods for the systematic analysis and interpretation of geographical data.*
- *To develop quantitative and analytical skills for examining patterns, relationships, variations and trends in geographical phenomena using appropriate statistical techniques.*

Course Learning Outcomes:

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

CLO1: Explain and apply fundamental concepts of cartography, geodesy, map projections and cartographic design in geographical mapping.

CLO2: Apply geoinformatics and GPS-based techniques for spatial data collection, mapping and addressing practical geographical problems.

CLO3: Apply appropriate statistical techniques to analyse, compare and interpret geographical data and identify significant spatial patterns, relationships and variations.

CLO4: Use statistical software and quantitative methods to analyse complex geographical datasets, construct meaningful indices and derive evidence-based geographical interpretations.

PART I: THEORY (3 Credits, Total Lectures: 45)

Unit 1: Cartography (Lectures: 30)

1. Basic Geodesy: concept and cartographic use of Spherical, Ellipsoidal and Geoidal Earth; measurement of distance, direction and area on the Earth's surface; great-circle distance and its applications. **(9 lectures)**

2. Map Projections and Coordinate Systems: Selection and application of appropriate projections for different geographical purposes (general distribution; small extent in latitude and longitude). **(6 lectures)**
3. Cartographic Representation of geographical data (Manual and digital): Sphere; Pie; Block diagram; Isopleth; Choropleth; Choro-chromatic proportional and graduated symbols; graphical /digital representation of geographical data. **(6 lectures)**
4. Application of Geoinformatics in Geographical Studies: Geospatial data acquisition, updation, analysis and visualization; applications in urban and regional planning, forestry and natural resource management, disaster management, environmental monitoring and infrastructure planning. **(9 lectures)**

UNIT 2: Advanced Statistical Techniques (Lecture: 15)

1. Inferential statistical techniques: sampling distributions and standard error; hypothesis testing and significance levels; parametric and non-parametric tests; z-test, t-test, Chi-square test and Analysis of Variance (ANOVA). **(4 Lectures)**
2. Correlation and regression: multiple correlation and regression; linear and non-linear relationships; applications of rank-size relationship and distance decay. **(3 Lectures)**
3. Multivariate analysis: concept and significance in Geography; Principal Component Analysis (PCA); combination analysis; application of multivariate techniques in areal classification and regionalisation. **(4 Lectures)**
4. Data standardisation, classification and index construction: data standardization; ranking and scoring techniques; construction and interpretation of composite and weighted indices. **(4 Lectures)**

PART 2: PRACTICAL (1 Credit, Total Hours: 30)

1. Enlargement and reduction of map using graphical and mathematical methods. **(2 exercises)**
2. Preparation of World map using selected map projection (Mercator's Projection/Mollweide's Projection) **(1 exercise)**
3. Designing a Digital Elevation Model (DEM) for a very small watershed in the hilly terrain using topographical map/SRTM data, its 3-D visualization. GPS/DGPS coordinates mapping by using database/text files. **(1 exercise)**
4. Application of z-test, t-test, F-test/ANOVA and chi-square test to selected geographical datasets. (1 exercise)
5. Computation and interpretation of multiple correlation and regression coefficients for selected geographical variables. **(1 exercise)**

6. Application of Principal Component Analysis (PCA) to selected geographical variables for data reduction, extraction of principal components and classification of geographical areas based on component scores. **(1 exercise)**
7. Flood hazard mapping/site suitability or any spatial applications for a selected area using multiple thematic layers, reclassification and weighted overlay techniques in ArcGIS/QGIS. **(1 exercise)**

Recommended Books

1. Campbell, J. (1984). *Introductory Cartography*. Prentice Hall.
2. Misra, R.P. & Ramesh, A. (1995). *Fundamentals of Cartography*. Concept Publishing.
3. Robinson, A.H. et al. *Elements of Cartography*. John Wiley & Sons.
4. Raisz, E. *Principles of Cartography*. McGraw Hill.
5. Kenetkar, T.P. & Kulkarni, S.U. *Surveying and Levelling* (Vol. I–II). Vidyarthi Griha Prakashan.
6. Talukder, S. (2008): *Map Projections*, EBH Publishers.
7. Lenon, B., Cleves, P. 2015. Geography Fieldwork and Skills, Harper-Collins.
8. Kanetkar, T.P. and Kulkarni, S.U.: *Surveying and Levelling*, Vol. I & II.
9. Monkhouse, F.J. and Wilkinson, H.R. (1989): *Maps and Diagrams*, B.I. Publications.
10. Patel, A.N. and Singh, S. (1999): *Principles of Remote Sensing*, Scientific Publishers.
11. Raisz, E.: *General Cartography*; *Principles of Cartography*, McGraw Hill.
12. Robinson, A.H. et al.: *Elements of Cartography*, Wiley.
13. Cressie, N.A.C., 1991: Statistics for Spatial Analysis, Wiley, New York.
14. Eldon, D., (1983). *Statistics in Geography: A Practical Approach*. Blackwell, London
15. Gregory, S., 1978: Statistical Methods and the Geographer (4th Edition), Longman, London.
16. Haining, R.P., 1990: Spatial Data Analysis in the Social and Environmental Science, Cambridge University Press, Cambridge.
17. Mahmood, A., (1977). *Statistical Methods in Geographical Studies*. Rajesh Publications. New Delhi
18. Mathews, J.A., 1987: Quantitative and Statistical Approaches to Geography: A Practical Manual Pergamon, Oxford.
19. Mc Grew, Jr. and Charles, B. M., 1993: An Introduction to Statistical Problem Solving in Geography, W.C. Brocan Publishers, New Jersey.
20. S.K., 1998: Statistics for Geoscientists : Techniques and Applications, Concept Publishing Company, New Delhi.

21. Wei, W.S.,1990: Time Series Analysis: Variate and Multivariate Methods , Addison Wesley Publishing.
22. Yeates, Mauris, 1974: An Introduction to Quantitative Analysis in Human Geography, Mc Grawhill, New York

COURSE NAME: Geography of North-East India and Assam

COURSE CODE: GG-CE-7434

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *To provide the learners with a comprehensive understanding of the geographical, demographic, economic and environmental aspects of North east India and Assam.*
- *To analyse the significance of North east India and Assam in terms of their locational, strategic, and socio-economic importance.*
- *To explore the physical characteristics, population dynamics, agricultural practices, resource distribution, industrial development, tourism potential, and biodiversity of Northeast India and Assam.*

Course Learning Outcome:

CLO1: *Learners will be able to articulate the locational and strategic significance of Northeast India and Assam, considering their impact on regional and global contexts.*

CLO2: *They will be able to demonstrate a comprehensive understanding of the physical characteristics of Northeast India and Assam.*

CLO3: *Learners will be able to analyse the population dynamics of Northeast India in general and Assam in particular.*

CLO4: *Learners will specifically be able to understand Assam's economic development prospects and challenges by analysing its resource and industrial profile alongside exploring biodiversity to assess the state's tourism potential*

PART A: North-East India (15 Lectures)

Unit 1: Physical setting: (5 Lectures)

Location and strategic significance, physiography, drainage, climate, soil and natural vegetation.

Unit 2: Socio-cultural setting: (4 Lectures)

Peopling, size, distribution and growth, composition (age-sex, rural-urban, religious).

Unit 3: Economy: (6 Lectures)

Resource and its classification; types of agriculture: settled agriculture and shifting cultivation; industries (agro-based; mineral based); major food crops (rice and oilseeds) and cash crops (tea and rubber)

PART B: Assam (30 Lectures)

Unit 1: Physical setting: (6 Lectures)

Physiography, drainage, climate, soil and natural vegetation and biodiversity.

Unit 2: Population: **(4 Lectures)**

Growth, distribution and density; composition (literacy, caste, linguistic, occupational)

Unit 3: Resources: (5 Lectures)

Mineral resources (coal, crude oil and natural gas); forest and water resources.

Unit 4: Agriculture: (5 Lectures)

Agro-climatic zones; production and distribution of major crops (rice, pulses, oil seeds, sugarcane).

Unit 5: Industry: (5 Lectures)

Agro-based (tea and sugar); mineral-based (coal, petroleum, natural gas and fertilizer); cottage and tourism industries; problems and prospects of industrial development in the state.).

PRACTICAL:

Total Hours: 30

Unit I:Exercises

1. Mapping of Physiographic divisions of Northeast India/Assam (1 Assignment)
2. Listing and mapping of major rivers of Northeast India/Assam (1 Assignment)
3. Trend of population growth rates in N.E. India/Assam since 1901 using Census data (Source: censusindia.gov.in) (1 Assignment)
4. Choropleth mapping to show spatial variation in urbanization level in NE India (1 assignment)
5. Spatio-temporal variation of population (religious/social composition) in NE India/Assam using a carto-statistical tool (2 Assignments)

6. Map showing distribution of major tribal groups in North-East India. (1 Assignment)

Unit II: Practical Note-Book and Viva-voce

1. Evaluation of Practical Note-Book
2. Viva-voce

RECOMMENDED BOOKS

1. Bhagabati, A.K., Bora,A. K and Kar, B.K.:Geography of Assam, Rajesh Publications, New Delhi, 7th Revised and enlarged edition (2023)
2. Baruah,S.K. (2025). *Assam Year Book 2025*. Guwahati: Revised & Enlarged Edition, Jyoti Prakashan, Assam
3. Taher,M and Ahmed, P. Geography of North East India, Mani Manik Prakash, Guwahati.
4. Das, M.M. Peasant Agriculture in Assam, EBH India Publishers, Guwahati.
5. Bhattacharya,P. 2006:Trend in Tourism Potentiality, Bani Mandir, Guwahati.
6. Bhagabati, A.K.(ed):Biodiversity of Assam, Eastern Book House,Guwahati.
7. Bhattacharyya, N.N.: North East India, Rajesh Publication, New Delhi.
8. Srivastava, S.C. : Demographic Profile of N.E.India, Mittal Publications, New Delhi.

COURSE NAME: Agricultural Geography

COURSE CODE: GG-CE-7444

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY
Total Lectures: 45

Course Objective:

- *To introduce the meaning, nature, scope, and significance of agricultural geography and highlight the role of agriculture in food security.*
- *To examine the factors influencing agriculture, including physical, socio-economic, infrastructural, and institutional aspects.*
- *To understand key concepts, theories, and agricultural systems, including global systems, crop patterns, and India's agro-climatic diversity.*
- *To assess agricultural modernization, mechanization, and contemporary sustainable practices, including digital farming and sustainable inputs, for improving productivity and resilience.*

Course Learning Outcome:

CLO1: *Learners will be able to explain the concepts, theories, and types of agriculture at global and national levels, including India's agricultural development and revolutions.*

CLO2: *Learners will be able to analyze factors influencing agriculture and evaluate the relevance of modern, digital, and sustainable agricultural practices.*

CLO3: *Learners will be able to assess agricultural modernization strategies and their impact on productivity, sustainability, and food security.*

PART I: THEORY (Lectures: 45)

Unit-1: Introduction: (Lectures 8)

Meaning, nature, scope, approaches and significance, role of agriculture in food security

Unit-2: Factors influencing Agriculture:(Lectures 5)

Physical, socio-economic, Infra-structural and Institutional

Unit-3: Concepts and Theories:(Lectures 10)

Crop combination (Weaver's method), cropping intensity, crop diversification; Von Thunen's Model of agricultural location

Unit-4: Agricultural Systems and types:(Lectures 8)

Global agricultural systems (Whittlesey' Classification); agricultural types; plantation, mixed farming, horticulture and sericulture; organic farming

Unit-5: Agriculture in India:(Lectures 6)

Agro-Climatic Regions; Crop Productivity, Agricultural development, Agricultural Revolutions (Green, White, Blue, Pink)

Unit-6: Agricultural Modernization and Development:(Lectures 8)

Agricultural inputs (Irrigation, HYV Seeds, fertilizers); mechanization in agriculture (machinery and skill development); Contemporary and Sustainable Practices (digital farming, sustainable inputs)

Part II: PRACTICAL
Unit I: Exercises

Total Hours: 30

1. Trend of Production of major food grains (rice, wheat, maize etc.) in India/ Selected states using moving average method (1 Assignment)
2. Agricultural productivity pattern in Brahmaputra Valley/ Assam/ N E India based on Kendall's Ranking Method (1 Assignment)
3. Crop combination analysis by Weaver's method (1 Assignment)
4. Spatial pattern of crop concentration in Assam/ N E India using Location Quotient Method (1 Assignment)
5. Spatial pattern of level of level of agricultural development in Assam/ N E India using Composite Z-score (1 Assignment)
6. Cropping Intensity in Assam/ N E India (1 Assignment)

Unit II: Practical Notebook & Viva-Voce

- Practical notebook evaluation
- Viva-voce

RECOMMENDED BOOKS:

1. Basu, D.N., and Guha, G.S., 1996: Agro-*Climatic Regional Planning in India*, Vol.I& II, Concept Publication, New Delhi.

2. Bryant, C.R., Johnston, T.R, 1992: *Agriculture in the City Countryside*, Belhaven Press, London.

3. Burger, A., 1994: *Agriculture of the World*, Aldershot, Avebury.

4. Grigg, D.B., 1984: *Introduction to Agricultural Geography*, Hutchinson, London.

5. Ilbery B. W., 1985: *Agricultural Geography: A Social and Economic Analysis*, Oxford University Press.

6. Mohammad, N., 1992: *New Dimension in Agriculture Geography*, Vol. I to VIII, Concept Pub., New Delhi.

7. Roling, N.G., and Wageruters, M.A.E.,(ed.) 1998: *Facilitating Sustainable Agriculture*, Cambridge University Press, Cambridge.

8. Shafi, M., 2006: *Agricultural Geography*, Doring Kindersley India Pvt. Ltd., New Delhi

9. Singh, J., and Dhillon, S.S., 1984: Agricultural Geography, Tata McGraw Hill, New Delhi.

10. Tarrant J. R., 1973: *Agricultural Geography*, David and Charles, Devon.

COURSE NAME: Soil and Biogeography

COURSE CODE:GG-CE-7454

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY
Total Lectures: 45

Course Objective:

- ***Introduce the fundamental concept, nature, and scope of Bio-Geography*** *and explain the interrelationships between living organisms and their environment.*
- ***Create awareness on biodiversity conservation*** *with special reference to forest and wildlife protection.*
- ***Introduce the meaning, nature, and scope of Soil Geography*** and explain soil as an essential component of the environment.
- ***Examine soil composition, profile, and horizon development,*** *and analyse various soil types and their distribution in India.*

Course Learning Outcomes:

After completing this course, students will be able to**:**

CLO 1: *Understand the concept, nature, scope, and significance of Bio-Geography and Soil Geography.*
CLO2: *Identify and analyze the role of physical and biological factors controlling the distribution of plants and animals.*
CLO3: *Evaluate the importance of biodiversity and justify the need for conservation of forest and wildlife.*
CLO4: *Illustrate soil formation processes and analyze the factors influencing soil development.*

Part I: Soil Geography(Lectures: 15)

Unit 1:**Introduction**: **(Lectures 3)**

Meaning, nature and scope; soil as a component of the environment

Unit 2: Soil formation: (Lectures 6)

Structure and composition, horizon and factors of soil-formation; soil forming processes; causes of soil degradation; methods of soil conservation

Unit 3: Soil properties and classification: (Lectures 6)

Physical properties (texture, porosity, colour, temperature) chemical Properties (alkalinity, acidity and salinity); major soil types and its distribution (of world with special reference to India)

Part II: Biogeography (Lectures: 30)

Unit 1: Introduction: **(Lectures: 4)**

Meaning, nature, scope, and significance; relationship of biogeography with ecology and environmental science

Unit2: Phytogeography and Zoogeography: (Lectures: 6)

Factors influencing the distribution of Plants (terrestrial and aquatic) and dispersal of animals; Phytogeographical and zoogeographical regions.

Unit 3: **Ecology and ecosystem: (Lectures: 10)**

Concept, components, structure and function; components of biosphere;major biomes of the world (Tundra, Taiga, Grassland, Desert, Tropical Rainforest and Savanna)

Unit 4: Biodiversity: (Lectures: 10)

Concept and conservation of biodiversity (in-situ and ex-situ); Biodiversity hotspots (world and India); protected areas: National Parks, Wildlife Sanctuaries and Biosphere Reserves

PRACTICALS

Total Hours: 30

Unit I: Exercises

1. Mapping of soil types of Assam/N.E. India (1 Assignment)
2. Identification of soil horizons/profile through field visit (1 Assignment)
3. Mapping of Phytogeographic and zoogeographic regions of the world (2 Assignments)
4. GIS-based mapping of protected areas (national park, biosphere reserve and wildlife sanctuary/biodiversity hotspots) of Assam/N.E.India/India (1 Assignment)

Unit II: Practical Notebook & Viva-Voce

- Practical Notebook evaluation
- Viva-voce

RECOMMENDED BOOKS:

1. Vatal, M (1986): Bhautik Bhugol, Central Book Depot, Allahabad

2. Singh, S (2009): Jalvayu Vigyan, Prayag Pustak Bhawan, Allahabad

3. Raj, Manideep Soil and Biogeography, Kalyani Publishers.

4. Cox, C.B., Moore, P.D. and Ladle, R., 2016. Biogeography: an ecological and evolutionary approach. John Wiley &Sons.

5.C.Barry Cox, Peter D. Moore, (2000), Biogeography, John Wiley and Sons Ltd

6. Bhattacharyya, N.N., 2003: Biogeography, Rajesh Publications, New Delhi.

7. Bradshaw, M.J., 1979: Earth and Living Planet, ELBS, London.

8. Bunting, Goudie, Andrew, 1981: The Human Impact, Basil Blackwell, Oxford.

9.Hussain, M. (ed), 1994: Biogeography (Part I&II), Anmol Publications Pvt. Ltd. New Delhi.

10.Newbegin: Plant and Animal Geography.

11. Odum, E.P., 1977: Ecology.

12. Robinson, H., 1982: Biogeography, E.L.B.S., Mc Donald & Evans, London.

13. Russell, E.W., 1973: Soil Condition and Plant Growth, Long man, London.

14. Smith, R.L., 1977: Ecology of Man-An Ecosystem Approach.

15. Simmons, I.G., 1974: Biogeography: Natural and Cultural, London.

COURSE NAME: Geographical Thought

COURSE CODE: GG-CE-8414

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- ***To understand the evolution of geographical thought and paradigms,*** *and their role in shaping modern geographical theory and methodology.*
- ***To examine major geographical models, theories, and schools of thought,*** *including classical, modern, and critical perspectives.*
- ***To develop analytical and practical skills*** *in spatial analysis, mapping, and interpretation using real-world geographical data.*

Course Learning Outcome:

After completing this course, learners will be able to:

CLO1: *Explain the evolution of geographical thought and paradigm shifts in geography.*
CLO2: *Critically evaluate major geographical schools, models, and theoretical traditions.*
CLO3: *Apply classical spatial models to analyse real-world geographical and urban data.*
CLO4:*Analyse radical and postmodern geographical perspectives and integrate theory and practice through spatial mapping and interpretation.*

PART I: THEORY (Lectures: 45)

1. Understanding Geographical Thought: Meaning and Scope of geographical thought; Importance of historical and contemporary perspectives in shaping geographical ideas **(Lectures 9)**

2. Paradigms: Meaning, concept of paradigm (Kuhn's model) in geography **(Lectures 6)**

3. Models and theories: Meaning, types, and significance in geographical analysis; Difference between models and theories **(Lectures 6)**

4. Classic models: Gravity Model, Distance Decay, and Spatial Diffusion **(Lectures 6)**

5. Modern Schools in Geography: German (Friedrich Ratzel, Alfred Hettner), French (Vidal de La Blache, Jean Brunhes) and American (Isaiah Bowman, Ellen Churchill Semple) **(Lectures 9)**

6. Critical Perspectives in Geography: Origin and growth of radical geography; Marxist perspective; Postmodernism and poststructuralism in geography **(Lectures 9)**

PART B: PRACTICAL (Hours: 30)

Unit 1: Practical Work

1. Mapping of routes of exploration and discoveries (Marco Polo, Christopher Columbus, Vasco-da-Gama, and James Cook) (1 Assignment)
2. Mapping of population potential surfaces in Assam using the gravity model (1 Assignment)
3. Intensity of spatial interaction of Guwahati city with neighbouring urban centres (1 Assignment)
4. Trend of development of paradigms in geography (from Environmental Determinism to Post Modernism) through time-scale graph indicating advocates, tentative time of emergence and overriding theme. (1 Assignment)

Unit II: Practical Note-Book and Viva-Voce

1. Evaluation of Practical Note-Book (2 Marks)
2. Viva-voce (2 Marks)

RECOMMENDED BOOKS

1. Arentsen M., Stam R. and Thruijis R., 2000: *Post-modern Approaches to Space*, ebook.
2. Bhat, L.S. (2009) *Geography in India (Selected Themes)*. Pearson
3. Blunt, A., 2008: *What is Geography?* Sage.
4. Dikshit R. D., 1997: *Geographical Thought: A Contextual History of Ideas*, Prentice–Hall India.
5. Hartshorne R., 1939: *Perspectives of Nature of Geography*, Rand MacNally and Co.
6. Holt-Jensen A., 2011: *Geography: History and Its Concepts: A Students Guide*. SAGE.
7. Hussain, M., 1989: *Evolution of Geographic Thought*. Rawat Publications, Jaipur.
8. Johnston R. J., (Ed.): *Dictionary of Human Geography*, Routledge.
9. Johnston R. J., 1997: *Geography and Geographers, Anglo-American Human Geography since 1945*, Arnold, London.
10. Kapur A., 2001: *Indian Geography Voice of Concern*, Concept Publications.
11. Martin Geoffrey J., 2005: *All Possible Worlds: A History of Geographical Ideas*, Oxford.
12. Soja, Edward 1989. *Post-modern Geographies*, Verso, London. Reprinted 1997: Rawat Publ., Jaipur and New Delhi.

COURSE NAME: Regional Planning and Development

COURSE CODE: GG-CE-8424

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

- *To understand how regions are defined and differentiated, and to grasp the corepurpose, evolution, and logic of regional planning.*
- *To learn how planning regions are identified and structured in India and analyze the nature and causes of regional disparities in economic and social development across different parts of India.*
- *To understand why regions grow unevenly through key theoretical explanations.*
- *To understand how institutions at local, state, and national levels shape and influence the process of regional development.*

Course Learning Outcome:

After completing this course, students will be able to:

CLO1: *Identify and classify different regions using basic regional concepts, criteria, and spatial characteristics to understand patterns of variation and organization in geographical space.*

CLO 2:*Explain how regional planning functions and why it matters, and interpret India's planning regions, including the North-East.*

CLO3:*Apply major theories of regional development to explain the causes and processes of unequal development among regions, and to critically understand how historical, economic, social, and spatial factors shape regional disparities.*

CLO 4:*Analyse regional disparities using indicators and spatial understanding, and assess the roles of major institutions involved in regional development.*

PART I: THEORY (Lectures: 45)

Unit-1: Concept of Region and its Types): (Lectures 8)

Meaning and characteristics; formal, functional and planning regions; delineation techniques.

Unit-2: Regional Planning: **(Lectures 10)**

Meaning and types; historical evolution; approaches (economic, spatial, social, environmental, integrated, participatory); significance and relevance in contemporary India

Unit-3: Planning Regions: (Lectures 7)

Concepts, Delineation Criteria, and India's Regionalization (with special reference to North-East India).

Unit-4:Theories and Models in Regional Planning: (**Lectures 10)**

Growth Pole (Perroux), Rostow's Stages of Growth; Growth Centre planning, Myrdal's Cumulative Causation, Hirschman's Unbalanced Growth, Friedmann's Core–Periphery.

Unit-5: Regional Disparities and Planning in India: **(Lectures 6)**

Indicators, measurement and spatial patterns of regional disparities in India; Macro, meso, and micro-level planning

Unit-6: Institutions for Regional Development: **(Lectures 7)**

Decentralized institutions(Panchayati Raj, GPDP, participatory planning);**National and regional bodies**(NITI Aayog, NEC, DoNER).

Part B: PRACTICAL

Total Hours: 30

1. Delineation of agricultural productivity regions in Assam/NE India by using Bhatia's method. (1 Assignment)
2. Delineation of influence zones of selected urban centres of Assam/NE India using Reilly's Breaking Point formula. (1 Assignment)
3. Preparation of a choropleth map to show regional disparity in development in India and NE India based on selected indicators using Ranking Method. (1 Assignment)
4. Preparation of a choropleth map to show regional disparity in development of India and NE India based on selected indicators using Composite Z-Score method. (1 Assignment)

RECOMMENDED BOOKS:

1. Ayers, Jessica, and David D. (2010). Climate change adaptation and development I: the state of the debate. UK: Progress in Development Studies 10(2): 161-168. SAGE.
2. Baker, Susan., (2006). Sustainable Development. Milton Park, Abingdon, Oxon; New York, N.Y.: Routledge. (Chapter 2, "The concept of sustainable development").
3. Blij H. J. De, 1971: *Geography: Regions and Concepts*, John Wiley and Sons.
4. Claval P., 1998: *An Introduction to Regional Geography*, Blackwell Publishers, Massachusetts.
5. Friedmann, J. and Alonso W. (1975). Regional Policy - Readings in Theory and Applications. Massachusetts, USA: MIT Press.

COURSE NAME: Urban Geography

COURSE CODE: 8434

Total Credits: 4 (Theory: 3 + Practical: 1)

THEORY
Total Lectures: 45

Course Objectives:

- To introduce students to the nature, scope and evolving perspectives of urban geography.
- To develop an understanding of urbanization as a demographic, economic, social, cultural and spatial process.
- To familiarize students with major concepts, classifications and theories related to urban systems and the internal spatial structure of cities.
- To examine patterns and regional variations of urbanization, with particular emphasis on India, along with urban planning, governance and major development programmes.
- To enable students to analyse contemporary urban problems and emerging approaches to inclusive, resilient and sustainable urban development through geographical and case-study perspectives.

Course Learning Outcome:

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

CLO-1: Explain the nature, scope, evolution and major approaches of urban geography.

CLO-2: Interpret the processes and spatial patterns of urbanization and apply major concepts and theories to urban systems and city structure.

CLO-3: Analyse patterns and regional variations of urbanization in India and other developed and developing regions.

CLO-4: Evaluate urban planning, governance, development programmes and major social, economic, infrastructural and environmental challenges of cities.

CLO-5: Assess inclusive, resilient and sustainable approaches to urban development and undertake a focused case study using appropriate data, methods and geographical interpretation.

Part-1: Theory (Credit: 3) (45 classes of 1 hour each)

Unit-1. Foundations and Evolution of Urban Geography: (7 Lectures)

Meaning, Nature and Scope; Evolution of urban geography: classical, quantitative, behavioural, humanistic, radical and postmodern approaches; contemporary relevance of urban geography

Unit-2. Urbanization – Concepts and Spatial Processes: (9 Lectures)

Concepts: Urbanization and its components; Urbanization as a demographic, economic, social, cultural and spatial process; city-region, urban agglomeration, urban sprawl, urban fringe, umland and periphery, rural–urban dichotomy and continuum, satellite town, smart cities.

Unit-3: Urban Classification and Spatial Structure: (8 Lectures)

Types and characteristics of towns; functional classification of towns; Theories of internal structure of towns—Sector Theory (Homer Hoyt) and Multiple Nuclei Theory (Harris and Ullman); city classification schemes by J.M. Houston, G. Taylor and L. Mumford.

Unit-4. Urban Planning, Governance and Policies: (13 Lectures)

Patterns of urbanization in developed and developing countries; trends and regional patterns of urbanization in India; Evolution of urban planning in India; urban governance and decentralization—role of Urban Local Bodies and metropolitan institutions; National urban development policies and programmes in India: Smart Cities Mission; AMRUT and AMRUT 2.0; Swachh Bharat Mission–Urban; PMAY–Urban; and DAY-NULM (assessment of their objectives, strategies, implementation and outcomes).

Unit-5. Urban Problems and Futures: (8 Lectures)

Problems and Challenges: Urban unemployment and Urban poverty; inequality and social exclusion; drainage, sanitation and solid waste management; urban flooding; Loss of urban green spaces and ecological degradation. Urban Futures- Inclusive Cities; Resilient Cities; Sustainable cities.

Part-2: Practical: (Credit: 1) (15 classes)

Students shall **prepare and submit one case study report** on Guwahati or any selected urban area of India, focusing on **any one aspect of urban dynamics**, such as urban expansion and land-use transformation, urban sprawl and peri-urbanization, housing and residential transformation, transportation and mobility, urban infrastructure and service provision, water supply and sanitation, urban environmental problems, flooding and climate vulnerability, informal settlements and livelihoods, social inequality and spatial segregation, urban governance

and planning, commercialization and changing urban land use, or digital/smart urban transformation.

The case study shall be based on **field investigation and/or secondary data** and shall include delineation of the study area, formulation of objectives, data collection and analysis, field observation or survey wherever applicable, application of appropriate methods, and interpretation of the spatial patterns, processes, impacts and challenges associated with the selected urban phenomenon.

One case study report shall be prepared and submitted by each student for evaluation.

RECOMMENDED BOOKS:

1. Bansal, S. C. (2000). *Urban Geography*. Meerut: Minakshi Publications.
2. Beaujeu-Garnier, J., & Chabot, G. *Urban Geography*. London: Longman.
3. Berry, B. J. L., & Horton, F. E. (1970). *Geographic Perspectives on Urban Systems*. Englewood Cliffs, New Jersey: Prentice-Hall.
4. Bhattacharya, B. (2006). *Urban Development in India Since Pre-Historic Times*. New Delhi: Concept Publishing Company.
5. Carter, H. (1982). *The Study of Urban Geography*. New Delhi: Arnold-Heinemann Publishers (India) Private Ltd.
6. Chapin, F. S. *Urban Land Use Planning*. Urbana: University of Illinois Press.
7. Chorley, R. J., & Haggett, P. (Eds.). (1966). *Models in Geography*. London: Methuen.
8. Davis, K., & Hertz, H. *Patterns of World Urbanisation*. New York: Columbia University Press.
9. Dwyer, D. J. (Ed.). (1971). *The City as a Centre of Change in Asia*. Hong Kong: University of Hong Kong Press.
10. Forrester, J. W. *Urban Dynamics*. Cambridge, Massachusetts: MIT Press.
11. Fyfe, N. R., & Kenny, J. T. (Eds.). (2005). *The Urban Geography Reader*. London & New York: Routledge.
12. Gallion, A. B., & Eisner, S. (1969). *The Urban Pattern: City Planning and Design*. New Delhi: Affiliated East-West Press Private Ltd.
13. Gibbs, J. P. (1961). *Urban Research Methods*. Princeton, New Jersey: D. Van Nostrand Company.
14. Ramachandran, R. (1992). *Urbanisation and Urban Systems of India*. New Delhi: Oxford University Press.
15. Scott, A. J. (2002). *Global City-Regions: Trends, Theory, Policy*. Oxford: Oxford University Press.

16. Sharma, P., & Rajput, S. (2017). *Sustainable Smart Cities in India: Challenges and Future Perspectives*. Cham, Switzerland: Springer International Publishing.

17. Singh, K., & Steinberg, F. M. (1996). *Urban India in Crisis*. New Delhi: New Age International.

18. Singh, R. B. (Ed.). (2015). *Urban Development Challenges, Risks and Resilience in Asian Mega Cities*. Tokyo: Springer Japan.

COURSE NAME: Environmental Geography and Disaster Management

COURSE CODE: GG – CE –8444

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

The course objectives are as follows:

- *To introduce the nature, scope, and significance of environmental geography and examine human–environment interactions*
- *To analyse environmental stresses, global problems, and their causes and consequences, emphasizing the impacts on ecosystems and societies.*
- *To develop understanding of disasters, hazards, risk assessment, and Traditional Ecological Knowledge in disaster management.*
- *To examine environmental policies, governance frameworks, and disaster management mechanisms at national and international levels, promoting resilience and sustainable practices.*

Course Learning Outcome:

Learners will be able to:

CLO 1:*Understand the key concepts of environmental geography and human–environment adaptation.*

CLO 2*: Analyse major environmental stresses and global environmental problems, their causes and impacts.*

CLO 3*: Describe different hazards and disasters, and analyse risk and vulnerability patterns in India*

CLO 4: *Apply disaster risk reduction strategies and governance frameworks, including traditional knowledge and relevant policies.*

PART I: THEORY (45 Lectures)

Unit 1: Introduction to Environmental Geography:

Nature, scope and significance; changing human-environment interactions **(Lectures 6)**

Unit 2: Environmental Stress and Global Problems:

Pollution, deforestation, desertification, global warming and climate change; biodiversity loss-causes, consequences, and global significance **(Lectures 9)**

Unit 3: Disasters and Hazards:

Meaning and definitions of hazards and disasters; Classification of disasters: natural and human-induced; Concepts: risk, vulnerability, and disaster impacts **(Lectures10)**

Unit 4: Disaster Profile and Risk Management:

Hazard and Vulnerability profile of India; Disaster-prone and vulnerable areas in India with emphasis on Cyclones, Earthquakes, Floods and Droughts; Structural and Non-structural measures for Disaster Risk Reduction; Traditional Ecological Knowledge (TEK) in Disaster Management with special reference to floods in Assam. **(Lectures 10)**

Unit 5: Environmental Policies and Disaster Management Frameworks

Environmental Protection Act (1986); Sendai Framework for Disaster Risk Reduction (2015–2030); Disaster Management Act (2005); Institutional mechanisms at national and state levels; National Disaster Management Policy and Plan of India **(Lectures10)**

PART II

PRACTICALS:

Total Hours:30

UNIT I: Exercises

1. Drawing a map of Assam showing major fault lines and plotting at least 50 earthquake epicentres recorded in the last few years using the Bhookamp App or other reliable sources (1 exercise)
2. Preparation of a disaster vulnerability map of Assam/ N.E. India based on data of natural disasters (Flood/earthquake/landslide/bank erosion) with respect to their occurrence and frequency in different areas. (1 exercise)
3. Preparation of a Flood Hazard Zonation Map of India/Assam showing areas of varying flood frequency and intensity (2 exercises)
4. Preparation of a long-term precipitation time series curve for any selected station ofN.E. India using moving average method by downloading the annual rainfall data for any

district/station of Assam for at least 30 years from the portalhttps://www.indiawaterportal.org/met_data/. Students can also explore the web portal https://mausam.imd.gov.in/ to get an idea of different types of weather data in India and their historical and present distribution. (1 exercise)

Unit II: Practical Note-Book and Viva-voce

1. Evaluation of Practical Note-Book
2. Viva-voce

BOOKS RECOMMENDED:

1. United Nations. (2021). *Opportunities and options for integrating climate change adaptation with the SDGs and the Sendai Framework for Disaster Risk Reduction 2015–2030.*
2. Cunninghum W. P. and Cunninghum M. A., 2004: Principals of EnvironmentalScience: Inquiry and Applications, Tata Macgraw Hill, New Delhi.
3. Goudie A., 2001: The Nature of the Environment, Blackwell, Oxford.
4. Singh, R.B. (Eds.) (2009) Biogeography and Biodiversity. Rawat Publication, Jaipur
5. Miller G. T., 2004: Environmental Science: Working with the Earth, Thomson BrooksCole, Singapore.
6. MoEF, 2006: National Environmental Policy-2006, Ministry of Environment and Forests, Government of India
7. Coppola D P, 2007. Introduction to International Disaster Management, Elsevier Science (B/H), London.
8. Manual on natural disaster management in India, M C Gupta, NIDM, New Delhi
9. Roy, P.S. (2000): Space Technology for Disaster management: A Remote Sensing& GIS Perspective, Indian Institute of Remote Sensing (NRSA) Dehradun.
10. Carresi A L, et al (2013) Disaster Management: International Lessons in Risk Reduction, Response and Recovery, Routledge U.K.

COURSE NAME: Geography of Tourism

COURSE CODE:GG-CE-8454

Total Marks: 60 (Credits: 4)

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

The course objective of this course are as follows:

- *Introduce students to the geographical dimensions of tourism and its patterns, processes, and impacts.*
- *Explore the physical, cultural, and economic factors shaping tourism.*
- *Develop skills in mapping, field observation, and analysis of tourism resources and circuits.*

Course Learning Outcome:

The course outcomes of this course are as follows:

CLO-01: *Understand the concepts, nature, scope, and spatial dimensions of tourism geography, including the classification of tourism resources.*

CLO-02: *Analyse spatial and economic patterns of tourism flow and evaluate tourism's impacts on the environment, society, and economy.*

CLO-03: *Apply geographical and analytical tools, including GIS, mapping, and statistical methods to prepare tourism maps, circuits, and field reports for tourism planning and development.*

PART I: THEORY (Lectures: 45)

Unit I: Conceptual framework:

Meaning, nature, scope and significance of Tourism geography; concepts of leisure and recreation; Geographical parameters of tourism by Robinson **(Lectures 8)**

Unit II: Determinants and Types:

Tourism infrastructure; factors responsible for the growth of tourism (physical, cultural and socio-economic); Types of tourism: nature, cultural, medical, pilgrimage **(Lectures 10)**

Unit III: Impact of Tourism:

Economy, environment, and society. **(Lectures 7)**

Unit IV: Tourism in India:

Opportunities (economic growth, employment and regional development) and challenges; role of Government and NGOs; case studies (Himalaya, Desert and NE India); national tourism policies

(Lectures 10)

Unit V: Recent Trends:

Eco-tourism, sustainable tourism, Digital tourism (NDTM), community participation.

(Lectures 10)

Part II: PRACTICAL (Credit: 1)

Total Hours: 30

Unit I: Exercises

1. Trend analysis of tourist arrivals in India using moving average and least squares methods (2 Assignments)
2. Line graph of tourist arrivals vs. climate (rainfall, temperature) (1 Assignment)
3. Transport connectivity map (road, rail, air) for key tourist sites of India/NE India/Assam (1 Assignment)
4. Thematic tourist map showing major destinations and attractions (1 Assignment)
5. Field-based exercise: short trekking/eco-trail mapping using GPS (1 Assignment)

Unit II: Practical Notebook & Viva-Voce

- Practical notebook evaluation
- Viva-voce

RECOMMENDED BOOKS:

1. Bhattacharya, P. (2011). *Tourism in Assam: Trend and Potentialities*, Banimandia, Guwahati.
2. Hall, C.M. & Page, S.J. (2006). *The Geography of Tourism and Recreation*, Routledge, London.
3. Kamra, K.K. & Chand, M. (2007). *Basics of Tourism: Theory, Operation and Practice*, Kanishka, Pune.
4. Singh, J. (2014). *Eco-Tourism*, I.K. International Pvt. Ltd., New Delhi.
5. Dhar, P.N. (2006). *International Tourism: Emerging Challenges and Future Prospects*, Kanishka, New Delhi.
6. Government of India (Annual). *India Tourism Statistics*, Ministry of Tourism.
7. UNWTO. *Tourism Barometer* (Latest reports).

MINOR

Programme Specific Outcome of Bachelor of Science –GEOGRAPHY (Minor)

PSO No.	Name	Outcome
PSO–1	Disciplinary Knowledge	Learners will develop a thorough understanding of human, physical, and economic geography, including the intricate relationships between physical landscapes, human societies, and cultural developments at local, regional, and global scales.
PSO–2	Discipline-Related Skills	Learners will acquire practical skills in representing and analyzing population data using various cartographic techniques, enabling them to create effective maps for regional development and decision-making.
PSO–3	Teamwork and Collaboration	Learners will engage in collaborative projects to investigate geographical issues, such as population distribution and resource utilization, promoting teamwork and shared problem-solving in geographical research.
PSO–4	Leadership Skills	Learners will develop leadership skills by taking initiative in group projects, guiding discussions on geographical topics, and leading efforts to address complex spatial and environmental challenges
PSO–5	Environmental Awareness and Stewardship	Learners will cultivate a strong environmental awareness, understanding the impact of human activities on the environment, and advocate for sustainable practices in resource management and industrial development.
PSO–6	Community Engagement and Service	Learners will apply their geographical knowledge to engage with communities, addressing local environmental issues, and contributing to sustainable development initiatives through informed spatial analysis and planning.
PSO–7	Disciplinary Knowledge	Learners will develop a thorough understanding of human, physical, and economic geography, including the intricate relationships between physical landscapes, human societies, and cultural developments at local, regional, and global scales.

LIST OF COURSES:

Semester	Course Name	Course Code
1	Fundamentals of Geography	GG – MN – 1114
2	Geography as a Discipline	GG – MN – 2114
3	Human Geography	GG – MN – 3214
4	Geography of India	GG – MN – 4214
5	Introduction to Cartography and Surveying techniques	GG – MN – 5214
6	Economic Geography	GG – MN – 6214
7	Population and Settlement Geography	GG – MN – 7314
8	Geography of North-East India and Assam	GG – MN – 8314

Course Learning Outcome (CLO)

Semester	Course Name & Code	Course Learning Outcome (CLO)	
1	Fundamentals of Geography GG – MN – 1114	CLO - 01	The student will be able to impart basic knowledge on Geography as a spatial science.
		CLO - 02	This course will help the student to gain the knowledge of the planet earth
2	Geography as a Discipline GG – MN – 2114	CLO - 01	This course will help the students to differentiate between physical Geography and Human Geography.
		CLO - 02	Students will understand human perception and behaviour in relation to their environment.
		CLO - 03	This paper will help the students to learn how human, physical and environmental components of the earth interact one another.
3	Human Geography GG – MN – 3214	CLO-01	The learners will be able to define human geography, identify its major themes while understanding its contemporary significance and critically evaluate the different schools of human geography.
		CLO-02	Learners will be able to analyse different human adaptations across various geographical environments and interpret the cultural expressions.
		CLO-03	Learners will also be able to analyse the population dynamics, theories, global trends and insight into types of settlements and patterns of world migration
		CLO - 04	Learners will also be able to demonstrate practical skills in representation and spatio-temporal analysis of population data using various cartographic techniques.
4	Geography of India GG – MN – 4214	CLO-01	Learners will be able to understand the location of India with reference to its neighbouring countries and gain a general understanding of the physiography, drainage, climate, soil and natural vegetation of the country.
		CLO-02	Learners will be able to analyse population distribution, composition, demographic trends and understand population problems and policies.

		CLO-03	Learners will also be able to examine the resource base of different regions in India and investigate spatial patterns of economic activities, including agriculture, industry, and services.
		CLO - 04	Learners will possess a well-rounded understanding of India's geography, equipped with analytical skills to comprehend the intricate relationships between physical landscapes, human societies, and cultural developments.
5	Introduction to Cartography and Surveying techniques GG – MN – 5214	CLO-01	This course will help the students to enhance proficiency in creating effective maps.
		CLO-02	The students will be able to prepare maps for regional development and decision making
		CLO-03	This course will help the students to apply quantitative methods to solve spatial problems.
6	Economic Geography GG – MN – 6214	CLO-01	Learners will develop a comprehensive understanding of Economic Geography, enabling critical analysis and interpretation of economic phenomena at local, regional, and global scales.
		CLO-02	They will acquire knowledge of economic activity principles, including production systems and resource utilization, fostering a deeper understanding of economic processes and dynamics.
		CLO - 03	Learners will be able to investigate the factors influencing industrial location and the distribution of key industries, enhancing comprehension of industrial geography and economic development strategies.
		CLO - 04	They will also develop analytical skills to assess international trade dynamics, including factors influencing trade patterns and India's trade relations with major global partners, contributing to informed decision-making in trade policy and international relations along with the ability to apply theoretical knowledge in practical applications in real life.

7	Population and Settlement Geography GG – MN – 7314	CLO - 1	Learners will gain an understanding of the field of Population Geography and its development. Learners will also understand basic concepts and theories and apply them to explain population dynamics.
		CLO - 2	Learners will understand the challenges and implications of contemporary population issues, such as aging populations and declining sex ratios.
		CLO - 3	Learners will acquire knowledge on rural and urban settlements, including their factors, characteristics, and internal structures based on given theories.
		CLO - 4	Learners will acquire basic skill in quantitative analysis, spatial mapping, distribution analysis, demographic visualization, urbanization patterns, population distribution, and migration analysis through hands-on practical and will be able to apply them to analyse population dynamics.
8	Geography of North-East India and Assam GG – MN – 8314	CLO - 1	Learners will be able to articulate the locational and strategic significance of Northeast India and Assam, considering their impact on regional and global contexts.
		CLO - 2	They will be able to demonstrate a comprehensive understanding of the physical characteristics of Northeast India and Assam.
		CLO - 3	Learners will be able to analyse the population dynamics of Northeast India in general and Assam in particular.
		CLO - 4	Learners will specifically be able to understand Assam'seconomic development prospects and challenges by analysing its resource and industrial profile alongside exploring biodiversity to assess the state’s tourism potential

MAPPING OF PROGRAMME OUTCOME OF SCIENCE STREAM (PO) AND COURSE LEARNING OUTCOME (CLO):

Attributes: Co-relation Levels

"1" : Minimum Co-relation

"2" : Moderate Co-relation

"3" : Maximum Co-relation

"-" : No Co-relation

Course Code	CLO	Programme Outcome(SPO)										
		SPO-1	SPO-2	SPO-3	SPO-4	SPO-5	SPO-6	SPO-7	SPO-8	SPO-9	SPO-10	SPO-11
GG-MN-1114	CLO-1	3	3	3	3	3	3	1	3	2	3	3
	CLO-2	3	3	3	3	3	3	1	3	2	3	3
GG-MN-2114	CLO-1	3	3	3	3	3	3	1	3	2	3	3
	CLO-2	3	3	3	3	3	3	1	3	2	3	3
	CLO – 3	3	3	3	3	3	3	1	3	2	3	3
GG-MN-3214	CLO-1	1	2		3	2	3			3	2	2
	CLO-2	2	3	3	3	1	3		1		1	
	CLO - 3		2		2	3	1	3	2		2	1
	CLO - 4	3	3	3	3	3	3	1	3	2	3	3
GG-MN-4214	CLO-1	1	1	1	1	2	1	2	1	2	1	2
	CLO-2	1	2	1	1	2	1	2	1	2	1	1
	CLO - 3	1	2	1	1	2	1	2	1	2	1	2
	CLO - 4	3	3	2	2	2	2	2	2		3	3
GG-MN-5214	CLO-1	3	2	2	2	2	1	2	2		3	3
	CLO-2	3	2	1	2	2	1	2	2		3	3
	CLO - 3	3	3	2	2	2	2	2	2		3	3
GG-MN-6214	CLO-1	1	2	2		2	2	3	2	3	3	
	CLO-2	1	2	3	3	3	2	2	2	2	3	1
	CLO - 3	2	3	2		3	2		1	2	1	2
	CLO - 4	1	2	3	3	3	2	2	2	2	3	1
GG-MN-7314	CLO-1	3	3	3	3	3	3	3	2	3	3	3
	CLO-2	3	2	2	2		3	2	3		3	3
	CLO - 3	3	3	3	2	3	3	2	2		3	3
	CLO - 4	3	3	3	3	2	3	2	3		3	3
GG-MN-8314	CLO-1	3	2	3	2	2	2	2	3	3	2	3
	CLO-2	3	2	3	2	3	3	3	3	2	2	3
	CLO - 3	3	3	2	2	3	2	3	2	2	2	3
	CLO - 4	3	3	2	2	3	3	3	3	2	2	3

MAPPING OF PROGRAMME OUTCOME OF ARTS STREAM (PO) AND COURSE LEARNING OUTCOME (CLO):

Attributes: Co-relation Levels

"1" : Minimum Co-relation

"2" : Moderate Co-relation

"3" : Maximum Co-relation

"-" : No Co-relation

Course Code	CLO	Programme Outcome(APO)										
		APO-1	APO-2	APO-3	APO-4	APO-5	APO-6	APO-7	APO-8	APO-9	APO-10	APO-11
GG-MN-1114	CLO-1	3	3	3	3	3	3	1	3	2	3	3
	CLO-2	3	3	3	3	3	3	1	3	2	3	3
GG-MN-2114	CLO-1	3	3	3	3	3	3	1	3	2	3	3
	CLO-2	3	3	3	3	3	3	1	3	2	3	3
	CLO – 3	3	3	3	3	3	3	1	3	2	3	3
GG-MN-3214	CLO-1	1	2		3	2	3			3	2	2
	CLO-2	2	3	3			3		1		1	
	CLO – 3		2		2			3	2		2	1
	CLO – 4	3	2	2	2	2	1	2	2		3	3
GG-MN-4214	CLO-1	1	1	1	1	2	1	2	1	2	1	2
	CLO-2	1	2	1	1	2	1	2	1	2	1	1
	CLO - 3	1	2	1	1	2	1	2	1	2	1	2
	CLO - 4	1	2	3	3	3	2	2	2	2	3	1
GG-MN-5214	CLO-1	3	2	2	2	2	1	2	2		3	3
	CLO-2	3	2	1	2	2	1	2	2		3	3
	CLO - 3	3	3	2	2	2	2	2	2		3	3
GG-MN-6214	CLO-1	1	2	2		2	2	3	2	3	3	
	CLO-2	1	2	3	3	3	2	2	2	2	3	1
	CLO - 3	2	3	2		3	2		1	2	1	2
	CLO - 4	3	3	2	2	2	2	2	2		3	3
GG-MN-7314	CLO-1	3	3	3	2	3	2	3	3	3	3	3
	CLO-2	2			2	2	3	3		3	3	3
	CLO - 3	3	3	3	2	2	3	3	3	3	3	3
	CLO - 4	3	2	2	3	2	3	3	3	3	3	3
GG-MN-8314	CLO-1	2	1	2	2	2	3	3	2	3	3	2
	CLO-2	3	3	3	2	2	3	3	2	3	3	2
	CLO - 3	3	2	3	3	3	3	2	3	3	3	2
	CLO - 4	3	3	2	3	3	3	2	2	3	3	3

MAPPING OF PROGRAMME SPECIFIC OUTCOME (PSO) AND COURSE LEARNING OUTCOME (CLO)

Attributes: Co-relation Levels

"1" : Minimum Co-relation

"2" : Moderate Co-relation

"3" : Maximum Co-relation

"-" : No Co-relation

Course Code	CLO	Programme Specific Outcome(SPO)						
		SPO-1	SPO-2	SPO-3	SPO-4	SPO-5	SPO-6	SPO-7
GG-MN-1114	CLO-1	3	2	2	2	3	3	2
	CLO-2	3	2	2	2	3	3	2
GG-MN-2114	CLO-1	3	2	3	2	2	2	2
	CLO-2	3	2	2	3	3	3	2
	CLO – 3	3	2	3	3	3	3	3
GG-MN-3214	CLO-1	3	3	3	3	3	3	2
	CLO-2	3	3	3	3	3	3	2
	CLO - 3	3	3	3	3	2	3	2
	CLO - 4	3	3	3	3	3	3	2
GG-MN-4214	CLO-1	3	3	3	3	2	2	3
	CLO-2	3	3	3	3	2	3	2
	CLO - 3	3	3	3	3	2	3	3
	CLO - 4	3	3	3	3	3	3	3
GG-MN-5214	CLO-1	3	3	3	3	3	3	2
	CLO-2	3	3	3	3	3	3	2
	CLO - 3	3	3	3	3	3	3	2
GG-MN-6214	CLO-1	3	3	3	2	3	3	2
	CLO-2	3	3	3	2	3	3	2
	CLO - 3	3	3	3	2	3	3	2
	CLO - 4	3	3	3	2	3	3	2
GG-MN-7314	CLO-1	3	3	3	3	3	3	2
	CLO-2	3	3	3	3	3	3	2
	CLO - 3	3	3	3	3	2	3	3
	CLO - 4	3	3	3	3	3	2	2
GG-MN-8314	CLO-1	3	1	3	2	1	1	2
	CLO-2	3	3	2	3	2	2	2
	CLO - 3	3	2	3	1	3	2	2
	CLO - 4	3	2	3	1	2	3	2

COURSE NAME: Fundamentals of Geography
COURSE CODE: GG – MN – 1114
TotalCredits:4 (Theory:3+Practical/Tutorial:1)

THEORY:3 CREDITS

Total Lectures:45

COURSE OBJECTIVE:

The course objectives of this course are as follows:

- *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 the passage of time.*
- *To provide the basic idea on the Earth's Coordinate System.*

Course Learning Outcome:

The course outcomes of this course are as follows:

CLO-01:*The student will be able to impart basic knowledge on Geography as a spatial science*

CLO-02:*This course will help the student to gain the knowledge of the planet earth.*

Unit-I: Scope of Geography (Lectures:10)

Meaning, definition, nature and scope of Geography.

Unit-II: Branches of Geography (Lectures:10)

Branches of Geography; its relationship with other disciplines.

Unit-III: Development of Geography(Lectures:15)

Development of Geography: Historical progression (ancient, medieval and modern) and recent trends (quantitative revolution, logical positivism, locational school of thought, behaviouralism, humanism and post-modernism).

Unit-IV: Approaches in Geography (Lectures:10)

Approaches in Geography: regional and systematic; idiographic and nomothetic.

Practical:

Lectures:30

1. Diagrammatic representation of branches of Geography and its relationship with other disciplines.
2. Preparation of a world map indicating the major contributions and contributors along with the year (Greek, Arab, French, German, USA and Asia) to track the development of Geography as a discipline.
3. Representation of Map elements in a map: Scale, Legend, Boundaries, Extensions (Latitude and longitude), etc.
4. Construction of graphical scale (linear, diagonal and comparative); conversion of map scale.

5. Topographical map interpretation and numbering system.

RECOMMENDED BOOKS:

1. Holmes, A. (1927).The Unstable Earth.
2. Hartshorne, R. (1955). The nature of Geography.
3. Husain, M.(2012).Evolution of geographical thought. Rawat Publications.
4. Knox, P. L., & Marston, S. A. (2001). Places and regions in global context: humangeography. 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. Khullar, D.R.(2011). Essentials of Practical Geography.
9. Singh, L.R.(2009).Fundamentals of Practical Geography. Sharda Pustak Bhavan.
10. Singh, R.L.(1979).Elements of Practical Geography.

COURSE NAME: Geography as a Discipline

COURSE CODE: GG – MN – 2114

TotalCredits:4 (Theory:3+Practical/Tutorial:1)

THEORY:3 Credits

TOTAL LECTURES:45

COURSE OBJECTIVE:

The course objectives of this course are as follows:

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

Course Learning Outcome:

The course outcomes of this course are as follows:

CLO-01:*This paper will help the students to differentiate between physical Geography and Human Geography.*

CLO-02:*Students will understand human perception and behaviour in relation to their environment.*

CLO-03: *This course will help the students to learn how human, physical and environmental components of the earth interact one another.*

PART A: Physical Geography

Unit- I: Lithosphere (Lectures: 6)

Lithosphere: composition, internal structure of the earth; order of landforms

Unit-II: Atmosphere (Lectures: 6)

Atmosphere: origin and composition; structure; elements of weather and climate.

Unit- III: Hydrosphere (Lectures: 6)

Hydrosphere: major relief features; temperature and salinity density variation; tides, waves and currents.

Unit- IV: Biosphere (Lectures: 6)

Biosphere: concept of biosphere; global distribution of flora and fauna; concepts and types of biodiversity.

PART B: Human Geography

Unit-V: Scope of Human Geography (Lectures:4)

Meaning, nature and scope.

Unit-VI: Schools of Human Geography (Lectures:6)

Schools of Human Geography: Environmental Determinism and Possibilism, Neo-determinism

and cultural determinism; concept of space and place.

Unit-VII: Concepts of culture: (Lectures:6)

Concept of culture, ethnicity, race (types and characteristics), religion (major groups and global distribution) and language (major families and global distribution).

Unit-VIII: Settlements: (Lectures:5)

Settlements: types, patterns and morphology of rural and urban settlements.

PRACTICAL:

Lectures:30

1. Diagrammatic representation of the interior structure of the Earth
2. Representation of vertical layers of the atmosphere
3. Diagrammatic representation of major reliefs of ocean
4. Religious and linguistic composition of population in the world using pie-diagram.
5. Mapping of distribution of major racial and linguistic groups of population in the world

RECOMMENDED 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. HusainM.,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. StrahlerA.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 Bychkovetal. (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.

COURSE NAME: Human Geography

COURSE CODE: GG- MN - 3214

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objectives:

- *To introduce the learners to the foundational concepts and major themes pertaining to human geography emphasizing its contemporary relevance.*
- *It explore the various schools of thought in human geography including human ecology, landscape and locational theories and to analyse human-adaptations in different geographic environment and their cultural expressions.*
- *To understand the various concepts and theories of population dynamics and their relationship with resources.*
- *To familiarise the learners with the concept of HDI*
- *To impart the students with the knowledge of various types of rural and urban settlements and the pattern of world migration.*

Course Learning Outcome:

CLO 1: *The learners will be able to define human geography, identify its major themes while understanding its contemporary significance and critically evaluate the different schools of human geography.*

CLO 2: *Learners will be able to analyse different human adaptations across various geographical environments and interpret the cultural expressions.*

CLO 3: *Learners will also be able to analyse the population dynamics, theories, global trends and insight into types of settlements and patterns of world migration*

CLO 4: *Learners will also be able to demonstrate practical skills in representation and spatio-temporal analysis of population data using various cartographic techniques.*

Unit I: **Definitions (Lectures:6)**

Defining human geography; fields, contemporary relevance and importance

Unit II: Schools of human geography (Lectures:6)

Human ecology, landscape and locational

Unit III: **Human adaptations**(**Lectures:6)**

Human adaptations in different geographical locations and their socio-cultural expression.

Unit IV: **Population(Lectures:7)**

Growth and distribution; population composition; Demographic Transition Theory; population-resource relationship

Unit V: **Migration(Lectures:7)**

Types, causes (centripetal and centrifugal forces) and consequences

Unit VI: **Human development(Lectures:6)**

Meaning and concept of human development

Unit VII: **Settlement (Lectures:7)**

Types of rural and urban settlements; factors of settlement growth (rural and urban)

Practicals:

Total Lectures: 30

1. Mapping of growth and distribution of world population (2 Assignments)
2. Mapping of India's population distribution and density pattern. (2 Assignments)
3. Population migration of India/World using flow cartogram. (1 Assignment)
4. Human Development Index map of World. (1 Assignment)
5. Drawing of major rural settlement types and patterns. (2 Assignments)
6. Spatial patterns of urban population in N.E. India at state level through choropleth map. (1 Assignment)

Recommended Books:

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.
6. Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
7. Maurya, S.D.(2012). Manav Bhugol, Sharda Pustak Bhawan., Allahabad.
8. Hussain, Majid (2012). Manav Bhugol. Rawat Publications, Jaipur.

COURSE NAME: Geography of India

COURSE CODE: GG- MN - 4214

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objectives:

- *The primary objective of the course is to provide students with a comprehensive understanding of the geographical features, environmental diversity, and spatial dynamics of India.*
- *Through a multidisciplinary approach, students will explore the physical, human, and cultural landscapes that shape the nation.*
- *The course aims to cultivate critical thinking, analytical skills, and a nuanced perspective on the complex interactions between natural and human elements within the Indian geographical context.*

Course Learning Outcome:

The expected outcomes of this course are:

CLO 1: *Learners will be able to understand the location of India with reference to its neighbouring countries and gain a general understanding of the physiography, drainage, climate, soil and natural vegetation of the country.*

CLO 2: *Learners will be able to analyse population distribution, composition, demographic trends and understand population problems and policies.*

CLO 3: *Learners will also be able to examine the resource base of different regions in India and investigate spatial patterns of economic activities, including agriculture, industry, and services.*

CLO 4: *Learners will possess a well-rounded understanding of India's geography, equipped with analytical skills to comprehend the intricate relationships between physical landscapes, human societies, and cultural developments.*

Unit-I: Significance of India's Location (Lectures – 6)

India's location and its significance; administrative divisions

Unit-II: Physiography and Drainage (Lectures – 6)

Physiographic divisions; river systems- Himalayan and Peninsular (west flowing and east flowing rivers)

Unit-III: Vegetation (Lectures – 7)

Climate, Soil and Natural Vegetation: factors determining the climate of India; climatic regions of India; Indian Monsoon- origin and its mechanisms; major soil groups and their distribution; classification of natural vegetation

Unit-IV: Population (Lectures – 6)

Size, distribution and growth; composition (ethnic, linguistic, age-sex, and religious); population problems and policies.

Unit-V: Resources (Lectures – 7)

Distribution and utilization of mineral (iron ore, bauxite) and power resources - conventional (coal, petroleum, natural gas) and non-conventional (solar, hydro, thermal and wind).

Unit-VI: Industries (Lectures – 7)

Iron and steel, cotton; transport and communication; Special Economic Zones and Technology Parks.

Unit-VII: Agriculture (Lectures – 6)

Agricultural production and distribution of rice, wheat, tea, sugarcane and cotton; Agro-climatic zones of India.

Practicals:

Total Lectures – 30

1. Trend of population growth and growth rates in India and N.E. India since 1901 using Census data. (1 Assignment)
2. Choropleth mapping to show spatial variation in decennial population growth rate in India. (1 Assignment)
3. Social composition of population (SC, ST and General) in N.E. India using Ternary Diagram. (1 Assignment)
4. Trend of rice, wheat and iron & steel production in the India/NE India since 1950 using Moving Average and Least Squares Method. (2 Assignments)
5. Inter-city/Inter-state movement of traffic/bus in India/NE India through flow cartogram. (1 Assignment)
6. Map showing SEZ and Industrial/Economic Corridors in India. (1 Assignment)

Recommended Books:

1. Khullar D. R., 2022: India: A Comprehensive Geography, Kalyani Publishers.
2. Hussain M. (Edited by Tasawwur Hussain Zaidi), 2022 (10thEdn.): Geography of India, McGraw Hill.
3. Mamoria C. B., 1980: Economic and Commercial Geography of India, Shiva Lal Agarwala.
4. Miller F. P., Vandome A. F. and McBrewster J., 2009: Geography of India: Indo- Gangetic Plain, Thar Desert, Major Rivers of India, Climate of India, Geology of India, Alphascript Publishing.
5. Nag P. and Sengupta S., 1992: Geography of India, Concept Publishing.
6. Pichamuthu C. S., 1967: Physical Geography of India, National Book Trust.
7. Sharma T. C. and Coutinho O., 1997: Economic and Commercial Geography of India, Vikas Publishing.
8. Singh Gopal, 1976: A Geography of India, Atma Ram.
9. Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.

COURSE NAME: Introduction to Cartography and Surveying techniques

COURSE CODE: GG- MN - 5214

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objectives:

- *To provide students with a comprehensive understanding of different methods and techniques used in geographical studies.*
- *To facilitate the students to learn skills of map making.*
- *To guide students to learn the science and art of collecting, processing and interpreting the data.*
- *To make the studies more scientific and applicable.*

Course Learning Outcome:

CLO 1: *Learners will be able to enhance their proficiency in creating effective maps.*

CLO 2: *They will also be able to prepare maps for regional development and decision making.*

CLO 3: *Learners will be able to investigate various geographical phenomena as well as solve various problems with the usage of different surveying equipment.*

CLO 4: *Learners will be able to apply various cartographic techniques to solve spatial problems.*

Unit-I: Cartography (Lectures: 30)

1. Cartography: meaning and scope; types (traditional and modern, theoretical and applied); development and importance of cartography.
2. Map: elements, types and classification; map design and layout; concept of base map.
3. Thematic mapping: concept and type; uses and limitations.
4. Map Projection: concept, classification and choice of map projection

Unit-II: Surveying techniques (Lectures:15)

1. Surveying: meaning, types and significance in geography.
2. Principles of surveying: plane and geodetic surveying; Principles of triangulation.
3. Concept of surveying by Plane Table, Prismatic Compass, Theodolite and Dumpy Level.

Practical:

Total Lectures – 30

1. Construction of graticules of (using Mathematical derivation) (2 Assignments)
2. Zenithal Polar Gnomonic, Stereographic and Orthographic, Simple Cylindrical, Conical One standard parallel along with their properties, uses and limitations. (5 Assignments)

3. Preparation of a plan or a map of an area within the college campus or any suitable area using Plane Table (applying both radiation and intersection methods) (2 Assignments)
4. Open and Closed Traverse Surveying with Prismatic Compass (2 Assignments)
5. Profile levelling and contouring in a selected area by Dumpy Level (2 Assignments)

Recommended Books:

1. Misra, R.P.,(2014): Fundamentals of Cartography(Revised and Enlarged), Concept Publishing, New Delhi.
2. Monkhouse, F. J. and Wilkinson, H. R.,(1973): Maps and Diagrams, Methuen, London.
3. Rhind, D. W. and Taylor D. R. F., (eds.) (1989): Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
4. Robinson, A. H.,(2009): Elements of Cartography (6th Edition), John Wiley and Sons, New York.
5. Sarkar, A.,(2015):Practical geography: A systematic approach, Orient Black Swan Private Ltd., New Delhi.
6. Singh, R.L. and Singh R.P.B.,(1999): Elements of Practical Geography, Kalyani Publishers, New Delhi.
7. Talukdar, S.,(2008): Introduction to Map Projections, EBH Publishers(India),Guwahati.
8. Mahmood, A.,(1977): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.

COURSE NAME: Economic Geography

COURSE CODE: GG- MN - 6214

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY

Total Lectures: 45

Course Objective:

*1*CourseObjective:

- *This course aims to provide an in-depth understanding of fundamental concepts of the field of Economic Geography.*
- *It also provides knowledge on various economic activities, concepts and theories, involved in the understanding of Economic Geography.*
- *Besides, the course aims to enable the learners to apply the various theoretical knowledge of the field in the real-life scenarios by developing different practical skills.*

Course Learning Outcome:

CLO 1: *Learners will develop a comprehensive understanding of Economic Geography, enabling critical analysis and interpretation of economic phenomena at local, regional, and global scales.*

CLO 2: *They will acquire knowledge of economic activity principles, including production systems and resource utilization, fostering a deeper understanding of economic processes and dynamics.*

CLO 3: *Learners will be able to investigate the factors influencing industrial location and the distribution of key industries, enhancing comprehension of industrial geography and economic development strategies.*

CLO 4: *They will also develop analytical skills to assess international trade dynamics, including factors influencing trade patterns and India's trade relations with major global partners, contributing to informed decision-making in trade policy and international relations along with the ability to apply theoretical knowledge in practical applications in real life.*

Unit-I: Economic Geography (Lectures: 7)

Meaning, scope and approaches

Unit-II: Economic Activity (Lectures: 7)

Meaning and classification; production system: land, labour and capital; resource: concept and classification.

Unit-III: Agriculture (Lectures: 8)

Factors influencing agriculture; types of agriculture; factors influencing cultivation of wheat, rice, tea, coffee and their distribution and production in different parts of the world; Agricultural Location Theory of Von Thunen.

Unit-IV: Manufacturing (Lectures: 8)

Factors influencing industrial location; classification of industries; Industrial Location Theory of Weber; Factors, distribution and production of Cotton Textile, Iron and Steel and Information technology industries in the world.

Unit-V: Transport system (Lectures: 8)

Modes of transport, factors influencing transport development and role of transport in resource mobilization and economic development.

Unit-VI: Trade (Lectures: 7)

Factors influencing trade in different countries of the world; trade relations of India with countries like USA, Russia and Japan.

Practical:

Total Lectures: 30

1. Trend of rice, wheat, iron and steel, cotton production in the world/India since 1960 using moving average and least squares method. (2 Assignments)
2. Trend of Agricultural production in the world/India/North East-India using Band-graph. (1 Assignment)
3. Trend of balance of Trade relations (export and import value) of India with USA, China and Japan in respect of major commodities since 1990 using bar graph. (2 Assignments)
4. Regional variation in fertilizer consumption and agricultural productivity in rice, wheat and barley in selected countries of the world using bar graph. (1 Assignment)
5. Inter-state/Inter-nation volume of movement of selected commodities and Inter-city movement of traffic/bus in N.E. India through flow cartogram. (1 Assignment)

Recommended Books:

1. Agnew, J., & Mitchell, K. (eds.). (2017). The Routledge Handbook of Political Ecology.
2. Cox, K. R. (2017). The Routledge Handbook of Political Geography.
3. O'Loughlin, J., & Flint, C. (eds.). (2017). The Routledge Research Companion to Political Geography.
4. Klaus Dodds. (2015). Geopolitics: A Very Short Introduction.
5. Kaplan, R. D. (2012). The Revenge of Geography: What the Map Tells Us About Coming Conflicts and the Battle Against Fate.
6. Mitchell B., 1997: Resource and Environmental Management, Longman Harlow, England.
7. Owen S. and Owen P. L., 1991: Environment, Resources and Conservation, Cambridge University Press, New York.
8. Rees J., 1990: Natural Resources: Allocation, Economics and Policy, Routledge. London.
9. Gilg A. W., 1985: An Introduction to Rural Geography, Edwin Arnold, London.
10. Krishnamurthy, J. 2000: Rural Development - Problems and Prospects, RawatPubls., Jaipur.
11. Lee D. A. and Chaudhri D. P. (eds.), 1983: Rural Development and State, Methuen, London.

COURSE NAME: Population and Settlement Geography
COURSE CODE:GG–MN -7314
Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

Theory: (Credit: 3)

Total Lecture: 45

Course Objective:

- *The objective of this course is to introduce students to the basic concepts of population and settlement geography and how the differential characteristics of population and settlement influence the overall development process of an area.*
- *It seeks to develop understanding among the learners about the significance of population and settlement geography and their inter-relationship*

Course Learning Outcome:

After completion of the course students will be able to:

CLO 1: *Learners will gain an understanding of the field of Population Geography and its development. Learners will also understand basic concepts and theoriesand apply them toexplain population dynamics.*
CLO 2: *Learners will understand the challenges and implications of contemporary population issues, such as aging populations and declining sex ratios.*
CLO 3: *Learners will acquire knowledge on rural and urban settlements, including their factors, characteristics, and internal structures based on given theories.*
CLO4: *Learners will acquire basic skill in quantitative analysis, spatial mapping, distribution analysis, demographic visualization, urbanization patterns, population distribution, and migration analysis through hands-on practical and will be able to apply them to analyse population dynamics.*

Unit 1: Population Geography (Lectures:30)

1. Population geography: nature, scope and development
2. Sources, characteristics and problems of population data; perspectives on Census of India publications – Primary Census Abstract, District Census Hand-Book, Sample Registration System)
3. Population Size, Distribution and Growth: Determinants and Patterns; theories of population growth- Malthusian Theory
4. PopulationCompositionandCharacteristics:age-sex,rural-urban,religious,linguistic
5. Population Dynamics: Fertility, Mortality and Migration- measures, determinants and implications.
6. Issues and policies- ageing population, declining sex ratio; Population policies of India

Unit 2: Settlement Geography (Lectures:15)

1. Settlement Geography: Meaning, Nature and Scope; factors influencing growth and distribution of settlements; importance of settlement studies in geography.
2. Rural and urban settlement: components, characteristics and morphology
3. Concepts: settlement hierarchy, primate city and urban fringe.
4. Theories: Christaller's Central Place Theory; Burgess theory of internal structure of a town.

PRACTICAL: (Total Hours: 30)

Unit I: Exercises

1. Trend of population growth in Assam/N.E. India/India through line graph.(1Assignment)
2. Choropleth map showing spatial pattern of population density in Assam/ N.E. India/ India. (1 Assignment)
3. Construction of Age-Sex Pyramid of selected developed and developing nations –compare and contrast. (2 Assignments)
4. Diagrammatic representation of Town Planning during Indus Valley Civilization. (1 Assignment)
5. Calculation of distribution pattern of settlements in an area using Nearest Neighbour Analysis. (1 Assignment)
6. Map showing distribution of towns and their varied population size with spheres in Assam/ N.E.India. (1 Assignment)

Recommended Books:

1. Chandna, R. C., 2015: Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers.
2. Barrett H.R.,1995: Population Geography, Oliver and Boyd.
3. Bhende A. and Kanitkar T., 2000: Principles of Population Studies, Himalaya Publishing House.
4. Chandna R.C.and Sidhu M.S.,1980 : An Introduction to Population Geography, Kalyani Publishers.
5. Clarke J.I., 1965: Population Geography, Pergamon Press, Oxford.
6. Jones, H. R.,2000: Population Geography, 3rd ed. Paul Chapman, London.
7. Lutz W., Warren C. S. and Scherbov S., 2004: The End of the World Population Growth in the 21st Century, Earthscan.
8. Newbold K.B., 2009: Population Geography: Tools and Issues, Rowman and Little field Publishers.
9. PacioneM., 1986:Population Geography: Progress and Prospect, Taylor and Francis.
10. WilsonM. G.A., 1968:PopulationGeography, Nelson.
11. Panda BP(1988): Janasankya Bhugol, MP Hindi Granth Academy, Bhopal.
12. Maurya SD (2009): Jansankya Bhugol, Sharda Pustak Bhawan, Allahabad.
13. Chandna, RC (2006), Jansankya Bhugol, Kalyani Publishers.

COURSE NAME: Geography of North-East India and Assam
COURSE CODE: GG-MN-8314
Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

Theory: (Credits: 3)

Total Lecture: 45

Course Objective:

- To provide the learners with a comprehensive understanding of the geographical, demographic, economic and environmental aspects of North east India and Assam.
- To analyse the significance of North east India and Assam in terms of their locational, strategic, and socio-economic importance.
- To explore the physical characteristics, population dynamics, agricultural practices, resource distribution, industrial development, tourism potential, and biodiversity of Northeast India and Assam.

Course Learning Outcome:

CLO1*: Learners will be able to articulate the locational and strategic significance of Northeast India and Assam, considering their impact on regional and global contexts.*
CLO2*: They will be able to demonstrate a comprehensive understanding of the physical characteristics of Northeast India and Assam.*
CLO3*: Learners will be able to analyse the population dynamics of Northeast India in general and Assam in particular.*
CLO4*: Learners will specifically be able to understand Assam's economic development prospects and challenges by analysing its resource and industrial profile alongside exploring biodiversity to assess the state's tourism potential*

PART A: North-East India (15 Lectures)

Unit 1: **Physical setting: (5 lectures)**
Location and strategic significance, physiography, drainage, climate, soil and natural vegetation.

Unit 2: **Socio-cultural setting: (4 lectures)**
Peopling, size, distribution and growth, composition (age-sex, rural-urban, religious)

Unit 3: **Economy: (6 lectures)**
Resource and its classification; types of agriculture: settled agriculture and shifting cultivation; industries (agro-based; mineral based); major food crops (rice and oilseeds) and cash crops (tea and rubber)

PART B: Assam (30 Lectures)

Unit 1: **Physical setting: (6 lectures)**
Physiography, drainage, climate, soil and natural vegetation and biodiversity.

Unit 2: Population: (4 lectures)
Growth, distribution and density; composition (literacy, caste, linguistic, occupational)

Unit 3: Resources: (5 lectures)
Mineral resources (coal, crude oil and natural gas); forest and water resources.

Unit 4: **Agriculture: (5 lectures)**
Agro-climatic zones; production and distribution of major crops (rice, pulses, oil seeds, sugarcane).

Unit 5: **Industry: (lecture 5)**
Agro-based (tea and sugar); mineral-based (coal, petroleum, natural gas and fertilizer); cottage and tourism industries; problems and prospects of industrial development in the state).

PRACTICAL: (Total Hours: 30)
Unit I:Exercises

1. Mapping of Physiographic divisions of Northeast India/Assam (1 Assignment)
2. Listing and mapping of major rivers of Northeast India/Assam (1 Assignment)
3. Trend of population growth rates in N.E. India/Assam since 1901 using Census data (Source: censusindia.gov.in) (1 Assignment)
4. Choropleth mapping to show spatial variation in urbanization level in NE India. (1 assignment)
5. Spatio-temporal variation of population (religious/social composition) in NE India /Assam using a carto-statistical tool (2 Assignments)
6. Map showing distribution of major tribal groups in North-East India. (1 Assignment)

Unit II: Practical Note-Book and Viva-voce

1. Evaluation of Practical Note-Book
2. Viva-voce

RECOMMENDED BOOKS

1. Bhagabati, A.K., Bora, A.K and Kar, B.K.: Geography of Assam, Rajesh Publications, New Delhi, 7th Revised and enlarged edition (2023).
2. Baruah, S.K. (2025). Assam Year Book 2025. Guwahati: Revised & amp; Enlarged Edition, Jyoti Prakashan, Assam
3. Taher, M and Ahmed, P. Geography of North East India, Mani Manik Prakash, Guwahati.

4. Das, M. M. Peasant Agriculture in Assam, EBH India Publishers, Guwahati.
5. Bhattacharya, P.2006: Trend in Tourism Potentiality, Bani Mandir, Guwahati.
6. Bhagabati, A. K.(ed): Biodiversity of Assam, Eastern Book House,Guwahati.
7. Bhattacharyya, N.N.: North East India, Rajesh Publication, New Delhi.
8. Srivastava, S.C.: Demographic Profile of N.E. India, Mittal Publications, New Delhi.

SKILL ENHANCEMENT COURSE (SEC)

Programme Specific Outcome–GEOGRAPHY(Skill Enhancement Course)

PSO No.	NAME	Outcome
PSO–1	Disciplinary Knowledge	Learners will develop a foundational understanding of environmental concepts and tourism geography, including ecosystem dynamics and the evolution of human-environment interactions.
PSO–2	Discipline-Related Skills	Learners will be able to relate geographical knowledge with other disciplines, fostering a holistic understanding of environmental and social processes.
PSO–3	Analytical Skills	Learners will enhance their ability to critically analyze environmental issues and assess the impacts of tourism on society and the environment.
PSO–4	Communication Skills	Learners will improve their ability to communicate complex geographical data through the creation of clear and informative maps.
PSO–5	Creative Thinking	Learners will develop creative approaches to solving spatial problems and representing geographical data innovatively.
PSO-6	Teamwork and Collaboration	Learners will engage in teamwork to address environmental and tourism-related challenges, fostering collaboration and shared knowledge.
PSO-7	Environmental Awareness and Action	Learners will cultivate a strong environmental awareness, advocating for sustainable practices in both environmental conservation and tourism development.

Basic Syllabus Structure of SEC

Semester	Course Name	Course code
1	Environmental Geography	GG – SE – 1113
2	Geography of Tourism	GG – SE – 2113
3	Basics of Thematic Cartography	GG – SE – 3213

Course Learning Outcome – Skill Enhancement Course (SEC)

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

Semester	Course Name & Code	Course Learning Outcome(CLO)	
1	Environmental Geography GG-SE-1113	CLO-01	Understand the various concepts related to the Environment and will also be able to explore the scope of the discipline.
		CLO-02	Appreciate the human and environment relationships and know their evolutionary historical progression over time
		CLO - 03	Analyze the different human adaptations in varied environmental conditions.
		CLO - 04	Acquire in depth knowledge about the concept of ecosystem
		CLO - 05	Identify the environmental issues and problems
		CLO - 06	Map the major biomes and biodiversity hotspots of the world
		CLO - 07	Construct trophic level ecosystem pyramids and Illustrate food chains of various ecosystems
		CLO - 08	Demonstrate various human dwelling places in different environmental conditions
2	Geography of Tourism GG-SE-2113	CLO-01	Comprehend the various concepts of tourism geography.
		CLO-02	Analyze the scope and significance of tourism geography as a discipline
		CLO - 03	Examine the recent trends associated with tourism in general and tourism geography in particular.
		CLO - 04	Elucidate the various factors and types of tourism
		CLO - 05	Examine different case studies on tourism; its impact on economy, environment and society
		CLO - 06	Interpret the various policies on tourism in India
		CLO - 07	Employ different techniques to elucidate tourists related data and interpret the same
		CLO - 08	Prepare transport connectivity map for major tourist destinations in India and North- East India
		CLO - 09	Map National Parks and Sanctuaries of tourist attraction; Construct a tourist guide map

3	Basics of Thematic Cartography GG-SE-3213	CLO-01	This course will help learners to enhance proficiency in creating effective maps
		CLO-02	Learners will be able to manage various geographical data and along with its appropriate representation.
		CLO - 03	The learners will be able to prepare maps for regional development and decision making.
		CLO - 04	This course will help the learners to apply quantitative methods to solve spatial problems

MAPPING OF COURSE LEARNING OUTCOME AND PROGRAMME OUTCOME (SCIENCE)

Attributes: Co-relation Levels

"1" : Minimum Co-relation
"2" : Moderate Co-relation
"3" : Maximum Co-relation
"-" : No Co-relation

Course Code	CLO	PROGRAMME OUTCOME										
		SPO-1	SPO-2	SPO-3	SPO-4	SPO-5	SPO-6	SPO-7	SPO-8	SPO-9	SPO-10	SPO-11
GG-SE-1113	CLO1	3	3	3	3	3	3	2	3	3	3	3
	CLO 2	3	3	3	3	3	3	2	3	3	3	3
	CLO 3	1	2	2	1	1	1	2		1	2	1
	CLO 4	1	1	1	1	1	1	1	2	1	2	1
	CLO 5	3	3	3	3	3	3	2	3	3	3	3
	CLO 6	1	2	2	1	1	1	2		1	2	1
	CLO 7	1	1	1	1	1	1	1	2	1	2	1
	CLO 8	3	3	3	3		3	3			3	3
GG-SE-2113	CLO1	3	3	3	3	3	3	1	3	2	3	3
	CLO 2	3	3	3	3	3	3	1	3	2	3	3
	CLO 3	1	1	1	1	1	1	1	2	1	2	1
	CLO 4	1	1	1	1	1	1	1	2	1	2	1
	CLO 5	3	3	3	3	3	3	2	3	3	3	3
	CLO 6	1	2	2	1	1	1	2		1	2	1
	CLO 7	1	1	1	1	1	1	1	2	1	2	1
	CLO 8	3	3	3	3		3	3			3	3
	CLO 9	3	3	3	3	3	3	1	3	2	3	3
GG-SE-3213	CLO1	3	3	3	3		3	3			3	3
	CLO 2	3	3	3	3		3	3			3	3
	CLO 3	3	3	3	3	3	3	3	3	2	3	3
	CLO 4	3	3	3	3	3	3	3	3	2	3	3

MAPPING OF COURSE LEARNING OUTCOME AND PROGRAMME OUTCOME (ARTS)

Attributes: Co-relation Levels

"1" : Minimum Co-relation
"2" : Moderate Co-relation
"3" : Maximum Co-relation
"-" : No Co-relation

Course Code	CLO	PROGRAMME OUTCOME										
		APO-1	APO-2	APO-3	APO-4	APO-5	APO-6	APO-7	APO-8	APO-9	APO-10	APO-11
GG-SE-1113	CLO1	3	3	3	3	3	3	2	3	3	3	3
	CLO 2	3	3	3	3	3	3	2	3	3	3	3
	CLO 3	1	2	2	1	1	1	2		1	2	1
	CLO 4	1	1	1	1	1	1	1	2	1	2	1
	CLO 5	3	3	3	3	3	3	2	3	3	3	3
	CLO 6	1	2	2	1	1	1	2		1	2	1
	CLO 7	1	1	1	1	1	1	1	2	1	2	1
	CLO 8	3	3	3	3	3	3	1	3	2	3	3
GG-SE-2113	CLO1	3	3	3	3	3	3	1	3	2	3	3
	CLO 2	3	3	3	3	3	3	1	3	2	3	3
	CLO 3	1	1	1	1	1	1	1	2	1	2	1
	CLO 4	3			3	3		3	3	3	3	3
	CLO 5	3			3	3		3	3	3	3	3
	CLO 6	3	3	3	3	3	3	3	3	3	3	3
	CLO 7	3	3	3	3	3	3	3	3	3	3	3
	CLO 8	1	2	2	1	1	1	2		1	2	1
	CLO 9	1	1	1	1	1	1	1	2	1	2	1
GG-SE-3213	CLO1	3			3	3		3	3	3	3	3
	CLO 2	3			3	3		3	3	3	3	3
	CLO 3	3	3	3	3	3	3	3	3	3	3	3
	CLO 4	3	3	3	3	3	3	3	3	3	3	3

MAPPING OF COURSE LEARNING OUTCOME AND PROGRAMME SPECIFIC OUTCOME

Attributes: Co-relation Levels

"1" : Minimum Co-relation
"2" : Moderate Co-relation
"3" : Maximum Co-relation
"-" : No Co-relation

Course Code	CLO	PROGRAMMESPECIFIC OUTCOME						
		PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6	PSO-7
GG-SE-1113	CLO1	3	3	3	2	3	2	3
	CLO 2	3	3	3	2	3	2	3
	CLO 3	3	3	2	2	2	3	3
	CLO 4	2	3	2	2	2	2	3
	CLO 5	2	2	3	2	3	2	3
	CLO 6	3	3	2	3	3	2	3
	CLO 7	3	3	3	2	3	3	3
	CLO 8	3	3	3	3	2	3	3
GG-SE-2113	CLO1	3	2	2	3	3	3	3
	CLO 2	3	3	3	3	2	3	3
	CLO 3	3	2	3	3	3	3	3
	CLO 4	3	3	2	2	3	3	3
	CLO 5	3	3	2	2	3	3	3
	CLO 6	3	3	2	2	3	3	3
	CLO 7	3	3	2	2	3	3	3
	CLO 8	3	3	2	2	3	3	3
	CLO 9	3	3	3	3	3	3	3
GG-SE-3213	CLO1	3	3	3	3	3	3	2
	CLO 2	3	3	3	3	3	3	2
	CLO 3	3	3	3	3	3	2	2
	CLO 4	3	3	3	3	3	3	3

COURSE NAME: Environmental Geography

COURSE CODE:GG-SE-1113

Total Credits: 3(Theory:2+Practical/Tutorial: 1)

THEORY: 2 Credits

TOTAL LECTURES: 30

Course Objective:

The course objectives of this course are as follows:

- *This course aims to deliver its learners with both theoretical and practical based knowledge of environmental geography that would aid them in acquiring skills to increase their chances of employability.*
- *The course aims to train its learners with hands on practice of various dimensions of the environment and its policies and programmes.*

Course Learning Outcome:

CLO–01: *Understand the various concepts related to the Environment and will also be able to explore the scope of the discipline*

CLO–02: *Appreciate the human and environment relationships and know their evolutionary historical progression over time.*

CLO – 03*: Analyze the different human adaptations in varied environmental conditions*

CLO – 04: *Acquire in depth knowledge about the concept of ecosystem.*

CLO – 05: *Identify the environmental issues and problems*

CLO – 06: *Map the major biomes and biodiversity hotspots of the world*

CLO – 07: *Construct trophic level ecosystem pyramids andIllustrate food chains of various ecosystems*

CLO – 08: *Demonstrate various human dwelling places in different environmental conditions.*

Unit-I: Environmental Geography(Lectures:8)

Environmental Geography: concept and scope, man-environment relationship- historical progression, adaptation in different biomes.

Unit-II: Ecosystem (Lectures:6)

Ecosystem: concept, structure and functions.

Unit-III: Global Environmental Issues (Lectures:8)

Major Global Environmental Issues and Problems: (deforestation, desertification, pollution, global warming)

Unit-IV: Environmental Programmes(Lectures:8)

Global Environmental Programmes and Policies.

Practical:

Total Lectures: 30

1. Mapping of major biomes of the world.
2. Diagrammatic representation of food chain of ecosystems: terrestrial and aquatic.
3. Construction of the trophic level pyramid of an ecosystem along with the energy transfer.
4. Mapping of biodiversity hotspots of the world.

Recommended Books:

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. Thomson, A. J. and A.V.Martinet. A Practical English Grammar. Oxford: Oxford UP, 1986.

COURSE NAME: Geography of Tourism

COURSE CODE: GG-SE-2113

Total Credits: 3 (Theory: 2 + Practical/Tutorial: 1)

THEORY

Total Lectures: 30

Course Objectives:

The course objectives of this course are as follows:

- *The skill enhancement course on Geography of Tourism has been designed specifically to equip its learners with both theoretical and practical knowledge about the dynamics of tourism industry in general and tourism geography in particular.*
- *The course has been curated to impart its learners with the basic knowledge and skills to aid them in securing a niche for themselves in the tourism industry.*
- *It aims to develop understanding among the learners about important role geography plays in the development of tourism as an industry.*

Course Learning Outcome:

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

CLO – 01: *Comprehend the various concepts of tourism geography*

CLO – 02: *Analyze the scope and significance of tourism geography as a discipline*

CLO – 03: *Examine there centtrends associated with tourism in general and tourism geography in particular*

CLO – 04: *Elucidate the various factors and types of tourism*

CLO – 05: *Examine different case studies on tourism; its impact on economy, environment and society*

CLO – 06: *Interpret the various policies on tourism in India*

CLO – 07: *Employ different techniques to elucidate tourists related data and interpret the same*

CLO – 08: *Prepare transport connectivity map for major tourist destinations in India and North-East India*

CLO – 09: *Map National Parks and Sanctuaries of tourist attraction; Construct a tourist guide map*

Unit-I: Geography of Tourism (LECTURES:6)

Geography of Tourism: concepts-recreation and leisure inter relationship; scope, significance and trends.

Unit-II: Resources (LECTURES:6)

Resources and factors influencing tourism: historical, natural, socio-cultural, economic and Infrastructure.

Unit-III: Types of Tourism (LECTURES:6)

Types of Tourism: natural, cultural, medical, adventure and pilgrimage.

Unit-IV: Impact of Tourism (LECTURES:6)

Impact of Tourism: environment, economy and society.

Unit-V: Tourism policies(LECTURES:6)

Tourism policies and initiative in India.

Practical:

Total Lectures: 30

1. Trend of growth of tourist arrivals in India/Assam since 2000 using line graphs.
2. Spatial patterns of seasonal variation (spring, summer, autumn and winter) in tourist arrivals in capital cities of North-East Indian states using pie diagrams.
3. Preparation of transport connectivity map (road, railway and air) of Assam/NE India for major tourist destinations.
4. Preparation of a locational map of NE India/Assam to show tourist attraction points-National Parks and Sanctuaries.
5. Preparation of a tourist guide map of N.E. India/Assam showing location of major tourist destinations and road connectivity routes from Guwahati city.

Recommended Books:

1. Bhattacharya, P. (2011): Tourism in Assam: Trend and Potentialities, Banimandir, Guwahati.
2. Dhar, P.N.(2006) International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi.
3. Hall, M. And Stephen, P. (2006) Geography of Tourism and Recreation–Environment, Place and Space, Routledge, London.
4. Kamra, K. K. and Chand, M. (2007) Basics of Tourism: Theory, Operation and Practise, Kanishka Publishers, Pune.
5. Page, S.J.(2011) Tourism Management: An Introduction, Butterworth- Heinemann-USA. Chapter2.
6. Raj, R. And Nigel, D. (2007) Morpeth Religious Tourism and Pilgrimage Festivals Management: An International perspective by, CABI, Cambridge, USA, www.cabi.org.
7. Tourism Recreation and Research Journal, Center for Tourism Research and Development, Lucknow.
8. Singh Jagbir (2014) “Eco-Tourism” Published by-I.K. International Pvt. Ltd.S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).
9. Market Research Division, Dept. of Tourism, Govt.of India, India Tourist Statistics (available in PDF form), New Delhi.
10. UNWTO: Tourism Barometer (available in their web portal ohavea fresh glimpse of global tourism statistics/ other relevant sites may also be consulted).

COURSE NAME: Basics of Thematic Cartography

COURSE CODE: GG-SE-3213

Total Credits: 3 (Theory: 2 + Practical/Tutorial: 1)

THEORY

Total Lectures: 30

Course Objectives:

This course has been specifically formulated to impart the basic skills of map making to the learners keeping in mind the diverse knowledge background of the students. As such, the following objectives are aimed at:

- *To provide students with a comprehensive understanding of different methods and techniques used in geographical studies.*
- *To facilitate the students to learn skills of map making.*
- *To guide students to learn the science and art of collecting, processing and interpreting the data.*
- *To make the studies more scientific and applicable.*

Course Learning Outcome:

CLO 1: *This course will help learners to enhance proficiency in creating effective maps*

CLO 2: *Learners will be able to manage various geographical data and along with its appropriate representation.*

CLO 3: *The learners will be able to prepare maps for regional development and decision making*

CLO 4: *This paper will help the learners to apply quantitative methods to solve spatial problems*

Unit-I: Maps(Lectures : 10)

Elements, Classification and Types; Concepts of Base Map. Principles of Map preparation and Design.

Unit-II: Data Presentation (Lectures: 5)

Data Presentation using – Line, Bar and Circle

Unit III: Thematic Mapping Techniques(Lectures: 5)

Thematic Mapping Techniques – Properties, Uses and Limitations

Unit IV: Concept of data layers(Lectures: 5)

Concept of data layers – Point, Linear and Areal Data layers

Unit V: Concept of data layers(Lectures: 5)

Areal Data presentation - Point Data, Isopleths, Choropleth, Proportional Circles

Practical:

Total Lectures: 30

A Thematic Atlas should be prepared on the following six themes of India (with provision for choice of relevant themes) along with interpretation:

1. Physiography and Drainage

2. Soil and Minerals

3. Natural Vegetation and National Parks & Wildlife Sanctuaries

4. Population Density and Urban centres

5. Industrial belts and major industrial sites (Iron & steel and cotton textile)

6. Administrative divisions and Transport network (roadways and railways)

Recommended Books:

1. Misra, R.P.,(2014): Fundamentals of Cartography(Revised and Enlarged), Concept Publishing, New Delhi.
2. Monkhouse, F. J. and Wilkinson, H. R.,(1973): Maps and Diagrams, Methuen, London.
3. Rhind, D. W. and Taylor D. R. F., (eds.) (1989): Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
4. Robinson, A. H.,(2009): Elements of Cartography (6th Edition), John Wiley and Sons, New York.
5. Sarkar, A.,(2015):Practical geography: A systematic approach, Orient Black Swan Private Ltd., New Delhi.
6. Singh, R.L. and Singh R.P.B.,(1999): Elements of Practical Geography, Kalyani Publishers, New Delhi.
7. Talukdar, S.,(2008): Introduction to Map Projections, EBH Publishers(India),Guwahati.
8. Mahmood, A.,(1977): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.

INTER-DISCIPLINARY COURSE (IDC)

Programme Specific Outcome of Geography (IDC)

PSO No.	Name	Outcome
PSO–1	Disciplinary Knowledge	Learners will develop a thorough understanding of human, physical, and economic geography, including the intricate relationships between physical landscapes, human societies, and cultural developments at local, regional, and global
PSO–2	Discipline-Related Skills	Learners will acquire practical skills in representing and analyzing population data using various cartographic techniques, enabling them to create effective maps for regional development and decision-making.
PSO–3	Analytical Knowledge	Learners will enhance their ability to critically analyze population dynamics, industrial location factors, and international trade dynamics, fostering informed decision-making and problem-solving in economic and human geography.
PSO–4	Creative Thinking	Learners will improve their ability to articulate and present complex geographical concepts, including human-environment interactions and the principles of economic geography, through written and visual means.
PSO-5	Teamwork and Collaboration	Learners will engage in collaborative projects to investigate geographical issues, such as population distribution and resource utilization, promoting teamwork and shared problem-solving in geographical research.
PSO-6	Leadership Skills	Learners will develop leadership skills by taking initiative in group projects, guiding discussions on geographical topics, and leading efforts to address complex spatial and environmental challenges

Basic Syllabus Structure of IDC

Semester	Course Name	Course Code
1	Introduction to Geography	GG-ID-1113
2	Geography of India	GG-ID-2113
3	Geography of North East India and Assam	GG-ID-3213

Course Learning Outcome (CLO)

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

Semester	Course Name & Code	Course Learning Outcome(CLO)	
1	Introduction to Geography GL-ID-1113	CLO-01	Students will acquire a general understanding on the origin of the universe, solar system as well as on Earth. They will gain knowledge about the geological time scale and earth's interior
		CLO-02	Students will acquire an idea about the different landforms which are formed on the surface of the earth and the forces responsible for their formation
		CLO - 03	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 surface
		CLO - 04	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
2	Geography of India GG-ID-2113	CLO-01	Understand the location of India with reference to its neighbouring countries and hence will be able to appreciate its strategic location from a geopolitical point of view, besides learning about the various administrative divisions of the country;
		CLO-02	Student will be familiar with the physiographic divisions and drainage systems of India
		CLO -03	The student will be able to impart basic knowledge on the climatic factors governing the country as well as the mechanisms of Monsoon Climate.
		CLO - 04	This paper will help the students to understand the soil diversity, evolution and its distribution along with an in-depth knowledge of the forests and biosphere reserves of India
		CLO - 05	Assess the agricultural diversity of India and will also be able to explore the contemporary issues of agricultural development in the country
		CLO - 06	Appreciate the many various resources of the country and shall also be able to examine the conservation issues associated with them.
3	Geography of North East India and Assam GG-ID-3213	CLO-01	Learners will be articulate the locational and strategic significance of Northeast India and Assam, considering their impact on regional and global contexts.

3	Geography of North East India and Assam GG-ID-3213	CLO-02	They will be able to demonstrate a comprehensive understanding of the physical characteristics of Northeast India and Assam.
		CLO - 03	Learners will be able to analyse the population dynamics of Northeast India in general and Assam in particular.
		CLO - 04	Learners will be able to assess agricultural practices in Northeast India and Assam, identifying major crops and traditional methods like shifting cultivation
		CLO - 05	Learners will specifically be able to understand Assam's economic development prospects and challenges by analysing its resource and industrial profile alongside exploring biodiversity to assess the state's tourism potential.

Mapping of Course Learning Outcome (CLO) and Programme Outcome (PO) of Science Stream

Attributes: Co-relation Levels

"1" : Minimum Co-relation
"2" : Moderate Co-relation
"3" : Maximum Co-relation
"-" : No Co-relation

Course Code	CLO	Programme Outcome(PO)										
		SPO-1	SPO-2	SPO-3	SPO-4	SPO-5	SPO-6	SPO-7	SPO-8	SPO-9	SPO-10	SPO-11
GG-ID-1113	CLO - 1	3	2	2	1	3	3	3	3	2	3	3
	CLO - 2	3	3	2	1	3	3	2	3	2	3	3
	CLO - 3	1	2			1	2	1	1		1	1
	CLO - 4	1	1			1			1		1	1
GG-ID-2113	CLO - 1	3	3	3	2	3	3	3	3	2	3	3
	CLO - 2	3	3	3	2	3	3	3	3	2	3	3
	CLO - 3	3	3	2	1	3	3	2	3	2	3	3
	CLO - 4	3	2	2	1	3	3	3	3	2	3	3
	CLO - 5	3	3	2	1	3	3	2	3	2	3	3
	CLO - 6	1	2			1	2	1	1		1	1
GG-ID-3213	CLO - 1	3				2			3		2	2
	CLO - 2	3	2		2				2	2		
	CLO - 3	3	2		2		2	3				2
	CLO - 4	2	2	2	2	3	3				3	2
	CLO - 5	3	2	2	2	3	3		2	3	3	

Mapping of Course Learning Outcome (CLO) and Programme Outcome (PO) of Arts Stream

Attributes: Co-relation Levels

"1" : Minimum Co-relation
"2" : Moderate Co-relation
"3" : Maximum Co-relation
"-" : No Co-relation

Course Code	CLO	Programme Outcome (PO)										
		APO-1	APO-2	APO-3	APO-4	APO-5	APO-6	APO-7	APO-8	APO-9	APO-10	APO-11
GG-ID-1113	CLO - 1	3	2	2	1	3	3	3	3	2	3	3
	CLO - 2	3	3	2	1	3	3	2	3	2	3	3
	CLO - 3	1	2			1	2	1	1		1	1
	CLO - 4	1	1			1			1		1	1
GG-ID-2113	CLO - 1	3	3	3	2	3	3	3	3	2	3	3
	CLO - 2	3	3	3	2	3	3	3	3	2	3	3
	CLO - 3	3	3	2	1	3	3	2	3	2	3	3
	CLO - 4	1	1			1			1		1	1
	CLO - 5	3	3	3	2	3	3	3	3	2	3	3
	CLO - 6	3	3	3	2	3	3	3	3	2	3	3
GG-ID-3213	CLO - 1	2	2	2	3		3	2			3	
	CLO - 2			2			2			2	3	
	CLO - 3				2	3		2		2	3	2
	CLO - 4							2	3		2	3
	CLO - 5	3			2		2			2	3	3

Mapping of Course Learning Outcome (CLO) and Programme Specific Outcome (PSO)

Attributes: Co-relation Levels

"1" : Minimum Co-relation
"2" : Moderate Co-relation
"3" : Maximum Co-relation
"-" : No Co-relation

Course Code	CLO	Programme Specific Outcome (PSO)					
		PSO-1	PSO-2	PSO-3	PSO-4	PSO-5	PSO-6
GG-ID-1113	CLO - 1	3	3	3	2	3	3
	CLO - 2	3	3	3	2	3	3
	CLO - 3	3	3	3	2	3	3
	CLO - 4	3	3	3	2	3	3
GG-ID-2113	CLO - 1	3	3	3	3	2	3
	CLO - 2	3	3	2	2	2	3
	CLO - 3	3	3	2	2	2	3
	CLO - 4	3	3	2	2	3	3
	CLO - 5	3	3	3	3	3	3
	CLO - 6	3	3	3	3	3	3
GG-ID-3213	CLO - 1	3	3	2	3	3	3
	CLO - 2	3	3	2	3	3	3
	CLO - 3	3	3	2	3	3	3
	CLO - 4	3	3	2	3	3	3
	CLO - 5	3	3	3	3	3	3

COURSE NAME: Introduction to Geography

COURSE CODE: GG – ID – 1113

TOTAL CREDITS: 3 (Theory: 3)

THEORY

Total Lectures - 45

Course Objective:

The objectives of the course are:

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

Course Learning Outcome:

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

CLO–01: *Students will acquire a general understanding on the origin of the universe, solar system as well as on Earth. They will gain knowledge about the geological time scale and earth's interior.*

CLO – 02: *Students will acquire an idea about the different landforms which are formed on the surface of the earth and the forces responsible for their formation.*

CLO – 03: *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 surface.*

CLO – 04: *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*

PART: A

Unit-I: Origin of the Universe (Lectures:8)

Origin of Universe: Solar System; Origin of Earth: Big Bang theory; concept of Geological Timescale.

Unit-II: Shape and size of the earth (Lectures:6)

Shape and size of the earth; 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).

Unit-III: Structure of the earth (Lectures:6)

Internal structure of the earth, earth's Movements, Plate Tectonics; Continental Drift theory

Unit-IV: Landforms (Lectures:4)

Order of Landforms: first, second and third order

PART: B

Unit-V: Man-Environment relationship(Lectures:6)

Concepts of man-environment relationship: environmental Determinism, Possibilism and Neo determinism;

Unit-VI: World Population (Lectures:6)

World Population: Growth, Distribution and density; Demographic Transition theory and Malthus theory.

Unit-VII: Migration(Lectures: 4)

Migration: types and causes

Unit-VIII: Human Settlement(Lectures:5)

Origin and evolution of human settlement: types, patterns and morphology of rural and Urban settlements.

Recommended Books:

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

COURSE NAME: Geography of India

COURSE CODE: GG – ID – 2113

TOTAL CREDITS: 3 (Theory: 3)

THEORY

Total Lectures - 45

Course Objective:

The objectives of the course are:

- *Keeping in view the Interdisciplinary approach as directed by the NEP 2020, this course has been designed to familiarize the student community from various other disciplines with the regional geography of India.*
- *It aims to help learners acquire knowledge about the various geographical aspects of the country with a dual motive of preparing them for pursuing higher studies in geography and also to help them prepare for various competitive exams.*

Course Learning Outcome:

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

CLO–01: *Understand the location of India with reference to its neighboring countries and hence will be able to appreciate its strategic location from a geopolitical point of view, besides learning about the various administrative divisions of the country;*

CLO–02: *Student will be familiar with the physiographic divisions and drainage systems of India*

CLO –03: *The student will be able to impart basic knowledge on the climatic factors governing the country as well as the mechanisms of Monsoon Climate.*

CLO –04: *This course will help the students to understand the soil diversity, evolution and its distribution along with an in-depth knowledge of the forests and biosphere reserves of India*

CLO – 05: *Assess the agricultural diversity of India and will also be able to explore the contemporary issues of agricultural development in the country.*

CLO – 06: *Appreciate the many various resources of the country and shall also be able to examine the conservation issues associated with them.*

Unit-I: Significance of India's Location (Lectures – 6)

India's location and its significance; administrative divisions

Unit-II: Physiography and Drainage (Lectures – 6)

Physiography and Drainage: physiographic divisions; river systems- Himalayan river system, Peninsular river system (west flowing and east flowing rivers), major dams and hydropower projects.

Unit-III: Climate (Lectures – 7)

Climate: factors determining the climate of India; climatic regions of India; Indian Monsoon-origin and its mechanisms, significance in Indian context; El Nino and La Nina.

Unit-IV: Population (Lectures – 6)

Population: distribution, density and growth; composition (rural-urban, age-sex, occupational, and religious); migration- push and pull factors; population problems and policies of India.

Unit-V: Vegetation (Lectures – 7)

Soil and Natural Vegetation: major soil types; major Forest types and conservation; biosphere reserves.

Unit-VI: Industries (Lectures – 7)

Major industries: production and distribution (Iron-steel, Tea, cotton and silk) and recent industrial policies

Unit-VII: Agriculture (Lectures – 6)

Agriculture: cropping patterns; agro-climatic zones; production and distribution of selected crops (wheat, rice, tea, cotton, jute, sugarcane)

Recommended Books:

1. Deshpande C.D.,1992:India: A Regional Interpretation, ICSSR, New Delhi.
2. Johnson, B.L.C.,ed.2001. Geographical Dictionary of India. Vision Books, New Delhi.
3. Mandal R.B.(ed.),1990: Patterns of Regional Geography–An International Perspective. Vol.3 – Indian Perspective.
4. Sdyasuk Galina and P Sengupta (1967): Economic Regionalisation of India, Census of India.
5. Sharma,T.C.2003: India-Economic and Commercial Geography. Vikas Publ., New Delhi.
6. Singh R.L.,1971: India: A Regional Geography, National Geographical Society of India.
7. Singh, Jagdish 2003: India – A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur
8. Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.
9. Tirtha, Ranjit 2002: Geography of India, Rawat Publs., Jaipur & New Delhi.
10. Pathak, C.R. 2003: Spatial Structure and Processes of Development India. Regional Science Assoc., Kolkata.
11. Tiwari, R.C.(2007): Geography of India. Prayag Pustak Bhawan, Allahabad.
12. Sharma,T.C. (2013). Economic Geography of India. Rawat Publication, Jaipur.
13. Bhagabati, A.K.,Bora, A.K.and Kar, B.K.: Geography of Assam, Rajesh Publications, New Delhi.
14. Taher, M and Ahmed, P.: Geography of North East India, Mani Manik Prakash, Guwahati.

15. Neog D, Biodiversity and Wetlands: Distribution and conservation, Ashok Publication, Panbazar, Guwahati, Assam
16. Bhagabati,A.K.(ed):Biodiversity of Assam, Eastern Book House, Guwahati.
17. Khullar, D.R.2012:India A Comprehensive Geography, Kalyani Publishers.

COURSE NAME: Geography of North East India and Assam

COURSE CODE: GG – ID – 3213

TOTAL CREDITS: 3 (Theory: 3)

THEORY

Total Lectures - 45

Course Objective:

- *To provide the learners with a comprehensive understanding of the geographical, demographic, economic and environmental aspects of Northeast India and Assam.*
- *To analyse the significance of Northeast India and Assam in terms of their locational, strategic, and socio-economic importance.*
- *To explore the physical characteristics, population dynamics, agricultural practices, resource distribution, industrial development, tourism potential, and biodiversity of Northeast India and Assam.*

Course Learning Outcome:

CLO 1: *Learners will be articulate the locational and strategic significance of Northeast India and Assam, considering their impact on regional and global contexts.*

CLO 2: *They will be able to demonstrate a comprehensive understanding of the physical characteristics of Northeast India and Assam.*

CLO 3: *Learners will be able to analyse the population dynamics of Northeast India in general and Assam in particular.*

CLO 4: *Learners will be able to assess agricultural practices in Northeast India and Assam, identifying major crops and traditional methods like shifting cultivation.*

CLO 5: *Learners will specifically be able to understand Assam's economic development prospects and challenges by analysing its resource and industrial profile alongside exploring biodiversity to assess the state's tourism potential*

Unit I: Northeast India (Lectures: 20)

1. North-East India: locational and strategic significance.
2. Physical setting: Physiography, drainage, climate, soil and natural vegetation.
3. Population: peopling; size, distribution and growth, composition (age-sex, rural-urban, religious).
4. Agriculture: major food crops (rice, wheat, oilseeds); Cash crops (jute, rubber, tea and coffee); shifting cultivation.

Unit II: Assam (Lectures: 25)

1. Physical setting: Physiography, drainage, climate, soil and natural vegetation.
2. Population: growth, distribution and density; composition (ethnic and social).
3. Resources: Mineral resources (coal, crude oil, natural gas); forest and water resources.

4. Agriculture: Agro-climatic zones; production and distribution of major crops (rice, wheat, pulses, oil seeds, jute, sugarcane).
5. Industry: Tea, petroleum and petrochemical, coal, fertilizer, handloom and silk industry; problems and prospects of industrial development in the state.
6. Tourism: major tourist destinations; problems and prospects of tourism.
7. Biodiversity: National parks and sanctuaries.

Recommended Books:

1. Bhagabati, A.K., Bora, A. K. and Kar, B.K.: Geography of Assam, Rajesh Publications, New Delhi.
2. Taher, M and Ahmed, P.: Geography of North East India, Mani Manik Prakash, Guwahati.
3. Das, M..M.: Peasant Agriculture in Assam, EBH India Publishers, Guwahati.
4. Gopal Krishnan, R : Geography of North East India.
5. Bhattacharya, P.2006 : Trend in Tourism Potentiality, Bani Mandir, Guwahati.
6. Bhagabati, A.K. (ed) : Biodiversity of Assam, Eastern Book House, Guwahati.
7. Bhattacharyya, N.N. : North East India, Rajesh Publication, New Delhi.
8. Srivastava, S.C. : Demographic Profile of N.E. India, Mittal Publications, New Delhi.

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