COMPETENCY BASED LEARNING DESIGN/COMPETENCY BASED POST-TEACHING REFLECTION

YEAR - 2026 SEMESTER - VI DEPARTMENT -GEOGRAPHY

Faculty-Dr Kaustuva Banerjee

Topic/Unit	Competency-Based Expected Learning Outcome (Knowledge, Skill Value, Attitude)	Assessment	Brief Description of Strategies, Aids (if any), Evaluation process	Hours Allotted	Evaluated Outcome/ Post-Teaching Reflections
CC15 Unit 1	**Knowledge (Cognitive)** The students will be able to: • Explain the **fundamental principles of remote sensing**, including electromagnetic radiation, spectral signatures, and atmospheric interactions. • Differentiate between **passive and active sensors** and their applications. • Describe various **remote sensing platforms** (satellite, airborne, UAV) and sensor types (optical, thermal, radar, LiDAR). • Interpret **spatial, spectral, radiometric, and temporal resolutions**.	**Formative-** Tutorials, Presentations, Group Projects **Summative-** End Semester theory and practical examination	**1. Teaching–Learning Strategies** • **Interactive lectures** to explain fundamental concepts and theories of remote sensing. • **Demonstrations and hands-on practical sessions** for satellite image processing and analysis. • **Case studies and problem-based learning** using real-world applications (agriculture, disaster management, urban studies).	**2hrs/week**	**Outcomes attained:** The students were able to: 1.Comprehend the fundamental concepts of remote sensing. 2.Analuze and perform image enhancement, classification, and change detection techniques. **Challenges Identified:** 1.Unplanned semester duration. 2.Time constraint.

	- Explain the **remote sensing data acquisition, processing, and interpretation workflow**. - Identify major **applications of remote sensing** in agriculture, environmental monitoring, urban planning, disaster management, and climate studies. **Skills (Psychomotor)** The students will be able to: - Acquire and preprocess remote sensing data (e.g., **geometric and radiometric corrections**). - Use **remote sensing and GIS software** (e.g., QGIS) for image analysis. - Perform **image enhancement, classification, and change detection** techniques. - Analyze satellite imagery to **extract meaningful spatial information**. - Integrate remote sensing data with **GIS layers** for spatial decision-making. - Produce **thematic maps and technical reports** based on remote sensing outputs.		**Group discussions and seminars** to promote critical thinking and collaborative learning. **Project-based learning** involving interpretation of remote sensing data for specific applications. **Self-directed learning** through assignments and exploration of open-source datasets. **Teaching–Learning Aids** **Multimedia presentations** (PPTs, animations, videos) to visualize remote sensing concepts. **Satellite imagery and open datasets** (e.g., Landsat, Sentinel, MODIS). **Remote sensing and GIS software** (QGIS). **Laboratory manuals and practical worksheets**. **Online platforms and digital resources** (tutorials, research articles, MOOCs).		**Improvements required:** 1.More hands on session for GIS. **Alignment with POs, PSOs, COs:** **COs** 1.Have knowledge of the principles of remote sensing, sensor resolutions and image referencing schemes. 2.Interpret satellite imagery and understand the preparation of false colour composites from them. 3.Apply GIS to the preparation of thematic maps. **Pos** 1. Reflect critically upon the scope and evolution of the diverse discipline of Geography.

	Values (Ethical and Professional Domain) The students will be able to: • Demonstrate awareness of **ethical use of geospatial and satellite data**. • Recognize the importance of **data accuracy, reliability, and integrity**. • Value remote sensing as a tool for **sustainable development and environmental protection**. • Respect **data privacy, security, and national/international geospatial policies**. • Appreciate interdisciplinary collaboration in geospatial sciences. **Attitudes (Affective Domain)** The students will be able to: • Develop a **problem-solving mindset** when analyzing spatial data. • Show **curiosity and interest** in emerging remote sensing technologies. • Exhibit **responsibility and professionalism** in handling geospatial data.		• **Maps, charts, and models** for spatial visualization. **Evaluation Process** • **Written examinations/quizzes** to assess conceptual understanding and theoretical knowledge. • **Practical examinations** to evaluate data processing, analysis, and software skills. • **Assignments and laboratory exercises** for continuous assessment. • **Mini-projects / case study reports** to assess application skills and problem-solving ability. • **Presentations and viva-voce** to evaluate communication skills and conceptual clarity. • **Participation and attitude assessment** based on involvement in discussions, teamwork, and ethical data handling.		**PSOs** 1. Analyze the Earth as an integrated human-environment system by examining dynamic flows, interactions and exchanges at different spatial and temporal scales.

	• Demonstrate **confidence in applying remote sensing techniques** to real-world problems. • Engage in **lifelong learning** to keep pace with advancements in Earth observation technologies.				

COMPETENCY BASED LEARNING DESIGN/COMPETENCY BASED POST-TEACHING REFLECTION

YEAR – III SEMESTER – VI HONS DEPARTMENT – GEOGRAPHY FACULTY – DEBASREE SINHA

COURSE: SOIL AND BIOGEOGRAPHY

CODE: GEOG-H-CC13-6-Th

Topic/Unit	Competency-Based Expected Learning Outcome (Knowledge, Skill Value, Attitude)	Assessment	Brief Description of Strategies, Aids (if any), Evaluation process	Hours Allotted	Evaluated Outcome/ Post-Teaching Reflections
UNIT I 1. Definition and significance of soil properties: Texture, structure, and moisture 2. Definition and significance of soil properties:	Students s will be able to: 1. Analyze how physical and chemical properties of soil influence soil characteristics, plant growth, and productivity. 2. Evaluate the significance of pH in determining soil health and crop suitability.	1. Case study 2. Seminar presentation 3. Peer assessment 4. Assignment	1. Group and individual learning. 2. Written assessment to help prepare for End Semester Examinations. 3. Traditional lecture method with presentations.	21	**Outcomes attained:** Learning-Teaching Strategies adopted (Case study, Seminar Presentation, and Peer Assessment) helped achieve all learning outcomes. **Challenges Identified:** Paucity of time and inability to conduct written test.

pH, organic matter, and NPK 3. Origin and profile characteristics of lateritic, podsol, and chernozem soils 4. Principles of soil classification: Genetic and USDA. Concept of land capability and its classification 5. Soil erosion and degradation: Factors, processes and management measures. Humans	3. Interpret how nutrient availability and soil reaction affect sustainable soil management. 4. Identify and compare the profile characteristics of laterite, podzol, and chernozem. 5. Relate soil distribution to climate, vegetation, and topography. 6. Distinguish between genetic and USDA systems of soil classification. 7. Comprehend the concept of land capability and classify land based on its agricultural potential and limitations. 8. Suggest appropriate soil conservation and management measures for sustainable land use.				**Improvements required:** Better implementation of all planned innovating learning-teaching methods. **Alignment with POs, PSOs, COs:** **POs**: 3. Explain societal relevance of geographical knowledge and apply it to real world human-environment issues. **PSOs**: 5. Understanding of various theoretical and methodological approaches to both physical and human geography. **COs**: 1. Have knowledge about the character and profile of different soil types.

as active agents of soil transformation					2. Understand the impact of man as an active agent of soil transformation, erosion and degradation. 3. Recognize land capability and classify it.

COURSE: SOIL AND BIOGEOGRAPHY

CODE: GEOG-H-CC13-6-P

Topic/Unit	Competency-Based Expected Learning Outcome (Knowledge, Skill Value, Attitude)	Assessment	Brief Description of Strategies, Aids (if any), Evaluation process	Hours Allotted	Evaluated Outcome/ Post-Teaching Reflections
1. Determination of soil pH, organic matter, and NPK using field kit	Students will be able to: 1. Test soil samples for determination of key chemical properties and nutrients.	1. Laboratory testing	Laboratory demonstration of soil testing.	15	**Outcomes attained:** Learning-Teaching Strategies adopted (learning by problem solving, laboratory demonstration) helped achieve all learning outcomes.

2. Determination of soil type by ternary diagram textural plotting	2. Identify soil texture and relate it with soil suitability for agriculture.				**Challenges Identified:** Paucity of time and inability to conduct multiple practice laboratory tests. **Improvements required:** Efficient time management for accommodating practice laboratory tests. **Alignment with POs, PSOs, COs:** **<u>COs</u>:** 7. Identify soil types and derive their pH

COMPETENCY BASED LEARNING DESIGN/COMPETENCY BASED POST-TEACHING REFLECTION

YEAR - __2026______ SEMESTER - _____VI________ DEPARTMENT -_____Geography______

Teacher: Dr. Ambika Roy Bardhan

Paper: CC-14-Theory and Practical- India and West Bengal

Topic/Unit	Competency-Based Expected Learning Outcome (Knowledge, Skill Value, Attitude)	Assessment	Brief Description of Strategies, Aids (if any), Evaluation process	Hours Allotted	Evaluated Outcome/ Post-Teaching Reflections
CC-14-Th- India and West Bengal					
Physiographic Divisions of India with reference to Tectonic Provinces	**Students will be able to-** **Knowledge:** Explain major physiographic divisions and tectonic evolution of India. **Skill:** Interpret and analyse physiographic and tectonic maps. **Value:** Develop appreciation of geomorphic and tectonic processes shaping the Indian landmass. **Attitude:** Develop scientific temper and respect for natural earth processes.	**Short answer questions**	• **Group Learning and teaching** • **Technology based Learning**	**3**	**Outcomes Attained:** • Students were able to identify major physiographic divisions and explain the tectonic evolution of India. Most students could interpret tectonic and physiographic maps correctly. • Students successfully explained the relationship between climate, soil, and vegetation regions of India. • Students understood the phases and impacts of the Green and White Revolutions and could
Climate, Soil and Natural Vegetation Regions of India	**Students will be able to-** **Knowledge:** Describe climatic types, soil groups and vegetation regions of India. **Skill:** Analyse interrelationships between climate, soil and vegetation types with the help of maps.	**Quiz with MCQ**	• **Peer Teaching** • **Group Learning and teaching (Flipped Classroom Teaching)** • **Technology based Learning**	**4**	

	Value: Develop environmental awareness and appreciation of India's natural diversity. **Attitude:** Become sensitivity towards conservation and sustainable resource use.				evaluate their socio-economic significance. • Students demonstrated understanding of industrial development patterns and factors influencing automobile and IT industries. • Students understood the concept of economic regionalisation and were able to identify economic regions of India. **Challenges Identified:** • Limited time for detailed discussion and individual practice in some topics. • Some topics are largely descriptive and knowledge-based, posing challenges in fostering higher-order conceptual and application-oriented learning. **Improvements Required:** • Greater scope for field-based, experiential, and technology-enabled learning components within the curriculum. **Alignment with POs, PSOs and COs:**
Green Revolution (Phases I & II) and White Revolution – Impacts	**Students will be able to-** **Knowledge:** Outline phases, features and objectives of Green and White Revolutions. **Skill:** Evaluate socio-economic and environmental impacts using case studies. **Value:** Understand the importance of food security and rural development. **Attitude:** Develop balanced outlook towards development, equity and sustainability.	**Short answer Question**	• **Group Learning and teaching** • **Technology based Learning**	**4**	
Industrial Development in India – Automobile and Information Technology Sectors	**Students will be able to-** **Knowledge:** Understand growth, distribution and characteristics of automobile and IT industries. **Skill:** Interpret industrial location factors and regional patterns. **Value:** Appreciate industrial development and its role in economic growth. **Attitude:** Become aware of employment generation, innovation and responsible industrialisation.	**Presentation**	• **Peer Teaching** • **Group Learning and teaching** • **Technology based Learning**	**4**	
Regionalisation of India – Economic Regions (After P. Sengupta)	**Knowledge:** Explain the basis and criteria of economic regionalisation by P. Sengupta.	**Long answer questions**	• **Group Learning and teaching**	**3**	

	Skill: Classify and map economic regions using economic indicators. **Value:** Become aware of regional disparities and balanced regional development. **Attitude:** Empathise towards backward regions and planning-oriented thinking.		• **Technology based Learning**		**PO (5):** Identify and address geographical questions using creativity and critical thought in diverse settings. **PSO (1):** Acquire an understanding and appreciation of the relationship between Geography and culture. **PSO (5):** Understanding of various theoretical and methodological approaches to both physical and human geography. **COs:** • Identify the physiographic divisions with refence to tectonic provinces • Comprehend the significance and impacts of Green revolution and white revolution • Understand the regionalization of India • Comprehend the pattern of industrialization
CC-14-Pr- India and West Bengal					
Monthly temperature and rainfall graphs of five select	**Students will be able to-** **Knowledge:** Understand spatial variation of temperature and rainfall	Graph construction	• **Learning by Problem Solving** • **Experiential Learning**	**3**	**Outcomes Attained:** • Students successfully constructed and interpreted

stations from different physiographic regions of India	across major physiographic regions of India. **Skill:** Construct and interpret climatic graphs using monthly temperature and rainfall data. **Value:** Appreciate regional climatic diversity of India.				temperature-rainfall graphs for selected stations. • Students were able to calculate composite indices using Kendall's Method and compare levels of regional development. **Improvements Required:** • Incorporation of GIS, Remote Sensing, digital cultural mapping, geospatial technologies, and contemporary datasets for a more application-oriented understanding of the physical and cultural geography of India. **Alignment with POs, PSOs and COs:** **COs:** • Acquire the skill of graphical representation of industrial data and composite index
Preparation of composite index (Kendall's Method): Comparison of developed and less developed states of India	**Students will be able to-** **Knowledge:** Understand the concept of composite index and Kendall's method for regional comparison. **Skill:** Compute composite index values and classify states into developed and less developed categories. **Value:** Become aware of regional inequalities and development issues in India.	Compute Composite Index using Kendall's Method	• **Learning by Problem Solving** • **Experiential Learning**	**3**	

COMPETENCY BASED LEARNING DESIGN/COMPETENCY BASED POST-TEACHING REFLECTION

TEACHER – DR. SUSHMA SAHAI YEAR - 2026 SEMESTER - SIX DEPARTMENT - GEOGRAPHY

PAPER – CC13-6-TH- SOIL AND BIOGEOGRAPHY

Topic/Unit	Competency-Based Expected Learning Outcome (Knowledge, Skill Value, Attitude)	Assessment	Brief Description of Strategies, Aids (if any), Evaluation process	Hours Allotted	Evaluated Outcome/ Post-Teaching Reflections
6.Concepts of biosphere, ecosystem, biome, ecotone, community and ecology	**Knowledge:** Define and explain core ecological concepts; distinguish among biosphere, ecosystem, biome, community, ecotone and ecology with suitable examples. **Skill:** Prepare labelled diagrams and concept maps and use them to interpret ecological phenomena at regional and global scales. **Value/Attitude:** Foster ecological sensitivity and an understanding of the interdependence between biotic and abiotic components	Classroom interaction and concept-mapping exercise	Interactive lecture using PPTs, schematic diagrams, short video clips; think–pair–share for concept differentiation;	5	**Outcomes attained:** Students successfully differentiated the concepts of biosphere, ecosystem, biome, ecotone, community and ecology, and demonstrated conceptual understanding through diagrams and concept maps. **Challenges Identified:** Some students experienced difficulty distinguishing between closely related ecological concepts and applying them to real-world examples. **Improvements required:** Greater use of field-based illustrations and local case studies. **Alignment with POs, PSOs, COs:** PO 1 - Reflect critically upon

					the scope and evolution of the diverse discipline of Geography. PO 2 -Recognize, synthesize and evaluate diverse sources of knowledge, arguments and approaches pertinent to exploring human-environment problems. PO 4 - Appreciate and reflect critically on the importance of holistic and interpretative human-environment perspectives. PSO 2- Knowledge of geographic principles or the fundamental concepts of Geography. PSO 3 - Analyze the Earth as an integrated human-environment system by examining dynamic flows, interactions and exchanges at different spatial and temporal scales. CO – Understand varied ecosystems and classify them.
7. Concepts of trophic structure, food chain and food web. Energy flow in ecosystems	**Knowledge:** Explain trophic levels, ecological pyramids, and principles of energy flow (10% law). **Skill:** Draw and interpret food chains, food webs, and energy flow diagrams. **Value/Attitude**: Cultivate environmental sensitivity, ethical awareness, and an informed respect for	Problem-solving questions, class discussion	PPT diagrams, case-based examples (grassland, pond); peer explanation	5	**Outcomes attained:** • Students were able to explain trophic levels, food chains, food webs and energy flow in ecosystems. • Most learners accurately interpreted ecological relationships using diagrams

	the interdependence and sustainability of natural systems.				and case-based examples. **Challenges Identified:** A few students found it difficult to differentiate among ecological pyramids and apply the 10% law in complex ecosystem examples. **Improvements required:** More diagram-based exercises and ecosystem-specific case studies may be incorporated. **Alignment with POs, PSOs, COs:** PO 2 -Recognize, synthesize and evaluate diverse sources of knowledge, arguments and approaches pertinent to exploring human-environment problems. PO 4 - Appreciate and reflect critically on the importance of holistic and interpretative human-environment perspectives. PO 5- Identify and address geographical questions using creativity and critical thought in diverse settings PSO 3 - Analyze the Earth as an integrated human-environment system by examining dynamic flows,

					interactions and exchanges at different spatial and temporal scales. PSO 4- Understanding of how the physical environment, human societies and local and/or global economic systems are integrated to the principles of sustainable development. PSO 5- Understanding of various theoretical and methodological approaches to both physical and human geography. CO – Understand varied ecosystems and recognize ecological interrelationships.
8. Classification of world biomes (after Whittaker). Geographical extent and characteristics of tropical rain forest, savanna, hot desert, taiga, and coral reef biomes.	**Knowledge:** Describe Whittaker's biome classification and characteristics of major world biomes. **Skill:** Analyze climatic graphs, interpret biome maps, and compare biomes in terms of vegetation and climate. **Value/Attitude:** Foster appreciation for global biodiversity and conservation-oriented thinking	Paper presentations	Integration of world maps, climate graphs, and PPT visuals, followed by group-wise comparative study of biomes.	7	**Outcomes attained:** Students demonstrated a clear understanding of Whittaker's biome classification and successfully compared major world biomes based on climate, vegetation and biodiversity characteristics. **Challenges Identified:** Some students required additional support in correlating climatic parameters with biome distribution and characteristics.

					Improvements required: Increased use of thematic maps, climate graphs and comparative exercises would strengthen analytical skills. **Alignment with POs, PSOs, COs:** PO 2 -Recognize, synthesize and evaluate diverse sources of knowledge, arguments and approaches pertinent to exploring human-environment problems. PO 4 - Appreciate and reflect critically on the importance of holistic and interpretative human-environment perspectives. PSO 2- Knowledge of geographic principles or the fundamental concepts of Geography. PSO 3- Analyse the Earth as an integrated human-environment system by examining dynamic flows, interactions and exchanges at different spatial and temporal scales. CO – Understand varied ecosystems, classify biomes and recognize biodiversity patterns.

9.Bio- geochemical cycles with special reference to carbon dioxide and nitrogen	**Knowledge:** Explain stages, reservoirs, and processes of carbon and nitrogen cycles. **Skill:** Draw flow diagrams and relate cycles to climate change, soil fertility, and human intervention. **Value/Attitude:** Develop responsibility towards sustainable resource use and environmental protection.	Tutorials based on previous years university examinations	Formative and summative assessment through diagram-based questions and short-answer tests	3	**Outcomes attained:** • Students accurately illustrated carbon and nitrogen cycles and explained their environmental significance. • Tutorials and assessments revealed a good understanding of nutrient cycling, climate change linkages, and human impacts on ecosystem processes. **Challenges Identified:** Some students required additional guidance in understanding the interactions between different nutrient reservoirs and the role of human activities in altering natural biogeochemical cycles. Drawing complete and accurate flow diagrams remained challenging for a few learners. **Improvements Required:** Use animated videos, interactive flowcharts, and contemporary case studies on climate change and nutrient pollution to reinforce conceptual understanding. **Alignment with POs, PSOs, COs:** PO 2 -Recognize, synthesize and evaluate diverse sources of knowledge, arguments and approaches pertinent to

					exploring human-environment problems. PO 4 - Appreciate and reflect critically on the importance of holistic and interpretative human-environment perspectives. PSO 3- Analyse the Earth as an integrated human-environment system by examining dynamic flows, interactions and exchanges at different spatial and temporal scales. PSO 4- Understanding of how the physical environment, human societies and local and/or global economic systems are integrated to the principles of sustainable development. PSO 5- Understanding of various theoretical and methodological approaches to both physical and human geography. CO- Recognize the significance of biogeochemical cycles and biodiversity.
10.Deforestation: Causes, consequences and management	**Knowledge:** Identify causes and ecological, social, and economic impacts of deforestation.	Case-study analysis, group discussion	Fish- bowl Technique to facilitate interactive learning and critical analysis	4	**Outcomes attained:** • Students critically analysed causes and impacts of

	Skill: Analyze case studies and propose management and conservation strategies. **Value/Attitude:** Cultivate conservation ethics, civic responsibility, and sustainable development outlook.				deforestation through case studies and suggested feasible conservation measures. • Discussions reflected enhanced environmental awareness and an appreciation of sustainable resource management practices. **Challenges Identified:** A few students found it difficult to critically evaluate the socio-economic dimensions of deforestation and compare conservation strategies across different geographical regions. Greater integration of case study evidence was required during discussions. **Improvements Required:** Introduce more region-specific case studies, documentary-based learning, and project-based activities to strengthen critical thinking. **Alignment with POs, PSOs, COs:** PO 2 -Recognize, synthesize and evaluate diverse sources of knowledge, arguments and approaches pertinent to exploring human-environment problems. PO 4 - Appreciate and reflect critically on the importance

					of holistic and interpretative human-environment perspectives. PSO 3- Analyse the Earth as an integrated human-environment system by examining dynamic flows, interactions and exchanges at different spatial and temporal scales. PSO 4- Understanding of how the physical environment, human societies and local and/or global economic systems are integrated to the principles of sustainable development. CO- Comprehend the devastating impact of deforestation.
PAPER – CC13-6-LAB- SOIL AND BIOGEOGRAPHY					
3.Plant species diversity determination by matrix method	**Knowledge:** Understand concepts of species diversity, richness, and evenness. **Skill:** Collect data, prepare matrices, compute diversity indices, and interpret results. **Value/Attitude**: Encourage scientific accuracy, teamwork, and respect for biodiversity.	Continuous assessment through practical record maintenance and evaluation, mock viva voce and tutorials	Field/secondary data, worksheets, guided calculations; group work with supervision	8	**Outcome attained:** • Students successfully prepared species matrices, calculated diversity measures, and interpreted results. • Practical exercises strengthened quantitative skills and promoted scientific accuracy in biodiversity assessment.

					Challenges Identified: Some students initially faced difficulties in data tabulation and calculation of diversity measures. **Improvements required:** Additional practice with diverse datasets and guided interpretation exercises. **Alignment with POs, PSOs, COs:** PO 2- Recognize, synthesize and evaluate diverse sources of knowledge, arguments and approaches pertinent to exploring human-environment problems. PO 5- Identify and address geographical questions using creativity and critical thought in diverse settings. PSO 3- Analyze the Earth as an integrated human-environment system by examining dynamic flows, interactions and exchanges at different spatial and temporal scales. PSO 5- Understanding of various theoretical and methodological approaches to both physical and human geography. CO – Determine and analyze plant species diversity.

4.Time series analysis of biogeography data	**Knowledge:** Explain temporal variation in biogeographical and ecological data. **Skill:** Plot graphs, analyze trends, and draw logical inferences from datasets. **Value/Attitude:** Develop analytical thinking, objectivity, and data interpretation ethics.	Evaluation based on maintained practical records and tutorials	Use of sample datasets; step-by-step plotting; individual practice and feedback	7	**Outcome attained:** • Students demonstrated competence in plotting graphs, identifying temporal trends, and drawing logical inferences from datasets. • Analytical and data interpretation skills improved **Challenges Identified:** • A few students encountered challenges in interpreting complex temporal trends and graphical presentation. **Improvements required:** More hands-on practice using real-world datasets and trend-analysis exercises. **Alignment with POs, PSOs, COs:** PO 2- Recognize, synthesize and evaluate diverse sources of knowledge, arguments and approaches pertinent to exploring human-environment problems PO 5- Identify and address geographical questions using creativity and critical thought in diverse settings. PSO 3- Analyze the Earth as an integrated human-

					environment system by examining dynamic flows, interactions and exchanges at different spatial and temporal scales. PSO 5 - Understanding of various theoretical and methodological approaches to both physical and human geography CO – Develop analytical and interpretative skills in biogeographical studies.

COMPETENCY BASED LEARNING DESIGN/COMPETENCY BASED POST-TEACHING REFLECTION

YEAR - 2026 SEMESTER – VI -DEPARTMENT -GEOGRAPHY
Mrs SABIHA SETHWALA
GEOG- H-CC-14 (TH) INDIA and WEST BENGAL

Topic/Unit	Competency-Based Expected Learning Outcome (Knowledge, Skill Value, Attitude)	Assessment	Brief Description of Strategies, Aids (if any), Evaluation process	Hours Allotted	Evaluated Outcome/ Post-Teaching Reflections
UNIT II- WEST BENGAL 6.Physiographic divisions	Knowledge Able to understand the landforms on different scales Skill Able to integrate knowledge with the tectonic setting Value appreciating the diversity in topography and develop sustainable strategies for landuse Attitude develop a scientific temper to link , associate and analyse	Class tests MCQ / Objective worksheets Home assignments Exams	Lecture method Discussion method Use of PPTs Use of ICT group PPT presentations	3	1)Outcomes attained Students are now equipped with the ability to to identify the different physical units , the diversity , link it to the drainage pattern . They are now able to synthesise and develop the idea of issues related to the industrialisation in the state, for future planning 2)Challenges identified
7.Drainage system	Knowledge Able to understand the use and importance of the water resources of the state and realize the importance of its conservation	Class tests MCQ / Objective worksheets Home assignments Exams	Lecture method Discussion method Use of PPTs Use of ICT group PPT presentations	3	

	Skill equips students with ecological and community focussed skills on the use of water resources **Value** appreciating the different uses of water and develop sustainable strategies for conservation **Attitude** develop a scientific approach to the use of water resources				**3)Improvements Required** **4)Alignment with POs,PSOs and COs**
8. Pattern of industrialisation	**Knowledge** Able to understand the different factors influencing present trends in idustrialisation **Skill** Able to integrate knowledge with critical thinking skills to address the regional issues **Value** able to prepare roadmaps for economic growth **Attitude** develop a scientific approach and a community based approach for policies	**Class tests** **MCQ / Objective worksheets** **Home assignments** **Exams**	**Lecture method** **Discussion method** **Use of PPTs** **Use of ICT** **group PPT presentations**	**3**	
9.Population Growth	**Knowledge** Able to understand the trends in growth	**Class tests** **MCQ / Objective worksheets** **Home assignments**	**Lecture method** **Discussion method** **Use of PPTs** **Use of ICT**	**3**	

	Skill Able to integrate knowledge with critical thinking skills to address the population issues **Value helps in strategic planning and resource management** **Attitude develops a behavioural approach to develop policies**	**Exams**	**group PPT presentations**		

COMPETENCY BASED LEARNING DESIGN/COMPETENCY BASED POST-TEACHING REFLECTION

YEAR - 2026 SEMESTER - ___VI__________ DEPARTMENT -____Geography__________

Faculty-Dr Suman Chatterjee

Topic/Unit	Competency-Based Expected Learning Outcome (Knowledge, Skill Value, Attitude)	Assessment	Brief Description of Strategies, Aids (if any), Evaluation process	Number of Classes	Evaluated Outcome/ Post-Teaching Reflections
6. GIS data structures types: Spatial and non-spatial; Raster and Vector	**Knowledge:** Explain concepts of spatial and non-spatial data; distinguish raster and vector data models with examples. **Skill:** Interpret GIS maps and datasets by identifying appropriate data structures. **Value & Attitude:** Develop logical thinking and appreciation of structured data organization in GIS.	Formative: Group Discussions and Viva, short-answer questions, diagram-based questions Summative: Written test	**Strategies:** Short lecture → live demo (QGIS/Saga GIS/ Google earth) → guided hands-on lab → pair discussion. **Aids:** Slides, sample datasets (shapefiles, GeoTIFF), QGIS, cheat-sheet of characteristics. **Evaluation process:** rubric scoring practical (correct structure, attribute linkage, file integrity), quiz scores, short report grading.	**5 Classes**	Most students successfully differentiated raster and vector data models and identified spatial and non-spatial data correctly. Practical demonstrations using QGIS improved conceptual understanding. A few students initially faced difficulty relating attribute data to spatial features, which was clarified through additional examples. More practice with real-world datasets is recommended.
7. Principles of preparing attribute tables, data	**Knowledge:** Describe structure of attribute tables, field types, joins, and basic query principles. **Skill:** Analyze attribute tables and logically frame attribute and spatial	Formative: Group Discussions and Viva, Descriptive questions, problem-solving	**Strategies:** Demonstration of attribute operations → stepwise guided labs → small group tasks to solve a query problem → individual assignment.	**6 classes**	Students understood the structure of attribute tables and basic query operations. The majority could perform simple attribute queries

manipulation, and query	queries. **Value & Attitude:** Emphasize accuracy, data consistency, and analytical thinking.	questions, short notes Summative: Written test	**Aids:** Sample tables, QGIS attribute table tools, SQL editor, field calculator examples, rubrics. **Evaluation process:** checklist for required steps, accuracy of query results, clarity of workflow notes.		independently, while complex logical expressions required additional guidance. Group activities enhanced collaborative learning. Future sessions should include more exercises on SQL expressions and field calculations.
8. Principles and significance of buffer preparation	**Knowledge:** Explain buffer concept, types of buffers, and proximity analysis. **Skill:** Interpret buffer maps and justify buffer distance selection in planning problems. **Value & Attitude:** Understand responsible spatial decision-making based on proximity.	Formative: Short-answer and diagram-based questions. Summative: Written test	**Strategies:** Brief lecture on theory → live demo of buffer creation (including CRS considerations) → hands-on timed lab. **Aids:** QGIS, sample vector layers (roads, rivers), stepwise guide. **Evaluation process:** rubric (correct buffer geometry, CRS handling, interpretation quality).	**2 Classes**	Students demonstrated a clear understanding of the concept and applications of buffer analysis. Most generated correct buffer zones using QGIS. Some students initially selected inappropriate coordinate reference systems (CRS), affecting buffer accuracy; this issue was addressed during practical discussions. Additional exercises involving real planning scenarios would further strengthen learning.
9. Principles and significance of overlay analysis	**Knowledge:** Describe overlay analysis, types (intersect, union, erase), and applications. **Skill:** Conceptually analyze multi-layer spatial problems and interpret overlay	Formative: Group Discussions and Viva, Long-answer questions, diagram	**Strategies:** Lecture on overlay theory and topology → demo of common overlays → progressive lab: simple overlays → complex multi-layer overlay	**4 Classes**	Students successfully understood the principles of overlay analysis and interpreted outputs of intersect and union

	outputs. **Value & Attitude:** Develop integrative and critical thinking in spatial analysis.	interpretation Summative: Written test	project. **Aids:** Sample layers (land use, slope, protected areas), topology tools, QGIS. **Evaluation process:** rubric covering correctness of overlay steps, topology handling, interpretation, map quality.		operations. Hands-on exercises improved confidence in combining multiple spatial layers. A few students encountered topology-related issues, highlighting the need for further practice in data preparation before overlay operations. Overall learning outcomes were satisfactorily achieved.
Unit III — 10. Global Navigation Satellite System (GNSS): Principles of GNSS positioning and waypoint collection	**Knowledge:** Explain GNSS components, satellite geometry, trilateration, and factors affecting accuracy. **Skill:** Conceptually understand waypoint collection and positioning principles. **Value & Attitude:** Appreciate technological importance of GNSS in mapping and navigation.	Formative: Descriptive and numerical questions, Group Discussions and Viva Summative: Written test	**Strategies:** Classroom lecture on GNSS theory → demonstration of receivers and apps → guided field exercise (paired students) → import and QA in lab. **Aids:** Handheld GPS units / smartphone GNSS apps, sample waypoints, QGIS, field data sheet template. **Evaluation process:** assessment of raw waypoint data (completeness, metadata), correctness of import, accuracy analysis and reflective write-up graded via rubric.	**5 Classes**	Students understood the principles of GNSS positioning, satellite geometry, and waypoint collection. Field demonstrations increased engagement and helped students appreciate practical applications. Minor inaccuracies in waypoint collection due to signal limitations were discussed as learning opportunities. Future sessions should allocate additional field time to compare positional accuracy under different environmental conditions.

COMPETENCY BASED LEARNING DESIGN/COMPETENCY BASED POST-TEACHING REFLECTION

YEAR - 2026 SEMESTER - ___VI__________ DEPARTMENT -____Geography__________

Faculty-Dr Suman Chatterjee

Topic/Unit	Competency-Based Expected Learning Outcome (Knowledge, Skill Value, Attitude)	Assessment	Brief Description of Strategies, Aids (if any), Evaluation process	Number of Classes	Evaluated Outcome/ Post-Teaching Reflections
1. Image georeferencing and enhancement; preparation of spectral reflectance libraries (IRS L3 / Landsat OLI)	**Knowledge:** Image geometry, GCPs, reflectance and spectral signatures. **Skill:** Georeference images, enhance imagery, extract spectral signatures and build LULC spectral libraries. **Value & Attitude:** Care for metadata and reproducibility.	**Formative:** in-class exercises, GCP checking, quizzes. **Summative:** practical file submission with spectral library and brief report.	**Strategies:** Demo + guided hands-on practice. **Aids:** QGIS Google Earth, sample satellite data, metadata files. **Evaluation:** Accuracy of outputs, documentation quality.	(8 classes)	Most students successfully georeferenced images, enhanced imagery, and prepared spectral libraries. Minor difficulties with GCP selection and spectral interpretation were addressed through additional practice
2. Supervised image classification, class editing, and post-classification analysis	**Knowledge:** Supervised classification concepts and accuracy assessment. **Skill:** Create training samples, run classifiers, edit classes, assess accuracy. **Value & Attitude:** Analytical and unbiased classification approach.	**Formative:** training-sample exercises, classifier comparison tasks. **Summative:** classified map with accuracy assessment and short interpretation.	**Strategies:** Concept recap + stepwise practicals. **Aids:** GIS/RS software, reference data. **Evaluation:** Classification accuracy, map quality, explanation.	(8 classes)	Students successfully completed supervised classification and basic accuracy assessment. Additional practice is needed in training sample selection and interpreting accuracy results.

3. Waypoint collection from GNSS receivers, exporting to GIS database and plotting	**Knowledge:** GNSS data formats and positioning basics. **Skill:** Collect waypoints, import/export to GIS, plot and interpret data. **Value & Attitude:** Accurate and ethical data collection.	**Formative:** supervised collection tasks, oral questions. **Summative:** GIS layer submission with plotted map and brief note.	**Strategies:** Demo + hands-on GNSS and GIS workflow. **Aids:** GNSS receiver/mobile app, QGIS. **Evaluation:** Data completeness, CRS handling, map output.	(6 classes)	Students effectively collected and plotted GNSS waypoints in GIS. Minor issues with CRS and metadata were corrected, and further field practice is recommended.