Anekant Education Society's

Tuljaram Chaturchand College, Baramati

(Autonomous)

Four Year B.A. Degree Program in Geography

(Faculty of Science & Technology)

CBCS Syllabus

FYBA (Geography) Semester -I

For Department of Geography

Tuljaram Chaturchand College, Baramati

Choice Based Credit System Syllabus (2023 Pattern)

(As Per NEP 2020)

To be implemented from Academic Year 2023-2024

Title of the Programme: FYBA (Geography)

Preamble

AES's Tuljaram Chaturchand College has made the decision to change the syllabus of across various faculties from June, 2023 by incorporating the guidelines and provisions outlined in the National Education Policy (NEP), 2020. The NEP envisions making education more holistic and effective and to lay emphasis on the integration of general (academic) education, vocational education and experiential learning. The NEP introduces holistic and multidisciplinary education that would help to develop intellectual, scientific, social, physical, emotional, ethical and moral capacities of the students. The NEP 2020 envisages flexible curricular structures and learning based outcome approach for the development of the students. By establishing a nationally accepted and internationally comparable credit structure and courses framework, the NEP 2020 aims to promote educational excellence, facilitate seamless academic mobility, and enhance the global competitiveness of Indian students. It fosters a system where educational achievements can be recognized and valued not only within the country but also in the international arena, expanding opportunities and opening doors for students to pursue their aspirations on a global scale.

In response to the rapid advancements in science and technology and the evolving approaches in various domains of Geography and related subjects, the Board of Studies in Geography at Tuljaram Chaturchand College, Baramati - Pune, has developed the curriculum for the first semester of FYBA Geography, which goes beyond traditional academic boundaries. The syllabus is aligned with the NEP 2020 guidelines to ensure that students receive an education that prepares them for the challenges and opportunities of the 21st century. This syllabus has been designed under the framework of the Choice Based Credit System (CBCS), taking into consideration the guidelines set forth by the National Education Policy (NEP) 2020, LOCF (UGC), NCrF, NHEQF, Prof. R.D. Kulkarni's Report, Government of Maharashtra's General Resolution dated 20th April and 16th May 2023, and the Circular issued by SPPU, Pune on 31st May 2023.

A Geography degree equips students with the knowledge and skills necessary for a diverse range of fulfilling career paths. Graduates in Geography find opportunities in various fields, including urban planning, GIS analysis, disaster preparedness, teaching, environmental science, remote sensing analysis, transportation planning, demography, hydrology, and many other domains. Throughout their three-year degree program, students explore the spatial

organization of both natural and human phenomena across different scales, from local to global. They learn to identify and analyze features on the Earth's surface, understand their spatial patterns, and compare similarities and differences between different places. The curriculum also delves into the intricate relationship between humans and the environment, examining how physical and cultural landscapes evolve over time. Students specializing in physical geography gain an understanding of the processes that shape Earth's climate, create landforms, and influence the distribution of plant and animal life. By acquiring these comprehensive skills and knowledge, graduates are well-prepared to embark on rewarding careers that contribute to a better understanding of our world and address the challenges of our ever-changing planet.

Overall, revising the Geography syllabus in accordance with the NEP 2020 ensures that students receive an education that is relevant, comprehensive, and prepares them to navigate the dynamic and interconnected world of today. It equips them with the knowledge, skills, and competencies needed to contribute meaningfully to society and pursue their academic and professional goals in a rapidly changing global landscape.

Programme Specific Outcomes (PSOs)

PSO1. Problem Analysis: Demonstrate the ability to analyze physical and cultural problems in both rural and urban environments and propose effective solutions.

PSO2. Socio-economic Survey Project: Possess the skills necessary to conduct socio-economic survey projects, enabling them to assess the development status of specific social groups or sections of society.

PSO3. Individual and Teamwork: Effectively collaborate as individuals and as members or leaders in diverse teams and multidisciplinary settings.

PSO4. Application of Modern Instruments: Apply various modern instruments for data collection and field surveys.

PSO5. GIS and Geographical Map Making: Learn to utilize GIS and modern techniques for creating geographically-based maps.

PSO6. Critical Thinking: Demonstrate the ability to understand and address critical issues in physical and cultural environments.

PSO7. Development of Observation Skills: Through field experiences, students will develop strong observational skills and the ability to identify socio-environmental problems in localities.

PSO8. Human perception and behaviour: Learning human perception and behaviour to acquire the geographical knowledge over time, is essential to improve decision making process.

PSO9. Effective Citizenship: Exhibit empathetic social concern, an equity-centered approach to national development, and actively engage in civic life through volunteering.

PSO10. Management Skills: Understand and apply management principles to their work, functioning effectively as individuals and as members or leaders in diverse, multidisciplinary teams.

PSO.11 Ethics: Recognize different value systems, including their own, understand the moral dimensions of their decisions, and take responsibility for their actions.

PSO12. Environmental Ethics and Sustainability: Comprehend the societal and environmental impact of their knowledge and exhibit an understanding of the need for sustainable development.

PSO13. Identification of critical problems and issues: Detection and identification of the critical problems and spatial issues are essential for sustainable development.

Anekant Education Society's

Tuljaram Chaturchand College, Baramati

(Autonomous)

Board of Studies (BOS) in Geography

From 2022-23 to 2024-25

Sr. No.	Name	Designation
1.	**Dr. Arun S. Magar**	Chairman
2.	**Dr. Asaram S. Jadhav**	Member
3.	**Mr. Vinayak D. Chavan**	Member
4.	**Mr. Sachin C. Memane**	Member
5.	**Ms. Akshta S. Raje**	Member
6.	**Dr. Santosh Lagad**	Vice-Chancellor Nominee
7.	**Dr. Pravin Kokane**	Expert from other University
8.	**Dr. T. P. Shinde**	Expert from other University
9.	**Dr. Babaji Maskare**	Industry Expert
10.	**Mr. Ganesh Ghanawat**	Meritorious Alumni
11.	**Ms. Kadam Radhika**	Student Representative
12.	**Ms. Harshada Saste**	Student Representative

Credit Distribution Structure for F.Y.B.A.-2023-2024 (Geography)

Level	Semester	Major		Minor	OE	VSC, SEC, (VSEC)	AEC, VEC, IKS	OJT, FP, CEP, CC, RP	Cum. Cr/Sem	Degree/ Cum.Cr.
		Mandatory	Electives							
4.5										UG Certificate 44 credits
	I	GEO-101-MJM: Physical Geography (4 credits) GEO-102-MJM:Practical in Physical Geography (2 credits)	--	--	GEO-116-OE: Principles of Remote Sensing-I (2 credits) GEO-117-OE:Principles of Geoinformatics -I (2 credits)	GEO-121-VSC: Land Surveying & Measurement (2 credits) GEO-126-SEC: Fundamentals of Google Earth (2 credits)	ENG-131-AEC Functional English-I (2 credit) GEO-135-VEC: Environmental Pollution and Value Education (2 credits) GEO-137-IKS: Ancient Indian Geographical Thoughts (2 credits)	CC1 (2 credit)	22	
	II	GEO-151-MJM: Human Geography (4 credits) GEO-152-MJM: Practical in Human Geography (2 credits)	--	GEO-161-MN: Fundamentals of Geography (2 credits)	GEO-166-OE: Principles of Remote Sensing-II (2 credits) GEO-167-OE:Principles of Geoinformatics -II (2 credits)	GEO-171-VSC: Map Making in GIS (2 credits) GEO-176-SEC Fundamentals of Google Map (2 credits)	ENG-181-AEC Functional English-II (2 credit) GEO-185-VEC: Save The Earth (2 credits)	CC2 (2 credit)	22	
	Cum Cr.	**12**	--	2	8	8	10	4	44	

Course Structure for F.Y.B.A. Geography (2023 Pattern)

Sem	Course Type	Course Code	Course Name	Theory / Practical	Credits
I	Major Mandatory	GEO-101-MJM	Physical Geography	Theory	04
	Major Mandatory	GEO-102-MJM	Practical in Physical Geography	Practical	02
	Open Elective (OE)	GEO-116-OE	Principles of Remote Sensing-I	Theory	02
	Open Elective (OE)	GEO-117-OE	Principles of Geoinformatics-I	Theory	02
	Vocational Skill Course (VSC)	GEO-121-VSC	Land Surveying and Measurement	Theory	02
	Skill Enhancement Course (SEC)	GEO-126-SEC	Fundamentals of Google Earth	Theory	02
	Ability Enhancement Course (AEC)	ENG-131-AEC	Functional English-I	Theory	02
	Value Education Course (VEC)	GEO-135-VEC	Environmental Pollution and Value Education	Theory	02
	Indian Knowledge System (IKS)	GEO-137-IKS	Ancient Indian Geographical Thoughts	Theory	02
	Co-curricular Course (CC)	--	To be selected from the Basket	Theory	02
				Total Credits Semester-I	**22**
II	Major Mandatory	GEO-151-MJM	Human Geography	Theory	04
	Major Mandatory	GEO-152-MJM	Practical in Human Geography	Practical	02
	Minor	GEO-161-MN	Fundamentals of Geography	Theory	02
	Open Elective (OE)	GEO-166-OE	Principles of Remote Sensing-II	Theory	02
	Open Elective (OE)	GEO-167-OE	Principles of Geoinformatics-II	Theory	02
	Vocational Skill Course (VSC)	GEO-171-VSC	Map Making in GIS	Theory	02
	Skill Enhancement Course (SEC)	GEO-176-SEC	Fundamentals of Google Map	Theory	02
	Ability Enhancement Course (AEC)	ENG-181-AEC	Functional English-II	Theory	02
	Value Education Course (VEC)	GEO-185-VEC	Save The Earth	Theory	02
	Co-curricular Course (CC)	--	To be selected from the Basket	Theory	02
				Total Credits Semester II	22
				Cumulative Credits Semester I and II	**44**

CBCS Syllabus as per NEP 2020 for F.Y.B.A Geography (2023 Pattern)

Name of the Programme : B.A. Geography
Programme Code : UAGEO
Class : F.Y.B.A.
Semester I
Course Type : Major Mandatory
Course Code : GEO-101-MJM
Course Title : Physical Geography
No. of Credits 04
No. of Teaching Hours 60

Course Objectives:

1. To describe the components of the Earth System.
2. To understand the Plate Tectonic Theory and associated features.
3. To study distribution of major landforms of the Earth.
4. To know the process of weathering and soil formation process.
5. To understand the role of hydrological cycle in the earth system.
6. To explain the factors influencing the formation of ocean currents.
7. To identify and study local landforms and weather features.

Course Outcomes:

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

CO1. Identify and describe the characteristics and functions of each component within the Earth System.

CO2. Explain the processes and features associated with plate tectonics, such as divergent boundaries, convergent boundaries, transform boundaries, and associated geological phenomena

CO3. Identify and classify major landforms on Earth, including mountains, plains, plateaus, valleys, and deserts.

CO4. Explain the stages and factors involved in soil formation, including parent material, climate, organisms, topography, and time.

CO5. Understand the role of the hydrological cycle in redistributing water on Earth and

maintaining global water balance.

CO6. Analyze the role of ocean currents in global climate patterns, marine ecosystems, and the transport of heat around the Earth.

CO7. Observe and analyze local weather features, including cloud formations, wind patterns, and precipitation, and understand their causes and implications.

Topics and Learning Points

UNIT 1: Introduction to Physical Geography	**Teaching Hours**
1.1 Definition, nature and scope	**12**
1.2 Components of Earth System	
1.3 Branches of Physical geography	
1.4 Importance of Physical Geography	
UNIT 2: Lithosphere	**12**
2.1 Internal structure of the Earth	
2.2 Plate Tectonic Theory	
2.3 Major landforms	
2.4 Weathering and soil formation	
UNIT 3: Atmosphere	**12**
3.1 Structure and composition of atmosphere	
3.2 Heat balance and global wind circulation pattern	
3.3 Tropical cyclones	
3.4 Monsoon	
UNIT 4: Hydrosphere	**12**
4.1 Hydrological cycle	
4.2 Ocean bottom relief features	
4.3 Tides and ocean currents	
4.4 Major oceans and seas	
UNIT 5: Applicability of Physical Geography	**12**
5.1 Urban planning and landuse	
5.2 Natural hazard assessment and mitigation	
5.3 Water resource management	
5.4 Tourism and recreation planning	

References:

1. Clyton K., (1986), Earth Crust, AdusBook , London.
2. Davis W. M., (1909), Geographical Essay, Ginnia Co.
3. Dayal P., (1996), Text Book of Geomorphology, Shukla Book Depot, Patna.
4. Kale V.S. and Gupta A., (2015), Introduction of Geomorphology, University Press, PVT Kolkata.
5. Lal, D. S.(1998): 'Climatology', Chaitanya Publishing House,Allahabad
6. Kale V.S. and Gupta A., (2001), Elements of Geomorphology, Oxford Univ. Press.
7. Monkhouse, (1951), Principle of Physical Geography, McGraw Hill Pub – New York.
8. Pitty A. F., (1974), Introduction to Geomorphology, Methuen London.
9. Singh Savindra, (2000), Physical Geography,PrayagPustakBhavan, 20-A, University Road, Allahabad – 211002.
10. Steers J. A., (1964), The Unstable Earth Some Recent Views in Geography, Kalyani Publishers, New Delhi.
11. Swaroop Shanti, (2006), Physical Geography, King Books, NaiSarak, Delhi –110006.
12. Wooldridge S. W. and Morgan R. S., (1959), The Physical Basis of Geography and Outline of Geomorphology, Longman Green and Co. London.
13. Chaudhari J. L (2013) Physical Geography

Mapping of Program Outcomes with Course Outcomes

Class: FYBA **Subject:** Geography

Course: Physical Geography **Course Code:** GEO-101-MJM

Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	1	2	2	2	1	1	2
CO2	3	3	1	2	2	3	2	2	1	2
CO3	3	2	1	2	2	2	3	2	1	2
CO4	3	2	1	2	2	3	2	2	1	2
CO5	3	3	1	2	2	3	3	2	1	2
CO6	3	3	1	2	2	3	3	2	1	2
CO7	3	3	1	2	2	3	3	2	1	3

PO1: Comprehensive Knowledge and Understanding

- **CO1** through **CO7** all require a solid understanding of Earth's systems, including the characteristics of different components (CO1), the processes of plate tectonics (CO2), landforms classification (CO3), soil formation (CO4), hydrological cycle (CO5), ocean currents (CO6), and weather patterns (CO7). A deep knowledge base is necessary to understand how each component contributes to Earth system science.

PO2: Application of Knowledge and Skills

- **CO1**, **CO2**, **CO4**, **CO5**, **CO6**, **CO7** involve applying theoretical knowledge in real-world contexts. For example, **CO1** requires applying knowledge of Earth components to understand their roles in the system, while **CO2** demands applying plate tectonics concepts to understand geological phenomena. Similarly, **CO4**, **CO5**, and **CO6** involve

applying principles to analyze environmental processes, while **CO7** applies observational data to understand local weather phenomena.

PO3: Constitutional, Humanistic, Ethical, and Moral Values

- All COs indirectly support ethical and moral values, particularly when considering environmental sustainability. For instance, **CO5** (hydrological cycle) and **CO6** (ocean currents) promote awareness of responsible use of natural resources. The analysis and management of Earth's resources through these concepts involve ethical considerations in relation to conservation and environmental stewardship.

PO4: Employability, Job-Ready Skills, and Entrepreneurship

- **CO2** (plate tectonics), **CO3** (landforms), **CO4** (soil formation), **CO5** (hydrological cycle), **CO6** (ocean currents), and **CO7** (weather patterns) enhance employability by providing skills useful in geoscience, geography, urban planning, environmental science, and meteorology. These COs help students develop specialized skills in these fields that are increasingly in demand as they prepare for careers in environmental analysis, resource management, and related industries.

PO5: Autonomy, Responsibility, and Accountability

- All COs require students to demonstrate autonomy in studying Earth systems. For instance, **CO1** and **CO2** demand independent analysis of natural processes and phenomena. Each CO emphasizes responsibility in the analysis and interpretation of data, which is key for safety and accuracy in professional practice, particularly in fields like geosciences and environmental sciences.

PO6: Research Skills

- **CO1**, **CO2**, **CO4**, **CO5**, **CO6**, **CO7** all foster research skills by requiring students to observe, hypothesize, analyze, and interpret data. For example, **CO4** and **CO6** involve designing and conducting research related to soil and ocean studies. Students must formulate research questions, gather and analyze data, and draw conclusions based on their findings.

PO7: Critical and Creative Thinking

- **CO3**, **CO5**, **CO6**, and **CO7** specifically require critical and creative thinking. **CO3** involves analyzing landforms through innovative thinking, while **CO5** and **CO6** require evaluating hydrological and oceanic processes to make predictions. **CO7** demands critical thinking to interpret local weather patterns and forecast implications.

PO8: Problem-solving Abilities

- **CO2**, **CO5**, **CO6**, and **CO7** require problem-solving skills. **CO2** (plate tectonics) involves solving geological problems related to tectonic processes. **CO5** and **CO6** involve solving complex global issues related to water distribution and climate patterns. **CO7** requires solving issues related to weather phenomena and interpreting their effects.

PO9: Collaboration and Teamwork

- While not explicitly stated, **CO1** through **CO7** encourage collaboration and teamwork, particularly in fieldwork, group projects, and research tasks. Students are often required to collaborate on complex environmental and geological studies, working with others to collect data, analyze findings, and develop solutions.

PO10: Digital and Technological Skills

- **CO1**, **CO5**, **CO6**, and **CO7** involve the use of technological tools. For example, **CO1** requires GIS or similar software to map Earth components, while **CO5** and **CO6** require the use of digital tools to analyze data related to the hydrological cycle and ocean currents. **CO7** involves analyzing weather data using meteorological tools and software, emphasizing the importance of technological proficiency.

CBCS Syllabus as per NEP 2020 for F.Y.B.A Geography (2023 Pattern)

Name of the Programme : B.A. Geography
Programme Code : UAGEO
Class : F.Y.B.A.
Semester I
Course Type : Major Mandatory
Course Code : GEO-102-MJM
Course Title : Practical in Physical Geography
No. of Credits 02
No. of Teaching Hours 60

Course Objectives:

1. To describe the components of the Earth System.
2. To understand the Plate Tectonic Theory and associated features.
3. To study distribution of major landforms of the Earth.
4. To know the process of weathering and soil formation process.
5. To understand the role of hydrological cycle in the earth system.
6. To explain the factors influencing the formation of ocean currents.
7. To identify and study local landforms and weather features.

Course Outcomes:

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

CO1. Identify and describe the characteristics and functions of each component within the Earth System.

CO2. Explain the processes and features associated with plate tectonics, such as divergent boundaries, convergent boundaries, transform boundaries, and associated geological phenomena

CO3. Identify and classify major landforms on Earth, including mountains, plains, plateaus, valleys, and deserts.

CO4. Explain the stages and factors involved in soil formation, including parent material, climate, organisms, topography, and time.

CO5. Understand the role of the hydrological cycle in redistributing water on Earth and

maintaining global water balance.

CO6. Analyze the role of ocean currents in global climate patterns, marine ecosystems, and the transport of heat around the Earth.

CO7. Observe and analyze local weather features, including cloud formations, wind patterns, and precipitation, and understand their causes and implications.

Topics and Learning Points

UNIT 1: Map reading and Interpretation **Teaching Hours**

1.1 Introduction to Topographical Maps **20**

1.2 Identification and drawing of relief features from the toposheet

1.3 Measurement of area, distance, direction and elevation

1.4 Interpretation of topographical maps

UNIT 2: Weather instruments and measurement **20**

2.1 Handling and operation of weather instruments

2.2 Measurement of temperature, atmospheric pressure, humidity, and wind speed

2.3 Recording and interpretation of weather data

UNIT 3: Field visit and study of landforms and geomorphic processes **20**

4.1 Field visit to observe and study landforms

4.2 Identification and description of geomorphic processes that have shaped the landscape

4.3 Writing a field visit report

References:

1. Clyton K., (1986), Earth Crust, AdusBook , London.
2. Davis W. M., (1909), Geographical Essay, Ginnia Co.
3. Dayal P., (1996), Text Book of Geomorphology, Shukla Book Depot, Patna.
4. Kale V.S. and Gupta A., (2015), Introduction of Geomorphology, University Press, PVT Kolkata.
5. Lal, D. S.(1998): 'Climatology', Chaitanya Publishing House, Allahabad
6. Kale V.S. and Gupta A., (2001), Elements of Geomorphology, Oxford Univ. Press.
7. Monkhouse, (1951), Principle of Physical Geography, McGraw Hill Pub – New York.

8. Pitty A. F., (1974), Introduction to Geomorphology, Methuen London.
9. Singh Savindra, (2000), Physical Geography,Prayag Pustak Bhavan, 20-A, University Road, Allahabad – 211002.
10. Steers J. A., (1964), The Unstable Earth Some Recent Views in Geography, Kalyani Publishers, New Delhi.
11. Swaroop Shanti, (2006), Physical Geography, King Books, Nai Sarak, Delhi –110006.
12. Wooldridge S. W. and Morgan R. S., (1959), The Physical Basis of Geography and Outline of Geomorphology, Longman Green and Co. London.
13. Chaudhari J. L (2013) Physical Geography

Mapping of Program Outcomes with Course Outcomes

Class: FYBA **Subject:** Geography

Course: Practical In Physical Geography **Course Code:** GEO-102-MJM

Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	1	2	2	2	1	1	2
CO2	3	3	1	2	2	3	2	2	1	2
CO3	3	2	1	2	2	2	3	2	1	2
CO4	3	2	1	2	2	3	2	2	1	2
CO5	3	3	1	2	2	3	3	2	1	2
CO6	3	3	1	2	2	3	3	2	1	2
CO7	3	3	1	2	2	3	3	2	1	3

PO1: Comprehensive Knowledge and Understanding

CO1, CO2, CO3, CO4, CO5, CO6, and CO7 all require a deep understanding of Earth systems. **CO1** covers the Earth's components, while **CO2** explains plate tectonics and geological processes. **CO3** focuses on landforms, **CO4** on soil formation, **CO5** on the hydrological cycle, **CO6** on ocean currents, and **CO7** on weather patterns, all of which demand a comprehensive grasp of Earth's physical and environmental sciences.

PO2: Application of Knowledge and Skills

CO1 to CO7 align with **PO2** as they require applying knowledge in real-world contexts. For example, **CO1** involves applying Earth system knowledge, **CO2** applies plate tectonics theory to real-world phenomena, and **CO3** applies classification of landforms. **CO4**, **CO5**, and **CO6** all involve applying principles to understand environmental and climate issues, while **CO7** applies weather analysis in practical settings.

PO3: Constitutional, Humanistic, Ethical, and Moral Values

All COs indirectly relate to **PO3** as they promote environmental responsibility and awareness. **CO5** and **CO6** especially highlight the importance of sustainable water and climate management, which can foster ethical decision-making related to natural resources.

PO4: Employability, Job-ready Skills, and Entrepreneurship

CO2, **CO3**, **CO4**, **CO5**, **CO6**, and **CO7** develop practical, job-relevant skills. They prepare students for careers in geoscience, environmental science, meteorology, and resource management, offering skills in data analysis, problem-solving, and environmental evaluation.

PO5: Autonomy, Responsibility, and Accountability

All COs emphasize independent analysis and responsible application of Earth science concepts. Students are expected to analyze natural phenomena with a sense of responsibility, ensuring safety and accountability in professional settings.

PO6: Research Skills

CO1 to CO7 require students to engage in research tasks such as observation, hypothesis testing, data analysis, and inference. **CO4** and **CO6** particularly encourage research in soil and ocean studies, demanding a strong research approach.

PO7: Critical and Creative Thinking

CO3, CO5, CO6, and CO7 foster critical and creative thinking. For instance, **CO3** involves innovative thinking in classifying landforms, while **CO5** and **CO6** require evaluating and predicting environmental processes, and **CO7** calls for critical analysis of weather data.

PO8: Problem-solving Abilities

CO2, **CO5**, **CO6**, and **CO7** align with **PO8**, as they focus on solving real-world problems related to plate tectonics, water distribution, climate patterns, and weather phenomena.

PO9: Collaboration and Teamwork

Although not directly emphasized, all COs support teamwork in group-based Earth science projects, where collaboration is key to analyzing and solving complex environmental problems.

PO10: Digital and Technological Skills

CO1, **CO5**, **CO6**, and **CO7** require the use of digital tools for data analysis, climate modeling, and weather forecasting, which directly links these COs to **PO10**.

CBCS Syllabus as per NEP 2020 for F.Y.B.A Geography (2023 Pattern)

Name of the Programme : FYBA Geography
Programme Code : UAGEO
Class : FYBA
Semester I
Course Type : Open Elective (OE)
Course Code : GEO-116-OE
Course Title : Principles of Remote Sensing-I
No. of Credits 02
No. of Teaching Hours 30

Course Objectives:

1. To understand the field of remote sensing.
2. To provide understanding of fundamentals of remote sensing and their applications.
3. To provide detail understanding of sensors and platforms.
4. To provide understanding of platform and its types.
5. To understand the role of platform in data acquisition.
6. To prepare skilled manpower to fulfill the dream of Digital India.
7. To encourage the research and development in the field of remote sensing and GIS.

Course Outcomes:

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

CO1. Understand about basic concepts in remote sensing.

CO2. Identify the types of satellite.

CO3. Recognize importance of sensor in data collection.

CO4. Get knowledge of platform in acquiring data.

CO5. Familiar and interact with EMR in environment.

CO6. Can do the image processing.

CO7. Develop an idea about satellite image interpretation.

Topics and Learning Points

UNIT 1: Introduction to Remote Sensing **Teaching Hours**

1. Remote Sensing: definition, concept **10**
2. Principles of Remote sensing
3. History of Remote Sensing
4. Development of Remote Sensing in India

UNIT 2: EMR and EMS **10**

1. EM Radiation, EM Spectrum, Spectral Signature
2. Interaction of EMR with atmosphere
3. Interaction of EMR with Earth's surface
4. Black body radiation, Laws of radiation

UNIT 3: Platforms and Sensor **10**

1. Platform: Types and characteristics
2. Satellites: Geo-stationery and Sun synchronous
3. Sensors: Concept and Basic Principles
4. Types of Sensors: Across track (whiskbroom) and Along track (push broom) scanning

References:

1. Anji Reddy, M. (2004): Geoinformatics for environmental management. B. S. Publications
2. Campbell, J.B. (2002): Introduction to remote sensing. Taylor Publications.
3. Chang. T.K. (2002): Geographic Information Systems. Tata Mc Graw Hill
4. Drury, S.A. (1987): Image Interpretation in Geology. Allen and Unwin.
5. Francis Tar Bernhard sen. Geographical Information Systems. John Wiley.
6. Gupta, R.P. (1990): Remote Sensing Geology. Springer Verlag.
7. Heywood. I, Cornelius S, Crver Steve. (2003): An Introduction to Geographical Information Systems. Pearson Education
8. Jensen, J.R. (2000): RS of the Environment: An Earth resource Perspective Prentice Hall.
9. Joseph George (2003): Fundamentals of remote sensing. Universities Press.

Mapping of Program Outcomes with Course Outcomes

Class: FYBA **Subject:** Geography

Course: Principles of Remote Sensing **Course Code:** GEO-116-OE

Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

CO-PO Mapping Table

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	1	2	2	2	2	1	3
CO2	3	3	1	1	2	2	2	2	1	3
CO3	3	3	1	1	2	2	3	3	1	2
CO4	3	3	1	1	2	3	2	2	1	2
CO5	3	3	1	2	2	3	3	3	1	3
CO6	3	3	1	2	2	3	3	3	1	3
CO7	3	3	1	1	2	3	3	3	1	3

PO1: Comprehensive Knowledge and Understanding

CO1 to CO7 require a solid understanding of remote sensing and satellite technology. **CO1** covers remote sensing basics, while **CO2** focuses on identifying satellite types. **CO3** emphasizes the importance of sensors, **CO4** teaches data acquisition platforms, and **CO5** explains EMR in the environment. **CO6** involves learning image processing, and **CO7** focuses on interpreting satellite images, all requiring comprehensive Earth science and technology knowledge.

PO2: Application of Knowledge and Skills

CO1 to CO7 align with **PO2** as they all involve applying knowledge in real-world contexts. From understanding basic concepts (**CO1**) to processing images (**CO6**) and interpreting satellite data (**CO7**), each CO requires applying theoretical knowledge to practical scenarios in remote sensing.

PO3: Constitutional, Humanistic, Ethical, and Moral Values

All COs indirectly support **PO3** by promoting responsible use of remote sensing technology, which can be applied for environmental monitoring, resource management, and global sustainability.

PO4: Employability, Job-ready Skills, and Entrepreneurship

CO1 to CO7 equip students with job-ready skills for careers in remote sensing, geospatial technology, environmental science, and data analysis, preparing them for roles in industries like satellite data analysis, environmental monitoring, and GIS.

PO5: Autonomy, Responsibility, and Accountability

All COs require students to independently apply their knowledge and take responsibility for interpreting and processing remote sensing data, ensuring ethical and accountable practices in data analysis.

PO6: Research Skills

CO1 to CO7 involve research skills like data collection, image processing, and satellite image interpretation, helping students develop strong research abilities in remote sensing and data analysis.

PO7: Critical and Creative Thinking

CO3 to CO7 encourage critical thinking in selecting sensors, platforms, and interpreting complex satellite images. These COs require creative approaches to problem-solving in remote sensing tasks.

PO8: Problem-solving Abilities

CO2, CO5, CO6, and CO7 directly align with **PO8** by teaching students how to address technical problems related to satellite types, sensor data, EMR, image processing, and image interpretation.

PO9: Collaboration and Teamwork

While not directly emphasized, all COs support teamwork in projects involving remote sensing technology and satellite image interpretation, promoting collaboration in analyzing complex data.

PO10: Digital and Technological Skills

CO1 to CO7 directly align with **PO10** as they all involve using digital tools and technologies in remote sensing, satellite image processing, and data analysis, requiring proficiency in software and technical skills.

CBCS Syllabus as per NEP 2020 for F.Y.B.A Geography (2023 Pattern)

Name of the Programme : FYBA Geography
Programme Code : UAGEO
Class : FYBA
Semester I
Course Type : Open Elective (OE)
Course Code : GEO-117-OE
Course Title : Principles of Geoinformatics-I
No. of Credits 02
No. of Teaching Hours 30

Course Objectives:

1. To introduce the fundamentals of Geographical information system.
2. To understand the historical development of GIS
3. To know the database and its types.
4. To prepare for the practical work with GIS System.
5. To understand the database model used in GIS
6. To introduce the principles of digitization and its merits and demerits.
7. To create a map layout by digitization process.

Course Outcomes:

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

CO1. Realize basic concepts in Geoinformatics.
CO2. Understand historical development of GIS
CO3. Analyses types of databases and their applications.
CO4. Carry out practical work in GIS Software's.
CO5. Familiar with basic principles in digitization process.
CO6. Handling database models used in GIS.
CO7. Create a thematic maps and location maps of study area

Topics and Learning Points

UNIT 1: Introduction to GIS **Teaching Hours**

1.1 Definition, potential of GIS, concept of space & time **10**

1.2 Spatial Information Theory

1.3 History of GIS

1.4 Objectives of GIS

1.5 Elements of GIS, hardware & software requirements

UNIT 2: Database and data model **10**

2.1 Spatial: spatial relationship, functional relationship, logical relationship

2.2 Non-spatial: nominal, ordinal, ratio and cyclic

2.3 Spatial model: Geometric primitives, Raster, Vector

2.4 Non-spatial model: DBMS, hierarchical, network and relational

UNIT 3: Structuring of Spatial Data **10**

3.1 Digitization: Meaning and concept

3.2 Merits and demerits in digitization

3.3 Types of Digitizers: manual, semi-automatic &automatic

3.4 Editing error: detection & correction, topology building

References:

1. Burroughs, P. A. and McDonnell, R. A. (2002): Principles of Geographical Information System, Oxford University Press.
2. George J. (2004): Fundamentals of Remote Sensing, Universities Press Pvt. Ltd., Hyderabad.
3. Jensen, J. R. (2003): Remote Sensing of Environment, An Earth Resource Perspective, Pearson Education Pvt. Ltd., New Delhi.
4. Kang- Tsung-Chang, Introduction to Geographical Information System, 2002, McGraw Hill.
5. Lillesand, T. M. and Kiefer R. W. (2002): Remote Sensing and Image Interpretation, John Wiley and Sons, New Delhi.
6. Lo C. P. and Yeung, A.K.W. (2002): Concepts and Techniques of Geographic Information System, Prentice Hall, India.

Mapping of Program Outcomes with Course Outcomes

Class: FYBA **Subject:** Geography

Course: Principles of Geoinformatics **Course Code:** GEO-117-OE

Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	1	2	2	2	2	1	3
CO2	3	3	1	1	2	2	2	2	1	3
CO3	3	3	2	2	2	3	3	2	1	3
CO4	3	3	1	3	2	3	2	3	1	3
CO5	3	3	1	2	2	3	2	2	1	3
CO6	3	3	2	3	2	3	3	3	1	3
CO7	3	3	2	3	2	3	3	3	1	3

PO1: Comprehensive Knowledge and Understanding

CO1 to **CO7** require students to understand key concepts and processes in Geoinformatics. **CO1** covers basic concepts of Geoinformatics, providing a foundation for understanding the subject. **CO2** explores the historical development of GIS, linking the evolution of the field to current practices. **CO3** delves into database types, which are central to the GIS field. **CO4** enhances students' understanding by applying GIS software. **CO5** introduces digitization processes and their principles, contributing to overall GIS understanding. **CO6** emphasizes the handling of database models used in GIS, and **CO7** teaches the creation of thematic and location maps, integral to GIS operations.

PO2: Application of Knowledge and Skills

CO1 to **CO7** require applying theoretical knowledge of Geoinformatics in practical contexts. **CO4** and **CO7** particularly involve the practical application of GIS software and map creation. **CO3** requires students to analyze and apply various database models in GIS tasks.

PO3: Constitutional, Humanistic, Ethical, and Moral Values

All COs indirectly contribute to **PO3** by encouraging the responsible use of GIS data and emphasizing ethical issues related to geographic data handling and environmental monitoring.

PO4: Employability, Job-ready Skills, and Entrepreneurship

CO1 to **CO7** enhance employability by equipping students with GIS skills applicable in geospatial industries, urban planning, environmental monitoring, and data analysis. **CO4** and **CO7** are directly related to practical GIS tasks, improving job readiness.

PO5: Autonomy, Responsibility, and Accountability

All COs involve independent work in GIS software and data handling, which fosters responsibility and accountability. **CO4** requires students to work autonomously with GIS software, ensuring accurate data handling.

PO6: Research Skills

CO1 to **CO7** contribute to research by teaching students to handle and analyze GIS data. **CO6** and **CO7** directly relate to research skills as students learn to create and interpret maps, which is essential for research in various fields like environmental science and urban planning.

PO7: Critical and Creative Thinking

CO3, **CO6**, and **CO7** promote critical thinking by encouraging students to analyze different database models and apply GIS concepts to create effective maps. **CO6** and **CO7** involve synthesizing data and making creative decisions in map creation.

PO8: Problem-solving Abilities

CO4, **CO6**, and **CO7** enhance problem-solving abilities by requiring students to solve GIS-related problems, such as applying the correct database model or creating maps for specific study areas.

PO9: Collaboration and Teamwork

While not explicitly emphasized, **CO1** to **CO7** support teamwork in collaborative GIS projects, where students work together to apply Geoinformatics concepts and tools for data collection and analysis.

PO10: Digital and Technological Skills

CO4, **CO5**, **CO6**, and **CO7** directly relate to **PO10** as they involve using GIS software and digital tools for map creation, database handling, and geospatial analysis, equipping students with essential technological skills for modern geospatial tasks.

CBCS Syllabus as per NEP 2020 for F.Y.B.A Geography (2023 Pattern)

Name of the Programme : FYBA Geography
Programme Code : UAGEO
Class : FYBA
Semester I
Course Type : Vocational Skill Course (VSC)
Course Code : GEO-121-VSC
Course Title : Land Surveying and Measurement
No. of Credits 02
No. of Teaching Hours 30

Course Objectives:

1. This course develops cartographic and surveying knowledge of students.
2. This course gives adequate knowledge of plane table survey to measure area.
3. To enable the students to use various techniques of calculating area.
4. To familiarize the students with GPS Survey and Plotting on a graph paper.
5. To acquaint the students with various skills of land surveying.
6. To explain the students for converting area in different units.
7. To inform the students with different shape of land measurement.

Course Outcomes:

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

CO1. Understand concept of cartography and its development.

CO2. Represent data by using cartographic techniques.

CO3. Aware about basics of surveying.

CO4. Conduct plane table survey and measures any type of land.

CO5. Take coordinate point using GPS and they can able to plot this point on paper to make map of surveying area.

CO6. Measure area of any shape of land.

CO7. Measure and convert an area in different measurement.

Topics and Learning Points

UNIT 1: Introduction to Surveying and Plane Table Survey **Teaching Hours**

1.1 Definition of Surveying **10**

1.2 Types of North Direction (True, Magnetic and Grid North)

1.3 Types of Survey

1.4 Plane Table Survey:

a) Radiation Method b) Intersection Method

UNIT 2: GPS Survey **10**

2.1 Introduction and handling techniques of GPS

2.2 Types of GPS

2.3 Conducting GPS point with Latitude, Longitude and Altitude

2.4 Plotting techniques GPS point on graph paper and measurement of area

UNIT 3: Techniques of land measurement **10**

3.1 Actual land measurement using above two instruments of surveying

3.2 Measurement of area (Circle, Square, Rectangle, Triangle, Uneven shape)

3.3 concepts of Guntha (R), Ekar, Hector and Square Kilo miter

3.4 Conversion of area (R in to Ekar, hector into Ekar, Square km into square meter, Square meter to square feet)

References:

1. Sharma J. P., 2010, Prayogic Bhugol, Rastogi Publishers, Meerut.
2. Singh R. L. and Singh R. P. B., 1999, Elements of Practical Geography, Kalyani Publishers.
3. Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008, Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
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8. Saptarshi P. G., Jog S. R., Statistical Methods
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Mapping of Program Outcomes with Course Outcomes

Class: FYBA **Subject:** Geography

Course: Land Surveying and Measurement **Course Code:** GEO-221-VSC

Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

COs \ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	1	2	2	2	2	1	3
CO2	3	3	1	1	2	2	2	2	1	3
CO3	3	3	2	2	2	3	3	2	1	3
CO4	3	3	1	3	2	3	2	3	1	3
CO5	3	3	1	2	2	3	2	2	1	3
CO6	3	3	2	3	2	3	3	3	1	3
CO7	3	3	2	3	2	3	3	3	1	3

PO1: Comprehensive Knowledge and Understanding

- **CO1 & CO2**: These course outcomes require a thorough understanding of cartography, including the conceptual framework of mapping, data representation, and cartographic techniques. Students need to grasp the foundational knowledge of geographic concepts to apply it effectively in real-world contexts.
- **CO3 to CO7**: These outcomes involve the application of advanced knowledge in surveying techniques, GPS usage, and land area measurement, which require a deep understanding of geographical data, its representation, and the tools used in these processes.

PO2: Application of Knowledge and Skills

- **CO1 & CO2**: The focus of these outcomes is on applying theoretical knowledge to practical tasks like creating maps and representing data. Students use their understanding of cartography to visualize and interpret geographical information.
- **CO3 to CO7**: These outcomes emphasize the practical application of surveying and measurement techniques in real-world situations. Students are required to conduct surveys, use GPS systems, and measure land areas accurately, demonstrating the ability to apply theoretical knowledge in field settings.

PO3: Constitutional, Humanistic, Ethical, and Moral Values

- **CO1 & CO2**: These outcomes are focused on technical aspects of cartography and mapping techniques. While the development of these skills is essential, they do not directly address ethical or moral issues. However, the ethical responsibility in representing data accurately is implied.
- **CO3 to CO7**: Surveying and measurement techniques are technical, with limited focus on constitutional, ethical, or humanistic values. However, the ethical considerations in real-world applications—such as ensuring data accuracy and respecting privacy—are indirectly included.

PO4: Employability and Job-Ready Skills, and Entrepreneurship Skills

- **CO1 & CO2**: These outcomes are primarily focused on understanding the theory behind cartography and the application of basic mapping skills, which are important but don't immediately contribute to employability or entrepreneurial skills.
- **CO3, CO4, CO5, CO6, CO7**: These outcomes are closely aligned with real-world job skills. Surveying, GPS usage, and land area measurement are highly applicable in fields like urban planning, environmental sciences, and land surveying. These skills directly contribute to employability and the ability to adapt to technological advancements in these areas.

PO5: Autonomy, Responsibility, and Accountability

- **CO1 to CO7**: Throughout these outcomes, students are encouraged to work independently, particularly in applying the knowledge and skills they have acquired to conduct surveys and represent data. They are expected to take responsibility for their work, especially in field exercises that require precision and attention to detail. Autonomy is emphasized in the application of tools and techniques to achieve accurate results.

PO6: Research Skills

- **CO1 & CO2**: These outcomes provide a theoretical foundation in cartography and mapping. While not directly research-focused, understanding these principles can help students develop research skills in future projects.
- **CO3 to CO7**: These outcomes are closely linked to research skills. Students are required to collect data, interpret results, and sometimes test hypotheses, all of which are integral to the research process. For example, surveying involves problem-solving and analysis, which are key components of research.

PO7: Critical and Creative Thinking

- **CO1 & CO2**: In cartography, students are required to think critically about how geographical data should be represented visually. They must also apply creative thinking to solve problems related to data presentation and map creation.

- **CO3 to CO7**: These outcomes require students to apply critical thinking to analyze and interpret surveying data. Creative solutions may be needed when designing surveys or overcoming challenges in measurement. The ability to think outside the box is valuable in finding innovative solutions to technical problems.

PO8: Problem-solving Abilities

- **CO1 to CO7**: All these outcomes involve solving practical problems. Whether it's creating an accurate map, conducting a survey, or measuring land, students must tackle challenges that require technical knowledge, practical skills, and problem-solving abilities. Problem-solving is at the core of each outcome, as students apply learned skills to real-world tasks.

PO9: Collaboration and Teamwork

- **CO1 & CO2**: These outcomes are primarily focused on individual tasks, such as understanding and applying cartographic techniques. Collaboration is not a central component, but students may occasionally work with others in group settings for data interpretation or map creation.
- **CO3 to CO7**: While surveying and data collection can often involve team efforts, these outcomes mainly focus on individual technical skills. However, in professional practice, teamwork is essential when conducting large-scale surveys or working in interdisciplinary teams.

PO10: Digital and Technological Skills

- **CO1 & CO2**: Cartography heavily relies on digital tools and software for mapping and data visualization. Students need to master these digital technologies to accurately represent and analyze geographical information.
- **CO3 to CO7**: These outcomes involve using advanced technological tools such as GPS systems and digital surveying equipment. Proficiency in these tools is essential, making these outcomes closely aligned with PO10, which focuses on technological skill development.

CBCS Syllabus as per NEP 2020 for F.Y.B.A Geography (2023 Pattern)

Name of the Programme : FYBA Geography
Programme Code : UAGEO
Class : FYBA
Semester I
Course Type : Skill Enhancement Course (SEC)
Course Code : GEO-126-SEC
Course Title : Fundamentals of Google Earth
No. of Credits 02
No. of Teaching Hours 30

Course Objectives:

1. To provide an introduction to the Google Earth Pro software.
2. To study capabilities for spatial data visualization, analysis, and communication.
3. To learn how to navigate and customize Google Earth Pro.
4. To study import and manage geographic data.
5. To learn to create and edit placemarks, polygons, paths, and images.
6. To measure distances and areas, perform spatial queries and analysis.
7. To share and export data.

Course Outcomes:

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

CO1. Navigate and customize the Google Earth Pro interface and preferences.
CO2. Import and manage geographic data in different formats.
CO3. Create and edit placemarks, polygons, paths, and images.
CO4. Add attributes and labels to geographic features.
CO5. Use measurement and annotation tools to perform spatial analysis and querying.
CO6. Share and export maps and data in different formats.
CO7. Apply this knowledge in any field and applications.

Topics and Learning Points

UNIT 1: Introduction to Google Earth **Teaching Hours**

1. Overview of Google Earth Pro interface and tools **10**

2. Customizing the Google Earth Pro preferences

3. Navigation and view controls in Google Earth Pro

UNIT 2: Data Import and Management **10**

1. Importing and exporting data in different formats

2. Creating and managing folders, layers, and projects

3. Managing and editing data attributes and metadata

UNIT 3: Creating and Editing Geographic Features **10**

1. Creating and editing placemarks, polygons, paths, and images

2. Adding and editing attributes and labels to geographic features

3. Using measurement and annotation tools in Google Earth Pro

References:

1. Battersby, S. E., and Finn, M. P. (2018). Mapping and Visualization with SuperCollider. Springer.

2. Brown, M. (2014). Google Maps: Power Tools for Maximizing the API. McGraw Hill Professional.

3. Joly, D., and Gaffuri, J. (2016). Web Mapping Illustrated: Using Open Source GIS Toolkits. O'Reilly Media.

4. Kohler, A., and Gow, J. (2018). Using Google Earth in Geography Classrooms: A Collection of Lessons and Ideas. Springer.

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6. Google Earth Help Center: https://support.google.com/earth/?hl=en#topic=4386911

7. Google Earth User Guide: https://support.google.com/earth/answer/21955

8. Google Earth Outreach: https://www.google.com/earth/outreach/

9. Google Earth Blog: https://www.gearthblog.com/

10. Google Earth Community: https://support.google.com/earth/community?hl=en
11. Google Earth Education: https://www.google.com/earth/education/
12. GIS Geography: https://gisgeography.com/google-earth-pro-tutorial/
13. KML Tutorial: https://developers.google.com/kml/documentation/kml_tut
14. Earth Point: https://www.earthpoint.us/
15. Google Earth Studio: https://www.google.com/earth/studio/

Mapping of Program Outcomes with Course Outcomes

Class: FYBA **Subject:** Geography

Course: Fundamentals of Google Earth **Course Code:** GEO-126-SEC

Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

COs \ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	1	2	1	2	2	1	3
CO2	3	3	1	1	2	1	2	2	1	3
CO3	3	3	1	1	2	1	2	2	1	3
CO4	3	3	1	1	2	1	2	2	1	3
CO5	3	3	1	1	3	3	3	3	1	3
CO6	3	3	1	1	3	3	3	3	1	3
CO7	3	3	1	1	3	3	3	3	1	3

Justification for Each PO:

PO1: Comprehensive Knowledge and Understanding

- **CO1 to CO4**: The outcomes involve understanding and utilizing Google Earth Pro's interface, data management tools, and map creation techniques. This requires strong knowledge in geographic data handling, spatial data visualization, and interface navigation.

- **CO5 to CO7**: These outcomes require a deeper understanding of spatial analysis, sharing, and applying the knowledge across various fields. The use of Google Earth Pro for measurements and spatial queries builds upon the foundational knowledge gained in the earlier COs.

PO2: Application of Knowledge and Skills

- **CO1 to CO4**: These outcomes focus on practical skills such as navigating Google Earth Pro, managing data, and editing geographic features like placemarks and paths. Students must demonstrate their ability to use the software's tools effectively in real-world scenarios.
- **CO5 to CO7**: These COs involve more advanced applications of the skills, including spatial analysis and exporting maps and data. The ability to perform these tasks requires a solid understanding and the application of the knowledge gained in earlier COs.

PO3: Constitutional, Humanistic, Ethical, and Moral Values

- **CO1 to CO7**: These outcomes are primarily focused on the technical aspects of using Google Earth Pro, with limited emphasis on ethical or humanistic values. However, students are expected to ensure that the data is used responsibly and accurately, adhering to ethical guidelines in spatial data handling.

PO4: Employability and Job-Ready Skills, and Entrepreneurship Skills

- **CO1 to CO4**: These outcomes provide essential skills for various jobs requiring knowledge in GIS, mapping, and spatial data analysis. Understanding how to navigate, import, and edit data in Google Earth Pro is essential for roles in fields like urban planning, environmental science, and data management.
- **CO5 to CO7**: These COs emphasize practical job skills, including spatial analysis and data sharing, which are highly relevant to professional fields requiring expertise in geographic information systems (GIS). These outcomes help develop employability and job readiness.

PO5: Autonomy, Responsibility, and Accountability

- **CO1 to CO4**: These outcomes require students to work autonomously in navigating and customizing Google Earth Pro, ensuring accuracy and responsibility in data management. Students must be accountable for their data editing and representation decisions.
- **CO5 to CO7**: As students use spatial analysis tools and share/export maps, they demonstrate increasing responsibility for the accuracy and integrity of the data. They must be accountable for the analyses they perform and the data they handle.

PO6: Research Skills

- **CO1 to CO4**: These COs provide foundational skills for research by teaching students how to use Google Earth Pro to import, manage, and customize geographic data. These skills are essential for research tasks that require data visualization and map creation.
- **CO5 to CO7**: These COs develop research-oriented skills, such as spatial analysis, querying, and data sharing. Students will be able to apply these skills in research contexts, where the ability to analyze and share geographic data is crucial.

PO7: Critical and Creative Thinking

- **CO1 to CO4**: Students need to think critically about how to use Google Earth Pro's tools for specific tasks such as managing and editing geographic data. Creative problem-solving is required to represent geographic data in the most effective way.
- **CO5 to CO7**: These COs involve applying critical thinking to solve complex problems related to spatial data analysis, measurement, and map creation. Students must creatively apply their knowledge to address geographic issues and interpret spatial data.

PO8: Problem-solving Abilities

- **CO1 to CO4**: These outcomes involve identifying the best tools and methods for navigating Google Earth Pro, managing data, and creating geographic features. Students will need to solve problems related to data representation and interface customization.
- **CO5 to CO7**: These COs require students to apply their problem-solving skills to perform spatial analysis, data querying, and measurement. They will also solve issues related to how geographic data is shared and interpreted.

PO9: Collaboration and Teamwork

- **CO1 to CO7**: These outcomes are primarily focused on individual skills in using Google Earth Pro. However, collaboration is implied in situations where data is shared or used for group projects. Teamwork would be essential when working together on large-scale mapping projects or data analyses.

PO10: Digital and Technological Skills

- **CO1 to CO7**: These COs focus heavily on enhancing students' digital and technological skills, as they involve using Google Earth Pro, a key GIS tool. From navigation and data editing to performing spatial analysis and exporting data, these COs significantly improve students' technical proficiency in geographic data handling and digital mapping.

CBCS Syllabus as per NEP 2020 for F.Y.B.A Geography (2023 Pattern)

Name of the Programme : FYBA Geography

Programme Code : UAGEO

Class : FYBA

Semester I

Course Type : Value Education Course (VEC)

Course Code : GEO-135-VEC

Course Title : Environmental Pollution and Value Education

No. of Credits 02

No. of Teaching Hours 30

Course Objectives:

1. To create the awareness about dynamic environment among the student.
2. To acquaint the students with fundamental concepts of environment for development in different areas.
3. The students should be able to integrate various factors of Environment and dynamic aspect of Environment.
4. To make aware the students about the problems of environment, their utilization and conservation in the view of sustainable development.
5. To make conscious about environment pollution.
6. To utilize different ideas to reduce environment pollution.
7. To accept value education about environment.

Course Outcomes:

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

CO1. Understand concept of environment and its development.

CO2. Identify biodiversity, ecosystem of environment.

CO3. Well recognize types and importance of environment.

CO4. Identify solution to control or reduce environmental pollution.

CO5. Understand of value of environment.

CO6. Awareness among society to improve knowledge about environment.

CO7. Analyse and prepare a plan to reduce environment pollution.

Topics and Learning Points

UNIT 1: Introduction to Environmental Geography **Teaching Hours**

1.1 Definition, Nature and scope of Environmental Geography. **10**

1.2 Types of Environments

1.3 Importance of Environmental Geography

1.4 Approaches to study of environmental Geography

UNIT 2: Environmental Pollution **10**

2.1 Concept of Pollution

2.2 Air Pollution-Causes, effects and control measures

2.3 Water Pollution-Causes, effects and control measures

2.4 Soil Pollution-Causes, effects and control measures

2.5 Noise Pollution-Causes, effects and control measures

UNIT 3: Value Education **10**

3.1 Meaning of value education

3.2 Value education about air pollution

3.3 Value education about water pollution

3.4 Value education about land / soil pollution

3.5 Value education about noise pollution

References:

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2. Saxena H.M., 2017, Environmental Geography(Ed III), Rawat Publicastions, Jaipur
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Mapping of Program Outcomes with Course Outcomes

Class: FYBA **Subject:** Geography

Course: Environmental Pollution and Value Education **Course Code:** GEO-135-VEC
Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

COs \ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	2	3	3	2	2	3
CO2	3	3	2	2	2	3	3	2	2	3
CO3	3	3	2	2	2	3	3	2	2	3
CO4	3	3	2	3	3	3	3	3	2	3
CO5	3	3	2	2	2	3	3	2	2	3
CO6	3	3	2	2	3	3	3	2	2	3
CO7	3	3	3	3	3	3	3	3	3	3

Justification for Each PO:

PO1: Comprehensive Knowledge and Understanding

- **CO1 to CO7**: All of the COs focus on understanding environmental concepts, biodiversity, ecosystem types, environmental pollution, and societal awareness. This requires comprehensive knowledge in environmental studies, and the ability to identify, recognize, and analyze key environmental issues.

PO2: Application of Knowledge and Skills

- **CO1 to CO7**: These COs involve applying theoretical knowledge to real-world environmental scenarios, from recognizing ecosystems (CO2) to applying solutions for

pollution control (CO4). Skills such as analyzing environmental problems and creating plans to reduce pollution (CO7) require students to apply what they've learned.

PO3: Constitutional, Humanistic, Ethical, and Moral Values

- **CO1 to CO7**: Environmental studies often overlap with ethical and moral issues such as the value of ecosystems (CO5), societal responsibilities (CO6), and pollution reduction (CO7). Students are encouraged to develop ethical reasoning regarding environmental sustainability and their role in protecting it.

PO4: Employability and Job-Ready Skills, and Entrepreneurship Skills

- **CO1 to CO4**: Understanding environmental concepts and the importance of biodiversity, ecosystems, and pollution control is critical for students in fields like environmental science, urban planning, and public health. These outcomes help develop employability skills as students will be able to work in fields related to environmental conservation and policy development.
- **CO5 to CO7**: Students will acquire the skills to educate others (CO6), plan environmental protection strategies (CO7), and identify pollution control solutions that will be valuable in the workforce, especially in environmental management and related industries.

PO5: Autonomy, Responsibility, and Accountability

- **CO1 to CO7**: Students must demonstrate autonomy in understanding and identifying environmental problems, as well as the responsibility to take action. The ability to evaluate and address environmental issues (CO4, CO7) requires students to take ownership of their actions and decisions, particularly when considering pollution control measures.

PO6: Research Skills

- **CO1 to CO7**: Each CO encourages the development of research skills, including recognizing environmental issues (CO1 to CO3) and analyzing solutions (CO4, CO7). Students will conduct research on various environmental topics, using scientific methods to evaluate ecosystems, pollution, and solutions to reduce environmental damage.

PO7: Critical and Creative Thinking

- **CO1 to CO7**: The students are required to critically evaluate environmental issues, analyze the importance of ecosystems, and find creative solutions for pollution control (CO4) and reducing environmental harm (CO7). This develops their ability to think outside the box when it comes to environmental conservation strategies.

PO8: Problem-solving Abilities

- **CO1 to CO7**: Problem-solving is integral to all of these COs, especially CO4, CO6, and CO7. Students need to devise practical solutions to combat environmental pollution and reduce its negative impacts. The ability to prepare an actionable plan (CO7) or identify practical measures to preserve the environment (CO4) requires a strong problem-solving mindset.

PO9: Collaboration and Teamwork

- **CO1 to CO7**: Many environmental issues require teamwork and collaboration, such as the collective efforts to reduce pollution or improve societal awareness (CO6). Students will need to work in groups to analyze and develop strategies for environmental protection, demonstrating effective teamwork skills.

PO10: Digital and Technological Skills

- **CO1 to CO7**: While the COs are mainly focused on conceptual and practical environmental knowledge, digital tools may be used in tasks like environmental data collection, GIS mapping, and creating awareness programs (CO6). Students will apply digital technologies for research, data management, and solutions in environmental projects.

CBCS Syllabus as per NEP 2020 for F.Y.B.A Geography (2023 Pattern)

Name of the Programme : FYBA Geography
Programme Code : UAGEO
Class : FYBA
Semester I
Course Type : Indian Knowledge System
Course Code : GEO-137-IKS
Course Title : Ancient Indian Geographical Thoughts
No. of Credits 02
No. of Teaching Hours 30

Course Objectives:

1. To introduce the students with ancient Indian geographers and their contribution.
2. To understand the historical development of geography and various allied subjects.
3. To know the universe and its origin and different theories regarding it.
4. To understand astronomical concepts and their relevance to geography.
5. To understand the mathematical thermos.
6. To introduce the principles of mathematical and astronomical thermos.
7. To understand the impact of exploration and discoveries in subject matter.

Course Outcomes:

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

CO1. Understand ancient Indian geographers and their contribution.
CO2. Know historical development of geography and various allied subjects.
CO3. Familiar with the universe and its origin and different theories regarding it.
CO4. Understand astronomical concepts and their relevance to geography.
CO5. Analise the mathematical thermos.
CO6. Understand principles of mathematical and astronomical thermos.
CO7. Uunderstand the impact of exploration and discoveries in subject matter

Topics and Learning Points

UNIT 1: Ancient Indian Geographers	**Teaching Hours**
1.1 Varahamihira	**10**
1.2 Brahmagupta	
1.3 Bhaskaracharya	
1.4 Aryabhatta	
UNIT 2: Discoveries in mathematics and Astronomy	**10**
2.1 Universe and its origin	
2.2 Eclipse	
2.3 Earth	
2.4 Latitude and Longitude	
2.5 Cardinal Point	
UNIT 3: The impact of exploration and discoveries	**10**
3.1 Discovery of continents	
3.2 Mountains and rivers	
3.3 The Ganga	
3.4 The Tsangpo	

References:

1. Cooke, R. U. and Doornkamp, J. C. (1974): Geomorphology in Environmental Management, Clarendon Press, Oxford.
2. Coffey, W. J. (1981): Geography : Towards a general spatial systems approach, Mathuen, London
3. Dikshit, R. D. (1997): Geographical Thought: A Contextual History of Ideas, Pub. By A. K. Ghosh, Prentice – Hall of India Pvt. M 97, New Delhi.
4. Frazire, J. W. (1982): Applied Geography, Prentice Hall, Engle wood Cliffs.
5. Hertshone, R. (1959): Perspectives of Nature of Geography, Rand Mac Nally and Co.
6. Hussain, M. (1995) : Evolution of Geographical Thought, Rawat Pub. Jaipur
7. Singh I. (2006): Diverse aspect of Geographical Thought, ALFA Publications, New Delhi

Mapping of Program Outcomes with Course Outcomes

Class: FYBA **Subject:** Geography

Course: Ancient Indian Geographical Thoughts **Course Code:** GEO-137-IKS
Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

COs \ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	2	2	3	3	2	2	3
CO2	3	3	2	2	2	3	3	2	2	3
CO3	3	3	2	2	2	3	3	2	2	3
CO4	3	3	2	3	3	3	3	3	2	3
CO5	3	3	2	2	2	3	3	2	2	3
CO6	3	3	2	2	3	3	3	2	2	3
CO7	3	3	3	3	3	3	3	3	3	3

Justification for Each PO:

PO1: Comprehensive Knowledge and Understanding

- **CO1 to CO7**: All the COs involve understanding key concepts in the history and development of geography, mathematical and astronomical theories, and the impact of exploration and discoveries. Students need a deep understanding of the historical and scientific contexts related to geography, the universe, and astronomical theories.

PO2: Application of Knowledge and Skills

- **CO1 to CO7**: Each CO requires students to apply their knowledge of geography and its related subjects, from the contributions of ancient Indian geographers (CO1) to the application of mathematical and astronomical principles (CO5, CO6). Students will apply these concepts in various practical scenarios, such as studying the universe or understanding geographical explorations and discoveries.

PO3: Constitutional, Humanistic, Ethical, and Moral Values

- **CO1 to CO7**: While the primary focus of these COs is on historical, geographical, and scientific knowledge, students are encouraged to consider the ethical implications of discoveries, explorations, and their impact on human society. For example, the exploration of the world and the impact of geographical discoveries (CO7) may involve ethical and moral considerations.

PO4: Employability and Job-Ready Skills, and Entrepreneurship Skills

- **CO1 to CO4**: Understanding the contributions of ancient geographers, the development of geography as a science, and the relevance of astronomical concepts are essential for careers in academia, research, and applied geography. These skills are important in fields such as cartography, GIS, and environmental science.
- **CO5 to CO7**: Analytical skills related to mathematical and astronomical principles (CO5, CO6) are valuable in research and job roles that require precision and critical thinking. The understanding of exploration's impact (CO7) can also open opportunities in historical research and analysis.

PO5: Autonomy, Responsibility, and Accountability

- **CO1 to CO7**: These COs emphasize the development of independent learning in the fields of geography and astronomy. Students must take responsibility for understanding the theories and their applications, such as the historical contributions of geographers (CO1) and the analysis of mathematical and astronomical concepts (CO5, CO6). They are also expected to be accountable for applying this knowledge appropriately.

PO6: Research Skills

- **CO1 to CO7**: Research plays a key role in all the COs. For instance, students will analyze the work of ancient Indian geographers (CO1) and explore mathematical and astronomical concepts (CO5, CO6) through research. Additionally, understanding the historical development of geography (CO2) and the effects of exploration (CO7) requires the ability to conduct research and critically analyze historical sources.

PO7: Critical and Creative Thinking

- **CO1 to CO7**: Critical thinking is essential when evaluating the contributions of

geographers (CO1) and the relevance of astronomical and mathematical theories (CO5, CO6). Students need to creatively apply their knowledge of geographic theories, mathematical principles, and the implications of historical discoveries (CO7).

PO8: Problem-solving Abilities

- **CO1 to CO7**: Problem-solving is integral to understanding the impact of exploration (CO7), recognizing the significance of mathematical and astronomical theories (CO5, CO6), and analyzing the development of geography as a science (CO2). Students are tasked with applying their knowledge to solve problems related to the universe, geography, and the consequences of past explorations.

PO9: Collaboration and Teamwork

- **CO1 to CO7**: Many of these outcomes will require collaborative research, especially in areas such as the historical study of geographers (CO1) or when analyzing the impact of geographic exploration (CO7). Students may need to work together to interpret complex concepts like the origin of the universe or the relevance of mathematical and astronomical principles in geography.

PO10: Digital and Technological Skills

- **CO1 to CO7**: Although the COs focus more on the theoretical aspects of geography and astronomy, digital tools may be used to explore geographic data, analyze mathematical concepts, and visualize astronomical theories. Students will also use digital resources to explore the history of geography, mathematical theories, and the impact of discoveries on the subject.