Learning Outcomes Based Curriculum Framework
(LOCF)

For

M. A./M.Sc. (Geography)
Post Graduate Programme
w.e.f. Session 2022-23

Department of Geography
Ch. Devi Lal University, Sirsa-125055, Haryana
(2022)

LOCF CURRICULUM (2022-23)
Program Name: M.A./M.Sc. (Geography)
(For the Batches Admitted From 2022-2023)

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1. About the Department

The Department of Geography, Chaudhary Devi Lal University, Sirsa was established in 2017. Presently, the Department is located in Tagore Bhawan of the University. The first batch of M A/M. Sc. Geography was commenced in August, 2017. The department has produced about 200 postgraduate and most of them are actively engaged in jobs in various fields. Currently, the department is running M A /M.Sc. (two year) programme in Geography. The Department has three well aerated classroom for M A/ M.Sc. (Previous) and M A /M.Sc. (Final) with proper sitting arrangement, electricity facility, projector and/or smart boards. The Department has one air-conditioned computer lab having twenty computers with LAN internet facility. Also, the Department has two well-equipped laboratories for M A /M.Sc. programme.

The holistic development of the students to compete the changing scenario of the world in the 21st century world is of prime importance. The Department of Geography is committed to impart quality education comprising academic knowledge and technical skills to all the students. Our aim is to increase their curiosity of knowledge and progression in learning , and to activate their full potential for academic excellence and for facing challenges of life during and beyond their study. While the pace and the path towards achieving these outcomes will vary from person to person, the goal of department for every Geography student is to inculcate and possess required academic capabilities/capacities by the time they graduate. The department is making sincere efforts to produce scholars inculcated with critical thinking and problem solving, creativity and innovation, civic literacy, adaptability and other cognitive capacities necessary for successful life in the 21st century.

2. Learning Outcomes Based Curriculum Framework

The Choice Based Credit Scheme (CBCS) evolved into learning outcome-based curriculum framework and provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill-based courses. The courses can be evaluated following the grading system, which is considered to be better than the conventional marks system. Grading system provides uniformity in the evaluation and computation of the Cumulative Grade Point Average (CGPA) based on student's performance in examinations which enables the student to move across institutions of higher learning. The uniformity in evaluation system also enables the potential employers in assessing the performance of the candidates.

2.1 Objectives of the Programme

➢ M A /M.Sc. Geography pass out students will have knowledge of fundamental laws and principles of Geography along with their applications in diverse areas

➢ Post graduate degree holders will develop teaching and research skills which might include advanced laboratory techniques, numerical methods, computer interfacing etc.

- After completing M A /M.Sc. Geography, the students will become effective teacher and/or researcher; and will be able to exhibit good scientific knowledge and temperament in diverse fields/environment.

- The students will develop the skill to plan, execute and report on experimental and/or theoretical Geography problems with effective scientific approach in future endeavor.

2.2 Program Outcomes (PO) With Post Graduate Attributes

Programme outcomes are attributes of the post graduates from the programme that are indicative of the post graduates' ability and competence to work after being a qualified professional geographer upon post-graduation. Program outcomes are statements that describe what students are expected to know or do by the time of post-graduation, they must relate to knowledge and skills that the students acquire from the programme. The achievement of all outcomes indicates that the student is well prepared to achieve the program educational objectives down the road. The department of geography has the following eleven PO's. The course syllabi and the overall curriculum have been designed to achieve these outcomes:

After completing the programme, the student have :

PO1	Knowledge	capability of demonstrating comprehensive disciplinary knowledge gained during course of study
PO2	Research Aptitude	ability to ask relevant/appropriate questions for identifying, formulating and analyzing the research problems and to draw conclusion from the analysis
PO3	Communication	ability to communicate effectively on general and scientific topics with the scientific community and with society at large
PO4	Problem Solving	capability of applying knowledge to solve scientific and other problems
PO5	Modern Tool usage	capability to use and learn techniques, skills and modern tools for scientific practices
PO6	Science and Society	ability to apply reasoning to assess the different issues related to society and the consequent responsibilities relevant to the professional scientific practices
PO7	Life-Long Learning	aptitude to apply knowledge and skills that are necessary for participating in learning activities throughout life
PO8	Project Management	ability to demonstrate knowledge and understanding of the scientific principles and apply these to manage projects

2.3 Program Specific Outcomes (PSO's):

After completing the programme, the student have :

PSO1	understanding the human and physical environmental phenomena using specialized knowledge pertaining to various sub-fields of geography.
PSO2	ability to use the state of art geospatial knowledge for resolving the social, economic, cultural and physical problems of the society.
PSO3	learning the techniques of data acquisition, data processing and interpretation of locational and spatial data.
PSO4	ability to demonstrate and communicate the geographical knowledge and inculcate analytical ability, research aptitude and relevant skills.

4. Programme Structure

MA/M.Sc. Geography - a four semesters postgraduate programme is of 110 credits weightage consisting of Core Courses (CC), Discipline Specific Elective Courses (DSC), Skill Enhancement Courses (SEC) and Open Elective Courses (OEC).

Table 1: Courses and Credit Scheme

Semester	Core Courses (CC)		Discipline Specific Elective Courses (DSC)		Skill Enhancement Courses (SEC)		Open Elective Courses (OEC)		Grand Total Credits
	1	2	3	4	5	6	7		
	No. of Courses	Total Credits	No. of Courses	Total Credits	No. of Courses	Total Credits	A total of **12** credits are to be earned from other Departments or from MOOCs. *Students have to opt open elective course(s) in consultation with the Chairperson of the department and the Director, University Centre for Outreach Programmes and Extension*		2+4+6+7
1	5	**18**	1	**4**	**-**	-			110
2	5	**18**	1	**4**	**-**	-			
3	3	**12**	2	**8**	2	**8**			
4	3	**10**	2	**8**	2	**8**			
Total	Core Credits	58	Discipline Specific Elective Credits	24	Skill Enhancement Credits	16	Open Elective Credits	12	110
Per-cent-age (%)	Core Credits	52.73	Discipline Specific Elective Credits	21.82	Skill Enhancement Credits	14.55	Open Elective Credits	10.90	100

Table 2: Detailed Break-up of Credit Courses

Semester	Core Courses	Discipline Specific Elective Courses	Skill Enhancement Courses	Open Elective Courses	Total Courses
	CC	**DSC**	**SEC**	**OEC**	**CC+ DSC+ SEC**
Semester-1	CC1 CC2 CC3 CC4 CC5	DSC1-A or DSC1-B	-	OECs offered by other departments or MOOCs **(Students may be enrolled in any of the four semesters).** *Students have to opt open elective course(s) in consultation with the Chairperson and the Director, University Centre for Outreach Programmes and Extension*	**6**
Semester-2	CC6 CC7 CC8 CC9 CC10	DSC2-A or DSC2-B	-		**6**
Semester-3	CC11 CC12-A or CC12-B CC13	DSC3-A or DSC3-B DSC4-A or DSC4-B	SEC1-A or SEC1-B SEC2-A or SEC2-B		**7**
Semester-4	CC14 CC15-A or CC15-B CC16	DSC5-A or DSC5-B DSC6-A or DSC6-B	SEC3-A or SEC3-B SEC4-A or SEC4-B		**7**

Table 3: Course Code and Title along with Credits Details

Sr. No.	Course Code	Course Title	Credits		
Semester-1					
			Theory	**Practical**	**Total**
1.	MA/M.Sc./GEO/1/CC1	Climatology	4	-	4
2.	MA/M.Sc./GEO/1/CC2	Geography of India	4	-	4
3.	MA/M.Sc./GEO/1/CC3	Economic Geography	4	-	4
4.	MA/M.Sc./GEO/1/CC4	Statistical Methods in Geography	4	-	4
5.	MA/M.Sc./GEO/1/CC 5	Cartographic Methods in Geography (Theory)	2	-	2
Choose any one out of the following options DSC1-A or DSC1-B					
6.	MA/M.Sc./GEO/1/DSC1-A	Cartographic Methods in Geography (Practical)	-	4	4
	MA/MSc/GEO/1/DSC1-B	MOOC available on SWAYAM portal	-	-	-
		Total	**18**	**4**	**22**
Semester-2					
1.	MA/M.Sc./GEO/2/CC6	Geomorphology	4	-	4
2.	MA/M.Sc./GEO/2/CC7	Population Geography	4	-	4
3.	MA/M.Sc./GEO/2/CC8	Regional Planning and Development	4	-	4
4.	MA/M.Sc./GEO/2/CC9	Agricultural Geography	4	-	4
5.	MA/M.Sc./GEO/2/CC 10	Morphometric Analysis (Theory)	2	-	2
Choose any one out of the following options DSC2-A or DSC2-B					
6.	MA/M.Sc./GEO/2/DSC2-A	Morphometric Analysis (Practical)	-	4	4
	MA/M.Sc./GEO/2/DSC2-B	MOOC available on SWAYAM portal	-	-	-
		Total	**18**	**4**	**22**
Semester -3					
1.	MA/M.Sc./GEO/3/CC11	Geography and Ecosystems	4	-	4
Choose any one out of the following options CC13-A or CC13-B					
2.	MA/M.Sc./GEO/3/CC12-A	Research Methodology	4	-	4
	MA/M.Sc./GEO/3/CC12-B	MOOC available on SWAYAM portal	-	-	-
Choose any one out of the following options SEC1-A or SEC1-B					
3.	MA/M.Sc./GEO/3/ SEC1-A	Urban Geography	4	-	4
	MA/M.Sc./GEO/3/ SEC1-B	Geography of wellbeing with special reference to India	4	-	4
Choose any one out of the following options DSC3-A or DSC3-B					
4.	MA/M.Sc./GEO/3/ DSC3-A	Political geography	4	-	4
	MA/M.Sc./GEO/3/ DSC3-B	Geography of Rural Settlement	4	-	4
Choose any one out the following options DSC4-A or DSC4-B					
5.	MA/M.Sc./GEO/3/ DSC4-A	Introduction to Remote Sensing (Theory)	4	-	4
	MA/M.Sc./GEO/3/ DSC4-B	Advanced Remote Sensing (Theory)	4	-	4
Choose any one out of the following options SEC2-A or SEC2-B					
6.	MA/M.Sc./GEO/3/ SEC2-A	Introduction to Remote Sensing	-	4	4

		(Practical)			
	MA/M.Sc./GEO/3/ SEC2-B	Advanced Remote Sensing (Practical)	-	4	4
Core Course					
7.	MA/M.Sc./GEO/3/ CC-13	Project Based Report on Field Survey	4	-	4
		Total	**24**	**4**	**28**

Semester-4

1.	MA/M.Sc./GEO/4/CC14	Geographical Thought	4	-	4
Choose any one out of the following options CC16-A or CC16-B					
2.	MA/M.Sc./GEO/4/CC15-A	Hydrology and Oceanography	4	-	4
	MA/M.Sc./GEO/4/CC15-B	MOOC available on SWAYAM portal	-	-	-
Choose any one out of the following options SEC3-A or SEC3-B					
3.	MA/M.Sc./GEO/4/ SEC3-A	Fluvial Geomorphology	4	-	4
	MA/M.Sc./GEO/4/ SEC3 -B	Aeolian Geomorphology	4	-	4
Choose any one out of the following options DSC5-A or DSC5-B					
4.	MA/M.Sc./GEO/4/ DSC5-A	Geography of Tourism	4	-	4
	MA/M.Sc./GEO/4/ DSC5-B	Cultural and Social Geography	4	-	4
Choose any one out of the following options DSC6-A or DSC6-B					
5.	MA/M.Sc./GEO/4/ DSC6-A	Geographic Information system (Theory)	4	-	4
	MA/M.Sc./GEO/4/ DSC6-B	Advanced Geographical Information System (Theory)	4	-	4
Choose any one out of the following options SEC4-A or SEC4-B					
6.	MA/M.Sc./GEO/4/ SEC4-A	Geographic Information system (Practical)	-	4	4
	MA/M.Sc./GEO/4/ SEC4-B	Advanced Geographical Information System (Practical)	-	4	4
Core Course					
7.	MA/M.Sc./GEO/4/CC16	Cardinal Principles of Academic Integrity and Research Ethics	2	-	2
		Total	**22**	**4**	**26**

Open Elective Paper					
1.	MA/M.Sc./GEO/9/OEC1	General Geography of India	4	-	4
2.	MA/M.Sc./GEO/9/OEC2	Climate Change and Disaster Management	4	-	4
3.	MA/M.Sc./GEO/9/OEC3	Fundamentals of Geography	4	-	4
		Total			**12**

Notes:

1. For one credit of theory, one hour of lecture will be delivered while for one credit of practical, two hours of laboratory work will be conducted, per week.
2. Practical will be conducted in groups; one group will have maximum 20 students.
3. Besides credits from Core, Discipline Specific Elective and Skill Enhancement Courses, students will need to earn additional minimum 12 credits from Open Elective Courses (OECs) offered by other departments of the University or from MOOCs available on SWAYAM portal. Students are free to get enrolled for this category courses in any of the four semesters. Further, students may get enrolled in any of the various PG MOOCs available at SWAYAM portal for this category for the desired credits.
4. MOOC coordinator will display the list of MOOCs for each Discipline Specific Elective Course (DSC) before the commencement of respective semester.
5. A Discipline Specific Elective Course as well as Skill Enhancement Course will be started in the department only when at least 15 students opt for a particular course. In addition, these courses will be mainly allotted to the students in 3rd semester on the basis of their preference and percentage of marks in the 1st semester examination. In the 4th semester, students have to choose corresponding options of these courses as in the 3rd semester.
6. Experiments in the Laboratory Courses may added/removed from time to time as per availability/necessity of them as per programme. Experiments may be performed physically or virtually as per availability/necessity.
7. The evaluation of Practical Courses (Final Term Exam) will be done by the External and Internal examiners. Experiment and Written part-70 marks, Viva-voce-20 marks and Lab Records-10 marks, (Total-100 marks).
8. Internal Assessment of each theory course is of 30 marks (Mid-term exam-20 marks, Assignment-05 marks and Regularity-05 marks).
9. The relevant Ordinance of PG programme of the university shall be followed by the department.

Table 4: Core Courses Offered by the Department

Course Code	Course Title	Credits
MA/M.Sc./GEO/1/CC1	Climatology	4
MA/M.Sc./GEO/1/CC2	Geography of India	4
MA/M.Sc./GEO/1/CC3	Economic Geography	4
MA/M.Sc./GEO/1/CC4	Statistical Methods in Geography	4
MA/M.Sc./GEO/1/CC 5	Cartographic Methods in Geography (Theory)	2
MA/M.Sc./GEO/2/CC6	Geomorphology	4
MA/M.Sc./GEO/2/CC7	Population Geography	4
MA/M.Sc./GEO/2/CC8	Regional Planning and Development	4
MA/M.Sc./GEO/2/CC9	Agricultural Geography	4
MA/M.Sc./GEO/2/CC 10	Morphometric Analysis (Theory)	2
MA/M.Sc./GEO/3/CC11	Geography and Ecosystems	4
MA/M.Sc./GEO/3/CC12	A: Research Methodology	4
	B: MOOC available on SWAYAM portal	
MA/M.Sc./GEO/3/ CC-13	Project Based Report on Field Survey	4
MA/M.Sc./GEO/4/CC14	Geographical Thought	4
MA/M.Sc./GEO/4/CC15-A	A: Hydrology and Oceanography	4
	B: MOOC available on SWAYAM portal	
MA/M.Sc./GEO/4/CC16	Cardinal Principles of Academic Integrity and Research Ethics	2
	Total	**58**

Table 5: Discipline Specific Courses Offered by Department

Course Code	Course Title	Credits
MA/M.Sc./GEO/1/DSC1	A: Cartographic Methods in Geography (Practical)	4
	B : MOOC available on SWAYAM portal	
MA/M.Sc./GEO/2/DSC2	A : Morphometric Analysis (Practical)	4
	B : MOOC available on SWAYAM portal	
MA/M.Sc./GEO/3/ DSC3	A : Political geography	4
	B : Geography of Rural Settlement	
MA/M.Sc./GEO/3/ DSC4	A : Introduction to Remote Sensing (Theory)	4
	B : Advanced Remote Sensing (Theory)	
MA/M.Sc./GEO/4/ DSC5	A : Geography of Tourism	4
	B : Cultural and Social Geography	
MA/M.Sc./GEO/4/ DSC6	A : Geographic Information system (Theory)	4
	B : Advanced Geographical Information System (Theory)	
	Total	**24**

Table 6: Skill Enhancement Courses Offered by the Department

Course Code	Course Title	Credits
MA/M.Sc./GEO/3/ SEC1	A : Urban Geography	4
	B: Geography of wellbeing with special reference to India	
MA/M.Sc./GEO/3/ SEC2	A : Introduction to Remote Sensing (Practical)	4
	B : Advanced Remote Sensing (Practical)	
MA/M.Sc./GEO/4/ SEC3-A	A : Fluvial Geomorphology	4
	B : Aeolian Geomorphology	
MA/M.Sc./GEO/4/ SEC4-A	A : Geographic Information system (Practical)	4
	B :Advanced Geographical Information System (Practical)	
	Total	**16**

Table 7: Open Elective Courses Offered by the Department

Course Code	Course Title	Credits
MA/M.Sc./GEO/2/OEC1	General Geography of India	4
MA/M.Sc./GEO/2/OEC2	Climate Change and Disaster Management	4
MA/M.Sc./GEO/3/OEC3	Geography Fundamentals	4
	Total	**12**

M.A./M.Sc.Geography-1st Semester
M.A./M.Sc./GEO/1/CC1- Climatology

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: The main objective of the course is introduce the students about climatology, green house effect, planetary winds weather systems, global warming and its impact.

Course Outcomes (COs): At the end of the course , the student will be able to

CO1 : enhance the knowledge about atmospheric constituents and structure.
CO2: development of scientific understanding about climatic elements and their characteristics.
CO3: Sharpens the understanding about atmospheric moisture, stability, instability and weather systems.
CO4: enrichment of knowledge about climatic classification, climate change and global warming.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Definition of weather and climate, Climatology and Meteorology, Origin, Composition and structure of atmosphere, Solar radiation, Greenhouse effect, Heat budget and temperature distribution.

UNIT-II

Atmospheric pressure and its distribution pattern, Theories of general circulation and planetary winds, Walker circulation- ENSO and La Nina, Origin of monsoons and jet streams.

UNIT-III

Atmospheric moisture: Humidity, Evaporation, Condensation, Precipitation formation theories and types of precipitation, Acid rain, Stability and instability of atmosphere, Air masses and fronts, Weather systems: Origin and characteristics of extra tropical and tropical cyclones.

UNIT-IV

Climatic classification : Bases of climatic classification by Koeppen, Trewartha and Thornthwaite , Climatic change: Pattern, Evidences and theories of climate change, Global warming and its impacts on earth systems.

Text/Reference Books :

1. Athrens, C. D. (1994), Meteorology Today: An Introduction to Weather, Climate and Environment, West Publishing Co.
2. Barry, R. G. and Chorley, R. J. (2010), Atmosphere Weather and Climate, Marth Ren,.
3. Critchfield, H. J. (1987), General Climatology, Prentice Hall of India, New Delhi,.
4. Collins, J.M. (2014), Climatology, Oxford.
5. Das, P.K. (1984), The Monsoons, National Book Trust, New Delhi.
6. Lal, D.S. (1966), Climatology, Chaitanya Publishing House, Allahabad.
7. Lutgens, F.K. and Tarbuck, E.J. (2010), The Atmosphere: An Introduction to Meteorology, Prentice Hall of India, New Delhi.
8. Miller, A.A. (1979), Climatology, Methuen and Co., London.
9. Oliver, J.E. and Hidore, J.J. (2003), Climatology: An Atmospheric Science, Pearson Education Inc. New Delhi.
10. Ram Sastry, A.A, Weather and Weather Forecasting, Publication Division, New Delhi.
11. Trewartha G. T.(1980), An Introduction to Climate, McGraw Hill Company, New York.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/1/CC1- Climatology

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0
CO2	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0
CO3	3.0	3.0	2.0	2.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	2.0	2.0	3.0	3.0	1.0	3.0	2.0	3.0	3.0
Average	3.0	3.0	2.3	2.5	2.8	3.0	3.0	1.8	3.0	2.8	2.8	3.0

M.A./M.Sc.Geography-1st Semester
M.A./M.Sc./GEO/1/CC2 - Geography of India

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: This course conveys the broad knowledge of geography of India through physiography, agriculture, production, distribution and international trade to the students.

Course Outcomes (COs): At the end of the course , it

CO1 : provides understanding about the physical structure of India.
CO2 : enrichment of understanding about spatial organization of agriculture and irrigation systems.
CO3 : acquaintance with geographical distribution and production of major resources.
CO4 : enhancement of knowledge about spatial distribution of industries and international trade   of India.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Physiography : Relief characteristics and physiographical divisions, Drainage systems and their functional significance, Climate: Characteristics, Seasons and climatic regions of India, Soil and vegetation types: Their distribution, characteristics and conservation.

UNIT-II

Agriculture: Major characteristics, Agricultural development, Problems of Indian agriculture, Irrigation: types, Major projects with reference to Bhakra Nangal, Narmada and Damodar valley projects.

UNIT-III

Production, Distribution, Status of use and conservation of metallic minerals: Iron ore and bauxite, Production, Distribution, Status of use and conservation of non-metallic minerals: Mica and manganese, Production, Distribution, Status of use and conservation of following power resources: Coal, Petroleum and hydropower.

UNIT-IV

Production and distribution of (a) iron and steel (b) cotton textile (c) sugar and (d) automobile industry. Major industrial regions and their characteristics, International trade: Major exports and imports.

Text/Reference Books:

1. Dubey, R. N.(1974), Economic Geography of India, Kitab Mahal, Allahabad
2. Hussain Majid (2015), Geography of India, Mc Graw Hill Education.
3. Joshi, H. L.,(1990), Industrial Geography of India, Rawat Publications, Jaipur
4. Nag, P. and Sengupta, S., (1992), Geography of India, Concept publications. Co., New Delhi.
5. Singh, R. L.(1971), India: A Regional Geography, N.G.S.I., Varanasi.
6. Sharma, T. C. and Coutinho, O. (1988), Economic and Commercial Geography of India. Vikas Publishing House Pvt. Ltd, New Delhi.
7. Singh, S. and Saroha, J. (2019), Geography of India, Mc Graw Hill Education.
8. Tiwari, R. C. Geography of India, PrayagPustak Bhawan, Allahabad.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/1/CC2- Geography of India

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	1.0	2.0	1.0	1.0	1.0	3.0	1.0	3.0	1.0	1.0	1.0
CO2	3.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	2.0
CO3	3.0	1.0	2.0	2.0	1.0	1.0	3.0	1.0	3.0	1.0	2.0	2.0
CO4	3.0	1.0	2.0	2.0	1.0	2.0	3.0	1.0	3.0	1.0	2.0	2.0
Average	3.0	1.3	2.0	1.8	1.3	1.5	3.0	1.3	3.0	1.0	1.8	1.8

M.A./M.Sc.Geography-1st Semester
M.A./M.Sc./GEO/1/CC3- Economic Geography

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective : .The basic objective of this course is to understand the economic geography, world economy and recent trends in pattern of international trade.

Course Outcomes (COs): At the end of the course , the student will be able to
CO1 : understand about the location and distribution of economic activities.
CO2 : familiarize with location theories of economic activities.
CO3 : acquaint with the spatial organization of world economies.
CO4 : know about trade blocs, trends in trade and various processes of globalization.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Definition, Nature, Scope, Importance, Recent trends and approaches in economic geography, Relationship of economic geography with economics, Economic activities and their classification.

UNIT-II

Network structure and economic activities, Impact of transport on economic activities, Spatial variation in production and transport cost, Location theories of Weber, Losch, Christaller,Ullman and Krugman.

UNIT-III

World Economies: Bases of classification, Patterns and characteristics of developed and developing economies of the world, Economic development: Meaning, Evolution, Goals, Measures, Patterns, Problems and theories.

UNIT-IV

Globalization and recent trends in pattern of international trade, Emergence of a new global economy-transnational integration and its spatial outcomes, Major regional trade blocks of the world, Free trade initiatives (GATT, UNCTAD, WTO).

Text/Reference Books:

1. Gautam, A. (2010), Advanced Economic Geography. Sharda Pustak Bhawan, Allhabad.
2. Hartshorne, T. A. and Alexander, J. W. (2001), Economic Geography. Prentice Hall of India. New Delhi.
3. Hudson, R. (2005), Economic Geography. Sage Publication, New Delhi.
4. Jones, C. F. and Darkenwarld, G. G. Economic Geography. The Macmillan and Company. New York.
5. Knox, P. (2003), The Geography of World Economy. Arnold, London.
6. Saxena, H.M. (2013), Economic Geography. Rawat Publications, Jaipur.
7. Wheeler, J.O. and Muller, P.O. (1985), Economic Geography. John Wiley and Sons. New York.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/1/CC3- Economic Geography

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	3.0	1.0	1.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0
CO2	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0
CO3	3.0	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
CO4	3.0	2.0	3.0	2.0	1.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0
Average	3.0	2.8	3.0	2.3	1.3	3.0	3.0	3.0	3.0	3.0	2.3	3.0

M.A./M.Sc.Geography-1st Semester
M.A./M.Sc./GEO/1/CC4- Statistical Methods in Geography

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: .This course has the objective to introduce the students about descriptive statistics, bivariate analysis, statistical analysis of spatial pattern and multivariate analysis

Course Outcomes (COs): After completion of the course , the student will familiar with:
CO1: introduction to tools of quantitative information and data.
CO2: enhancement of knowledge about statistical analysis of spatial pattern from
        geographical data.
CO3: enrichment of knowledge about inferential data analysis and errors associated with it.
CO4: acquaintance with bivariate and multi variant analytical techniques.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Descriptive statistics: Histogram and frequency curve, Measures of central tendency : Mean, Median, Mode, Partitioned values : Quartiles and deciles, comparison of mean, Median and mode, Measures of dispersion : Absolute measures: range, quartile deviation, Mean deviation, Standard deviation, Relative measure of dispersion : Coefficient of variation.

UNIT-II

Normal curve as a probability distribution : Characteristics and area under curve , Measure of inequality: Location quotient and Lorenz curve, Sampling : Theory, Methods, Distribution and chance errors.

UNIT-III

Bivariate analysis : Scatter diagram, Correlation analysis, Spearman's rank correlation and Karl Pearson's correlation coefficient, Test of significance, Simple linear regression model: Properties of least square estimate, Coefficient of determination.

UNIT-IV

Residuals and their mapping, Basics of multivariate analysis : Correlation matrix, Partial and multiple correlation.

Text/Reference Books :

1. Gregory, S.(1964), Statistical Methods and the Geographers, Longman, London.
2. Gupta, C. B.(1974), An Introduction to Statistical Methods, Vikas Publishing House, Delhi.
3. Johnston, R.J.(1989), Multivariate Statistical Analysis in Geography, Longman Scientific and Technical, John Wiley & Sons,.
4. Mahmood, A.(1993), Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
5. Paul, S.K.(1998), Statistics for Geoscientists: Techniques and Applications, Concept Publishing Company, New Delhi.
6. Houshmand, A.R**.** (1998), Statistical Methods for Environmental and Agricultural Sciences, CRC Press, New York.
7. Levin, J and Fox, J.A.(2006), Elementary Statistics in Social Research, Pearson Education, New Delhi.
8. Rogerson. P.A.(2010), Statistical Methods for Geography, Sage Publication, New Delhi.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/1/CC4- Statistical Methods in Geography

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0	3.0
CO2	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0
CO3	3.0	3.0	2.0	3.0	3.0	3.0	2.0	1.0	2.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	3.0	3.0	3.0
Average	3.0	3.0	2.5	3.0	3.0	3.0	2.3	2.0	2.3	3.0	3.0	3.0

M.A./M.Sc.Geography-1ˢᵗ Semester
M.A./M.Sc./GEO/1/CC5 -Cartographic Methods in Geography (Theory)

Credits: 2　　　　　　　　　　　　　　　　**Max. Marks : 50**
Lectures: 30　　　　　　　　　　　　　　　**Final Term Exam.: 30**
Duration of Exam.: 2 Hrs.　　　　　　　　**Internal Assessment: 20**

Objective: The objective of the course is to make the students understand the Cartography and characteristics of distribution maps and various types and characteristics of statistical diagrams, and to make them aware about various career options.

Course Outcomes (COs): At the end of the course , the student will be able to **:**
CO1: understand about the basic concepts of cartography and distribution maps.
CO2:   represent statistical data in the form of diagrams.

Note for the paper setter: The question paper will consist of five questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, four more questions will be set unit-wise comprising of two questions from each of the two units. The candidates are required to attempt two more questions selecting at least one question from each unit.

UNIT-I
Nature and scope of Cartography, Recent advancements in cartography, Types and characteristics of distribution maps : (i) Chorochromatic (ii) Choroschematic (iii) Isopleths (iv) Choropleth (v) Dot and (vi) Diagrammatic.

UNIT-II
Types and characteristics of statistical diagrams : (i) One dimensional (Bar, Line), (ii) Two dimensional (Circular, Rectangular, Square), (iii) Three dimensional (Block, Sphere, Cube) and (iv) Other diagrams (Snail, Pyramid, Flow diagram/cartogram) , Characteristics of graph/ diagrams/ maps representing climatic data : (i) Rainfall deviation, (ii) Climograph (Taylor and Foster), (iii) Hythergraph, (iv) Star/Wind rose diagram (v) Isopleths (vi) Line and bar (vii) Polygraph.

Text/Reference Books:
1. Misra, R.P. and Ramesh, A. (1999), Fundamentals of Cartography, Concept Publishing Company, New Delhi
2. Monkhouse, F.J. and Wilkinson, H.R. (1980), Maps and Diagrams. B. I. Publications, New Delhi.
3. Singh, R. L. (1986), Elements of Practical Geography. Kalyani Publishers, New Delhi.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/1/CC5 - Cartographic Methods in Geography (Theory)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	3.0	3.0
CO2	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	3.0	3.0
Average	3.0	2.0	2.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	3.0	3.0

M.A./M.Sc.Geography-1st Semester
M.A./M.Sc./GEO/1/ DSC 1-A - Cartographic Methods in Geography (Practical)

Credits: 4　　　　　　　　　　　　　　　　　　　　**Max. Marks: 100**
Teaching per week : 8 Hrs.　　　　　　　　　　　**Duration of Exam.: 3 Hrs.**

Objective: This course aims to provide an exposure to the students about simple and weather diagrams and various distribution maps.

Course Outcomes (COs): At the end of the course , the student will get :
CO1 : awareness about various types of cartographic diagrams.
CO2 : enrichment of skills to prepare the thematic maps and diagrams.
CO3 : acquisition of skills to represent the statistical data.
CO4 : capability to understand and interpret the graphs/diagrams/maps.

Note for the Paper Setter: The question paper will consist of four exercises in all. Student(s) are required to attempt any three exercises.

UNIT- I
Simple diagrams: Line and bar graph, Poly graph, Rainfall deviation diagram, One dimensional diagrams: Simple, Comparative bar, Compound bar, Trend graph, Two dimensional diagrams: Pie diagram, Proportional circle, Three dimensional diagrams: Sphere.

UNIT- II
Weather diagrams : Climograph (Taylor and Foster), Hythergraph, Ergograph, Wind rose diagram, Isopleth.

UNIT- III
Distribution maps : Dot method, Choropleth-Monovariate, Choropleth- Bivariate.

UNIT- IV
Diagrams: Age and sex pyramid, Snail diagram, Cartogram(Rectangular,Traffic flow).

Text/Reference Books:
1. Misra, R.P. and Ramesh, A. (1999), Fundamentals of Cartography, Concept Publishing Company, New Delhi
2. Monkhouse, F.J. and Wilkinson, H.R. (1980),   Maps and Diagrams. B. I. Publications, New Delhi.
3. Singh, R. L. (1986), Elements of Practical Geography. Kalyani Publishers, New Delhi.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/1/ DSC 1-A - Cartographic Methods in Geography (Practical)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	2.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	3.0	3.0
CO2	3.0	2.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	3.0	3.0
CO3	3.0	2.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	3.0	3.0
CO4	3.0	2.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	3.0	3.0
Average	3.0	2.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	3.0	3.0

M.A./M.Sc.Geography-1st Semester
M.A./M.Sc./GEO/1/ DSC 1-B - MOOC Available on SWAYAM Portal

Credits: 4   **Max. Marks: 100**

M.A./M.Sc. Geography-2nd Semester
M.A./M.Sc./GEO/2/CC6- Geomorphology

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: The aim of this course is to introduce the students about geomorphology, geological structure, weathering and role of geomorphology in environmental management

Course Outcomes (COs): After completion of the course , the student will familiar with :
CO1 : development of understanding about the fundamental concepts of geomorphology.
CO2 : enrichment of knowledge about tectonic activities and hill slope relationship.
CO3 : familiarization with the processes and patterns shaping the landforms.
CO4: understanding of environmental management using principles of applied
       geomorphology.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Introduction to geomorphology as a science : Definition, Nature, Scope and recent developments, Fundamental concepts: Geological structure and landforms, uniformitarianism, Multi-cycle and polygenetic evolution of landscape, Frequency concept of geomorphic processes, Climatogenetic geomorphology and peneplain and pediplain.

UNIT-II

Continental drift theory and its basic considerations; Plate tectonics-meaning and concept, margins and boundaries, Plate motion and cycle, Tectonic activities along boundaries and distribution of plates, Hill slope-definition and forms of slope, Geomorphic processes and slope forms, Theories of slope evolution by Davis, Penck, Strahler, Young, Woodand King.

UNIT-III

Weathering : Causes, Types of weathering : Physical, Chemical and biological, Mass movement Causes, Classifications and types of mass movements - slow and rapid mass movements.

UNIT-IV

Geomorphic processes and resulting land forms : Fluvial, Glacial, Periglacial, Aeolian and Karst, Applied geomorphology : Meaning and concept, Role of geomorphology in environmental management of the following : (i) accelerated erosion and sedimentation, (ii) construction of large dams (iii) urban floods.

Text/Reference Books:

1. Bloom AL.(2002), Geomorphology: A systematic Analysis of late Cenozoic landforms.Prentice-Hall Private Limited, New Delhi.
2. Embleton, C and Thormne. J.(1979), Process in Geomorphology. London, Edward Arnold.
3. Kale VS and Gupta A. (2001), Introduction to Geomorphology. OrientLongman, Hyderabad.
4. RitterDF., KochelRC. and Miller JR.(1995), Process Geomorphology. Dubuque, WinC. Brown Publishers.
5. Sharma HS and Kale V.S. (2009), Geomorphology in India, PrayagPustak Bhawan,Allahabad.
6. Sharma, VK. (2010), Introduction to Process Geomorphology. Tayler and Francis's, London.
7. Sharma, V.K. (1992), Earth's Surface Processes and Forms. Tata McGraw Hill Publications,New Delhi.
8. Singh S. (2002), Geomorphology, PrayagPustak Bhawan, Allahabad.
9. Strahler A.H. (2013), Introducing Physical Geography, Wiley and Sons, New York.
10. Thornbury, W.D. (2004), Principles of Geomorphology, John Wiley Sons, New York.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/2/CC6- Geomorphology

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	2.0	1.0	3.0
CO2	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	1.0	3.0
CO3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0
CO4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0
Average	3.0	3.0	3.0	3.0	2.5	2.8	3.0	2.5	3.0	2.3	1.8	3.0

M.A./M.Sc.Geography-2nd Semester
M.A./M.Sc./GEO/2/CC7- Population Geography

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: This course introduce the students about population geography, linkages between population and economic development and comparative study of population problems.

Course Outcomes (COs) : After completion of the course , the student will have :
CO1 : knowledge about population data base, methodological issues and mapping.
CO2 : familiarization with the dynamics of population and demographic dividends.
CO3 : enrichment of knowledge about population theories and models.
CO4: awareness about population policies of different countries and relation between population and environment.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Nature and scope of population geography, Methodological problems in population geography, Sources of population data, Quality and reliability of data, Problems of mapping population data.

UNIT-II

Concepts, Determinants and world patterns of the following attributes of population : (i) Dynamics of population : Fertility, Mortality, Migration (Including policies) and growth.
(ii) Composition of population: Age and sex composition, Ageing of population, Occupational structure and workforce, Demographic dividend: Linkages between population and economic development.

UNIT-III

Concepts of over population, Under population and optimum population, Demographic transition model, Population resource regions, Theories of population : Malthus, Ricardo and Marx, Limits to growth : Concept and application.

UNIT-IV

Comparative study of population problems and policies of developed and less developed countries, Developed world: U.S.A., Japan, Canada , Less developed world: India, China and Brazil, Population problems and environmental implications.

Text/Reference Books:
1. Bhende, A. A. and Kanitkar, T. (2011), Principles of Population Studies, Himalaya Publishing House, Mumbai.
2. Cassen, Robert & Bates, Lisa M. (1994), Population Policy: A New Consensus Overseas Development Council, Washington, D.C.
3. Chandna, R. C. (2016), Population Geography: Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi.
4. Demko, G. J. and others (Eds.) (1971), Population Geography, Reader, McGraw- Hill Books Co., New York
5. Graff, M., and Bremner, J. (2014), A Practical Guide to Population and Development, Washington DC: Population Reference Bureau.
6. Hassan,I.(2020), Population Geography: ASystematic Exposition, Routledge, London.
7. May, J.F. (2012),World population policies: their origin, evolution, and impact, Washington DC: Springer.
8. Mahajan,N(2014), Population Geography, R.K. publishers, Delhi.
9. Murray C. J. L., J. A. Salomon, C. D. Mathers and A. D. Lopez , Summary Measures of Population Health: Concepts, Ethics, Measurement and Applications. WHO, Geneva.
10. Newbold, K Bruce (2016), Population geography : Tools and Issues.

Mapping Matrix of COs, POs and PSOs   for M.A./M.Sc./GEO/2/CC7- Population Geography

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	2.0	3.0	2.0	2.0	2.0	3.0	2.0	3.0	1.0	3.0	3.0
CO2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	1.0	3.0	1.0
CO3	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	1.0	2.0	1.0
CO4	3.0	2.0	3.0	3.0	1.0	2.0	3.0	2.0	3.0	1.0	3.0	3.0
Average	3.0	2.5	3.0	2.8	2.0	2.5	3.0	2.0	3.0	1.0	2.8	2.0

M.A./M.Sc.Geography-2nd Semester
M.A./M.Sc./GEO/2/CC8- Regional Development and Planning

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: This course focuses on concept of regional development and theories of regional development, Niti aayog and its objectives,

Course Outcomes (COs): After completion of the course , the student will have:
CO1 : understanding of basic concepts of regional planning and development.
CO2 : acquaintance with models of regional development.
CO3 : enrichment of knowledge about regional disparities and challenges in India.
CO4 : awareness about developmental plans and strategies in India.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Concept of regional development, Regional disparities, Balanced regional development, Region and its typology, Basis of regionalization in India and their characteristics.

UNIT-II
Theories of regional development: Trickle Down Theory, Growth Pole Theory, Cumulative causation Model, Core-Periphery Theory, Concept of sustainable development, Inclusive growth and eco-feminism.

UNIT-III

Development and regional disparities in India since independence: Disparities in agricultural development , Disparities in industrial development, Disparities in human resource development in terms of poverty, Education and health .

UNIT-IV

India through planned era with special reference to: **T**ribal area development plan , Hill Area development plan, Desert, Drought prone and backward area development plan, Niti aayog : Aims and objectives, Urban planning in India with special reference to national capital region

Text/Reference Books:

1. Chandna, R.C.(2000), Regional Planning: A Comprehensive Text. Kalyani Publishers, New Delhi.
2. Chaudhuri, J.R. (2001), An Introduction to Development and Regional Planning with special reference to India. Orient Longman, Hyderabad.
3. Friedmann, J. and Alonso, W.(1973), Regional Development and Planning. The MIT Press, Mass.
4. Hettne, B., Inotai, A. and Sunkel, O. (2000), Studies in the New Regionalism. Vol. I-V. Macmillan Press, London.
5. Kuklinski, A.R. (1972), Growth Poles and Growth Centres in Regional Planning. Mouton and Co., Paris.
6. Leys, C. (1996),The Rise and Fall of Development Theory. Indian University Press, Bloomington.
7. Mahapatra, A.C. and Pathak, C.R.(2003), Economic Liberalization and Regional Disparities in India.Star Publishing House, Shillong.
8. Chand, M andPuri, V.K. (1983), Regional Planning in India, Allied Publishers, NewDelhi.
9. Misra, R.P.(1992), Regional Planning: Concepts, Techniques, Policies and Case Studies.Concept Publishing Company, New Delhi.
10. Misra, R.P. and Natraj, V.K. (1978), Regional Planning and National Development. Vikas Publication, New Delhi.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/2/CC8- Regional Development and Planning

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
CO2	3.0	3.0	2.0	3.0	2.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0
CO3	3.0	3.0	2.0	3.0	2.0	3.0	3.0	1.0	3.0	2.0	3.0	3.0
CO4	3.0	3.0	2.0	2.0	2.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0
Average	3.0	3.0	2.0	2.8	2.0	3.0	3.0	2.0	2.8	2.3	3.0	3.0

M.A./M.Sc.Geography-2nd Semester
M.A./M.Sc./GEO/2/CC9- Agricultural Geography

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: This course deals with the scope and significance of agricultural geography, green revolution, food production and security.

Course Outcomes (COs): After completion of the course , the student will have:
CO1 : enrichment of knowledge about origin, location and distribution of agricultural activities.
CO2 : enhancement of knowledge about changing land use and cropping pattern.
CO3 : acquaintance with agricultural systems, efficiency and productivity.
CO4 : awareness about impacts of climate change and economic liberalization on agriculture.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Nature, scope and significance of agricultural geography, Origin and dispersal of agriculture in the World , Determinants of agricultural patterns: Physical, Technological and cultural factors.

UNIT-II

Concepts of land capability survey, Land use and cropping pattern, Agricultural concepts: intensity of cropping, Degree of commercialization, Cropping diversification and concentration, Crop combination, Contract framing and agri-business, Approaches in agricultural regionalization : Von Thunen Model of agricultural land use, Agro-climatic zonation: Concept and Indian experience.

UNIT-III

Bases of identification of agricultural systems by Whitllesey and agricultural typology by Kostrowiki, Measurements of agricultural efficiency and productivity, Green revolution: Its impacts and consequences in India.

UNIT-IV

Food production and security in India, Neo-liberalization and Indian agriculture, Agriculture and climate change : Impacts and adaptation.

Text/Reference Books:

1. Bowler TR (1992), The Geography of Agriculture in Developed Market Economics. Longman.
2. Geoffrey, H.F.(1970), Geography of Agriculture: Themes in Research. Practice Hall, N.J.
3. Grigg D. (1995), Introduction to Agricultural Geography. Routledge, London.
4. Husain, Majid (1996),Systematic Agricultural Geography. Rawat Publications, Jaipur.
5. Morgon, W.B. and Munton, R.J.C.(1971), Agricultural Geography. Methuen, London.
6. Singh Jasbir and Dhillon S.S. (1994), Agricultural Geography. Tata Mc Graw Hill, New Delhi.
7. Safi, Mohammad (2007), Agricultural Geography. Prentice-Hall of India.
8. Singh Jasbir (1989), Agricultural Geography.
9. Symons, Leslic (1967), Agricultural Geography, G. Bell and Sons, London.
10. Tarrant, J.R. (1974), Agricultural Geography, Willey, New York.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/2/CC9- Agricultural Geography

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	2.0	2.0	3.0	2.0	3.0	3.0	1.0	3.0	2.0	2.0	3.0
CO2	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0
CO3	3.0	3.0	1.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	2.0
CO4	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0
Average	3.0	2.8	2.0	3.0	2.5	3.0	3.0	1.8	3.0	2.5	2.8	2.8

M.A./M.Sc.Geography-2nd Semester
M.A./M.Sc./GEO/2/CC10 - Morphometric Analysis (Theory)

Credits: 2 **Max. Marks: 50**
Lectures: 30 **Final Term Exam.: 30**
Duration of Exam.: 2 Hrs. **Internal Assessment: 20**

Objective: The objective of the course is to enable the students to be familiar about the topographical sheets of India and geographical significance of drainage basin and development of slopes

Course Outcomes (COs): At the end of the course , the student will be able to :
CO1: understand the arrangement, identification and interpretation of topographical sheets and drainage basin and its linear and areal properties.
CO2: know about relief aspects of drainage basin and Development of understanding about slope and various methods of its analysis.

Note for the paper setter: The question paper will consist of five questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, four more questions will be set unit-wise comprising of two questions from each of the two units. The candidates are required to attempt two more questions selecting at least one question from each unit.

UNIT-I
Arrangement, identification and interpretation of topographical sheets of India. Delineation of drainage basin and its geographical significance, Profile: Transverse and longitudinal, Drainage network analysis : Linear and areal properties, Relationship between stream order, number and length.
UNIT-II
Relief aspect of drainage basin: Area-height curve, Altimetric frequency curve, Hypsographic curve, Hypsometric integral curve, Clinographic curve, Development of slope and various methods of its analysis (Wentworth and Smith's method).

Text/Reference Books:
1. Dury, G.H. (1966), Essays in Geomorphology. Heinmann, London.
2. Misra, R.P. and Ramesh, A. (1999), Fundamentals of Cartography, Concept Publishing Company, New Delhi.
3. Miller, A. (1964), The Skin of the Earth. Methuen, London
4. Monkhouse, F. J. and Wilkinson, H.R. (1980), Maps and Diagrams. B.I. Publications, New Delhi.
5. Singh, R.L.(1986), Elements of Practical Geography, Kalyani Publications, New Delhi.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/2/CC10 - Morphometric Analysis (Theory)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	2.0	2.0	1.0	1.0	1.0	3.0	3.0	3.0	1.0	1.0	2.0
CO2	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Average	3.0	2.5	2.5	2.0	1.5	2.0	3.0	3.0	3.0	2.0	2.0	2.5

M.A./M.Sc.Geography-2nd Semester
M.A./M.Sc./GEO/2/ DSC-2 A - Morphometric Analysis (Practical)

Credits: 4 (Practical)
Teaching per week: Hrs.

Max. Marks: 100
Duration of Exam : 3 Hrs

Objective: This course enable the students to be familiar about the topographical sheets of India and geographical significance of drainage basin and development of slopes

Course Outcomes (COs): At the end of the course , the student will be able to
CO1: extract physical and cultural information from topographical maps.
CO2: get the knowledge of drawing of transverse and longitudinal profiles.
CO3: represent the linear, areal and relief aspects of drainage basin.
CO4: prepare the slope and relative relief maps of drainage basin.

Note for the Paper Setter: The question paper will consist of four exercises in all. Student(s) are required to attempt any three exercises.

UNIT- I

Representation of physical features, Representation of cultural features, Delineation of watershed (All exercises shall be based on it).

UNIT- II

Profile analysis: Transverse and longitudinal, Serial profiles, Superimposed profiles, Composite profiles, Projected profiles, Longitudinal profile. Linear Aspects : Relationship between stream order and stream Number, Relationship between stream order and average stream length, Bifurcation ratio.

UNIT- III

Areal Aspects: Drainage frequency, Drainage Density. Relief Aspect : Area height Curve, Altimetric frequency curve.

UNIT- IV

Hypsographic curve, Hypsometric integral curve, Clinographic curve, Slope Analysis: Wentworth's method of average slope , G. H. Smith's method of relative relief.

Text/Reference Books:

1. Dury, G.H. (1966), Essays in Geomorphology. Heinmann, London.
2. Misra, R.P. and Ramesh, A. (1999), Fundamentals of Cartography, Concept Publishing Company, New Delhi.
3. Miller, A. (1964), The Skin of the Earth. Methuen, London
4. Monkhouse, F. J. and Wilkinson, H.R. (1980), Maps and Diagrams. B.I. Publications, New Delhi.
5. Singh, R. L.(1986), Elements of Practical Geography, Kalyani Publications, New Delhi.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/2/ DSC-2 A - Morphometric Analysis (Practical)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	1.0	3.0	2.0
CO2	3.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0	2.0	3.0	2.0
CO3	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0
Average	3.0	3.0	3.0	3.0	2.5	2.3	3.0	3.0	3.0	2.3	3.0	2.5

M.A./M.Sc.Geography-2nd Semester
M.A./M.Sc./GEO/2/ DSC 2-B - MOOC Available on SWAYAM Portal

Credits: 4   **Max. Marks: 100**

M.A./M.Sc.Geography-3rd Semester
MA/M.Sc./GEO/3/ CC11- Geography and Ecosystems

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: The objective of this course is to describe Geography and ecosystems, biomes, biodiversity and conservation and some environmental issues.

Course Outcomes (COs): After completion of the course , the student will have :
CO1 : familiarization with the concept and elements of ecosystem.
CO2 : enrichment of knowledge about the characteristics of different biomes.
CO3 : awareness about the inter-linkages between human artifacts and natural environment.
CO4 : acquaintance about world environmental problems and policy framework.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Geography and ecosystem : Fundamental concepts, Concept of ecosystem : Bases, Types, components and function of ecosystem, Energy flow in ecosystem : Food chain, Food Web, Tropic levels, Ecological production and ecological pyramids, Biogeochemical cycles : Hydrological, Carbon, Oxygen and nitrogen cycles.

UNIT-II

Biome: scheme of classification : Factors affecting the distribution of biomes, Salient features of the following biomes : Tropical evergreen rain forest biome, Savanna biome , Monsoon biome, Temperate biome, Marine biome, Mountain biome, Desert biome, Ecosystem approach and its relevance in geography.

UNIT-III

Man-environment relationship : Classification of resources, Use and ecological imbalance with reference to soils, Forests and energy resources, Concept of air, Water, and noise pollution: Level of problem, Causes and measurement tools, Biodiversity and conservation : Preservation and conservation of ecosystem through resource management.

UNIT- IV

Environmental issues : Climate change, ozone depletion, Global warming and global cooling, International efforts for environment management and conservation : The Stockholm Conference, The Earth Summit, Kyoto Protocol, Paris declaration and after, Environment Governance : Environment policies and environmental legislation in India : Prevention &

protection act of wild life, Water, Air, Forest, Environment protection and National Environment Tribunal Act.

Text/Reference Books:

1. Agarwal, A. and Sen, S.(1999), The Citizens Fifth Report. Centre for Science and Environment New Delhi.
2. Bertalanffy, L. (1958), General Systems Theory, George Bragiller, New York.
3. Bodkin, E.(1982), Environmental Studies, Charles E.Merril Pub Co., Columbus, Ohio.
4. Chandna, R.C.(1998), Environmental Awareness, Kalyani Publishers, New Delhi.
5. Chorley, R.J.(1962), Geomorphology and General Systems Theory, U.S.G.S. Professional Paper, 500B.
6. Eyre, S.R. and Jones, G.R.J.(1966), Geography as Human Ecology, Edward Arnold, London,.
7. Kormondy, E.J.(1989), Concepts of Ecology, Prentice Hall.
8. Mishra,S.P.and Pandey, S.N. (2016), Essential Environmental studies, Ane publications New Delhi.
9. Nobel and Wright(1996), Environmental Science, Prentice Hall, New York.
10. Odum, E.P.(1971), Fundamentals of Ecology, W.B. Saunders, Philadelphia.
11. Russwurm, L.H. and Sommerville, E.(1985), Man's Natural Environment-A systems Approach, Duxbury, Massachusets.
12. Sharma, H.S.(2000),Ranthambhore Sanctuary-Dilemma of Eco-development, Concept, New Delhi.
13. Simmons, I.G. (1981), Ecology of Natural Resources, Edward Arnold, London.
14. Singh, S.Environmental Geography, Prayag Publications, Allahabad, 1991.
15. Smith, R.L.(1992), Man and his Environment: An Ecosystem Approach, Harper & Row, London.
16. World Watch Institute: State of the World, Latest Report, Washington, D.C.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/3/ CC11- Geography and Ecosystems

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	1.0	3.0	2.0	1.0	2.0	3.0	2.0	3.0	1.0	1.0	3.0
CO2	3.0	2.0	3.0	3.0	1.0	2.0	3.0	2.0	3.0	1.0	2.0	3.0
CO3	3.0	2.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	3.0
CO4	3.0	2.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	3.0
Average	3.0	1.0	3.0	2.8	1.5	2.0	3.0	2.0	3.0	1.0	1.8	3.0

M.A./M.Sc.Geography-3rd Semester
MA/M.Sc./GEO/3/ CC12-A - Research Methodology

Credits: 4
Lectures: 60
Duration of Exam.: 3 Hrs.

Max. Marks: 100
Final Term Exam.: 70
Internal Assessment: 30

Objective: The main objective of this course is to introduce the idea of research, selection of research problem, sampling techniques, data sources and data collection etc.

Course Outcomes (COs): At the end of the course , the student will be able to **:**
CO1 : improve their ability and known about the research process and their problems
CO2 : improve their knowledge about research and formulated their research. They can generates hypothesis for research.
CO3 : collect data for any research and give information about sampling techniques
CO4 : understand the process of data collection and to improve the knowledge about questionnaire making.

Note for the Paper Setter : The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Introduction to Research in Geography: Meaning, Objectives, Types, and Significance of Research; Characteristics of research, The Research Process- a detailed description of steps involved, Problems encountered by researchers in India.

UNIT-II

Defining the research problem : Meaning of research problem, Selection of research problem, Need for defining a research problem, Techniques involved in defining a problem, Limitations of the research problem.
Formulation of hpothesesm: Definition, Characteristics and types of Hypothesis.

UNIT-III

Research Design: Meaning, Need, and features of research design, Important concepts relating to research design, Types of research design-exploratory, Descriptive and experimental, Sampling and Sample Design : Census and Sample Methods, Basis, Advantages and limitations of sampling, Characteristics of a good sample, Sampling techniques and methods - Random sampling methods and non-random sampling methods, Merits and limitations of sampling.

UNIT-IV

Data sources and data collection **:** Types of data- Primary and secondary, Sources of data, Methods of collecting primary data - Observation method, Interview method, Questionnaire and schedule, Difference between questionnaire and schedule, Significance of field work and report writing in geography, Format of field report

Text/Reference Books:

1. Black James A and D.J. Champion (1976), Methods and Issues in Social Research, New York, John Wiley and Sons, Inc.
2. Goode and Hatt, Research Methodology in Social Sciences, Oxford University Press, New Delhi.
3. Gomez B. and John Paul Jones.(2010), Research Methods in Geography-A Critical Introduction. Wiley Blackwell Publications, Singapore.
4. Prasad H.(1992), Research Methods and Techniques in Geography, Rawat Publishers, Jaipur.
5. Kundu A. Measurement of Urban Processes: A Study of Regionalization, Popular Prakashan, Mumbai.
6. Mishra, H.N. and Singh V.P. (1998), Research Methodology: Social, Spatial and Policy Dimensions, Rawat Publishers, Jaipur.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/3/ CC12-A - Research Methodology

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	1.0	3.0	2.0	2.0	2.0	3.0	2.0	3.0	1.0	1.0	3.0
CO2	3.0	2.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	3.0
CO3	3.0	2.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	3.0
CO4	3.0	2.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	3.0
Average	3.0	1.0	3.0	2.8	2.0	2.0	3.0	2.0	3.0	1.0	1.8	3.0

M.A./M.Sc.Geography-3rd Semester
M.A./M.Sc./GEO/3/ CC 12-B - MOOC Available on SWAYAM Portal

Credits: 4   **Max. Marks: 100**

M.A./M.Sc.Geography-3rd Semester
MA/M.Sc./GEO/3/ SEC1-A - Urban Geography

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: The main objective of this course is to elaborate urban geography, Rural urban fringe, Internal structure of third world cities and bases of residential segregation etc.

Course Outcomes (COs): After completion of the course, it will :
CO1 : provides understanding about evolution of towns and pattern of urbanization.
CO2 : enrichment of knowledge about economic and functional characteristics of cities.
CO3 : acquaintance with urban morphology and land use models.
CO4 : familiarization with theories of urban development.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Urban geography: Concepts, Nature and scope, Approaches to study urbanization and urban systems, Origin and evolution of towns and factors of urban growth, Theories of urban origins , The global context of urbanization: trends and pattern, Cycle of urbanization.

UNIT-II

Economic base of cities: Concept and employment ratio, Functional classification of cities : Concepts and scheme of classification, Rural Urban Fringe : Structural characteristics and its development, City and region : Concepts of influence and dominance, Methods of delimitation of area of influence and dominance, SEZ: Concept, policies and consequences.

UNIT-III

Urban morphology and land use structure : City core, Commercial, Industrial and residential areas, Classical models of city structure : Concentric zone model by E.W. Burgess, Sector model by Homer Hoyt, Multiple nuclei model by Harris and Ullman, Modifications of the classical models : Kearsley' modifications of Burgess model, Mann's model of midsize British city, White's model of the 21st century city and Vance's urban realms model, Internal structure of third world cities : Bazar model and colonial model of south asian cities, Model of south east asian cities and model of African cities.

UNIT-IV

Social area analysis, Bases of residential segregation, Diffusion theories by Bylund, Morril, Hudson and Vance, Rank size rule, Law of primate city.

Text/Reference Books:

1. Mayer, H.M. and Kohn, C.F. (1968), Readings in Urban Geography. The University of Chicago Press, Chicago.
2. Berry, J.E.(1970), Geography Perspective on Urban System, Prentice Hall, New Jersey.
3. Cater, Herald (1972),The study of Urban Geography, Edward Arnold, London.
4. Datta, A. and Shaban, A.(2017), Mega-Urbanization in Global South: Fast Cities and New Urban Utopias of the Post-colonial State, Routledge: London and New York.
5. Johnson, J. (1974), Suburban Growth, John Wiley and Sons, London.
6. Kaplan, Wheeler and Holloway (2007), Urban Geography, John Wiley, USA.
7. Clark, D. (1982), Urban Geography, Croom Halm, London and Cambridge.
8. Northern, R.M.(1979), Urban Geography, John Wiley, Toronto.
9. Michael P. (2004), Urban Geography: A Global Perspective, Routledge, USA.
10. Parnell, S. and Oldfield, S. (2014),The Routledge Handbook on Global Cities, Routledge, London.
11. Ramachandra,R(1992), Urbanization and Urban System in India, Oxford, London.
12. Raymond and Murphy(1960), The American Cities: An Urban Geography, McGraw Hills, NewYork.
13. Scott, A.J. (2002), Global City-Regions: Trends, Theory, Policy, Oxford Press, London.
14. Southhall, A. (1998), The City in Time and space, Cambridge University Press, Cambridge.
15. Sinha, S.P. (1984), Processes and Pattern of Urban Development in India: A Study of Haryana, The associated Publishers, Ambala Cantt.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/3/ SEC1-A - Urban Geography

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	1.0	3.0	2.0	1.0	2.0	3.0	2.0	3.0	1.0	2.0	3.0
CO2	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	1.0	3.0	3.0
CO3	3.0	3.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	3.0
CO4	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	1.0	2.0	3.0
Average	3.0	2.5	3.0	2.8	2.3	2.0	3.0	2.3	3.0	1.0	2.3	3.0

M.A./M.Sc.Geography-3rd Semester
MA/M.Sc./GEO/3/ SEC1-B- Geography of Wellbeing with Special Reference to India

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective : The course describes welfare geography, human development index , structure of education in independent India and Geography of health

Course Outcomes (COs): After completion of the course , it will help the students for :
CO1 : understanding the concept of social wellbeing in spatial context.
CO2 : enhancement of knowledge about human welfare issues and their identification.
CO3 : acquaintance with educational infrastructure and policies in India.
CO4: enrichment of knowledge about spatial pattern of hunger, health and nutritional security.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Welfare geography : Concept of social well-being, Development and approaches to study human welfare, Human beings : Needs and wants, Quality of life, Level of living and state of well-being in India, Identification of social indicators, Their data sources and problem.

UNIT-II

Human development index, poverty and its measures, Poverty and inequality in India, Gender issues in the process of development and gender development index.

UNIT-III

Structure of education in independent India, Regional patterns of educational development, Enrolment and dropouts with reference to school education, Financing education and education policy in India.

UNIT-IV

Geography of health: Concept of disease, ecology and epidemiology, Health programmes and National Health Policy in independent India, Nutritional security in India.

Text/Reference Books:

1. Ahmad, A. (1999), Social Geography, Rawat Publication, New Delhi.
2. Coates, B.E., Johnston R.J. and KnoxP.L. (1977), Geography and Inequality, Oxford University Press, London.
3. Jean, D.and Sen, A. (1996), Economic Development and Social Opportunity, Oxford University Press, New Delhi.
4. Jean, D andSen, A (2002), India: Development and Participation, OUP, New Delhi.
5. Kapila, U (2007),India's Economic Development Since 1947. Academic Foundation, New Delhi.
6. National Nutrition Monitoring Bureau (2000), Dynamic Database on Diet and Nutrition, National Institute of Nutrition, Hyderabad.
7. Sen, A. and Jean D. (1996), Indian Development: Selected Regional Perspectives, Oxford University Press.
8. Smith, D.M. (1977), Human Geography: A Welfare Approach, Arnold Heinemann.
9. Smith, D.M.(1973), The Geography of Social Well-being in the United States. McGrawHill, New York.
10. Smith, D.M.(1977), Where the Grass is Greener: Geographical Perspectives on Inequality, Penguin.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/3/ SEC1-B- Geography of Wellbeing with Special Reference to India

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	2.0	2.0	3.0	1.0	3.0	3.0	1.0	3.0	2.0	2.0	1.0
CO2	3.0	3.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	2.0	3.0	2.0
CO3	3.0	3.0	2.0	3.0	2.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0
CO4	3.0	3.0	2.0	3.0	2.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0
Average	3.0	2.8	2.3	3.0	1.5	2.8	3.0	1.3	3.0	2.5	2.5	2.0

M.A./M.Sc.Geography-3rd Semester
MA/M.Sc./GEO/3/ DSC3-A - Political Geography

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: . The main objective of this course is to describe role of political geography in human life, globalization, concept of nation and geo-political issues in India.

Course Outcomes (COs): After completion of the course , it will help the students for :
CO1 : familiarization with the conceptual framework of geo-political issues.
CO2 : augmentation of knowledge about state and nation in geographic perspective.
CO3 : enhancement of knowledge about global strategic views and geo-politics
CO4 : awareness about contemporary geo-political situation and issues in India.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Nature and scope of political geography, Its approaches and recent trends, School of thoughts: Political economy, World system, Globalization.

UNIT-II

Concept of nation, State and nation-state, Nationalism and nation building, Emergence and growth of territorial state, Globalization and the crisis of the territorial state forms of governance : Unitary and federal, Distinction between frontiers and boundaries, Demarcation of boundaries, Classification and functions of boundaries, Landlocked state : Advantages and disadvantages.

UNIT-III

Global strategic views: Mahan and Sea power, Mackinder and Heartland, Spykman and Rimland Servasky and Air power, Geo-politics in the post-cold war world- S.B. Cohen's model of geo-politics.

UNIT-IV

Emergence of India as regional power : Geo-political significance of Indian and Pacific ocean, Geo-political issues in India with special reference to water disputes and riparian claims, Gerrymandering and electoral abuse in India, Kashmir problem and Indo-Pak relations.

Text/Reference Books:

1. Alexander, L.M. (1963), World Political Patterns Ran Mc Nally, Chicago.
2. De Blij, H.J. and Glassner, Martin(1968),Systematic Political Geography, John Wiley, New York.
3. Deshpande C.D(1992), India-A Regional Interpretation Northern Book Centre, New Delhi,.
4. Dikshit, R. D.(1996), Political Geography: A Contemporary perspective, Tata McGraw Hill, New Delhi.
5. Dikshit, R.D.(1999), Political geography: A Century of Progress, Sage, New Delhi.
6. Fisher Charles A.(1968), Essays in Political Geography, Methuen, London.
7. John R. Short(1982). An Introduction to Political Geography, Routledge, London.
8. Moddie, A.E. Geography Behind Political Hutchinson, London, Latest edition.
9. Pounds N.J.G.(1972), Political Geography. McGraw Hill, New York.
10. Prescott. J.R.V.The Geography of Frontiers and Boundaries Aldine, Chicago.
11. Sukhwal, B.L.(1968), Modern Political Geography of India Sterling Publishers, New Delhi..
12. Taylor, P.(1985), Political Geography, Longman, London.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/3/ DSC3-A - Political Geography

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	3.0	2.0	2.0	3.0	3.0	2.0	3.0	1.0	1.0	2.0
CO2	3.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	2.0
CO3	3.0	3.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	3.0
CO4	3.0	3.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	3.0
Average	3.0	2.8	2.8	2.5	2.0	2.3	3.0	2.0	3.0	1.0	1.8	2.5

M.A./M.Sc.Geography-3rd Semester
MA/M.Sc./GEO/3/DSC 3-B - Geography of Rural Settlements

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: The course focuses on rural settlement of geography , environmental issues and historical development

Course Outcomes (COs): After completion of the course , it will enable the students for :
CO1 : understanding about the fundamental concepts of settlement geography.
CO2 : enhancement of knowledge about types and patterns of rural settlements
CO3 : acquaintance with various social issues in rural settlements.
CO4 : knowledge about environmental issues and rural development planning in India.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Nature, Scope, Significance and development of settlement geography. Approaches in rural settlement geography, Histogenesis of rural settlements : Historical development, Definition and characteristics of rural settlement, Distribution of rural settlements, Size and spacing of rural settlements in India.

UNIT-II

Rural settlement : Types, Forms and patterns, Regionalization of rural settlements with special reference to India.

UNIT-III

Social issues in rural settlements: Poverty, Housing, Health care and inequality in India, Cultural landscape elements in rural settlements : House type and field pattern.

UNIT-IV

Environmental issues in rural settlements, Rural development planning in India.

Text/Reference Books:

1. Alam, S.M.(1982), Settlement System of India, Oxford and IBH Publication Co, New Delhi,.
2. Brok, J.O.M and Welb, J.W.(1978), Geography of Mankind. McGraw Hill, London.

3. Chisholm, M.(1967), Rural settlements and Land Use, John Wiley, New York.
4. Clout, H.D.(1977), Rural Geography, Pergamon, Oxford.
5. Daniel, P. and Hopkinson, M.(1986), The Geography of Settlement. Oliver &Byod, Edinburgh.
6. Grover, N.(1985), Rural Settlements – A Cultural Geographical analysis, Inter-India Publication, Delhi.
7. Hudson, R.S.(1976), A Geography of Settlements, MacDonald & Evans., New York.
8. Mitra, A.(1960), Report on House Types and Village settlement Patterns in India. Publication Development, Govt. Of India, New Delhi.
9. Mayer, I and R.J. Haqqet (1979), Settlements: Theory and Practice. Harper & Row, London.
10. Ramachandran, H.(1985), Village Clusters and Rural Development, Concept Publication, New Delhi.
11. Rao, E.N.(1986), Strategy for Integrated Rural Development, B.R. Publication Cor., Delhi.
12. Rappaport, A.(1969), House form and Culture, Prentice Hall, New Jersey.
13. Sen, L.K.(1972), Readings in Micro-level Planning and Rural Growth Centres. National Institute of Community Development, Hyderabad.
14. Singh, R.L.(1978), Transformation of Rural Habitat in Indian Perspectives: A Geographic Dimension, NGSI Research Publication, No. 19, Varanasi.
15. Srinivas, M.N.(1968), Village India, Asia Publication House, Bombay.
16. Wan Mali, S.(1983), Service Centres in Rural India, B.R. Publication, New Delhi.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/3/DSC3-B - Geography of Rural Settlements

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	1.0	3.0	3.0	1.0	2.0	3.0	2.0	3.0	1.0	1.0	2.0
CO2	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	1.0	3.0	3.0
CO3	3.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	2.0
CO4	3.0	2.0	2.0	2.0	2.0	2.0	3.0	2.0	3.0	1.0	2.0	2.0
Average	3.0	2.0	2.5	2.5	2.0	2.0	3.0	2.0	3.0	1.0	2.0	2.3

M.A./M.Sc.Geography-3rd Semester
MA/M.Sc./GEO/3/ DSC4-A - Introduction To Remote Sensing (Theory)

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: The main objective of this course is to describe the remote sensing concept for geographical sites with emphasis on aerial photographs. Concept of multispectral and digital image processing is also introduced.

Course Outcomes (COs): After completion of the course , it will help the students for :
CO1 : acquaintance with fundamentals of remote sensing.
CO2 : development of capability to interpret the aerial photographs.
CO3 : enrichment of skills to extract information from resource satellite imageries.
CO4: awareness about digital image processing and its applications in resource monitoring and mapping.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Aerial photographs : History, definition and advantages and limitations, Types of aerial photographs and resolution, Mirror stereoscope, Stereoscopic parallax, Relief displacement, Elements of aerial photo interpretation.

UNIT-II

Remote sensing, Definition and scope, EMR and spectrum, Blackbody Radiation and Kirchhoff's Law, Interaction of EMR with atmosphere and earth surface features. Atmospheric window, Remote Sensing Platforms and Sensors. Orbits, Resolution and types of remote sensing.

UNIT-III

Concept of multispectral, Thermal and Hyper spectral remote sensing, Major earth resource Satellites: LANDSAT, SPOT and IKONOS, Indian Space Program and characteristics of Indian remote sensing satellite and data.

UNIT-IV

Digital image processing and application: Image restoration and correction, Image classification : Supervised and unsupervised, Applications in resource mapping and monitoring.

Text/Reference Books:

1. Avery T.E., and G.L. Berlin (1992), Fundamentals of Remote Sensing and Air Photo Interpretation, Macmillan, New York, USA.
2. Aggarwal C.S. and P.K. Garg (2000), Remote Sensing, A.H. Wheeler & Co. Ltd, New Delhi.
3. Campbell, J.B. (2002), Introduction to Remote Sensing, Taylor & Francis, New York, USA.
4. Jensen, J.R. (2000), Remote Sensing of the Environment: An Earth Resource Perspectives, Pearson Education.
5. Lillesand, TM. and Keffer R. (1994), Remote Sensing and Image Interpretation, John Willy & Sons, New York.
6. Meenakshi Kumar (2000), Text book on Remote Sensing; NCERT, New Delhi.
7. Nag and Kudrat (2002), Remote Sensing and Image Interpretation, Concept Publishers, Delhi.
8. Reddy, A. (2000), Remote Sensing and Geographical Information System (An Introduction), Hyderabad.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/3/ DSC4-A - Introduction To Remote Sensing (Theory)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0
CO2	3.0	3.0	2.0	3.0	3.0	3.0	3.0	1.0	2.0	3.0	3.0	3.0
CO3	3.0	2.0	2.0	2.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	2.0	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0
Average	3.0	2.5	2.5	2.5	3.0	3.0	3.0	1.8	2.5	3.0	3.0	3.0

M.A./M.Sc.Geography-3rd Semester
MA/M.Sc./GEO/3/ DSC4-B - Advance Remote Sensing(Theory)

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: The main objective of this course is to give the idea of advance remote sensing techniques, pre-processing of satellite data.

Course Outcomes (COs): After completion of the course , it will help the students to :
CO1 : enhance the knowledge of space technology.
CO2 : extract the knowledge of satellites and sensors.
CO3 : enrichment of skills to extract information from resource satellite imageries.
CO4 : awareness about digital image processing and digital classification.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Types of remote Sensing: Thermal remote sensing, Microwave remote sensing, Radar environment considerations, LIDAR, Hyperspectral, Application of advance remote sensing.

UNIT-II

Platform: Types and their characteristics, Satellites and their characteristics, Geo-stationary and sun-synchronous, Earth resources satellites- LANDSAT, SPOT, IRS, IKONOS, QUICKBIRD satellite series, Meteorological satellites-INSAT, NOAA, GOES; Sensors-Types and their characteristics, Across track (whiskbroom) and along track (pushbroom) scanning, Optical mechanical scanners-MSS, TM, LISS, WiFS, PAN, Concept of resolution- Spatial, Spectral, Temporal, Radiometric.

UNIT-III

Digital image processing (DIP): Introduction and DIP systems, Digital data and storage formats (BSQ, BIL and BIP), Statistics and digital image processing particularly histogram and scatter plots, Pre-processing of satellite data (radiometric and geometric corrections)

UNIT-IV

Concept of image classification : Supervised, Unsupervised classification, Classification algorithms: Maximum likelihood, Distance to mean, parallel piped. Classification accuracy: Error matrix, Errors of commission and omissions, Kappa statistics, Advanced classification techniques.

Text/Reference Books:

1. Jensen, J.R.(2000), Remote Sensing of the Environment: An Earth resource Perspective. Prentice Hall.
2. Joseph George,(2003), Fundamentals of remote sensing. Universities Press
3. Lillesand, T.M., and Kieffer, R.M.,(1987), Remote Sensing and Image Interpretation, John Wiley.
4. Sabbins, F.F., (1985), Remote sensing Principles and interpretation. W.H.Freeman and company.
5. American society for Photogrammetry and Remote Sensing, (1999), Remote Sensing for the Earth Sciences,Manual of Remote Sensing,3rd ed.,vol. 3, Wiley,New York.
6. Avery, T.E., and G.L.Berlin,(1992), Fundamentals of Remote Sensing and Airphoto Interpretation,5th ed.,Macmillan, New York.
7. Campbell, J.B.,(1996), Introduction to Remote Sensing, 2nded., Guilford, New York.
8. Curran, Paul J., (1985), Principles of Remote Sensing, Longman, London & New York.
9. Drury, S.A., Images of the Earth: A Guide to Remote Sensing,2nd ed.,Oxford University Press, Oxford.
10. Elachi,C., (1987), Introduction to the Physics and Techniques of Remote Sensing, Wiley, New York.
11. Jensen, J.R., (2004), Remote Sensing of the Environment: An Earth Resource Perspective, Pearson Education.
12. Joseph, G.,(2003), Fundamentals of Remote Sensing, Universities Press, Hyderabad.
13. Lillesand, T. and Kiefer, R.,(1999), Remote Sensing and Image Interpretation, Wiley, London.
14. Mather, P.M. (1999), Computer processing of remotely sensed images: an introduction, Wiley, Chichester.
15. Sabins, F.F,Jr., (1997), Remote Sensing: Principles and Interpretation,3rd ed., W.H. Freeman, New York.
16. Star, J.L., J.E. Estes, and K.C. McGwire,(1997), Integration of GIS and Remote Sensing, Cambridge University Press.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/3/ DSC4-B - Advance Remote Sensing(Theory)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0
CO2	3.0	3.0	2.0	3.0	3.0	3.0	3.0	1.0	2.0	3.0	3.0	3.0
CO3	3.0	2.0	2.0	2.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	2.0	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0
Average	3.0	2.5	2.5	2.5	3.0	3.0	3.0	1.8	2.5	3.0	3.0	3.0

M.A./M.Sc.Geography-3rd Semester
MA/M.Sc./GEO/3/ SEC 2-A - Introduction to Remote Sensing (Practical)

Credits: 4 (Practical)   **Max. Marks: 100**
Teaching per week: 8 Hrs.   **Duration of Exam : 3 Hrs**

Objective : This paper deals with the applied aspects of remote sensing and identification of objects on ZEISS card and digital classification of satellite data

Course Outcomes (COs) : After completion of the course , it will help the students for

CO1 : acquisition of skills of measurements on aerial photographs.
CO2 : capability of reading and interpreting physical, socio-economic features on photographs.
CO3 : acquaintance with different digital data products and software for the processing of satellite data.
CO4 : enhancement of skills about processing and extracting features from satellite imageries.

Note for the Paper Setter: The question paper will consist of four exercises in all. Student(s) are required to attempt any three exercises.

UNIT-I

Basic information on aerial photographs (annotation and markings). Identification of fiducial marks, Principal point, Conjugate principal points and flight line. Calculation of scale of aerial photographs, Determination of height of objects on single vertical aerial photographs.

UNIT-II

Stereoscope vision and identification of objects on ZEISS card, Interpretation and preparation of land use/ land cover from aerial photographs, Preparation of interpretation key of satellite imageries, Visual interpretation and preparation of land use/land cover from satellite imageries**.**

UNIT-III

Georeferencing of satellite data by georeferenced toposheet or GCP's, Pre-processing of imageries (i) image enhancement (ii) sub set and (iii) resolution. merge/sharpening of image.

UNIT-IV

Preparation of FCC and comparison of features on true colour, Panchromatic and FCC, Digital classification of satellite data (supervised and unsupervised).

Text/Reference Books:

1. Bhatta Basudeb (2014), Remote Sensing and GIS. Oxford University Press, Oxford.
2. Guha Pardeep (2013), Remote Sensing for the Beginner. East West Press, New Delhi.
3. Kumar Meenakshi (2001), Remote Sensing, NCERT, New Delhi.
4. Lillesand and R.W. Kiefer,(2005), Remote Sensing and Image Interpretation, John Wiley and Sons.
5. Pritvish Nag, and M. Kudrat (1998), Digital Remote Sensing, Concept Publishing Company, New Delhi.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/3/ SEC 2-A - Introduction to Remote Sensing (Practical)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	2.0	3.0	3.0	3.0	3.0	1.0	2.0	3.0	3.0	2.0
CO2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0
CO3	3.0	3.0	2.0	2.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0
Average	3.0	3.0	2.5	2.8	3.0	3.0	3.0	1.8	2.3	3.0	3.0	2.5

M.A./M.Sc.Geography-3rd Semester
MA/M.Sc./GEO/3/ SEC 2-B - Advance Remote Sensing (Practical)

Credits: 4 (Practical)   **Max. Marks: 100**
Teaching per week: 8 Hrs.   **Duration of Exam : 3 Hrs**

Objective: . The main objective of this course is to expertise the students in advance remote sensing techniques along wit various types of maps.

Course Outcomes (COs): After completion of the course , it will help the students for :
  CO1 : acquisition of skills to create geodatabase .
  CO2 : Capability of editing of Spatial & Non-Spatial data
  CO3 : Acquaintance with data query different and raster data calculations
  CO4 : Enhancement of skills about mapping and editing, cartographic symbolization

Note for the Paper Setter: The question paper will consist of four exercises in all. Student(s) are required to attempt any three exercises.

UNIT- I

Geo database creation, Non-spatial data integration, Editing of spatial & Non-spatial data.

UNIT- II

Building Topology, Data query, Texture & object based classification & Modelling, Raster data calculations.

UNIT-III

Accuracy assessment, Mapping and editing, Cartographic symbolization, Generalization of maps.

UNIT-IV

Types of maps, Map design or layout, Map production.

Text/Reference Books:

1. Bhatta Basudeb (2014), Remote Sensing and GIS. Oxford University Press, Oxford.
2. Guha Pardeep (2013), Remote Sensing for the Beginner. East West Press, New Delhi.
3. Kumar Meenakshi (2001), Remote Sensing, NCERT, New Delhi.
4. Lillesand and R.W. Kiefer,(2005), Remote Sensing and Image Interpretation, John Wiley and Sons.
5. Pritvish Nag, and M. Kudrat (1998), Digital Remote Sensing, Concept Publishing Company, New Delhi.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/3/ SEC 2-B
Advance Remote Sensing (Practical)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	2.0	3.0	3.0	3.0	3.0	1.0	2.0	3.0	3.0	2.0
CO2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0
CO3	3.0	3.0	2.0	2.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0
Average	3.0	3.0	2.5	2.8	3.0	3.0	3.0	1.8	2.3	3.0	3.0	2.5

M.A./M.Sc.Geography-3rd Semester
M.A./M.Sc./GEO/3/CC13 - Project Report Based on Field Survey

Credits : 4 (Project)   **Max. Marks : 100**
Teaching Hour per week : 8 Hrs   **Duration of Exam : 3 Hrs**

Objective: To enable the students about the use of computer in geography, sampling techniques for data collection retrieval, analysis and interpretation of socio-economic field data.

Course Outcomes (COs): At the end of the course, the student will be able to

CO1: know the basics of hardware and software of a computer system and role of computer in geography.
CO2: Aware the students about MS-Excel , to draw various graphs and diagram in excel
CO3: work as a team and handle the field situations, identify socio-economic problem and formulation of research design.
CO4: learn sampling techniques for data collection in the field, analysis and interpretation of socio-economic field data,

Note for the paper setter : Examiner will have to evaluate the candidate on the basis of field report prepared by the student, viva voce etc.

Text/Reference Books:

1. Black James A and D.J. Champion (1976), Methods and Issues in Social Research, New York, John Wiley and Sons, Inc.
2. Goode and Hat, Research Methodology in Social Sciences, Oxford University Press, New Delhi.
3. Gomez B and John Paul Jones. (2010), Research Methods in Geography-A Critical Introduction. Wiley Blackwell Publications, Singapore.
4. Har Prasad (1992), Research Methods and Techniques in Geography, Rawat Publishers, Jaipur.
5. Kundu A. Measurement of Urban Processes: A Study of Regionalization, Popular Prakashan, Mumbai.
6. Mishra, H.N. and Singh V.P.(1998), Research Methodology: Social, Spatial and Policy Dimensions, Rawat Publishers, Jaipur.
7. Walfor, N (1995), Geographical Data Analysis, John Wiley & Sons, New York.

Mapping Matrix of COs, POs and PSOs for M.A./M.Sc./GEO/3/CC13 - Project Report Based on Field Survey

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	1.0	2.0	2.0	2.0	2.0	3.0	3.0	3.0	1.0	2.0	3.0	3.0
CO2	3.0	3.0	2.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	3.0	3.0
CO3	3.0	3.0	1.0	2.0	2.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Average	2.5	2.8	2.0	2.5	2.0	3.0	3.0	2.5	2.0	2.5	3.0	3.0

M.A./M.Sc.Geography-4th Semester
M.A/M.Sc./GEO/4/CC14- Geographical Thought

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: This course is emphasized to describe geography thought in human life, globalization, concept of nation and Geo-political issues in India.

Course Outcomes (COs): After completion of the course , it will help the students for
CO1 : Cognizance of nature and philosophy of geography.
CO2 : Contextualization of development of geographic knowledge in ancient and medieval period.
CO3 : Awareness about philosophy and concepts of modern geography.
CO4 : Acquaintance with positivist and alternative explanations in geography.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Classification of knowledge, Nature of geography and its place among sciences, Nature of geographic knowledge during ancient (Greek and Roman) and medieval (Arab) periods, Foundation of modern geography-contributions of Varenius, Kant, Humboldt and Ritter.

UNIT-II

Emergence of geography as a study of (i) physical features (ii) chorology (iii) landscapes, Concepts in geography : Environmental determinism and possibilism, Areal differentiation, Dichotomy and dualism in Geography : Physical vs human Geography and systematic vs regional Geography.

UNIT-III

Quantitative revolution-emergence of geography as spatial science, Positivist explanations in Geography - Laws, Theories, Models, Inductive and deductive logic in geographic explanations.

UNIT-IV

Behavioral and humanistic perspectives in geography, Social relevance in geography-Welfare, Radical and feminist perspectives, Postmodernism and Geography.

Text/Reference Books:

1. Creswell Tim (2013), Geographic Thought: A critical introduction, Wiley- Blackwell.
2. Dickinson, R. E. (1969), The Makers of Modern Geography, London.
3. Dikshit, R.D.(1997), Geographical Thought-A Contextual History of Ideas, Prentice Hall of India, New Delhi.
4. Gaile GL and Willmott C.J. (2003), Geography in America at the Dawn of 21st Century, Oxford.
5. Hartshorne, R.(1959), Perspectives on the Nature of Geography, Rand MacNelly, Chicago.
6. Harvey David (1989), Explanation in Geography, Edward Arnold, London.
7. Holt-Jonson(2011), Geography, History and Concepts: A Study's Guide, Sage Publications.
8. James P.E. and Martin J Geoffrey (1972), All possible Worlds, John Wiley and Sons, New York.
9. Johnston, R.J. (1983), Geography and Geographers, Edward Heinemann, London.
10. Peet, Richard (1998), Modern Geographical Thought, Oxford, Blackwell Publishers.

Mapping Matrix of COs, POs and PSOs for M.A/M.Sc./GEO/4/CC14- Geographical Thought

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	2.0	2.0	1.0	3.0	3.0	1.0	3.0	1.0	2.0	3.0
CO2	3.0	3.0	2.0	2.0	2.0	3.0	3.0	2.0	3.0	1.0	2.0	3.0
CO3	3.0	3.0	2.0	1.0	1.0	3.0	3.0	1.0	3.0	1.0	1.0	3.0
CO4	3.0	3.0	2.0	1.0	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0
Average	3.0	3.0	2.0	1.5	1.3	3.0	3.0	1.3	3.0	1.5	2.0	3.0

M.A./M.Sc.Geography-4th Semester
M.A/M.Sc./GEO/4/CC15-A - Hydrology and Oceanography

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: . The main objective of this course is to discuss the scope and applications of hydrology and oceanography alongwith major topographic features of ocean basins.

Course Outcomes (COs): After completion of the course , it will help the students for:
CO1 : awareness about the basic concepts and applications of hydrology.
CO2 : acquaintance with techniques of rainfall estimation and runoff processes.
CO3 : enrichment of knowledge about topographic features of oceanic floor and deposits.
CO4 : augmentation of knowledge about movement and circulation in oceanic water.

Note for the Paper Setter : *The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.*

UNIT-I

Definition, Nature, scope, Importance and historical development of hydrology, Relationship of hydrology with other physical sciences, Hydrological cycle, Estimation of global water budget, Human impact on hydrological cycle.

UNIT-II

Rainfall : Frequency, Intensity and measurement accuracy, Determination of average rainfall (Arithmetic mean, Theiesson polygon, Isohyetal methods), Types of variations in rainfall, Hydrograph : Components, Analysis, Separation methods, Affecting factors, Variations in runoff, Rainfall-runoff relationship.

UNIT-III

Major topographic features of ocean basins, Bottom relief of Atlantic, Pacific and Indian oceans, Sources, Classification and distribution of ocean deposits, Corals-origin, Types and conditions for development, Theories of the origin of coral reefs (Subsidence and standstill).

UNIT-IV

Origin, Causes, Types and effects of the ocean currents, Currents of the Atlantic, Pacific and Indian oceans, Oceanic temperature: Distribution and causes of variation, Composition of oceanic water and distribution of salinity.

Text/Reference Books:

1. Digman, L.S. (2002), Physical Hydrology. Prentice Hall, New Jersey.
2. Lal, D.S. (2007), Oceanography. Sharda Pustak Bhawan, Allahabad.
3. Patra K.C. (2010), Hydrology and Water Resource Engineering, Norsa Publishing House, New Delhi.
4. Reddy, P.J. (1992), A Text Book of Hydrology, Laxmi Publications, New Delhi.
5. Siddhartha, K.(1999), Oceanography-A Brief Introduction, Kisalaya Publications, New Delhi.
6. Singh. S. (2008), Oceanography. PrayagPustak Bhawan, Allahabad
7. Sharma RC and Vatal M.(1993), Oceanography for Geographers, Chaitanya Publishing House, Allahabad.
8. Subramanya, K. (1994), Engineering Hydrology, Tata McGraw-Hill Publishing Company Limited, New Delhi.
9. Ward, W.C. (1967), Principles of Hydrology, McGraw Hill, New York.

Mapping Matrix of COs, POs and PSOs for M.A/M.Sc./GEO/4/CC15-A - Hydrology and Oceanography

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
CO2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
CO3	3.0	3.0	3.0	1.0	1.0	2.0	3.0	1.0	3.0	2.0	2.0	2.0
CO4	3.0	3.0	3.0	1.0	1.0	3.0	3.0	1.0	3.0	2.0	2.0	2.0
Average	3.0	3.0	3.0	2.0	2.0	2.8	3.0	2.0	3.0	2.5	2.5	2.5

M.A./M.Sc.Geography-4th Semester
M.A./M.Sc./GEO/4/ CC 15-B - MOOC Available on SWAYAM Portal

Credits: 4   **Max. Marks: 100**

M.A./M.Sc.Geography-4th Semester
M.A/M.Sc./GEO/4/SEC 3-A - Fluvial Geomorphology

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: The main objective of this course to discuss the fluvial System, sediment transfer and Impact of construction activities on fluvial systems.

Course Outcomes (COs) : After completion of the course , it will help the students for
CO1 : acquaintance with the basic concepts of fluvial system.
CO2 : familiarization with sediment transfer processes and major types of channels.
CO3 : cognizance of flood forecasting and management techniques.
CO4 : awareness about flood plain management using geospatial technology.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Fluvial system : Types, variables, Feedbacks, Thresholds, Responses and scales in fluvial geomorphology, Water erosion: Types of water erosion and erosive processes, Monitoring of water erosion (Field measurements and models) management problems associated with erosion.

UNIT-II

Sediment transfer: Sources, modes, Storage, Movement and measurement of sediment load and yield, Controls as sediment yield, Human activity and sediment yield, Channel forms and processes : Channel types, Geometry, Size, Shape, Channel pattern, Bedrock channels and associated land forms.

UNIT-III

Floods : Flood frequency, Magnitude, forecasting and structural and non-structural adjustment to floods, Catastrophic and paleo floods. Impact of construction activities on fluvial systems, Human adjustment in floodplains.

UNIT-IV

Managing river channels: Channelization and flow regulation, Impacts of water management on the physical, Chemical and ecological condition of channels and floodplains, River restoration, Remote sensing and GIS applications in mapping, Monitoring and management of fluvial environments.

Text/Reference Books:

1. Charlton, R. (2008), Fundamentals of Fluvial Geomorphology, Routledge, London
2. Chorley R.J. (1973), Introduction of Fluvial Processes. Methuen and Company, London.
3. Fryirs, K.A. and Brierley G.J. (2013), Geomorphologic Analysis of River Systems, Wiley Blackwell, Chichester.
4. Gregory K.J. (1977), River Channel Changes. John Wiley and Sons, New York.
5. Gregory K.J. and Walling, D.E. (1985), Drainage Basin: Forms and Process-A Geomorphological Approach. John Wiley and Sons, New York.
6. Kingston D. (1984), Fluvial Forms and Processes. Edward Arnold, London.
7. Kondelf, G.M. and Piegay, H. (2003), Tools in Fluvial Geomorphology. Wiley, Chichester.
8. Leopold C.B. (1964), Fluvial Processes in Geomorphology. Freeman, London.
9. Morisawa.(1981), Fluvial Geomorphology. George Allen and Unwin, London.
10. Robert, A. (2003), River Processes-An Introduction to Fluvial Dynamics, Hodder Education.

Mapping Matrix of COs, POs and PSOs for M.A/M.Sc./GEO/4/SEC 3-A - Fluvial Geomorphology

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	2.0	2.0	1.0	3.0	3.0	1.0	3.0	2.0	1.0	3.0
CO2	3.0	3.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0
CO3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Average	3.0	3.0	2.5	2.8	2.3	3.0	3.0	2.3	3.0	2.8	2.3	3.0

M.A./M.Sc.Geography-4th Semester
M.A/M.Sc./GEO/4/SEC 3-B - Aeolian Geomorphology

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: This paper focuses on the various aeolian processes, wind erosion and landforms and wind erosion on agricultural fields.

Course Outcomes (COs): After completion of the course , it will help the students to

CO1 : study about inventory, distribution of water resources on earth, hydrological and its component.

CO2 : learn about methods of estimation of Water demand, problems related irrigation and Water quality parameters.

CO3 : know the Industrial use of water and Municipal use of water.

CO4 : understanding the Problems of water resource management, river water disputes, Conservation and planning for the development of water resources

Note for the Paper Setter : The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Aeolian processes : Introduction , Wind environment , Desert wind systems, Directional variability and resultant, Drift potential, Scope of aeolian geomorphology, Grain in motion: fluid flows , Flow types, Interaction of the wind and the bed-wind shear, Entrainment-lift and drag

UNIT-II

Aeolian landforms : Wind erosion and landforms, Processes : Abrasion, Deflation and aerodynamic erosion, Landforms, Yardangs, Ventifacts, Pans, Stone pavements, Deflation hollows, Desert varnish : Processes and significance. Dusts-sources - contemporary and proximal, Mineral composition , Deposition , Loess, types, Palaeo - environmental significance.

UNIT-III

Depositional processes and palaeo environment forms of wind deposition : Sand ripples, obstacle dunes , Dune : Classification Schemes, Morphodynamics of the crescentic, longitudinal and complex dunes, Aeolinites - Composition and distribution.

UNIT-IV

Applied aeolian geomorphology : Introduction, Wind erosion on agricultural fields, controls of dust, Management of coastal dunes and dunes in semi :arid areas, Desertification and its controls with special reference to India.

Text/Reference Books:

1. Abrahams, A.D. and Parsons, A. J. (1994), Geomorphology of Desert Environments. Chapman & Hall, London.
2. Goudie,A. and Hegde. (1980), Palaeo-geography and Pre-history of Indian Desert. AcademicPress, London.
3. Baumont, P. (1993), Drylands-Environment, Management and Development. Routledge, New York.
4. Bagnold, R.A.(1941), The Physics of Blown Sand and Desert Dunes. Methuen, London.
5. Cook, R. U.,Waren, A. and Goudie, A. (1993), Desert Geomorphology. London, UCL Press, London.
6. Embleton, C. and Thornes, J. (eds.). (1980), Process in Geomorphology. Arnold - Heinemann, New Delhi.
7. Greeley, R. and Iversen, J. D. (1985), Wind as a Geological Process. Cambridge University Press, Cambridge.
8. Lancaster, N. (1995), Geomorphology of Desert Dunes. Routledge, New York.

Mapping Matrix of COs, POs and PSOs for M.A/M.Sc./GEO/4/SEC 3-B - Aeolian Geomorphology

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	2.0	2.0	1.0	3.0	3.0	1.0	3.0	2.0	1.0	3.0
CO2	3.0	3.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0
CO3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Average	3.0	3.0	2.5	2.8	2.3	3.0	3.0	2.3	3.0	2.8	2.3	3.0

M.A./M.Sc.Geography-4th Semester
MA/M.Sc./GEO/4/DSC5-A - Geography of Tourism

Credits: 4 **Max. Marks: 100**
Lectures: 60 **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs. **Internal Assessment: 30**

Objective: The main objective of this course is to describe the relation between Geography of tourism and factor affecting the tourism along with Government policies for tourism development.

Course Outcomes (COs) : After completion of the course , it will help the students for **:**
CO1 : familiarization with the fundamentals of tourism geography.
CO2 : awareness about motivating factors of tourism.
CO3 : acquaintance with eco-tourism potentials and socio-economic impacts of tourism.
CO4 : knowledge about impact of globalization and foreign capital on tourism development.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Definition, Nature, Scope and significance of tourism geography, Factors influencing tourism: Historical, Physical, Socio-cultural and economic.

UNIT-II

Motivating factors of tourism: Leisure, Recreation, Spiritual, Attraction of site and situation. Infrastructure and support system of tourism accommodation and supplementary accommodation.

UNIT-III

Eco-tourism potentials in India with reference to northern mountains and plains, Peninsula, coastal regions and islands, Impact of tourism: Physical, Economic and social.

UNIT-IV

Environmental laws and tourism, Impact of globalization and foreign capital on tourism development, Government policies for tourism development.

Text/Reference Books:

1. Bhatia A.K. (1996), Tourism Development; Principles and Practices. Sterling Publishers, New Delhi.
2. Bhatia, A.K. (1991), International Tourism-Fundamentals and Practices, Sterling, New Delhi.
3. Chandra R.H.Hill(1998), Tourism: Planning and Development, Kanishka Publishers, New Delhi.
4. Hunter C and Green H.(1995), Tourism and the Environment: A Sustainable Relationship, Routledge, London.
5. Kaul R.K. (1985), Dynamics of Tourism & Recreation. Inter-India, New Delhi.
6. Kaur J.(1985), Himalayan Pilgrimages & New Tourism Himalayan Books, New Delhi.
7. Lea J.(1988) , Tourism and Development in the Third World, Routledge, London.
8. Molton D.(1993), Geography of World Tourism Prentice. Hall, New York.
9. Pearce D.G.(1987), Tourism To-day: A Geographical Analysis, Harlow, Longman.
10. Robinson, H. A.(1996), Geography of Tourism. Macdonald and Evans, London.
11. Sharma J.K.(2000), Tourism Planning and Development – A New Perspective Kanishka Publishers, New Delhi.
12. Shaw G. and Williams A.M.(1994),Critical Issues in Tourism-A Geographical Perspective, Oxford: Blackwell.
13. Sinha P.C.(1994), Global Tourism : The Next Decade, Oxford, Butterworth, Heinemann, Oxford.
14. Voase R. (1995) ,Tourism: The Human Perspective Hodder & Stoughton, London.
15. Williams A.M. and Shaw G.Tourism and Economic Development- Western European Experiences, London.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/4/DSC5-A - Geography of Tourism

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	2.0	2.0	1.0	2.0	3.0	2.0	3.0	1.0	1.0	2.0
CO2	3.0	2.0	3.0	2.0	1.0	2.0	3.0	2.0	3.0	1.0	1.0	2.0
CO3	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	1.0	2.0	3.0
CO4	3.0	2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	1.0	2.0	3.0
Average	3.0	2.5	2.8	2.5	1.5	2.5	3.0	2.0	3.0	1.0	1.5	2.8

M.A./M.Sc.Geography-4th Semester
MA/M.Sc./GEO/4/DSC5-B - Cultural and Social Geography

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: This course deals with the relation between cultural and social Geography , social differentiation and region formation

Course Outcomes (COs): After completion of the course , it will help the students for
CO1 : enrichment of knowledge about main civilizations of world.
CO2 : enhancement of knowledge about factors and processes of cultural diversity.
CO3 : acquaintance with social differentiation and region formation.
CO4 : awareness about caste and morphology of settlements.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Definition, nature and scope of Cultural Geography, Cultural elements and components of culture, The evolution of human civilizations with special reference to : Mesopotamia, the Nile Valley, the Indus Valley and the Hwang Ho Valley.

UNIT-II

Bases of cultural diversity and cultural transformation-race, Religion and language, Cultural landscape and cultural ecology, The speed and efficiency of operation of cultural processes.

UNIT-III

Nature and scope of social geography, Its development and place among social sciences, Sources and problems of data for study in social geography of India, Social differentiation and region formation, Social evolution, Social space, Social and spatial justice.

UNIT-IV

Tribes: social formations, Rural-urban and spatial distribution and impacts of development, Castes: origin, Caste and morphology of settlements, Caste and clan territories and distribution of scheduled castes.

Text/Reference Books:

1. Craig, Mike (1998), Cultural Geography, Routledge Publications, London.
2. De Blij, Harm J. (1977), Human Geography, Cultural Society and Space, John Wiley and Sons, New York.
3. Dickens, S.N. (1970), Introduction to Cultural Geography, Xerox College Publishing House, Waltham, Massachusetts.
4. Magunder, D.N. (1973), Races and Culture of India, Asia Publishing House, New Delhi.
5. Mukerjee, A.B. and Aijazuddin A. (1985), India: Culture, Society and Economy, Inter-India Publications, New Delhi.
6. Spencer, J.E. and Thomas, W.L. (1973), Introducing Cultural Geography, John Wiley and Sons, New York.
7. Taylor G. (1971), The Geography in the Twentieth Century, Asia Publishing House, New Delhi.
8. Wagner, P.L. and Mikesell, M. (1962), Readings in Cultural Geography, The University of Chicago Press, Chicago.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/4/DSC5-B - Cultural and Social Geography

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	2.0	1.0	1.0	1.0	3.0	3.0	1.0	3.0	2.0	2.0	3.0
CO2	3.0	2.0	2.0	2.0	2.0	3.0	3.0	1.0	3.0	2.0	2.0	2.0
CO3	3.0	2.0	2.0	1.0	2.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0
CO4	3.0	3.0	2.0	2.0	1.0	3.0	3.0	1.0	3.0	2.0	2.0	3.0
Average	3.0	2.3	1.8	1.5	1.5	3.0	3.0	1.3	3.0	2.0	2.3	2.8

M.A./M.Sc.Geography-4th Semester
MA/M.Sc/GEO/4/DSC6-A - Geographic Information System (Theory)

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: This course is based on the Geographic Information System, Data inputting in GIS and various data models, digitizing errors and digital terrain analysis and modeling.

Course Outcomes (COs): After completion of the course , it will help the students for
CO1 : students will learn these basic geospatial concepts using GIS technology.
CO2: development of interpretation capability of aerial photographs and satellite imageries.
CO3 : enrichment of skills to extract information from resource satellite imageries.
CO4 : awareness about digital image processing and digital classification.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Basic concepts: Definition and history, Components of GIS, Recent trends and applications of GIS, Data structure and formats, Spatial data models-Raster and vector, Data base design- editing and topology creation in GIS, Linkage between spatial and non-spatial data, Data inputting in GIS, Rectification, Transformation Methods, Root mean square (RMS) rrror.

UNIT-II

Data types, Spatial data, Non-spatial data, Data input**,** Existing GIS data, Metadata, Conversion of existing data, Creating new data, Data models**,** Vector data model; Raster data model, Integration and comparison of vector and raster data models.

UNIT-III

Types of digitizing errors, Causes for digitizing errors, Topological editing and Non topological editing, Other editing operations, Editing using topological rules.

UNIT-IV

Spatial data : Definition, Analysis, Processes & steps, Software and tools, Geo-database model, Role of databases in GIS, Creating, Editing and managing, Classification scheme of Vector based and Raster based GIS operation, Raster based techniques: Methods of reclassification, overlay analysis, Digital terrain analysis and modelling - TIN and DEM, Surface representation and analysis, Slope and aspect, Geographic visualization data classification, Map comparison.

Text/Reference Books:

1. Kang-tsung Chang (2007), Introduction to Geographic Information Systems, Tata MCGraw Hill, New Delhi.
2. C.P.Lo and Albert K.W. Yeung (2006), Concepts and Techniques of Geographic information Systems, Prentice Hall of India, New Delhi
3. Burrough, Peter A. and Rachael McDonnell, (1998), Principles of Geographical Information Systems, Oxford University press, New York.
4. Magwire, D.J. Goodchild, M.F. and Rhind, D.M.,(2005), Geographical Information Systems: Principles and Applications, Longman Group, U.K.
5. Burrough, P.A.,(1986), Geographical Information System for land Resources System, Oxford Univ. Press, UK.
6. Fotheringham, S.; Rogerson, P. (ed.), (1994), Spatial analysis and GIS. Taylor and Francis, London, UK.
7. Laurini, Robert and Dierk Thompson, (1992), Fundamentals of Spatial Information Systems, Academics Press, ISBN 0-12-438380-7.
8. Maguire,D.J.; Goodchild, M.F.; Rhind,D.W.(1991), Geographical information System, Longman, London,UK
9. Siddiqui, M.A. (2006), Introduction to Geographical Information System, Sharda Pustak Bhavan, Allahabad.
10. Siddiqui, M.A.;(2011), Concepts and Techniques of Geoinformatics, Sharda Pustak Bhavan, Allahabad.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc/GEO/4/DSC6-A - Geographic Information System (Theory)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0
CO2	3.0	3.0	2.0	2.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0
CO3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0
CO4	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0
Average	3.0	2.8	2.8	2.8	3.0	3.0	3.0	2.8	2.3	3.0	3.0	2.8

M.A./M.Sc.Geography-4th Semester
MA/M.Sc/GEO/4/DSC6-B - Advanced Geographic Information System (Theory)

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: The main objective of the course is to highlight advanced geographic information system and its applications, hardware & software of a computer, Vehicle tracking system.

Course Outcomes (COs): After completion of the course , it will help the students for
CO1 : basic geospatial concepts using GIS technology.
CO2 : enrichment of skills to extract information from web GIS
CO3 : awareness about digital image processing and digital models.
CO4 : development of Mobile GIS skill.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Introduction to GIS: Definitions, Evolution, Components and objectives. Hardware & software requirements, Hardware : Basic blocks of computer, Processor, Memory, Secondary storage devices, Input/output devices, Binary numbers. Software : Operating system, Application, Compliers, Editors. Overview of GIS software packages.

UNIT-II

Concepts and principles of web GIS; Definition and history of web GIS; Significance of web GIS, Transferred Geo-data, Interactive web maps, Internet map services, Web GIS Architectures, Web GIS development, Requirement Analysis, Conceptual design, Web GIS system integration, Open source GIS; Web based Geo-portal, India Geo-portal, State Geo-portal and district Geo-portal, Vehicle tracking system, Mobile mapping, Location based services, Intelligent transportation systems.

UNIT-III

Concepts and principles of GIS Model, Types of GIS models, Modelling process, Application of GIS modelling.

UNIT-IV

Mobile GIS : Concepts, Portable PCs , Personal digital assistance (PDAs) or Palm top, Mobile phone, Arc GIS mobile, Characteristics of mobile GIS, Benefits of mobile GIS, Mobile applications.

Text/Reference Books:

1. Richards, J. A., Jia, X. (2000), Remote Sensing and Digital Image Processing, Springer, Verlag Berlin
1. Chand, B., Majumdar, D. D. (2001), Digital Image Processing Analysis Prentice-Hall of India, New Delhi
2. Jensen, J. R. (2005), Introductory Digital Image Processing, Prentice Hall, New Jersey
3. Lillesand, T. M., Kiefer, R. W., Chipman, J. W. (2008), Remote Sensing and Image Interpretation, John Wiley & Sons, New Delhi
4. Sabins, F. F. (1996), Remote Sensing: Principles Interpretation, W.H. Freeman Company, New York
5. Navalgund, R. R. Ray, S. S. (2011), Hyperspectral Data, Analysis Techniques Application, Indian Society of Remote Sensing, Dehradun
6. Demers, M. N. (2000), Fundamentals of Geographic Information Systems, John Wiley & Sons, New Delhi
7. Burrough, P. A. and McDonnell, R. A. (2000), Principles of Geographical Information Systems, Oxford University Press, New York
8. Malczewski, J. (1999), GIS Multi-criteria Analysis, John Wiley & Sons, New York
9. Chang, K. T. (2008), Introduction to Geographic Information Systems, Avenue of the Americas, McGraw-Hill, New York
10. Williams, J. (1995), Geographic Information from Space: Processing Applications of Geocoded Satellite Images, John & Wiley Sons, New Delhi
11. Environmental Systems Research Institute, Inc. (1998), Understanding GIS: The ARC/INFO Method, ESRI Press, Redlands

Mapping Matrix of COs, POs and PSOs for MA/M.Sc/GEO/4/DSC6-B - Advanced Geographic Information System(Theory)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0
CO2	3.0	3.0	2.0	2.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0
CO3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0
CO4	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0
Average	3.0	2.8	2.8	2.8	3.0	3.0	3.0	2.8	2.3	3.0	3.0	2.8

M.A./M.Sc.Geography-4th Semester
MA/M.Sc./GEO/4/ SEC4-A - Geographical Information Systems (Practical)

Credits: 4 (Practical)   **Max. Marks: 100**
Teaching per week: 8 Hrs.   **Duration of Exam : 3 Hrs.**

Objective: To understand the applied aspects of GIS system , the course is to describe Generation of geographic framework, spatial data base and map preparation.

Course Outcomes (COs): After completion of the course , it will help the students for
CO1 : acquisition of skills to handle geographical information systems software.
CO2 : enhancement of skills in processing of digital imageries using techniques of GIS.
CO3 : awareness about GPS functioning and processes of data acquisition.
CO4 : acquaintance with the techniques of integrating GPS data in GIS and mobile mapping.

Note for the Paper Setter: The question paper will consist of four exercises in all. Student(s) are required to attempt any three exercises.

UNIT-I

Familiarization to geographic information system, Open sources software, Generation of geographic framework: Geo-referencing of topographic maps with projection, False colour composition.

UNIT-II

Generation of geodatabase/ spatial data base : Vectorization (Point, Line and polygon), Editing and building topology, Joining non-spatial data.

UNIT-III

Analysis : Overlay, Query, Proximity and buffering (Simple and multi ring buffer).

UNIT-IV

Map preparation and symbolization: Chorochromatic, Choropleth and point proportional.
GPS: Introduction to the GPS and different pages in GPS device. Collection of GCP and mapping.

Text/Reference Books:

1. Burrough, P.A. and McDonnell, R. (1998), Principles of Geographic Information Systems. Oxford University Press, Oxford.
2. Bhatta Basudeb (2014), Remote Sensing and GIS. Oxford University Press, Oxford.
3. Chang, K.T. (2003), Introduction to Geographic Information Systems. Tata McGraw Hill Publications Company, New Delhi.
4. Demers, M. N. (2000), Fundamentals of Geographic Information Systems. John Wiley and Sons, Singapore

5. Heywood I, Cornelius S and Carver S. (2000), An Introduction to Geographical Information Systems, Longman, New York.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/4/ SEC4-A - Geographical Information Systems (Practical)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	2.0	3.0	2.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0
CO2	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0
CO3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Average	3.0	2.8	2.8	2.8	3.0	3.0	3.0	2.5	2.8	3.0	3.0	3.0

M.A./M.Sc.Geography-4th Semester
MA/M.Sc./GEO/4/ SEC4-B – Advanced Geographical Information Systems
(Practical)

Credits: 4 (Practical) **Max. Marks: 100**
Teaching per week: 8 Hrs. **Duration of Exam : 3 Hrs**

Objective: . The main objective of this course is to focus on google earth, GIS software, buffering , network, symbology

Course Outcomes (COs): After completion of the course , it will help the students for

CO1 : Acquisition of skills to handle geographical information systems software.
CO2 : Enhancement of skills in processing of digital imageries using techniques of GIS.
CO3 : Awareness about GPS functioning and processes of data acquisition.
CO4 : Acquaintance with the techniques of integrating GPS data in GIS and mobile mapping.

Note for the Paper Setter: The question paper will consist of four exercises in all. Student(s) are required to attempt any three exercises.

UNIT-I

Add layer from a shape file dataset, Data exploration, Data styling (raster and vector), Labeling vector files, Loading google earth to GIS software, Raster data downloading in GIS software.

UNIT-II

Managing a dataset : Geo-referencing (Map to image and image to image), Projection, Data base creation: Digitization, Edit, Clip, Intersect, Union, Merge, Join and subset. Attribute table editing.

UNIT-III

Google earth (Convert shape file to KML Format and KML File to shape file, Import data into google earth, Bhuvan view, Extract data from google earth, Extract point data, Extract polygon data, Extract line data, Overlaying an image into google earth).

UNIT-IV
Linking of spatial and Non-spatial data and queries, Joining tabular data with the feature attribute data, Non-spatial query, Spatial query, Buffering, Creation of contour , Network, Symbology (Generalization, Symbology, and colour effect, Change symbology and use transparency in creative ways)

Text/Reference Books:

1. Burrough, P.A. and McDonnell, R. (1998), Principles of Geographic Information Systems. Oxford University Press, Oxford.
2. Bhatta Basudeb (2014), Remote Sensing and GIS. Oxford University Press, Oxford.
3. Chang, K.T. (2003), Introduction to Geographic Information Systems. Tata McGraw Hill Publications Company, New Delhi.
4. Demers, M. N. (2000), Fundamentals of Geographic Information Systems. John Wiley and Sons, Singapore
5. Heywood I, Cornelius S and Carver S. (2000). An Introduction to Geographical Information Systems, Longman, New York.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/4/ SEC4-B – Advanced Geographical Information Systems (Practical)

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	2.0	3.0	2.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0
CO2	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0
CO3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
CO4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Average	3.0	2.8	2.8	2.8	3.0	3.0	3.0	2.5	2.8	3.0	3.0	3.0

M.A./M.Sc.Geography-4th Semester
MA/M.Sc./GEO/4/ CC16- Cardinal Principles of Academic Integrity

Credits: 2   **Max. Marks: 50**
Lectures: 30   **Final Term Exam: 30**
Duration of Exam.: 2 Hrs.   **Internal Assessment: 20**

Objective: The objective of the course is to apprise/aware the students about the Academic Integrity, Plagiarism (prevention and detection) and UGC regulations; as well as to follow Research and Publications ethics and best practices

Course outcomes: At the end of the course, the students will know:
CO1: academic Integrity, Plagiarism (prevention and detection) and UGC regulations
CO2: research and Publications ethics and best practices

Note for the paper setter: The question paper will consist of five questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, four more questions will be set unit-wise comprising of two questions from each of the two units. The candidates are required to attempt two more questions selecting at least one question from each unit.

UNIT-I

Academic Integrity: Introduction, Academic Integrity Values-Honesty and Trust, Fairness and Respect, Responsibility and Courage, Violations of Academic Integrity-types and consequences, Plagiarism -definition, Plagiarism arising out of misrepresentation-contract cheating, collusion, copying and pasting, recycling, Avoiding Plagiarism through referencing and writing skills, UGC Policy for Academic Integrity and prevention, Some Plagiarism detection tools.

UNIT-II

Research and Publication ethics: Scientific misconducts- Falsifications, Fabrication and Plagiarism (FPP), Publication ethics-definition, introduction and importance, Best practices/standard setting initiatives and guidelines-COPE, WAME etc., Violation of publication ethics, authorship and contributor-ship, Identification of publications misconduct, complains and appeals, Conflicts of Interest, Predatory publisher and journals.

Text/Reference Books:

1. MacIntyre A (1967), A short History of Ethics, London Chaddah P (2018) Ethics in Competitive Research: Do not get scooped; do not get plagiarized. ISBN: 978-9387480865
2. National Academy of Sciences, National Academy of Engineering and Institute of Medicine (2009), On being a Scientist: A guide to Responsible Conduct in research: Third Edition. National Academics press.
3. Resnik D. B. (2011), What is ethics in research & why is it important. National Institute of Environmental Health Sciences, 1-10.

4. Beall J (2012).,Predatory publishers are corrupting open access, Nature, 489 (7415), 179. Indian National Science Academy (INSA), Ethics in Science Education, Research and Governance (2019), ISBN: 978-81-939482-1-7. UGC regulations (2018) for Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutes. Ulrike kestler, Academic Integrity, Kwantlen Polytechnic University.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/4/ CC16- Cardinal Principles of Academic Integrity

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	1.0	2.0	1.0	1.0	2.0	3.0	2.0	3.0	1.0	1.0	1.0
CO2	3.0	2.0	1.0	1.0	1.0	3.0	3.0	2.0	3.0	1.0	2.0	3.0
Average	3.0	1.8	1.8	1.5	1.5	2.8	2.8	2.0	3.0	1.0	1.8	2.0

MA/M.Sc./GEO/9/OEC1- General Geography of India

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: The main objective of this course is to know about the basic concepts of geography of the county.

Course Outcomes (COs): After completion of the course , it will help the students for:
CO1 : learn about locational setting and geographical expansion of India with relief and drainage system.
CO2 : know the importance of climate, soil, natural vegetation.
CO3 : learn the distribution, density and growth of India population.
CO4 : study the socio- cultural attributes of Indian population.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

India: Locational Setting and Geographical Expansion**,** Relief and Drainage Systems.

UNIT-II

Climate, Soil and Natural Vegetation, Regions of India.

UNIT-III

The Peopling of India, Population: Distribution, Density and Growth.

UNIT-IV

Population Composition: Ethnic and Socio-cultural Attributes (caste and tribes), Unity in Diversity in India.

Text/Reference Books:
1. Ahmed, A, India: A General Geography, NCERT, New Delhi.
2. Hussain, Majid Geography of India, McGraw Hill Education Series
3. Qureshi, M. H. India: People and Economy, NCERT, New Delhi.
4. Qureshi, M.H. India: Physical Environment, NCERT, New Delhi.
5. Singh, S. and Saroha, J. (2019), Geography of India, Mc Graw Hill Education.
6. Tiwari, RC, Geography of India, Prayag Pustak Bhawan, Allahabad.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/9/OEC1- General Geography of India

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	1.0	2.0	1.0	1.0	2.0	3.0	2.0	3.0	1.0	1.0	1.0
CO2	3.0	2.0	1.0	1.0	1.0	3.0	3.0	2.0	3.0	1.0	2.0	3.0
CO3	3.0	2.0	2.0	2.0	3.0	3.0	2.0	2.0	3.0	1.0	2.0	2.0
CO4	3.0	2.0	2.0	2.0	1.0	3.0	3.0	2.0	3.0	1.0	2.0	2.0
Average	3.0	1.8	1.8	1.5	1.5	2.8	2.8	2.0	3.0	1.0	1.8	2.0

MA/M.Sc./GEO/9/OEC2- Climate Change and Disaster Management

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: . The main objective of this course is   discuss the various aspects of climate change and disaster management, greenhouse effect and global warming etc.

Course Outcomes (COs): After completion of the course , it will help the students to :
CO1 : Learn about Climatic variations, Climatic fluctuations and change.
CO2 : know the importance of Earth's Greenhouse effect and global warming.
CO3 : learn the Regional extreme events in India
CO4 : study the disaster management plans.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Climatic variations, Climatic fluctuations and change, Past climates and evidences of climate change.

UNIT-II

 Earth's Greenhouse effect and global warming, World climate policy framework: Rio Summit, Kyoto Protocol.

UNIT-III

Regional extreme events in India : Earthquakes, Floods, Drought, Cyclone, Disaster magnitude and impacts: Examples from recent disasters.

UNIT-IV

Understanding manmade disasters, Fires and forest fires, Nuclear, Biological and chemical disaster, Awareness among people, Capacity building, Disaster management plan.

Text/Reference Books:
1. Andrew Dessler,(2011),   Introduction to Modern Climate Change, Cambridge University Press.
2. Andrew Dessler (2012), The Science and Politics of Global Climate Change, Cambridge University Press.
3. Anthony Giddens (2013), The Politics of Climate Change, Wiley.
4. David Wallace-Wells, (2019), The Uninhabitable Earth, Penguin Books.
5. John Houghton,(2009), Global Warming: The Complete Briefing, Cambridge University Press.
6. Jefferey   Bennet,   (2016),Global   Warming   Premier,   https://www.

globalwarmingprimer.com/.

7. Intergovernmental Panel on Climate Change, UNEP and WMO. IPCC Assessment Reports 1-5.
8. Trewartha G. T. (1980), An Introduction to Climate, McGraw Hill Company, New York.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/9/OEC2- Climate Change and Disaster Management

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	1.0	2.0	1.0	1.0	2.0	3.0	2.0	3.0	1.0	1.0	1.0
CO2	3.0	2.0	1.0	1.0	1.0	3.0	3.0	2.0	3.0	1.0	2.0	3.0
CO3	3.0	2.0	2.0	2.0	3.0	3.0	2.0	2.0	3.0	1.0	2.0	2.0
CO4	3.0	2.0	2.0	2.0	1.0	3.0	3.0	2.0	3.0	1.0	2.0	2.0
Average	3.0	1.8	1.8	1.5	1.5	2.8	2.8	2.0	3.0	1.0	1.8	2.0

MA/M.Sc./GEO/9/OEC3- Fundamentals of Geography

Credits: 4   **Max. Marks: 100**
Lectures: 60   **Final Term Exam.: 70**
Duration of Exam.: 3 Hrs.   **Internal Assessment: 30**

Objective: . The main objective of this course is to   discuss the fundamental concepts of Geography and to aware them about Solar system, interior of earth, weather climate, Ocean

Course Outcomes (COs): After completion of the course , it will help the students for

CO1 : Understanding about the solar system, solar and lunar eclipse.
CO2 : Acquaintance with the interior of earth, plate tectonics.
CO3 : Enrichment of knowledge about Weather and climate, atmospheric pressure .

CO4 : Capability to understand the Relief of oceans; oceanic salinity world.

Note for the Paper Setter: The question paper will consists of nine questions in all. The first question will be compulsory and will consist of five short questions of 2 marks each covering the whole syllabus. In addition, eight more questions will be set unit-wise comprising of two questions from each of the four units. The candidates are required to attempt four more questions selecting at least one question from each unit.

UNIT-I

Solar system, Solar and lunar eclipse, Earth- shape, Movements, Formation of day/nights and seasons, Location-latitude-longitude, Longitude and time zones, International date line.

Unit-II

Interior of earth, Vulcanism and earthquakes, Plate tectonics, Weathering and erosion , Brief introduction to major landforms.

Unit-III

Weather and climate: Factors affecting and distribution, Composition and structure of atmosphere, Atmospheric pressure and global winds, Introduction to monsoon.

Unit-IV

Relief of oceans, Oceanic salinity, Circulation of oceanic water, Currents of Atlantic, Pacific and Indian Oceans.

Text/Reference Books:

1. Leong, Goh Cheng(2015), Certificate Physical and Human Geography, Oxford University
   Press, New Delhi.

2. Getis, Arthur and Bjelland Mark and Getis Victoria (2014),Introduction to Geography, McGraw Hill Education.
3. Singh, Savinder (2006), Physical Geography, Pravalika Publications, Allahabad.

Mapping Matrix of COs, POs and PSOs for MA/M.Sc./GEO/9/OEC3- Fundamentals of Geography

COs/POs. PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4
CO1	3.0	1.0	1.0	2.0	1.0	2.0	3.0	1.0	3.0	2.0	1.0	2.0
CO2	3.0	2.0	1.0	1.0	1.0	3.0	3.0	1.0	3.0	2.0	2.0	2.0
CO3	3.0	2.0	1.0	1.0	1.0	2.0	2.0	1.0	3.0	1.0	2.0	2.0
CO4	3.0	2.0	2.0	2.0	1.0	2.0	3.0	1.0	3.0	2.0	2.0	2.0
Average	3.0	1.8	1.3	1.5	1.0	2.3	2.8	1.0	3.0	1.8	1.8	2.0