

THE UNIVERSITY OF BURDWAN



**Syllabus for 3-Year Degree/4-Year Honours
in**

Geography

**Under Curriculum and Credit Framework for Undergraduate Programmes
(CCFUP) as per NEP, 2020
With effect from 2023-24**

SEMESTER WISE AND COURSE WISE CREDIT DISTRIBUTION STRUCTURE UNDER CCFUP AS PER NEP, 2020

SEM	COURSE TYPE	COURSE NAME	CRED IT	MARKS				DISTRIBUTION OF CREDIT		
				IA	ESE (TH)	ESE (PR)	TOTAL	LECT	TUT O	PR
I	MAJOR/DS COURSE CODE: GEOG 1011	GEOTECTONICS AND GEOMORPHOLOGY	4	15	60	0	75	3	1	0
	MINOR COURSE CODE:GEOG 1021	GEOTECTONICS AND GEOMORPHOLOGY	4	15	60	0	75	3	1	0
	MULTIDISCIPLINARY COURSE CODE: GEOG 1031	PHYSICAL GEOGRAPHY	3	10	40	0	50	2	1	0
	ABILITY ENHANCEMENT COURSE(AEC) CODE:1041	Arabic/ Bengali/ Hindi/ Sanskrit/ Santali/ Urdu or Equiv. Course from SWAYAM /Any other UGC recognized platform	2	10	40	0	50	2	0	0
	SKILL ENHANCEMENT COURSE (SEC) CODE: GEOG 1051	COMPUTER BASICS AND COMPUTER APPLICATIONS	3	10	0	40	50	0	0	3
	VALUE ADDED COURSE(VAC) CODE: CVA1061	ENVIRONMENTAL SCIENCE/ EDUCATION	4	20	60	20	100	3	1	1
	TOTAL		20				400			
II	MAJOR/DS COURSE CODE: GEOG 2011	POPULATION AND SETTLEMENT GEOGRAPHY	4	15	60	0	75	3	1	0
	MINOR COURSE CODE:GEOG 2021	POPULATION AND SETTLEMENT GEOGRAPHY	4	15	60	0	75	3	1	0
	MULTIDISCIPLINARY COURSE CODE: GEOG 2031	HUMAN GEOGRAPHY	3	10	40	0	50	2	1	0
	ABILITY ENHANCEMENT COURSE(AEC) CODE: ENGL 2041	English or Equiv. Course from SWAYAM/ /Any other UGC-recognized platform	2	10	40	0	50	2	0	0
	SKILL ENHANCEMENT COURSE (SEC) CODE: GEOG 2051	FIELD TECHNIQUES	3	10	40	0	50	2	1	0
	VALUE ADDED COURSE(VAC) CODE: CVA 2061	Understanding India/Digital & Tech. Solutions/Health & Wellness, Yoga Edu, Sports & Fitness	4	20	80/60	0/20	100	3/3	1/0	0/1
	Skill based vocational course (addl. 4 Cr) during summer term for 8 weeks, who will exit the programme after securing 40 cr.									
	TOTAL		20				400			

GEOGRAPHY (MAJOR)
SEMESTER I
COURSE 1 (CODE: GEOG 1011)

COURSE TITLE: GEOTECTONICS AND GEOMORPHOLOGY

Credits: 4

Lecture hours: 60

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Course Objective: • To instil fundamental knowledge about the different aspects of Physical Geography, especially Geotectonics and Geomorphology with the objective to educate them regarding the characteristics of different Earth surface processes and landforms.

Learning Outcome: • Students shall gather ideas about structure of the Earth and the causes for the different tectonic activities over the Earth. They also get opportunity to learn about different exogenic processes and resultant landforms.

Professional Skill Development: • This knowledge will help to provide a foundation for the further studies in Physical Geography or Earth Sciences.

UNIT I: Concepts in Geotectonic

Lecture hours (30 hrs)

- | | |
|--|---|
| 1. Earth's crust and interior: Internal structure with seismological evidences | 5 |
| 2. Theories of Isostasy: Airy & Pratt | 4 |
| 3. Continental Drift: Evidences, criticism and importance | 5 |
| 4. Sea floor spreading: Process, evidences (Palaeomagnetism) | 5 |
| 5. Plate Tectonics: Mechanism of movements, vulcanism, genesis of earthquake and Mountain building | 6 |
| 6. Folds and Faults: Origin and classification | 5 |

UNIT II: Fundamentals of Geomorphology

Lecture hours (30Hrs)

- | | |
|--|---|
| 1. Fundamental principles of Geomorphology | 4 |
| 2. Denudational processes and resultant landforms : Weathering and Mass movement | 5 |
| 3. Theories of landscape evolution: Davis, Penck, and Hack | 6 |
| 4. Slope development: Theories of King and Wood | 4 |
| 5. Processes and landforms: Fluvial and Coastal | 6 |
| 6. Drainage development on Uniclinal and folded structure | 5 |

Suggested Readings: Geotectonics and Geomorphology

1. Bloom, A. L. (2002): *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms*, Prentice Hall, Upper Saddle River, New Jersey
2. Chorley, R.J. and Kennedy, B.A. (1971): *Physical Geography: A Systems Approach*, Prentice Hall, Upper Saddle River, New Jersey
3. Condie, K.C. (2003): *Plate Tectonics and Crustal Evolution*, Butterworth-Heinemann, Oxford, Burlington
4. Duff, D. (1993): Holmes': *Principles of Physical Geology*, Stanley Thornes, Cheltenham
5. Erickson, J. (2001): *Plate Tectonics: Unravelling the Mysteries of the Earth*, Checkmark Books, New York
6. Goudie, A.S. (ed.) (2004): *Encyclopaedia of Geomorphology*, Routledge, London
7. Goudie, A.S. and Viles, H. (2010): *Landscapes and Geomorphology: A Very Short Introduction*, Oxford University Press, Oxford
8. Holmes, A. (1978): *Principles of Physical Geology*, Van Nostrand Rheinhold, New York
9. Huggett, R.J. (2011): *Fundamentals of Geomorphology*, Routledge, New York
10. Kale, V.S. and Gupta, A. (2001): *Introduction to Geomorphology*, Orient Longman, Kolkata
11. Keary, P. and Vine, M. (1997): *Global Tectonics*, Blackwell Scientific Publications, Oxford
12. Ollier, C.D. (1981): *Tectonics and Landforms*, Longman Group Ltd., London
13. Selby, M.J. (1985): *Earth's Changing Surface: An Introduction to Geomorphology*, Clarendon Press, Oxford
14. Siddhartha, K. (2001): *The Earth's Dynamic Surface*, Kisalaya Publications, New Delhi
15. Singh, S. (2000): *Geomorphology*, Prayag Pustak Bhavan, Allahabad
16. Strahler, A.H. and Strahler A.N. (1992): *Modern Physical Geography*, John Wiley & Sons, New York
17. Summerfield, M.A. (1991): *Global Geomorphology: An Introduction to the Study of Landforms*, Longman, London
18. Summerfield, M.A. (ed.) (2000): *Geomorphology and Global Tectonics*, Wiley, Chichester
19. Thorn, C. (1988): *Introduction to Theoretical Geomorphology*, Unwin Hyman, Boston
20. Thornbury, W. D. (1960): *Principles of Geomorphology*, John Wiley & Sons, New York
21. Wooldridge, S.W. and Morgan, R.S. (1937): *An Outline of Geomorphology: The Physical Basis of Geography*, Longman, London
22. Young, A. (1972): *Slopes*, Oliver and Boyd, Edinburg

**SEMESTER II
GEOGRAPHY (MAJOR)
COURSE II (CODE: GEOG 2011)**

COURSE TITLE: POPULATION AND SETTLEMENT GEOGRAPHY

Credits: 4

Lecture hours: 60

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Course Objective: ● To inculcate fundamental knowledge about Population Geography and basic concepts in Settlement Geography.

Learning Outcome: ● Students shall gather ideas about the dynamics of population and its different measures and also about the different types & patterns of settlement. The course will help them to gather ideas about fundamental concepts in Urban Geography.

Professional Skill Development: ● This knowledge will help to provide a foundation for the further studies in Population studies or in Urban Geography.

UNIT I: Population Geography

Lecture hours (30Hrs)

- | | |
|--|---|
| 1. Development of Population Geography; Relation between Population Geography and Demography | 4 |
| 2. Determinants of Population Dynamics: Fertility, Mortality and Migration | 4 |
| 3. Measures of Fertility and Mortality | 5 |
| 4. Migration: Theories, Causes and Types | 5 |
| 5. Theories of population growth: Malthus and Marx; Demographic Transition Theory (Thompson and Notestein) | 6 |
| 6. Population Composition (Age-Sex; Occupational Structure); Population policies (India and Sweden). | 6 |

UNIT II: Settlement Geography

Lecture hours (30Hrs)

- | | |
|---|---|
| 1. Development of Settlement Geography | 4 |
| 2. Characteristics of Rural Settlement: Site, Situation, types and Pattern | 5 |
| 3. Morphology of rural Settlements | 4 |
| 4. Urban Settlements: Census Definition, Urban Agglomeration; Urban sprawl, Rural-urban Continuum, Rurban and Periurban | 5 |
| 5. Urban Morphology: Classical Models of Burgess, Hoyt, Harris and Ullman | 6 |
| 6. Central place theory and Hierarchy of settlements; Urban primacy | 6 |

Suggested Readings: Social & Cultural Geography

1. Anderson, K. (2006): *Race and Crises of Human Development*, Routledge, London and New Delhi.
2. Beaujeu- Garnier, J. (1966) *Geography of Population*. London: Longman.
3. Bhende, A.S. and Kanitkar, T. (2015) *Principles of Population Studies*. Mumbai: Himalaya Publishing House.
4. Casino, V.J.D., Jr., (2009): *Social Geography: A Critical Introduction*, Wiley-Blackwell, Chichester.
5. Chandana, R.C. (2021) *Geography of Population – Concept, Determinants and World Pattern*. New Delhi: Kalyani Publishers.
6. Clarke, J.I. (1972): *Population Geography*, Pergamon Press, Oxford.
7. Coates, B.E., Johnston, R.J. and Knox, P.L. (1977): *Geography and Inequality*, Oxford University Press, Oxford and London.
8. Dubey, S.C. (1991): *Indian Society*, National Book Trust, New Delhi.
9. Eyles, J. (ed.) (1986): *Social Geography in International Perspective*, Rowman and Littlefield, New Jersey and Los Angeles.
10. Ghosh, S. (1998) *Settlement Geography*. Kolkata: Orient Longman Ltd.
11. Gregory, D. and Larry, J. (eds.) (1985): *Social Relations and Spatial Structures*, MacMillan, London.
12. Haq, M. (2000): *Reflections on Human Development*, Oxford University Press, New Delhi.
13. Jones, E. (ed.) (1975): *Readings in Social Geography*, Oxford University Press, London
14. Mandal, R.B. (2001) *Introduction to Rural Settlements*. New Delhi: Concept Publishing Company.
15. Norton, W. (2006): *Cultural Geography: Environments, Landscapes, Identities, Inequalities*, Oxford University Press, Toronto.
16. Ramachandran, R. (2010) *Urbanisation and Urban Systems of India*. New Delhi: Oxford University Press.
17. Roy, D. (2015) *Population Geography*. Kolkata: Books & Allied (P) Ltd.
18. Rubenstein, J.M. (2002), *The Cultural Landscape*, 7th edition, Prentice Hall, Englewood Cliffs.
19. Sharma, K.L. (1980): *Essays on Social Stratification*, Rawat Publications, Jaipur and New Delhi.
20. Singh, R.Y. (1994) *Geography of Settlement*. Jaipur: Rawat Publications, Jaipur.
21. Smith, D. (1977): *Geography: A Welfare Approach*, Edward Arnold, London .
22. Tiwari, R.C. (2020) *Settlement Geography – Rural and Urban Settlement*. Allahabad: Pravalika Publications.
23. Valentine, G. (2001): *Social Geographies: Space and Society*, Prentice Hall, Harlow, U.K.

GEOGRAPHY (MINOR)
SEMESTER- I
COURSE 1 (CODE: GEOG 1021)

COURSE TITLE: GEOTECTONICS AND GEOMORPHOLOGY

Credits: 4

Lecture hours: 60

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Course Objective: ● To instil fundamental knowledge about the different aspects of Physical Geography, especially Geotectonics and Geomorphology with the objective to educate them regarding the characteristics of different Earth surface processes and landforms.

Learning Outcome: ● Students shall gather ideas about structure of the Earth and the causes for the different tectonic activities over the Earth. They also get opportunity to learn about different exogenic processes and resultant landforms.

Professional Skill Development: ● This knowledge will help to provide a foundation for the further studies in Physical Geography or Earth Sciences.

UNIT I: Concepts in Geotectonic

Lecture hours (30 hrs)

- | | |
|--|---|
| 1. Earth's crust and interior: Internal structure with seismological evidences | 5 |
| 2. Theories of Isostasy: Airy & Pratt | 4 |
| 3. Continental Drift: Evidences, criticism and importance | 5 |
| 4. Sea floor spreading: Process, evidences (Palaeomagnetism) | 5 |
| 5. Plate Tectonics: Mechanism of movements, vulcanism, genesis of earthquake and Mountain building | 6 |
| 6. Folds and Faults: Origin and classification | 5 |

UNIT II: Fundamentals of Geomorphology

Lecture hours (30Hrs)

- | | |
|--|---|
| 1. Fundamental principles of Geomorphology | 4 |
| 2. Denudational processes and resultant landforms : Weathering and Mass movement | 5 |
| 3. Theories of landscape evolution: Davis, Penck, and Hack | 6 |
| 4. Slope development: Theories of King and Wood | 4 |
| 5. Processes and landforms: Fluvial and Coastal | 6 |
| 6. Drainage development on Uniclinal and folded structure | 5 |

Suggested Readings: Geotectonics and Geomorphology

1. Bloom, A. L. (2002): *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms*, Prentice Hall, Upper Saddle River, New Jersey
2. Chorley, R.J. and Kennedy, B.A. (1971): *Physical Geography: A Systems Approach*, Prentice Hall, Upper Saddle River, New Jersey
3. Condie, K.C. (2003): *Plate Tectonics and Crustal Evolution*, Butterworth-Heinemann, Oxford, Burlington
4. Duff, D. (1993): Holmes': *Principles of Physical Geology*, Stanley Thornes, Cheltenham
5. Erickson, J. (2001): *Plate Tectonics: Unravelling the Mysteries of the Earth*, Checkmark Books, New York
6. Goudie, A.S. (ed.) (2004): *Encyclopaedia of Geomorphology*, Routledge, London
7. Goudie, A.S. and Viles, H. (2010): *Landscapes and Geomorphology: A Very Short Introduction*, Oxford University Press, Oxford
8. Holmes, A. (1978): *Principles of Physical Geology*, Van Nostrand Rheinhold, New York
9. Huggett, R.J. (2011): *Fundamentals of Geomorphology*, Routledge, New York
10. Kale, V.S. and Gupta, A. (2001): *Introduction to Geomorphology*, Orient Longman, Kolkata
11. Keary, P. and Vine, M. (1997): *Global Tectonics*, Blackwell Scientific Publications, Oxford
12. Ollier, C.D. (1981): *Tectonics and Landforms*, Longman Group Ltd., London
13. Selby, M.J. (1985): *Earth's Changing Surface: An Introduction to Geomorphology*, Clarendon Press, Oxford
14. Siddhartha, K. (2001): *The Earth's Dynamic Surface*, Kisalaya Publications, New Delhi
15. Singh, S. (2000): *Geomorphology*, Prayag Pustak Bhavan, Allahabad
16. Strahler, A.H. and Strahler A.N. (1992): *Modern Physical Geography*, John Wiley & Sons, New York
17. Summerfield, M.A. (1991): *Global Geomorphology: An Introduction to the Study of Landforms*, Longman, London
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20. Thornbury, W. D. (1960): *Principles of Geomorphology*, John Wiley & Sons, New York
21. Wooldridge, S.W. and Morgan, R.S. (1937): *An Outline of Geomorphology: The Physical Basis of Geography*, Longman, London
22. Young, A. (1972): *Slopes*, Oliver and Boyd, Edinburg

GEOGRAPHY (MINOR)
SEMESTER- II
COURSE 1I (CODE: GEOG 2021)

COURSE TITLE: POPULATION AND SETTLEMENT GEOGRAPHY

Credits: 4

Lecture hours: 60

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Course Objective: • To inculcate fundamental knowledge about Population Geography and basic concepts in Settlement Geography.

Learning Outcome: • Students shall gather ideas about the dynamics of population and its different measures and also about the different types & patterns of settlement. The course will help them to gather ideas about fundamental concepts in Urban Geography.

Professional Skill Development: • This knowledge will help to provide a foundation for the further studies in Population studies or in Urban Geography.

UNIT I: Population Geography

Lecture hours (30Hrs)

- | | |
|--|---|
| 1. Development of Population Geography; Relation between Population Geography and Demography | 4 |
| 2. Determinants of Population Dynamics: Fertility, Mortality and Migration | 4 |
| 3. Measures of Fertility and Mortality | 5 |
| 4. Migration: Theories, Causes and Types | 5 |
| 5. Theories of population growth: Malthus and Marx; Demographic Transition Theory (Thompson and Notestein) | 6 |
| 6. Population Composition (Age-Sex; Occupational Structure); Population policies (India and Sweden). | 6 |

UNIT II: Settlement Geography

Lecture hours (30Hrs)

- | | |
|---|---|
| 1. Development of Settlement Geography | 4 |
| 2. Characteristics of Rural Settlement: Site, Situation, types and Pattern | 5 |
| 3. Morphology of rural Settlements | 4 |
| 4. Urban Settlements: Census Definition, Urban Agglomeration; Urban sprawl, Rural-urban Continuum, Rurban and Periurban | 5 |
| 5. Urban Morphology: Classical Models of Burgess, Hoyt, Harris and Ullman | 6 |
| 6. Central place theory and Hierarchy of settlements; Urban primacy | 6 |

Suggested Readings: Social & Cultural Geography

1. Anderson, K. (2006): *Race and Crises of Human Development*, Routledge, London and New Delhi.
2. Beaujeu- Garnier, J. (1966) *Geography of Population*. London: Longman.
3. Bhende, A.S. and Kanitkar, T. (2015) *Principles of Population Studies*. Mumbai: Himalaya Publishing House.
4. Casino, V.J.D., Jr., (2009): *Social Geography: A Critical Introduction*, Wiley-Blackwell, Chichester.
5. Chandana, R.C. (2021) *Geography of Population – Concept, Determinants and World Pattern*. New Delhi: Kalyani Publishers.
6. Clarke, J.I. (1972): *Population Geography*, Pergamon Press, Oxford.
7. Coates, B.E., Johnston, R.J. and Knox, P.L. (1977): *Geography and Inequality*, Oxford University Press, Oxford and London.
8. Dubey. S.C. (1991): *Indian Society*, National Book Trust, New Delhi.
9. Eyles, J. (ed.) (1986): *Social Geography in International Perspective*, Rowman and Littlefield, New Jersey and Los Angeles.
10. Ghosh, S. (1998) *Settlement Geography*. Kolkata: Orient Longman Ltd.
11. Gregory, D. and Larry, J. (eds.) (1985): *Social Relations and Spatial Structures*, MacMillan, London.
12. Haq, M. (2000): *Reflections on Human Development*, Oxford University Press, New Delhi.
13. Jones, E. (ed.) (1975): *Readings in Social Geography*, Oxford University Press, London
14. Mandal, R.B. (2001) *Introduction to Rural Settlements*. New Delhi: Concept Publishing Company.
15. Norton, W. (2006): *Cultural Geography: Environments, Landscapes, Identities, Inequalities*, Oxford University Press, Toronto.
16. Ramachandran, R. (2010) *Urbanisation and Urban Systems of India*. New Delhi: Oxford University Press.
17. Roy, D. (2015) *Population Geography*. Kolkata: Books & Allied (P) Ltd.
18. Rubenstein, J.M. (2002), *The Cultural Landscape*, 7th edition, Prentice Hall, Englewood Cliffs.
19. Sharma, K.L. (1980): *Essays on Social Stratification*, Rawat Publications, Jaipur and New Delhi.
20. Singh, R.Y. (1994) *Geography of Settlement*. Jaipur: Rawat Publications, Jaipur.
21. Smith, D. (1977): *Geography: A Welfare Approach*, Edward Arnold, London.
22. Tiwari, R.C. (2020) *Settlement Geography – Rural and Urban Settlement*. Allahabad: Pravalika Publications.
23. Valentine, G. (2001): *Social Geographies: Space and Society*, Prentice Hall, Harlow, U.K.

GEOGRAPHY
MULTIDISCIPLINARY COURSES (MDC)
SEMESTER I
COURSE: 1 (CODE: GEOG 1031)

COURSE TITLE: PHYSICAL GEOGRAPHY (Theory)

Credits: 3
Lecture hours: 45

Total Marks: 50 Course Evaluation: Semester Examination (40 marks) and Internal Assessment (10Marks)

Objectives of the Course: Students can acquire knowledge and develop an understanding of concepts, processes and methods of Physical Geography. Students may develop an interest in Geography through this course. Students can familiarize themselves with key concepts, terminology and core principles of Geography.

Learning Outcomes:

Students can apply the knowledge of the principles of Physical Geography in explaining the causes and consequences of natural hazards and suggest ways of coping with them through sustainable development. They will understand and analyze physical environments and utilize such knowledge in reflecting on issues on nature.

Professional Skill Development:

The acquired knowledge is beneficial to providing for future studies in geography. This obtained knowledge will definitely providing basic inputs in skill development which will place the students in their professional life in the near future.

	<u>Lecture hours</u>
1. Internal Structure of Earth	5
2. Geomorphic Processes: Weathering and Erosion	6
3. Processes and Landforms : Fluvial, Glacial and Aeolian	8
4. Composition and Structure of Atmosphere	6
5. Insolation, Heat Budget, Horizontal and Vertical Distribution of Temperature	6
6. Hydrological Cycle	4
7. Soil forming factors; Types of soil: Zonal, Azonal and Intrazonal	6
8. Classification of Natural Vegetation	4

Suggested Readings :

1. Barry, R. G, Chorley R. J. 2009 Atmosphere Weather and Climate. 9th Ed, Routledge.
2. Conserva H. T., 2004: Illustrated Dictionary of Physical Geography, Author House, USA.
3. Daji, J. A., Kadam, J.R., Patil, N.D. 1996 A Textbook of Soil Science, Media Promoters and Publishers Pvt Ltd.
4. Gabler R.E., Petersen J.F. and Trapasso, L.M., 2007: Essentials of Physical Geography (8th Edition), Thompson, Brooks/Cole, USA.
5. Garrett. N., 2000: Advanced Geography, Oxford University Press.
6. Goudie, A., 1984: The Nature of the Environment: An Advanced Physical Geography, Basil Blackwell Publishers, Oxford.
7. Hamblin, W.K. 1995: Earth's Dynamic System, Prentice Hall, N.J.
8. Husain M. 2002: Fundamentals of Physical Geography, Rawat Publications, Jaipur.
9. Lal, D. S. 2012. Climatology. Sharda Pustak Bhawan.
10. Monkhouse, F.J. 2009: Principles of Physical Geography, Platinum Publishers, Kolkata.
11. Strahler A.N. and Strahler A.H., 2008: Modern Physical Geography, John Wiley & Sons, New York.

GEOGRAPHY
MULTIDISCIPLINARY COURSES (MDC)
SEMESTER II
COURSE: 2 (CODE: GEOG 2031)

COURSE TITLE: HUMAN GEOGRAPHY (Theory)

Credits: 3

Lecture hours: 45

Total Marks: 50 Course Evaluation: Semester Examination (40 marks) and Internal Assessment (10 Marks)

Objectives of the Course: Students can acquire knowledge and develop an understanding of concepts, processes and methods of Human Geography. Students may develop an interest in Human Geography through this course. Students can familiarize themselves with key concepts, terminology and core principles of Human Geography. They can easily recognize and understand the processes and patterns of the spatial arrangement of the natural features as well as human aspects and phenomena on the earth's surface.

Learning Outcomes: Students achieve knowledge about major themes of human geography. They can develop an idea about space and society and build an idea about population growth and distribution of population. This module helps to recognize about population –resource relationship. They will understand and analyze the inter-relationship between physical and human environments and utilize such knowledge in reflecting on issues related to society.

Professional Skill Development: The acquired knowledge is beneficial to providing for future studies in Geography. This obtained knowledge will definitely providing basic inputs in skill development which will place the students in their professional life in the near future.

Lecture hours

1. Population: Distribution, Density and Growth	6
2. Types of population migration	5
3. Economic Activities: Primary, Secondary and Tertiary	6
4. Types and Patterns of Rural Settlements	6
5. Definition and Types of Urban Settlements	6
6. Major Ethnic groups of the World	6
7. Cultural Diffusion	5
8. Indicators of Human Development	5

Suggested Readings:

1. Anderson, K. (2006): *Race and Crises of Human Development*, Routledge, London and New Delhi.
2. Chandna, R.C.(2010) Population Geography, Kalyani Publisher.
3. Clarke, J.I. (1972): Population Geography, Pergamon Press, Oxford.
4. Daniel,P.A. and Hopkinson, M.F.(1989)The Geography of Settlement, Oliver & Boyd, London.
5. Johnston R; Gregory D, PrattG. etal. (2008)The Dictionary of Human Geography, Blackwell Publication.
6. Jordan-Bychkovetal. (2006)The Human Mosaic: A Thematic Introduction to Cultural Geography. W.H. Freemanand Company, NewYork.
7. Ghosh,S. (2015) Introduction to settlement geography. Orient Black Swan Private Ltd., Kolkata.
8. Ghosh, S. (1998) Settlement Geography. Kolkata: Orient Longman Ltd.
9. Hussain, Majid(2012) Manav Bhugol. Rawat Publications ,Jaipur
10. Rubenstein, J.M. (2002), *The Cultural Landscape*, 7th edition, Prentice Hall, Englewood Cliffs.

GEOGRAPHY
SKILL ENHANCEMENT COURSE (SEC)
SEMESTER I
COURSE: 1 (CODE: GEOG 1051)

COURSE TITLE: COMPUTER BASICS AND COMPUTER APPLICATIONS (Practical)

Credits: 3

Lecture hours: 90

Total Marks: 50 Course Evaluation: Semester Examination (40 marks) and Internal Assessment (10 marks)

Objectives: This is an initiative to develop the basics of computer applications to students so that they can apply it to solve the geographical problems through statistical methods. From this course students can learn the significance of computer applications in geographical studies.

Learning Outcomes: Students shall know about fundamentals of computer applications. They can develop an idea about computer basics and acquire skill to solve the statistics. They will be able to identify correlations of different variables and can establish solution of research problems through statistical procedure with the help of computer application.

Professional Skill Development: The acquired knowledge is beneficial to providing for future studies in Geography. This obtained knowledge will definitely providing basic inputs in skill development which will place the students in their professional life in the near future.

	<u>Lecture hours</u>
1. Numbering Systems; Binary Arithmetic	10
2. Data Computation, Storing and Formatting in Spreadsheets: Computation of Rank, Mean, Median, Mode, Standard Deviation,	25
3. Moving Averages, Derivation of Correlation, Covariance and regression; Selection of technique and interpretation.	25
4. Preparation of annotated diagrams and its interpretation: Scatter diagram and Histogram	20
5. Internet surfing: generation and extraction of information	10

(Sub unit 2, 3, 4 will be done by using MS Excel)

Suggested Readings:

1. Bartee, Thomas C. (1977): Digital Computer Fundamental; McGraw Hill.
2. Chauhan, S.; Chauhan, A. and Gupta, K. (2006): Fundamental of Computer; Firewall Media.
3. Flake, L.J.; McClintock, C.E. and Turner, S. (1989): Fundamental of Computer Education; Wordsworth Pub. Co.
4. Leon, A. and Leon, M.(1999): Introduction to Computer, USB Publishers' Distributors Ltd.
5. Malvino, A.P. and Leach, D.P. (1981): Digital Principles and Applications; Tata Mc Graw Hill.
6. Mano, Moris M. and Kime, Charles R. (2004): Logic and Computer Design Fundamental; Prentice Hall. Rajaraman, V.(2003):Fundamentals of Computer, Prentice Hall Publisher
7. Sarkar, A. and Gupta, S.K (2002): Elements of computer Science, S Chand and Company, New Delhi Blissmer (1996):Working with MSWord; Houghton Mifflin Co.
8. Johnson, Steve (2007): Microsoft PowerPoint 2007; Pearson Paravia Bruno.
9. Leon, A .and Leon, M. (1999): Introduction to Computer, USB Publishers' Distributors Ltd.
10. Leon, A. and Leon, M.(1999):A beginners Guide to Computers, Vikas
10. Rajaraman, V. (2008): Computer Primer; Prentice Hall of India Pvt. Ltd.
11. Sarkar, A. and Gupta, S .K (2002) Elements of computer Science, S Chand and Company, New Delhi
12. Shepard, Aaron (2007): Perfect Pages; Shepard Publications. Tyson,
13. Herbert L. (2007): Microsoft Word 2007 Bible; John Wiley.
14. Walkenbach, John (2007): Excel 2007 Bible; John Wiley

GEOGRAPHY
SKILL ENHANCEMENT COURSE (SEC)
SEMESTER II
COURSE: 2 (CODE: GEOG 2051)

COURSE TITLE: FIELD SURVEY TECHNIQUES (Theory)

Credits: 3

Lecture hours-45

Total Marks: 50 Course Evaluation: Semester Examination (40 marks) and Internal Assessment (10marks)

Objectives: This is an initiative to develop the basic concept of field technique to students so that they can apply it to solve the geographical problems in the field. From this course students can learn the significance of field techniques in geographical studies, understand the meaning of field and identifying the case study.

Learning Outcomes: Students shall know about different types of field techniques. They can develop an idea about research problems and acquire observation power through field experience in future they will be able to identify the socio environmental problems of a locality. They will be capable to develop communication skill and interaction power.

Professional Skill Development: The acquired knowledge is beneficial to providing for future studies in geography. This obtained knowledge will definitely providing basic inputs in skill development which will place the students in their professional life in the near future.

Lecture hours

- | | |
|---|----|
| 1. Fieldwork in Geographical studies – Role and significance, Selection of study area and objectives, Pre-field preparations, Ethics of fieldwork | 10 |
| 2. Preparation of Survey Schedule and Questionnaires (open, closed, structured, non-structured) | 8 |
| 3. Interview with special reference to focused group discussions | 7 |
| 4. Field techniques and tools: Landscape survey using transects and quadrants, constructing a sketch, photo and video recording | 10 |
| 5. Collection of samples. Preparation of inventory from field data. Post-field tasks | 10 |

Suggested Readings:

1. Creswell J., 1994: Research Design: Qualitative and Quantitative Approaches Sage Publications
2. Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi
3. Evans M., 1988: "Participant Observation: The Researcher as Research Tool" in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
4. Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi
5. Robinson A., 1998: "Thinking Straight and Writing That Way", in Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
6. Special Issue on "Doing Fieldwork" The Geographical Review 91:1-2 (2001).
7. Stoddard R. H., 1982: Field Techniques and Research Methods in Geography, Kendall/ Kothari, C. R. and Garg, G., 2018, Research Methodology, Methods and Techniques, New Age International Publication, New Delhi

**COURSE STRUCTURE UNDER CCFUP (AS PER NEP 2020) FOR B.A/B.Sc. 3YR DEGREE/4YR HONS. IN
GEOGRAPHY**

Semester-wise distribution of Credits and Marks

SEMESTER	COURSE TYPE	COURSE NAME WITH CODE	CREDIT	DISTRIBUTION OF CREDIT			MARKS			
				LECT	TUTO	PR	IA	ESE (TH)	ESE (PR)	TOTAL
III	MAJOR/DS COURSE	GEOGRAPHY OF INDIA CODE: GEOG 3011	5	4	1	0	15	60	0	75
		CARTOGRAPHY AND SURVEYING (PR) CODE: GEOG 3012	5	0	0	5	15	0	60	75
	MINOR COURSE[#]	VOCATIONAL EDUCATION & TRAINING CODE ----- 3021	4				15			75
	MULTIDISCIPLINARY COURSE[#]	ENVIRONMENTAL GEOGRAPHY CODE: GEOG 3031	3	2	1	0	10	40	0	50
	ABILITY ENHANCEMENT COURSE(AEC)	L1-2-MIL Arabic/ Bengali/ Hindi/ Sanskrit/ Santali/ Urdu or EquvInt. Course from SWAYAM or UGC recognized others CODE ----- 3041	2	2	0	0	10	40	0	50

	SKILL ENHANCEMENT COURSE (SEC)	BASICS OF RS&GIS (PR) CODE: GEOG 3051	3	0	0	3	10	0	40	50
	TOTAL		22							375
IV	MAJOR/DS COURSE	CLIMATOLOGY CODE: GEOG 4011	5	4	1	0	15	60	0	75
		ECONOMIC GEOGRAPHY CODE: GEOG 4012	5	4	1	0	15	60	0	75
		MAP PROJECTION AND MAP ANALYSIS (PR) CODE: GEOG 4013	5	0	0	5	15	0	60	75
	MINOR COURSE[#]	FUNDAMENTALS OF CLIMATOLOGY AND BIOGEOGRAPHY CODE: GEOG 4021	4	3	1	0	15	60	0	75
	MINOR COURSE[#] (OTHER THAN GEOGRAPHY)	CODE ----- 4021	4				15			75
	ABILITY ENHANCEMENT COURSE(AEC)	L ₂ -2-English: Language and Creativity CODE: ENGL 4041 or equivalent Course from SWAYAM or UGC recognized other Platform.	2	2	0	0	10	40	0	50
	TOTAL		25							425

**** IA- INTERNAL ASSESSMENT, ESE-END SEMESTER EXAMINATION, TUTO-TUTORIAL, LECT- LECTURE, TH-THEORY, PR-PRACTICAL**

GEOGRAPHY (MAJOR) SEMESTER III

COURSE 1 (CODE: GEOG 3011)

COURSE TITLE: GEOGRAPHY OF INDIA

Credit: 5

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Course Objective: • To provide knowledge about the Physiography, Economy, and Demography of India.

Learning Outcome: • To gain enough knowledge about the Physiography, Economy and Demography of India.

Professional Skill Development: • Several skills and knowledge will develop among the students after studying about their nation which will help them to become an expert and professional planner for the betterment of the nation. It will also help them for preparation of different competitive examinations.

UNIT I: Physical Geography

1. Geological set-up: Archaean, Purana, Dravidian, and Aryan Rock systems
2. Physiographic divisions
3. Drainage Systems: Himalayan and Peninsular
4. Climate: Types and characteristics; Significance of Indian Monsoon
5. Soil: Types, Characteristics and Distribution
6. Vegetation: Types and Classification

UNIT II: Economic and Social Geography

1. Agricultural regions, Green Revolution and its consequences
2. Industrial development since independence
3. Distribution of Minerals and Energy Resources: Iron, Bauxite, Coal and Petroleum

4. Water Resources of India; Inter-state conflicts
5. Regionalisation of India: Views of Spate and Bhatt
6. Human Resources: Population Distribution and population policies

Reference Books:

1. . Deshpande C. D., 1992: India: A Regional Interpretation, ICSSR, New Delhi.
2. Johnson, B. L. C., ed. 2001. Geographical Dictionary of India. Vision Books, New Delhi.
3. Mandal R. B. (ed.), 1990: Patterns of Regional Geography – An International Perspective. Vol. 3 – Indian Perspective.
4. Sdyasuk Galina and P Sengupta (1967): Economic Regionalisation of India, Census of India
5. Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
6. Singh R. L., 1971: India: A Regional Geography, National Geographical Society of India.
7. Singh, Jagdish 2003: India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
8. Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.
9. Tirtha, Ranjit 2002: Geography of India, Rawat Publs., Jaipur & New Delhi
10. Pathak, C. R. 2003: Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.
11. Tiwari, R.C. (2007) Geography of India. Prayag PustakBhawan, Allahabad
12. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur
20. Thornbury, W. D. (1960)

GEOGRAPHY (MAJOR)
SEMESTER III
COURSE 2 (CODE: GEOG 3012)

COURSE TITLE: CARTOGRAPHY & SURVEYING (PR)

Credit: 5

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Course Objective: • To impart knowledge about mathematical principles of maps, to gain knowledge to analyze maps and diagrams prepared using mathematical principles. To provide knowledge of using precision instruments for survey purposes.

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Learning Outcome: • Preparation of maps and diagrams using different formula; measurement of height, distance, and area using the survey instruments.

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Professional Skill Development: • Ability to assimilate and understand various maps, perform mathematical analysis and hands-on training of the instruments for professional skill enhancement.

Unit 1: Map Scales and Thematic Mapping

1. Concepts of Cartograms and Thematic Maps
2. Concept of Scale; Reduction and Enlargement of Scale
3. Construction of Scale: Plain, Comparative, Diagonal, and Vernier
4. Diagrammatic representation of data: Star and Age-sex pyramid diagram, Proportional Pie diagram, Ternary diagram.
5. Representation of data on a map by proportional circles, dots and spheres, isolines and Choropleth method, Chorochromatic maps.

6. Preparation and interpretation of Climograph, Hythergraph, Ergograph.

Unit 2: Surveying

1. Basics of surveying and survey equipment: Concepts of Bearing: magnetic and true; whole-circle and reduced.
2. Numerical problems related to traverse: calculation of Exterior and Interior angles, measurement of area.
3. Open and closed traverse survey using Prismatic Compass; Correction for closing error (Bowditch's method).
4. Drawing of the longitudinal profile and Contouring over closed traverse using Dumpy level and Digital levelling instrument.
5. Measurement of Height and distance of objects using Transit Theodolite (Accessible and Inaccessible bases) on horizontal plains with the same and different instrument heights.
6. Measurement of ground slope using Abney level. Determination of strike and dip using Brunton Compass.

Reference Books

- 1.. Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books Dent B. D., T
2. organon J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), McGraw-Hill Higher Education
3. Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
4. Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
5. Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.

6. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
7. Slocum T. A., McMaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
8. Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
9. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

GEOGRAPHY (MDC)
SEMESTER III
COURSE 1 (CODE: GEOG 3031)

COURSE TITLE: ENVIRONMENTAL GEOGRAPHY

Credit: 3

**Total Marks: 50 Course Evaluation: Semester Examination (40 marks) and
Internal Assessment (10 Marks)**

Course Objective: • The objectives of environmental geography are to impart basic knowledge about the environment and its allied problems and to create awareness about environmental problems among people.

Learning Outcome: • Students shall develop an attitude of concern for the environment.

Professional Skill Development: • This knowledge will help to develop awareness about local environmental quality.

ENVIRONMENTAL GEOGRAPHY

3 Credit

1. Concepts and approaches of Environmental Geography
2. Structure and Functions of Ecosystem
3. Soil Pollution and Management
4. Solid Waste Pollution and Management
5. Marine Pollution and Management

Reference Books:

1. Casper J.K. (2010) Changing Ecosystems: Effects of Global Warming. Infobase Pub. New York.

2. Hudson, T. (2011) Living with Earth: An Introduction to Environmental Geology, PHI
3. Learning Private Limited, New Delhi.
4. Miller, G.T. (2007) Living in the Environment: Principles, Connections, and Solutions,
5. Brooks/ Cole Cengage Learning, Belmont.
6. Singh, R.B. (1993) Environmental Geography, Heritage Publishers, New Delhi.
7. UNEP (2007) Global Environment Outlook: GEO4: Environment for Development, United
8. Nations Environment Programme. University Press, Cambridge.
9. Wright R. T. and Boorse, D. F. (2010) Toward a Sustainable Future, PHI Learning Pvt Ltd, New Delhi.
10. Singh, R.B. and Hietala, R. (Eds.) (2014) Livelihood security in Northwestern Himalaya:
11. Case studies from changing socio-economic environments in Himachal Pradesh,

GEOGRAPHY (SEC)
SEMESTER III
COURSE 1 (CODE: GEOG 3051)

COURSE TITLE: BASICS OF RS & GIS

Credit: 3

**Total Marks: 50 Course Evaluation: Semester Examination (40 marks) and
Internal Assessment (10 Marks)**

Course Objective: • To provide knowledge about Remote Sensing and GIS technology-enabled information on natural and built environments.

Learning Outcome: • Students will acquire knowledge about the mapping techniques in RS & GIS software and its use in various fields.

Professional Skill Development: • This knowledge will help the students to enhance their skills in the preparation of digital maps for planning purposes.

Remote Sensing and GIS

1. Remote Sensing: Definition, Platforms, Types, Sensors and Resolution
2. Satellite Remote Sensing: Principles, EMR Interaction with Atmosphere and Earth Surface; Landsat and IRS Satellites: Sensors and Resolution
3. GIS: Definition, Data Structure (Vector and Raster), Applications
4. Downloading of satellite images and preparation of SFCC*
5. Georeferencing of Scanned Maps; Digitization of Point, Line, and Polygon features; Digitization of Administrative Boundaries*

[*Sub-units 4 and 5 are to be done using QGIS Software.

Note: A Project File Consisting of Practical Exercises is to be Submitted.]

Reference Books:

1. Campbell J. B., 2007: Introduction to Remote Sensing, Guildford Press.

2. Jensen J. R., 2004: Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall.
3. Joseph, G. 2005: Fundamentals of Remote Sensing, United Press India.
4. Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
5. Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
6. Rees W. G., 2001: Physical Principles of Remote Sensing, Cambridge University Press.
7. Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford and IBH Pub.
8. Wolf P. R. and Dewitt B. A., 2000: Elements of Photogrammetry: With Applications in GIS, McGraw-Hill.

GEOGRAPHY (MAJOR)
SEMESTER IV
COURSE 1 (CODE: GEOG 4011)

COURSE TITLE: CLIMATOLOGY

Credit: 5

**Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and
Internal Assessment (15 Marks)**

Course Objective: • Understanding the nature of the Earth's atmosphere and its different phenomena.

Learning Outcome: • Students can explain different atmospheric phenomena and their impact on the environment.

Professional Skill Development: • This knowledge will help to provide a foundation for further studies in climate and local resource management.

Unit 1: Elements of the Atmosphere

1. Nature, composition, and layering of the atmosphere,
2. Insolation: Latitude-wise variation of solar incidence. Depletion of Solar radiation within the atmosphere.
3. Heat balance (Terrestrial and Latitudinal), Heat budget.
4. Temperature: horizontal and vertical distribution. Inversion of temperature: types, causes, and consequences. Adiabatic temperature changes.
5. Stability and Instability of the atmosphere; Types of instability.
6. Greenhouse effect, importance of the Ozone layer and depletion.

Unit 2: Atmospheric Phenomena

1. Atmospheric moisture: Vapor pressure, Dew point and Saturation; Condensation: Processes and forms. Types of clouds.
2. Mechanism of Precipitation: Bergeron-Findeisen theory, Collision and Coalescence. Forms of Precipitation.
3. Air mass: Typology, origin, characteristics, and modification.
4. Circulation in the atmosphere: Planetary winds, Tri-Cellular model, Jet stream;
5. Monsoons: Origin and Mechanisms; Theories of Monsoon: Koteswaram, Jet Stream
6. Tropical and mid-latitude cyclones; Thunderstorms.

Reference Books:

1. Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.
2. Barry R. G. and Chorley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.
3. Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi
4. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
5. Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.
6. Trewartha G. T. and Horne L. H., 1980: An Introduction to Climate, McGraw

GEOGRAPHY (MAJOR)
SEMESTER IV
COURSE 2 (CODE: GEOG 4012)

COURSE TITLE: ECONOMIC GEOGRAPHY

Credits: 5

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Course Objective: • To instill fundamental ideas of Economic Geography, concept of resources and different economic activities

Learning Outcome: • Students will acquire knowledge about economic theories and economic phenomena,

Professional Skill Development: • Students will be able to evaluate different economic activities and aspects with more efficiency and this knowledge will help in the development of local economic enterprises.

Unit 1: Concepts and Approaches

1. Concepts and Approaches to Economic Geography
2. Concepts of Goods, Services, Production, and Consumption in Economic Geography
3. Resource: Concepts, significance and classification
4. Factors Influencing Location of Economic Activity and Forces of Agglomeration
5. Location Theories: Von Thünen and Alfred Weber
6. Resource depletion and Conservation, Limits to growth

Unit 2: Economic Activities

1. Concept and Classification of Economic Activities
2. Marketplace theories: Losch and Palander
3. Primary Activities: Subsistence and Commercial Agriculture; Forestry; Fishing
4. Secondary Activities: Manufacturing (Iron and Steel in India and Japan, Petrochemical in India and USA)
5. Tertiary Activities: Types of Trade and Services
6. International Trade Blocs: WTO and OPEC. SAARC, BRICKS.

Reference Books

1. Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey
2. Coe N. M., Kelly P. F. and Yeung H. W., 2007: Economic Geography: A Contemporary Introduction, Wiley-Blackwell
3. Hodder B. W. and Lee Roger, 1974: Economic Geography, Taylor and Francis Combes
4. P., Mayer T. and Thisse J. F., 2008: Economic Geography: The Integration of Regions and Nations, Princeton University Press
5. Wheeler J. O., 1998: Economic Geography, Wiley
6. Durand L., 1961: Economic Geography, Crowell

GEOGRAPHY (MAJOR)
SEMESTER IV
COURSE 3 (CODE: GEOG 4013)

COURSE TITLE: MAP PROJECTION & MAP ANALYSIS (PR) Credit:5

**Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and
Internal Assessment (15 Marks)**

Course Objective: • To inculcate fundamental knowledge about projection methods, Topographical maps, and Geological maps.

Learning Outcome: • Students shall gather ideas about the construction of map projection and their uses, they also learn to interpret Topographical maps and gain knowledge about geology through Geological maps.

Professional Skill Development: • This knowledge will help to provide a foundation for further studies in Physical Geography or Earth Sciences.

Unit 1: Map projection

1. Coordinate Systems: Polar and Rectangular. Concept of Geoid and Spheroid.
2. Map Projections: Classification, Properties, and Uses. Concept and Significance of UTM Projection.
3. Concept of Generating Globe, Grids: Angular and Linear Systems of Measurement.
4. Construction of Projections: Polar Zenithal Stereographic, Simple Conical with two Standard Parallels, Bonne's, Cylindrical Equal Area, and Mercator's.

Unit 2: Topographical Maps and Geological Map

1. Survey of India Topographical Maps: Reference scheme of Old and Open series
2. Delineation of Drainage Basin from Survey of India Topographical Map. Concept of Relief, Slope, and Stream Order.
3. Construction and Interpretation of Relief Profiles (Superimposed, Projected and Composite),
4. Preparation of Maps for Relative Relief, Dissection Index, Slope map (Wentworth), Drainage Density and Stream Ordering (Strahler) on a Drainage Basin.
5. Elements of Geological map: Bedding Plane, Unconformity and Non-conformity, thickness of Bed, Dip, Throw, Hade, Heave.
6. Drawing of geological cross sections: Problems related to Horizontal, Uniclinal, Folded and Faulted structures.
7. Determination of True and apparent dip, identification of dip direction, thickness, and displacement (for faulted structures).
8. Interpretation of geological structures: correlation with topography, geological history.

Reference Books:

1. Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol. Pregmen Press.
2. Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
3. Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi

4. Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
5. Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York
6. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
7. Sarkar, A. 2015: Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

THE UNIVERSITY OF BURDWAN



SYLLABUS FOR B.A./B.Sc. IN GEOGRAPHY

UNDER CCFUP as per NEP, 2020 for 3 Year Degree and 4 Year

Honours Programme

w.e.f. 2023-2024

COURSE STRUCTURE UNDER CCFUP (AS PER NEP 2020) FOR B.A/B.Sc. HONOURS IN GEOGRAPHY

Semester-wise distribution of Credits and marks

SEMESTER	COURSE TYPE WITH CODE	COURSE NAME	CREDIT	MARKS				DISTRIBUTION OF CREDIT		
				IA	ESE(TH)	ESE(PR)	TOTAL	LECT	TUTO	PR
V	MAJOR/DS COURSE Code: GEOG5011	GEOGRAPHICAL THOUGHT	5	15	60	0	75	4	1	0
	MAJOR/DS COURSE Code: GEOG5012	SOIL & BIOGEOGRAPHY	5	15	60	0	75	4	1	0
	MAJOR/DS COURSE Code: GEOG5013	QUANTITATIVE TECHNIQUES IN GEOGRAPHY (PR)	5	15	0	60	75	0	0	5
	MINOR COURSE# (Vocational Education and Training) Code: MSR5021 Or HRM5021 Or RSA5021	MEDICAL SALES REPRESENTATIVE Or HUMAN RESOURCE MANAGAMENT Or RETAIL SALES ASSOCIATE	4	15	60	0	75	3	1	0
	INTERNSHIP FOR ALL		2	PROJECT 30+ VIVA 20			50	0	0	2
	TOTAL		21				350			
VI	MAJOR/DS COURSE Code: GEOG6011	GEOGRAPHY OF DEVELOPMENT	4	15	60	0	75	3	1	0
	MAJOR/DS COURSE Code: GEOG6012	SOCIAL AND CULTURAL GEOGRAPHY	4	15	60	0	75	3	1	0
	MAJOR/DS COURSE Code: GEOG6013	REMOTE SENSING & GIS (PR)	4	15	0	60	75	0	0	4
	MAJOR/DS COURSE Code: GEOG6014	FIELD REPORT (PR)	4	15	0	60	75	0	0	4
	MINOR COURSE# (Vocational Education	MEDICAL SALES REPRESENTATIVE	4	15	60	0	75	3	1	0

	and Training) Code: MSR6021 Or HRM6021 Or RSA6021	Or HUMAN RESOURCE MANAGEMENT Or RETAIL SALES ASSOCIATE								
	TOTAL		20				375			

**** IA- INTERNAL ASSESMEN, ESE-END SEMESTER EXAMINATION, TUTO-TUTORIAL, LECT- LECTURE, TH-THEORY, PR- PRACTICAL
STUDENTS OPTED GEOGRAPHY AS MAJOR SUBJECT (4 YR HONS. COURSE/ 3YR DEGREE COURSE) WILL STUDY ANY DISCIPLINE OTHER THAN
GEOGRAPHY AS SPECIFIED BY THE UNIVERSITY/AS PER NEP STRUCTURE IN THEIR MINOR AND MULTIDISCIPLINARY COURSES.**

GEOGRAPHY (MAJOR)
SEMESTER V
COURSE 1 (CODE: GEOG 5011)

COURSE TITLE: GEOGRAPHICAL THOUGHT

Credits: 5

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Course Objective: ● The course enables students to understand the philosophical foundation of geography as a discipline as well as builds a strong base for academic research and professional practice in geography.

Learning Outcome: ● Helps students to understand the evolution of geography as a discipline and develops the power of critical thinking which enhances research skills and prepares for advanced studies.

Professional Skill Development: ● The developed power of critical thinking and analytical skills enhances communication and problem-solving abilities for professional works in geography related fields.

Unit: 1

1. Nature and Scope of Geography; Geography as a Spatial Science
2. Geography in Ancient Period: Greek, Roman and Indian
3. Development of Geography in Medieval period: Contributions of Arab Geographers
4. German School of Thought
5. French School of Thought
6. British and American School of Thought

Unit: 2

1. Concept of Determinism, Possibilism and Neo-Determinism
2. Positivism and Quantitative Revolution
3. Behavioural Geography
4. Approaches to the study of Geography: Ideographic vs Nomothetic
5. Approaches to the study of Geography: Systematic vs Regional
6. Humanistic and Welfare Geography

Suggested Readings: Geographical Thought

1. Adhikari S. 1992, Geographical Thought. Chaitanya Pub. House. Allahabad.
2. Binege. W. 1962, Theoretical Geography. Glenerp. London.
3. Chorley. R.J. and Hagget. P. (eds) 1965, Frontiers in Geographical Teaching. OUP. Oxford.
4. Dikshit. R.D. (eds) 1994, The Art and Science of Geography: Selected Readings. Prentice Hall India. New Delhi.
5. Dunbar. G.S. (eds) 1991, Modern Geography: An Encyclopedic Survey. St. James Press. Chicago
6. Gregory D. and Walford. R. (eds) 1988, Horizons in Human Geography, Macmillan London.
7. Hussain. M. 1995, Evolution of Geographical Thought, 3rd edition, Rawat Pub. Co., New Delhi.
8. Johnston. R.J. Gregory. D. Prett. G and Watts. M. 2000, The Dictionary of Human Geography. 4th edition. Blackwell Pub. Ltd. London.
9. Lahiri-Dutt, K. BhugolChintarBikash, World Press
10. Matthews. J.A. and Herbert. J.A. 2004, Unifying Geography: Common Heritage, Shared Future? Routledge. London.
11. Messy D. and Allen J. (eds) 1984, Geography Matters: A Reader, Cambridge University Press Cambridge.
12. Peet. R. 1998, Modern Geographical Thought. Blackwell, London.
13. Stoddart. D.R. 1986, On Geography and its History. Basil Blackwell, Oxford19.

SEMESTER V
GEOGRAPHY (MAJOR)
COURSE II (CODE: GEOG 5012)

COURSE TITLE: SOIL AND BIOGEOGRAPHY

Credits: 5

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Course Objective: • To inculcate fundamental knowledge about Soil Geography and basic concepts in Biogeography.

Learning Outcome: • Students shall gather ideas about the factors of soil formation, its type, distribution and different properties. They also gather knowledge about the principles of Biogeography and its different components.

Professional Skill Development: • This knowledge will help to provide a foundation for the further studies in Pedology and Biogeography or Ecology.

UNIT I: SOIL GEOGRAPHY

1. Soil as a component of biosphere, Factors of soil formation, Pedogenic processes and development of soil profile
2. Soil properties: Physical (Texture, Structure, Colour, Moisture, Air, Porosity) and Chemical (pH, Organic matter, NPK and Cation Exchange Capacity)
3. Soil Organisms: Macro and Micro
4. Study of soil profiles: Podzol, Laterite, Chernozem; Concept of Soil Catena.
5. Soil classification: Genetic and USDA
6. Soil erosion: Types, Consequences and Conservation, Soil Pollution: Causes, Consequences and Amelioration

UNIT II: BIOGEOGRAPHY

1. Nature and Scope of Biogeography, Concepts of Biosphere, Ecosystem, Biome, Species, Population, Community, Ecotone, Habitat, Ecological Niche, Biodiversity
2. Energy flow in Ecosystem: Trophic Level, Ecological pyramids, Y-shaped and universal model of energy flow
3. Bio-Geo Chemical Cycle: Carbon, Nitrogen
4. Biodiversity: Types, Gradients, Hotspots, Loss and Conservation
5. Classification of Biome; Tropical Rainforest, Temperate Grassland and Tundra
6. Programs of Conservation: IBP, MAB and IUCN

Suggested Readings:

Soil Geography:

1. Biswas, T.D. and Mukherjee, S.K. 1987, Text book of Soil Science. Tata-McGraw-Hill.
2. Brady. N.C. and Weil. R.R. 1996, The Nature and Properties of Soil. 11th edition. Longman. London.
3. De N K and P Ghosh, 2013, Geography of Soils, Shribhumi Publishing House, 101B, Sitaram Ghosh Street, Kolkata - 700009
4. Floth. H.D. 1990, Fundamentals of Soil Science, 8th edition. John Wiley and Sons. New York.
5. Morgan. R.P.C. 1995, Soil Erosion and Conservation, 2nd edition. Longman. London. Schwab. G.O. Fandmeir. D.D. and Eliot, W.J. 1996, Soil and Water Management Systems, 4th edition, John Wiley and Sons Inc. New York.
6. Young. A. 2000, Land Resources: Now and for the Future, Cambridge University Press. Cambridge.

Biogeography:

1. Chapman J.L. and Reiss. J.J. 1993, Ecology: Principles and Applications, Cambridge University Press, Cambridge.
2. Chiras D.D. Reganold J.P. and Owen, O.S. 2002, Natural Resource Conservation. Management for a Sustainable Future. 8th edition, Prentice Hall. Englewood Cliffs.
3. Dash. M.C. 2001, Fundamentals of Ecology, 2nd edition, Tata McGraw-Hill, New Delhi.
4. Huggett. R. 1998, Fundamentals of Biogeography, Routledge. London.
5. Kormondy. E.J. 1996, Concepts of Ecology, 4th edition. Prentice-Hall, India. New Delhi.
6. Myers. A.A. AND Giller. P.S. (editors) 1988, Analytical Biogeography: An Integrated Approach to the study of Animal and Plant Distributions. Chapman and Hall. London.
7. Odum E.P. 1997, Ecology: A Bridge between Science and Society, Sinaur Associates Inc. Publishers, Sunderland.
8. Sharma P.D. 1996, Ecology and Environment, 7th edition, Rastogi Publications, Mirat.
9. Weddell, B.J. 2002, Conserving Living Natural Resources in the Context of a Changing
10. World. Cambridge University Press. Cambridge. World Wide Fund for Nature-India (Eastern Region) 1995, Nature Conservation Handbook. Calcutta.

**SEMESTER V
GEOGRAPHY (MAJOR)
COURSE III (CODE: GEOG 5013)**

**COURSE TITLE: QUANTITATIVE TECHNIQUES IN GEOGRAPHY
(Practical)**

Credits: 5

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Duration of Practical Examination: 4 hrs

Course Objective: • To describe and analyses the quantitative geographical information and the probability of outcomes of an event or an area.

Learning Outcome: • Students shall gather the knowledge about the statistical techniques to solve the geographical problems of an event. They also learn different statistical techniques to solve the problems.

Professional Skill Development: • This knowledge will help to provide the fundamental foundation for further studies in research.

Unit 1

1. Sources and Types of Data; Variables and Attributes
2. Population and Samples, Scales of measurement (nominal, ordinal, interval and ratio)
3. Tabulation: Construction of data matrix with each row representing an aerial unit (districts / blocks / mouzas / towns) and corresponding columns of relevant attributes
4. Frequency distribution: Histogram, Curve, Polygon and Ogive
5. Measures of Central tendency: Mean, median, mode, Partition values (Deciles and Percentiles)
6. Measures of Dispersion: Mean Deviation, Standard Deviation, Coefficient of Variation, Standard Score

Unit 2

1. Scatter Diagram and trend line fitting with eye estimation
2. Coefficient of Correlation: Product Moment Correlation, Rank Correlation
3. Yule's Coefficient of Association
4. Linear Regression and fitting of best fit line with least square method, Estimation of Standard Error
5. T-Test and Chi-Square test
6. Time series analysis

***A Project File consisting of practical exercises on the above themes is to be submitted.**

Suggested Readings: Quantitative Techniques in Geography

1. Berry B. J. L. and Marble D. F. (eds.): Spatial Analysis – A Reader in Geography.
2. Ebdon D., 1977: Statistics in Geography: A Practical Approach.
3. Hammond P. and McCullagh P. S., 1978: Quantitative Techniques in Geography: An Introduction, Oxford University Press.
4. King L. S., 1969: Statistical Analysis in Geography, Prentice-Hall.
5. Mahmood A., 1977: Statistical Methods in Geographical Studies, Concept.
6. Pal S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
7. Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., NewDelhi
8. Silk J., 1979: Statistical Concepts in Geography, Allen and Unwin, London.
9. Spiegel M. R.: Statistics, Schaum's Outline Series.
10. Yeats M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.

**SEMESTER VI
GEOGRAPHY (MAJOR)
COURSE I (CODE: GEOG 6011)**

COURSE TITLE: GEOGRAPHY OF DEVELOPMENT

Credits: 4

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Course Objective: • This course is going to establish understanding about development and growth. It focuses on human development with sustainability and aspiring to quality of life. It can inculcate community development, rural development and urban growth aiming to development.

Learning Outcome: • Students shall acquire ideas about the growth and development and their indicators. They shall able to identify sustainable development goals. Learners shall obtain responsiveness about development in different sectors such as community level and regional level.

Professional Skill Development: • This knowledge will help to measure human development and sustainable development through different approaches and methods. Students will develop expertise to measure quality of life index through which students can assess the stages of development

UNIT I

1. Concept of Development; Growth vs Development
2. Indicators of development
3. Human Development: Concept and its measurement
4. Concept of Sustainable Development; SDGS 2030: Goals, Measurement and Monitoring
5. Development, Equity and Inclusivity
6. Development and Gender

UNIT II

1. Community Development: Approaches and Processes
2. Quality of Life: Approaches, Measurement and Significance
3. Concept of Rural Development; Dimensions and Components of Rural Development
4. Rural Development programme in India: Sansad Adarsh Gram Yojana (SAGY)
5. Urban agglomeration, City region and Urban fringe
6. Sustainable city; Salient Features of Smart City Mission

Suggested Readings: Geography of Development

1. Ahuja R. (2001): Social problem in India Rawat Publication
2. Aziz, S. (1978): Rural Development-Learning from China, English language Book society and Macmillan
3. Biswas, A.K., Jortajada, C., (2006): Appraising Sustainable Development, Oxford University
4. Corbridge, Stuart (ed.). (1995): Development studies-A Reader, Arnold, London
5. Dreze.J and Sen A. (1996): Economic Development and Social Opportunity, Oxford University Press, New Delhi
6. Elliotte, j. A. (1994): An Introduction to Sustainable Development: The Developing World, Routledge, London.
7. Gehlawat, J.K. and Kant, K., (1987): Strategies for Rural Development, Arnold Publishers
8. Gerald, M. & Roucc, J. (2003): Leading Issues in Economic Development, OUP
9. Gill, R. (1975): Economic Development: Past and Present, Prentice-Hall of India, New Delhi
10. Gilpin, A. (1996): Dictionary of Environment and Sustainable Development, John Wiley and Sons Ltd., Chichester:
11. Guha R. (ed.). (1994): Social Ecology, OUP, New Delhi.
12. Gupta D.N., (2001): Rural Development Systems, Population India International
13. Herbert, David and Thomas, C. (1982): Urban Geography A First Approach, Jhon Wiley & Sons, New Delhi
14. Hooja, R. (1987): Administrative interventions in Rural Development, Rawat Publications, Jaipur
15. Lebra, Joyce et al. (ed.). (1984): Women and Work in India-Community and Change, Pramila & co. Publishers
16. Meier, G., Rauch, J. (2003): Leading Issues in Economic Development, Oxford University Press
17. Middleton, N & Keefe, P.O. (2001): Redefining Sustainable Development, Pluto Press, London, Sterling & Virginia.
18. Mohan, S. (2005): Urban Development and New Localism, Rawat Publications, Jaipur
19. Moore R. (1995): Sustainable Development, New Age International.
20. Peet, R. and Hartwick, E. (1999): Theories of Development, Rawat Publications
21. Powar, M. (2003): Rethinking Development Geographies, OUP
22. Rao, P.K. (2001): Sustainable Development, Blackwell Publishers
23. Raza, M. (1992): Development & Ecology, Rawat Publication
24. Sharma, R.N. and Sita, K. (2001): Issues in Urban Development, Rawat Publications, Jaipur.
25. Shaw, A. (2018): Towards Sustainable Cities in India' in J. Mukherjee (ed.) Sustainable Urbanization in India: Challenges and Opportunities. New Delhi: Springer

26. Singh, K. (1986): Rural Development: Principles, Policies and Management, Sage Publication New Delhi
27. Singh, M. and Sharma, R.N. (1978): Rural Development-A Select bibliography, Uppal Publishing House
28. Venkateswaran, S. (1995): Environment, Development and the Gender Gap, Sage, New Delhi

**SEMESTER VI
GEOGRAPHY (MAJOR)
COURSE II (CODE: GEOG 6012)**

COURSE TITLE: SOCIAL AND CULTURAL GEOGRAPHY

Credits: 4

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks)

Course Objective: • To develop an understanding of how social and cultural processes shape spaces and places, enhance critical thinking about identity, power, and diversity, and apply geographical perspectives to real-world social issues.

Learning Outcome: • To develop an understanding of how social and cultural processes shape spaces and places, enhance critical thinking about identity, power, and diversity, and apply geographical perspectives to real-world social issues.

Professional Skill Development: • To develop professional skills such as critical thinking, spatial analysis, cultural sensitivity, research methods, communication, and the ability to interpret social patterns and human-environment interactions.

UNIT 1: Social Geography:

1. Concept and Elements of Social Structure
2. Social System and Social Processes
3. Social Exclusion and Inequality
4. Concept and Indicators of Social Well-being, Quality of Life
5. Social Ecology and Social Pathology
6. Social Security and Social Justice

Unit 2: Cultural Geography

1. Definition, Scope and Content of Cultural Geography
2. Concept of Cultural Hearth, Realm, Cultural Landscape
3. Cultural Innovation, Diffusion and Assimilation
4. Cultural Segregation, Cultural Diversity and Acculturation
5. Major Races of the World: Distribution and characteristics
6. Cultural identity, Cultural Hegemony and conflicts

Suggested Readings: Social & Cultural Geography

1. Ahmad, A. (1999): *Social Geography*, Rawat Publications, Jaipur and New Delhi
2. Anderson, K. (2006): *Race and Crises of Human Development*, Routledge, London and New Delhi
3. Casino, V.J.D., Jr., (2009): *Social Geography: A Critical Introduction*, Wiley-Blackwell, Chichester
4. Coates, B.E., Johnston, R.J. and Knox, P.L. (1977): *Geography and Inequality*, Oxford University Press, Oxford and London
5. Dubey, S.C. (1991): *Indian Society*, National Book Trust, New Delhi
6. Eyles, J. (ed.) (1986): *Social Geography in International Perspective*, Rowman and Littlefield, New Jersey and Los Angeles
7. Gregory, D. and Larry, J. (eds.) (1985): *Social Relations and Spatial Structures*, MacMillan, London
8. Haq, M. (2000): *Reflections on Human Development*, Oxford University Press, New Delhi
9. Jones, E. (ed.) (1975): *Readings in Social Geography*, Oxford University Press, London
10. Norton, W. (2006): *Cultural Geography: Environments, Landscapes, Identities, Inequalities*, Oxford University Press, Toronto
11. Rubenstein, J.M. (2002), *The Cultural Landscape*, 7th edition, Prentice Hall, Englewood Cliffs
12. Sharma, K.L. (1980): *Essays on Social Stratification*, Rawat Publications, Jaipur and New Delhi
13. Smith, D. (1977): *Geography: A Welfare Approach*, Edward Arnold, London
14. Valentine, G. (2001): *Social Geographies: Space and Society*, Prentice Hall, Harlow, U.K

**SEMESTER VI
GEOGRAPHY (MAJOR)
COURSE III (CODE: GEOG 6013)**

COURSE TITLE: REMOTE SENSING AND GIS (Practical)

Credits: 4

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks).

Duration of Practical Examination: 4 hrs.

Course Objective: The objective of this course is to gain an understanding of basic cartographic issues and GIS concepts, and their use in a specific GIS application. Moreover, after completion of the course students have gained understanding of the purposes of cartography, recognize the elements of cartographic representation, and how maps work.

Learning Outcome: To perform sophisticated raster and vector GIS analysis in a GIS environment and solve spatial problems using GIS techniques and technology. CO3: To develop a broad appreciation of spatial analysis techniques and application areas. To experiment with different symbologies to develop qualitative, quantitative and multivariate traditional and non-traditional maps.

Professional Skill Development: This knowledge will help the students to enhance their skills in the preparation of digital maps for planning purposes. It also will help the job opportunities in the deferent sector.

Unit I:

1. Interaction of EMR with atmosphere and earth's surface; Spectral signature curve: Soil, Vegetation and Water bodies
2. Optical mechanical scanners: MSS, TM, LISS, WiFS and PAN
3. Satellites and their characteristics: LANDSAT, IRS, INSAT and NOAA
4. Photogrammetry and its application, Types and Geometry of aerial photographs
5. Principles of GNSS, Navigation with Indian Satellite Constellation (NaVIC), GPS measurements and accuracy
6. GIS and its applications

Unit II:

1. Digitization of administrative boundary with attribute table
2. Creation of Thematic Mapping by using attribute table

3. Creation of Buffer Zone: Point and Line
4. Supervised and Unsupervised Image Classification from the LANDSAT and Sentinel Data
5. Drainage Basin demarcation, extraction and mapping of stream order and stream frequency from SRTM data
6. GPS way point collection and Mapping

***Unit II is to be done using QGIS Software.**

A Project File consisting of practical exercises on the above themes is to be submitted.

Suggested Readings: Remote Sensing and GIS

1. Campbell J. B., 2007: Introduction to Remote Sensing, Guildford Press.
2. Jensen J. R., 2004: Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall.
3. Joseph, G. 2005: Fundamentals of Remote Sensing, United Press India.
4. Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: Remote Sensing and Image Interpretation, Wiley. (Wiley Student Edition).
5. Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
6. Rees W. G., 2001: Physical Principles of Remote Sensing, Cambridge University Press.
7. Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford and IBH Pub.
8. Wolf P. R. and Dewitt B. A., 2000: Elements of Photogrammetry: With Applications in GIS, McGraw-Hill.
9. P.A. Burrough and R.A. McDonnell, "Principles of Geographical Information systems", Oxford University Press.
10. C.P. Lo and K.W. Yeung, "Concepts and Techniques of Geographic Information Systems", Pearson Education.
11. P.A.Longley, M.f.Goodchild, D.J.Maguireand D.W. Rhind, "Geographical Information system and Science (3rd Edition)", John Wiley.
12. S. Sekhar and H. Xiong, "Encyclopedia of GIS", Springer International Publishing. 5. T. P. Kanetkar, S. V. Kulkarni, "Surveying and Levelling Vol I and II", Vidyarthi Griha Prakashan
13. R.C. Gonzales and R.E. Woods, "Digital Image Processing (2nd Edition)", Pearson Education.

**SEMESTER VI
GEOGRAPHY (MAJOR)
COURSE IV (CODE: GEOG 6014)**

COURSE TITLE: FIELD WORK (Practical)

Credits: 4

Total Marks: 75 Course Evaluation: Semester Examination (60 marks) and Internal Assessment (15 Marks).

Question Pattern: Report writing: 30, Viva-voce:10, two questions to be set each of 10 marks (10x2=20).

Internal Assessment: Marks should be awarded on the basis of student's active participation during field visit and post field activities. (Strictly for this paper).

Duration of Practical Examination: 4 hrs.

FIELDWORK

Students are required to carry out a comprehensive field work in a village/mouza/town/C.D. Block/drainage basin selecting a particular research problem. There should be a clear-cut Problem background, major Objectives, Methodology and Findings. The text of the fieldwork should not exceed 5000 words. The fieldwork along with the diagrams and illustrations should be prepared in a computer using the standard (Using MS-Word for typing and Excel for calculation and graphs). The cartographic and statistical techniques used in the fieldwork should be at par with the syllabus of the UG Course.

Guidelines for Fieldwork:

The following methods are to be followed for fieldwork:

- 1) Preparation of questionnaire for assessing the physical/cultural/environment/socio-economic components. A filled-in questionnaire used in the survey should be attached with the report signed by the concerned teacher and the student.
- 2) Preparation of maps using QGIS, it is preferred that RS data should be used in field report.
- 3) Preparation of charts/graphs in MS-Excel (duly labelled).
- 4) The report should be typed in MS-Word. The font size is fixed at 12 in Times New Roman and the line spacing 1.5.
- 5) Each field work should have a certificate of authenticity duly signed by the project Supervisor.