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	CREDIT	MARKS				DISTRIBUTION OF CREDIT		
				IA	ESE (TH)	ESE (PR)	TOTAL	LECT	TUTO	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. (I960): *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

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. (I960): *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.

	Lecture hours
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 (8thEdition), 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. HusainM.2002: Fundamentals of Physical Geography, Rawat Publications, and 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.

	Lecture hours
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 annoted 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)	L_1-2-MIL Arabic/ Bengali/ Hindi/ Sanskrit/ Santali/ Urdu or Equvlnt. 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, Jaipur20. Thornbury, W. D. (I960)

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.

.

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

.

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, NewJersey
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