Papers & Credits: Multidisciplinary (MD) Course [1]

Semester ⇩	Major Discipline Specific Course (MD-DSC/CC Major) [2]	Minor Discipline Specific Course (MD-DSC/CC Minor) [2]	Interdisciplinary Course (IDC) [3]	Ability Enhancement Course (AEC)	Skill Enhancement Course (SEC) [4]	Common Value Added Course (CVAC)	Summer internship [5]	Total Credit (including 2nd DSC Major course) [2]
	8 papers × 4 credits = 32 credits	6 papers × 4 credits = 24 credits	3 papers × 3 credits = 9 credits	4 papers × 2 credits = 8 credits	3 papers × 4 credits = 12 credits	4 papers × 2 credits = 8 credits	1 paper × 3 credits = 3 credits	124
1	GEOG-MD-CC**01**-1-Th & P Physical Geography	—	GEOG-IDC**01**-Th & P Geomatics and Spatial Analysis	1 × 2 = 2 From central pool	GEOG-MD-SEC**01**-1-Th Methods in Geography	2 × 2 = 4 From central pool	—	21
2	GEOG-MD-CC**02**-2-Th & P Human Geography	—	GEOG-IDC**01**-Th & P Geomatics and Spatial Analysis	1 × 2 = 2 From central pool	GEOG-MD-SEC**01**-1-Th Methods in Geography	2 × 2 = 4 From central pool	Summer Internship to be completed by students exiting after Semester-2	21
3	GEOG-MD-CC**03**-3-Th & P Economic Geography	GEOG-MD-CC**01**-3-Th & P Physical Geography	GEOG-IDC**01**-Th & P Geomatics and Spatial Analysis	1 × 2 = 2 From central pool	GEOG-MD-SEC**01**-1-Th Methods in Geography	—	—	21
4	GEOG-MD-CC**04**-4-Th & P Geomorphology GEOG-MD-CC**05**-4-Th & P Climatology	GEOG-MD-CC**02**-4-Th & P Human Geography	—	—	—	—	Summer Internship to be completed by students exiting after Semester-4	22
5	GEOG-MD-CC**06**-5-Th & P Hydrology and Oceanography [6] GEOG-MD-CC**07**-5-Th & P Cultural and Settlement Geography	GEOG-MD-CC**03**-5-Th & P Economic Geography GEOG-MD-CC**04**-5-Th & P Geomorphology	—	—	—	—	—	20
6	GEOG-MD-CC**08**-6-Th & P India and West Bengal	GEOG-MD-CC**05**-6-Th & P Climatology GEOG-MD-CC**07**-6-Th & P Cultural and Settlement Geography	—	—	—	—	Summer Internship to be completed by students exiting after Semester-6	
Credits	8 × 4 = 32	6 × 4 =24	3 × 3 =9	4 × 2 = 8	3 × 4 =12	4 × 2 = 8	3	128
Marks	8 × 100 = 800	6 × 100 = 600	3 × 75 = 225	4 × 50 = 200	3 × 100 = 300	4 × 50 = 200	—	3200

NOTES: 1. *Exit Options*: • At the end of Semester 2 for award of *Certificate* (45 credits). • At the end of Semester 4 for award of *Diploma* (88 credits). • At the end of Semester 6 for award of *BA/BSc Degree* (128 credits).

2. Geography may be selected as one of the three DSC (Core) subjects, as major (eight papers: CC-1 or CC-2) or as minor (six papers: CC-3).
3. Three IDC papers are to be selected from a pool of subjects. 'Geomatics and Spatial Science' can be taken in any of the Semesters 1, 2, and 3 by students who do not have Geography as CC.
4. Three different SEC papers are to be selected in Semester-1, -2, or -3 against the three major and minor subjects
5. The 3-credit Summer Internship is to be completed by the end of the Semester-2, -4, and -6 for the students opting for Certificate Course, Diploma Course, and BA/BSC Degree Course, respectively.
6. If Geography is selected as CC-2 subject, GEOG-MD-CC**6** is to be studied in Semester 6 besides GEOG-MD-CC**8**

Abbreviations: **Th**: Theory, **P**: Practical

DISCIPLINE SPECIFIC COURSES (CC): HONOURS & MULTIDISCIPLINARY

SEMESTERS – 1/3 (for H & MD)

GEOG-H-CC01/MD-CC01-1/3-Th – Physical Geography – 75 Marks / 3 Credits

Unit I: Cartography

1. Concept and applications of scales and projections. Components and classification of maps [5]

Unit II: Geotectonics

2. Seismic waves and internal structure of the earth [3]

Unit III: Geomorphology

3. Classification of weathering and agents of erosion [5]
4. Fluvial processes and landforms [5]

Unit IV: Climatology

5. Nature, composition, and layering of the atmosphere [4]
6. Circulation in the atmosphere: Planetary winds, jet streams, and index cycle [5]

Unit V: Soil Geography

7. Factors of soil formation [4]
8. Evolution of an ideal soil profile [4]

Unit VI: Biogeography

9. Plant adaptation and distribution in relation to water availability [5]

Unit VII: Geography of Hazards

10. Nature and classification of hazards and disasters in Indian context [5]

References

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Barry, R.G, Chorley R.J. 2009. Atmosphere Weather and Climate. 9th ed, Routledge.

Coch, N.K. 1994. Geohazards: Natural and Human, Pearson College.

Critchfield, H. J. 1983. General Climatology. Prentice Hall India Ltd (2010 Reprint).

Franzmeier, D.P., McFee, W.W., Graveel, J.G., Kohnke, H. 2016. Soil Science Simplified, 5th ed, Waveland Press.

Hyndman, D., Hyndman, D. 2016. Natural Hazards & Disasters, 5th ed, Cengage Learning.

Huggett, R., Shuttleworth, E., 2022. Fundamentals of Geomorphology, 5th ed, Routledge.

Kale, V.S., Gupta, A. 2001. Introduction to Geomorphology, Orient Blackswan.

Kapur, A. 2010. Vulnerable India: A Geographical Study of Disasters, Sage.

Lal, D.S. 2012. Climatology. Sharda Pustak Bhawan.

Lomolino, M.V., Riddle, B.R., Whittaker, R.J. 2016. Biogeography, 5th ed, Oxford University Press.

Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan.

Sharma, P.D. 2011. Ecology and Environment, Rastogi Publications.

Singer, M., Munns, D.N. 2005. Soils: An Introduction, 6th ed, Pearson.

Singh, R.L., Singh, R.P.B. 2008. Elements of Practical Geography, Kalyani Publishers.

Smith, K. 2013. Environmental Hazards: Assessing Risk and Reducing Disaster, 6th ed, Routledge.

Strahler, A. 2013. Introducing Physical Geography, 6th ed., Wiley.

Weil, R.R., Brady, N.C. 2022. The Nature and Properties of Soils, 15th ed, Pearson Education.

GEOG-H-CC01/MD-CC01-1/3-P – Physical Geography Lab – 25 Marks / 1 Credit

An A3- or tabloid-size laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Graphical construction of scales: Plain, comparative, diagonal, and vernier [10]
2. Delineation of drainage basins on Survey of India 1:50k topographical maps. Determining stream ordering (Strahler), and bifurcation ratio in a drainage basin (c. 5' x 5') [10]
3. Identification of drainage and channel patterns from Survey of India 1:50k topographical maps [6]
4. Construction and interpretation of wind rose diagram [4]
5. Viva voce based on laboratory notebook (5 Marks)

References

Monkhouse F.J., Wilkinson H.R. 1971. Maps and Diagrams, their compilation and construction, 3rd ed (2017 reprint), Alphaneumera.

Basu, P. 2021. Advanced Practical Geography — a Laboratory Manual, 4 ed, Books and Allied.

Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan.

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Vaidyanadhan, R., Subbarao, K.V. 2014. Landforms of India from Topomaps and Images, Geological Society of India.

SKILL ENHANCEMENT COURSE (SEC)

SEMESTERS – 1 (for H) & 1/2/3 (for MD)

GEOG-H-SEC01/MD-SEC01-1/2/3-Th – Methods in Geography – 100 Marks / 4 Credits

Unit I: Field Data Collection and Compilation

1. Designing of primary survey based on diverse research problems. Relevance of pilot survey [4]
2. Sampling types and strategy based on diverse research problems [4]
3. Preparation of questionnaire and interview schedule [4]
4. Data compilation into master table [4]
5. Computer-assisted field data entry; tabulation of data into frequency distribution tables [4]
6. Statistical analysis of data: measures of central tendency and dispersion [4]

Unit II: Methods in Physical Geography

7. Use of minor survey instruments: Brunton compass, distometer, smartphone levelling applications [4]
8. Textural analysis of grains using sieves [4]
9. Mapping and extraction of flooded areas from satellite images and digital elevation models [5]
10. Mapping areal and linear extents of riverbank and coastline shift from Survey of India 1:50k maps and/or satellite images [5]

Unit III: Methods in Human Geography

11. Dominant and distinctive functions [4]
12. Ternary diagram showing occupational patterns (after Ashok Mitra) [4]
13. Preparation of accessibility map [5]
14. Preparation of flowcharts using transportation data [5]

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Lenon B., Cleves, P. 2015. Geography of Fieldwork and Skills, Harper Collins.

Lindholm, R.C. 1987 A Practical Approach to Sedimentology, Springer.

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Phillips, R., John J. 2012. Fieldwork for Human Geography, Sage

Mahmood, A. 1999, Statistical Methods in Geographical Studies, Rajesh Publication.

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INTERDISCIPLINARY COURSE (IDC)

SEMESTERS – 1/2/3 (for H)

GEO-H-IDC01-1/2/3-Th – Geomatics and Spatial Analysis – 50 Marks / 2 Credits

Unit I: Cartography

1. Concept and applications of scales and projections. Components and classification of maps [4]
2. Bearing: Magnetic and true, whole-circle and reduced. Concept of geoid and spheroid with special reference to WGS-84. [3]
3. Map projections: Classification, properties and uses with special reference to simple conical projection and Universal Transverse Mercator (UTM) [5]

Unit II: Surveying

4. Basic concepts of surveying, survey equipment, and their capabilities: Dumpy level, theodolite, total station, and Global Navigation Satellite System (GNSS) [10]

Unit III: Remote Sensing and Geographical Information System

5. Principles of remote sensing (RS). Types of RS satellites and sensors with reference to IRS and Landsat missions [5]
6. Principles of • preparing standard false colour composites (FCCs) and • supervised image classification [4]
7. GIS data types: Spatial and non-spatial (attribute table and metadata), raster and vector [2]
8. Principles of preparing attribute tables, data manipulation, query, and overlay [7]

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BOOKS:

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Bhatta, B. 2011. Global Navigation Satellite Systems: Insights into GPS, GLONASS, Galileo, Compass and Others, CRC Press.

Bhatta, B. 2020. Remote Sensing and GIS, 3rd ed, Oxford University Press.

Bolstad, P. 2016. GIS Fundamentals: A First Text on Geographic Information Systems, 5th ed, XanEdu Publishing.

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Kimerling, A.J., Buckley, A.R., Muehrcke, P.C., Muehrcke, J.O. 2011. Map Use: Reading, Analysis, Interpretation, 7th ed, Esri Press.

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Vaidyanadhan, R., Subbarao, K.V. 2014. Landforms of India from Topomaps and Images, Geological Society of India.

WEBSITES

ISRO Bhuvan 2D and 3D Platforms:
https://bhuvan-app1.nrsc.gov.in/bhuvan2d/bhuvan/bhuvan2d.php
https://bhuvan-app1.nrsc.gov.in/globe/3d.php

National Remote Sensing Centre: www.nrsc.gov.in

Survey of India: https://www.surveyofindia.gov.in

USGS Global Visualization Viewer: https://glovis.usgs.gov

USGS Landsat Missions: https://www.usgs.gov/landsat-missions

GEO-H-IDC01-1/2/3-P – Geomatics and Spatial Analysis Lab – 25 Marks / 1 Credit

An A3- or tabloid-size laboratory notebook, comprising class assignments of the following is to be prepared and submitted. The exercises are to be drawn in pencil with photocopied representation of source materials where necessary. All texts are to be handwritten.

1. Construction of simple conical projection with one standard parallel [6]
2. Traverse survey and plotting UTM coordinates using smartphone GNSS application [8]
3. Identification of land use / land cover features from standard FCCs and preparation of inventories [8]
4. Change detection of riverbank or coastline shift from multi-dated maps and images [8]
5. Viva voce based on laboratory notebook (5 Marks)

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