

M.A./M.Sc. (Two Years Degree Program)	
Second Semester	
Subject-Geography	
Code of the Course	GEG8003P
Title of the Course	REPRESENTATION OF GEOGRAPHICAL DATA THROUGH MAPS
Qualification Level of the Course	NHEQF Level 6.5
Credit of the course	4
Type of the course	Discipline Centric Core Practical Course in Geography
Delivery type of the Course	Practical (80+40). The 80 hours for content delivery include hands-on exercises, and 40 hours of diagnostic assessment, formative assessment, and subject/ class activity, problem solving.
Prerequisites	This course on the Representation of Geographical Data Through Maps assumes' that the students are familiar with the basic concepts cartography of Graduation level.
Co-requisites	Fundamental mathematics upto secondary level and basic cartographic skills.
Objectives of the course	<ul style="list-style-type: none"> • To give a comprehensive & integrated knowledge and understanding of history of cartography and survey, mapping agencies of India and Scale. • To give an overview of the National Map Policy, Extraction of geographical information from toposheets, new and old series of toposheet. • To give an understanding of qualitative and quantitative mapping techniques of cartography. • To give an understanding of Principles and Elements of Map Composition and use of Bhuvan and Open Street Maps platform for mapping.
Learning outcomes	<ul style="list-style-type: none"> • Knowledge and understanding of history of cartography and survey, mapping agencies of India and scale.

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- Syllabus पाठ्यक्रम	
UNIT - I	<p>History of Cartography and Maps. Survey of India, NATMO. Concept of Ellipsoid, Datum and Projections. Scale and Scale Factor.</p> <p>मानचित्रकला एवं मानचित्रों का इतिहास। भारतीय सर्वे विभाग, नाटमो। दीर्घवृत्ताभ, डेटम एवं प्रक्षेप की संकल्पना। मापनी एवं मापनी कारक।</p>
UNIT - II	<p>New Map Policy, 2005. Toposheets and its Sources: SOI, Nakshe Web Portal. Extraction of geographical information from toposheets: physical and cultural aspects. Old and New series topographic maps (<i>Open Series Maps</i>).</p> <p>नई मानचित्र नीति, 2005। स्थलाकृतिक मानचित्र एवं उनके स्रोत: एसओआई, नक्शे वेब पोर्टल। स्थलाकृतिक मानचित्रों से भौगोलिक सूचनाओं का निष्कर्षण: प्राकृतिक एवं सांस्कृतिक पहलू। पुरानी एवं नई श्रृंखला के भूआकृतिक मानचित्र (खूली श्रृंखला मानचित्र)।</p>
UNIT - III	<p>Principles and Elements of Map Composition; Good and Bad Maps. Map Classification – Qualitative maps; Colour-patch method, Simple shade method, Pictorial method, Choro-schematic method, Naming method.</p> <p>मानचित्र संघटन के सिद्धांत एवं तत्व; अच्छे एवं खराब मानचित्र। मानचित्र वर्गीकरण— गुणात्मक मानचित्र; रंगारेख विधि, सामान्य छाया विधि, चित्रीय विधि, वर्णप्रतीकी विधि, नामांकन विधि।</p>
UNIT - IV	<p>Map Classification – Quantitative maps; Choropleth method, Isopleth method, Dot map: Simple dot map, Stilgenbaure’s method and Sten de Geer’s method, Diagrammatic method: Bar and Pie.</p> <p>मानचित्र वर्गीकरण— मात्रात्मक मानचित्र; वर्णमात्री विधि, सममान रेखा विधि, बिन्दु विधि: सामान्य बिन्दु मानचित्र, स्टिलजेनबोअर विधि एवं स्टेन डी गीर विधि, आरेखी विधि: दण्ड एवं वृत्तारेख।</p>
UNIT - V	<p>Online resources for generation of thematic maps for India/Rajasthan – Bhuvan and Open Street Maps.</p> <p>भारत/राजस्थान के विषयक मानचित्र बनाने के ऑनलाइन संसाधन— भुवन</p>

	एवं ओपन स्ट्रीट मानचित्र।
Exercises अभ्यास	
Practical Exercises	<ol style="list-style-type: none"> 1. Scheme of Toposheets – old and new (2 Exercises) 2. Extraction of geographical information from toposheets: physical and cultural aspects. (2 Exercises) 3. Prepare one map for each method of qualitative maps. (5 Exercises) 4. Prepare one map for each method of quantitative maps. (7 Exercises) 5. Generate Choropleth map of Rajasthan by using Bhuvan portal. (1 Exercise) 6. Generate Road Network (NH & SH) & Water Bodies map of Rajasthan by using Open Street Maps. (2 Exercises)
Suggested Readings सहायक ग्रन्थ / सामग्री	
Text Books	<ul style="list-style-type: none"> • Mishra, R.P. Fundamentals of Cartography, Concept Publishing Company PVT. LTD. New Delhi. • Khullar, D.R.: Essentials of Practical Geography, New Academic Publishing Company, Jalandhar. • Singh, R.L. & Singh, R.P.B Elements of Practical Geography, Kalyani Publishers, New Delhi. • Singh, R.L., Elements of Practical Geography, Student Friends, Allahabad. • Mishra, R.N., Sharma, P.K., Practical Geography, Pareek Publication • मिश्रा, आर. एन., प्रायोगिक भूगोल, रावत पब्लिकेशन, जयपुर। • शर्मा, जे.पी., प्रयोगात्मक भूगोल की रूपरेखा, रस्तोगी पब्लिकेशन्स, मेरठ। • खुल्लर, डी.आर., प्रयोगात्मक भूगोल के तत्व, न्यू एकेडेमिक पब्लिशिंग कंपनी, जालंधर। • चौनियाल, डी. डी. सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली के सिद्धांत, शारदा पुस्तक भवन, इलाहाबाद।

<p>Reference Books</p>	<ul style="list-style-type: none"> • Raize, E. General Cartography, McGraw Hill Book Co. London. • William, J. T., Surveying and Field Work, Constable • B.C. Punmia, 1998: Surveying and Field Work. Vol. I, Laxmi Publications, New Delhi.
<p>Suggested E-resources</p>	<ul style="list-style-type: none"> • https://www.surveyofindia.gov.in/ • https://portal.natmo.gov.in/en/ • https://www.surveyofindia.gov.in/documents/national-map-policy.pdf • https://www.tamiu.edu/cees/courses/fall2018/geol4460_labs/lecture4.pdf • https://www.surveyofindia.gov.in/pages/open-series-map-osm • http://164.100.58.63/pages/display/189-download-open-series-maps(osm) • https://www.nrsc.gov.in/sites/default/files/pdf/Software_download/MappingUtility_SOI_to_OSM_Usermanual.pdf • https://geographyfieldwork.com/ • https://bhuvan.nrsc.gov.in/home/index.php • https://vedas.sac.gov.in/en/ • https://bhoonidhi.nrsc.gov.in/bhoonidhi/home.html • https://bhuvan-app1.nrsc.gov.in/gisviewer/ • https://education.nationalgeographic.org/ • https://secc.gov.in/ • http://shaileshchaure.com/qgis-plugin.php • https://unstats.un.org/unsd/demographic/meetings/egm/sampling_1203/docs/no_1.pdf • https://english.okstate.edu/images/Documents/Preston/Oklahoma_Dialectology/12_Quantitative_mapping_techniques.pdf • https://www.e-education.psu.edu/geog486/node/641