CBSE | DEPARTMENT OF SKILL EDUCATION
CURRICULUM FOR SESSION 2025-2026
GEOSPATIAL TECHNOLOGY (SUBJECT CODE - 818)

JOB ROLE: GIS OPERATOR
Class – XI

COURSE OVERVIEW:

Geospatial technology is an umbrella phrase associated with a range of various technologies which include remote sensing, Global Positioning System (GPS), Geographic Information System (GIS), information technologies, and field sensors, that are intended to facilitate the process of capturing/storing/ processing/ displaying/ disseminating information tied to a location.

This present course curriculum offers an opportunity for the students to understand the basics of geospatial technology for developing an interest in the principles, practical uses, and resources related to geospatial technologies. With the exponential growth of Indian geospatial market, this initiative is intended to develop the pool of manpower trained in this subject. This course will enable the students to get an insight into the diverse geospatial database concepts, creating and implementing of the same, GIS theory and spatial analysis, supplemented by extensive practical exercises. Also, it will help the students to acquire skills for further studies and to enter the professional world.

OBJECTIVES OF THE COURSE:

In this course, the students will be introduced to the fundamental concepts of Geospatial Technology and the career opportunities available in this field. This vocational course offers professional education dealing with mapping and Geospatial production to ensure that students obtain insight into Geospatial database concepts, creating and implementing database, spatial analysis, developing GIS applications, through both theoretical concepts and supported by extensive practical exercise with hands-on training using Geomatica industry standard software.

Followings are the main objectives of this course.

- To provide knowledge to students to compile, analyze, and present geospatial data. Students will learn these basic geospatial concepts while working with Rolta's Geomatica software.
- To familiarize the students with various dimensions of Geospatial Technology and career opportunities available in these fields.
- To develop creative thinking among students and make them technology-savvy so that they could be ready to join the Geospatial industry.

SALIENT FEATURES:

- Geospatial technologies with proven capabilities for supporting decision making can effectively support governance, enable sustainable development, assist in better management of business process as well as bring location-based information closer to the people.
- Geographic information has application in practically all walks of human existence.
- In the present economic scenario, there is an increasing demand for cost effective solutions for decision making which is likely to propel the usage of this technology and professionals across sectors in the near future.
- Geospatial technology is perhaps the only technology that can provide a holistic approach to the understanding of the interactions and inter-linkages between the earth's biophysical and social elements to strike an optimal balance between developmental and environmental goals.

LIST OF EQUIPMENT AND MATERIALS:

- Computers
- Rolta Geomatica Software (Provided by CBSE)
- Internet connectivity
- LCD Projector (optional)
- Projector Screen (optional)

CAREER OPPORTUNITIES:

Geospatial technology is ubiquitous and the expanse of its reach in multiple fields is growing rapidly. Most technologies require a spatial component and it is one of the pillars of emerging technologies. Be it our day-to-day activities or cutting-edge futuristic research, none can be visualized without geospatial information. A vast range of career opportunities are available in this field. Following are just few of them-

- Geospatial Data Technician
- Geospatial Scientist
- Image Scientist/ Analyst
- Geospatial Developer
- Geospatial Programmer
- Geospatial Database Engineer
- Forensic Analyst
- Criminal Intelligence Analyst

VERTICAL MOBILITY:

- GIS Operator -------GIS Assistant or Technician -------GIS Specialist ---------- GIS
- Analyst -------- Senior GIS Analyst ---------- GIS Coordinator ---------- GIS
- Scientist/ Manager.

OCCUPATIONS USING GEOSPATIAL TECHNOLOGY:

- Agriculture
- Archeology
- Banking and Financial Services
- Business
- Census
- Conservation
- Criminal Justice
- Defense and Intelligence
- Disaster Management
- Education
- Economic Development
- Education Administration
- Education and Research
- Elections
- Emergency Response
- Energy
- Engineering
- Environmental Health
- Environmental Law
- Environmental Planning
- Epidemiology
- Fire Science Forestry

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CLASS – XI

Total Marks: 100 (Theory - 60 + Practical - 40)

	Term	UNITS	NO. OF HOURS for Theory and Practical	MAX. MARKS for Theory and Practical
Part A		**Employability Skills**		
		Unit 1 : Communication Skills - III	13	**2**
		Unit 2 : Self-Management Skills - III	07	**2**
		Unit 3 : ICT Skills - III	13	**2**
		Unit 4 : Entrepreneurial Skills - III	10	**2**
		Unit 5 : Green Skills - III	07	**2**
		Total	**50**	**10**
Part B		**Subject Specific Skills**		
		Unit 1: Geospatial Overview a. Familiarization with GT software b. Familiarization with the Data Sources	08	05
		Unit 2: Maps & Cartography	20	10
		Unit 3: Remote Sensing	30	15
		Unit 4: Geographic Information System (GIS)	30	15
		Unit 5: Global round Positioning System (GPS)	15	05
		Total	**103**	**50**
Part C		**Practical Work**		
		Project	107	10
		Viva		05
		Practical File		10
		Demonstration of skill competency via LabActivities		15
		Total	**107**	**40**
		GRAND TOTAL	**260**	**100**

NOTE: Detailed Curriculum/ Topics to be covered under Part A: Employability Skill can be downloaded from CBSE website.

PRACTICAL GUIDELINES FOR CLASS XI

Assessment of performance:

The two internal examiners, assigned for the conduct and assessment of Practical Examinations each in **Senior Secondary School Curriculum (Under NSQF).** Question for the viva examinations should be conducted by two examiners (two internal examiners). Question to be more of General nature, project work or the curriculum. Investigatory Project especially those that show considerable amount of effort and originality, on the part of the student, should get suitable high marks, while project of a routine or stereotyped nature should only receive MEDIOCRE marks.

Procedure for Record of Marks in the Practical answer-books:

The examiner will indicate separately marks of practical examination on the title page of the answer-books under the following heads:-

Project - 10 marks

Projects for the final practical is given below .Student may be assigned

Viva based on Project -05 marks

The teacher conducting the final practical examination may ask verbal questions related to the project, if any, done by the student. Alternatively, if no project has been assigned to the students, viva may be based on questions of practical nature from the field of subject as per the Curriculum

Practical File - 10 Marks

Students to make a power point presentation / assignment / practical file / report. Instructor shall assign them any outlet to study the elements in retailing.

Suggested list of Practical –

1. Study any one of the toposheets (educational series) and prepare a detail report on it covering all the important natural and man-made features, type of land use, nature of terrain and economic activities.
2. Collect all the coordinates and altitude values of all the four corners of your school building with the help of a GPS receiver or a smartphone (eg. Use compass feature in iphone). Check these values and mention the variation if any, in google or Bhuvan satellite maps. Write the complete steps and procedure in your file.
3. Study the weather charts prepared by Indian Meteorological deptt of India. You can use the IMD website also if hard copy is not available. Prepare a weather report of that day after studying all the essential weather elements.

4. Prepare a route map from school to home or vice-versa. You can do this vectorization on Google, NASA's world wind or ISRO's Bhuvan. Measure the accurate distance, mark it and take the image. Explain all the steps with the image in your file.
5. Prepare a detailed colored diagram of electromagnetic spectrum and mention the important bands for remote sensing process. Explain the difference between Panchromatic and RGB bands.
6. Download any GIS application in your mobile or desktop and measure the area of any five buildings including your home and school. Explain the step by step process in your file and tally the figure with the actual data.
7. Open Rolta Geomatica Focus or the trial version of any GIS software like QGIS or ARC GIS and explain its tool bar. What all functions can be done by each symbol of toolbar. Prepare a table in your file.
8. Download different satellite images from authentic sources like UGSS. Categorize and paste them in your file according to high, medium and low resolution. Explain the difference in these images.
9. Explain the difference between a Panchromatic and Multispectral image. Download the examples for both and paste them in your file with explanation.
10. Differentiate between Geostationary and Sun-synchronous satellites in detail with examples, diagrams and images.

Demonstration of skill competency in Lab Activities -15 marks

Guidelines for Project Preparation:

The final project work should encompass chapters on:

a) Introduction,

b) Identification of core and advance issues,

c) Learning and understanding and

d) Observation during the project period.