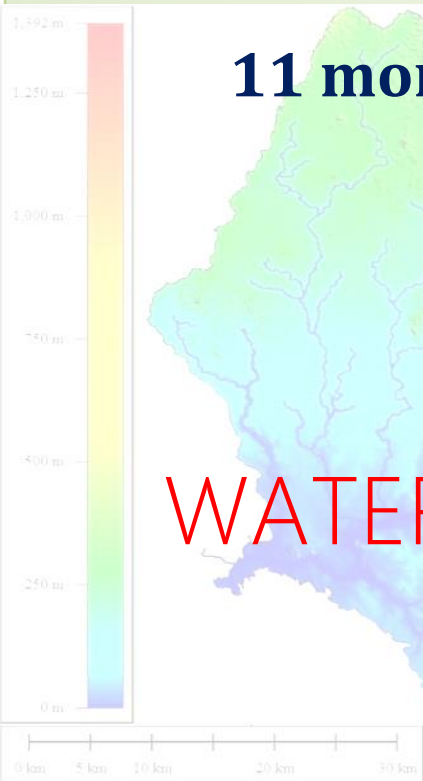


**ADMISSION GOING ON**

# 11 months Professional PG Diploma Course in

# GEOINFORMATICS in WATER RESOURCE MANAGEMENT



## Course Description

Geoinformatics (Geographic Information Systems [GIS] and Remote Sensing [RS]) is a growing technical field with manifold applications. Applications in the field of water resource management are of particular significance as water crisis increases with both increasing demand and climate change. This course is aimed at training students in understanding the concepts and applications of Geoinformatics in water resource management. The purpose of this course is to enable students to acquire both theoretical knowledge and practical training by using cutting-edge GIS software for mapping water management related problems.

The course is designed to cover topics on data types, sources, geodatabases, vector and raster analyses in GIS and the use of satellite and sensors in RS for observing, monitoring and estimating hydrologic parameters. Introduction to hydrologic systems, water budget and water resource models (hydrologic and groundwater) are also addressed. Practical exercises include watershed delineation (DEM), site suitability analysis, geostatistical interpolation and flood and wetland mapping in addition to creating basic maps (static and dynamic) following cartographic principals. The course concludes with an introduction to the concepts of climate change, its impact on water resources and the potential uses of GIS and RS in facing these challenges. As a part of the 1-yr PG Diploma program, students have the opportunity to participate in a 3-month internship experience.

The course is aimed at students and professionals with background in geography, geology, water and natural resources scientists and engineers who are seeking to further their understanding of practical applications of Geoinformatics.

## **COURSE OUTLINES**

### **Semester- I**

#### **Module 1**

Week 1: Introduction to GIS

Week 2: GIS in Water Resources

Week 3: Data Types and Sources

Week 4: Co-ordinate systems, projections

#### **Module-2**

Week 1: Working with Professional GIS software

Week 2: Contd.

Week 3: Web GIS

Week 4: Storymaps, dashboards

#### **Module 3**

Week 1: Data Models in GIS

Week 2: Geoprocessing Tools

Week 3: GIS - Vector Analysis

Week 4: GIS - Raster Analysis

#### **Module 4**

Week 1: Hydrological Systems

Week 2: Water Allocation

Week 3: Introduction to Remote Sensing

Week 4: RS in Water Resources

#### **Module 5**

Week 1: GIS -Terrain Analysis

Week 2: GIS-Watershed Delineation

Week 3: Watershed Delineation (contd.)

Week 4: Watershed Characterization

### **Semester-II**

#### **Module 6**

Week 1: Mapping Water Pollution

Week 2: Flood mapping in coastal areas

Week 3: Mapping Wetlands with GIS and RS

Week 4: Case studies & Discussions

#### **Module 7**

Week 1: Concepts of Water Resource Modeling

Week 2: Hydrologic Models

Week 3: Groundwater Models

Week 4: Case studies & Discussions

#### **Module 8**

Week 1: Geospatial Analysis

Week 2: Suitability analysis

Week 3: Case studies & Discussions

Week 4: Student presentations

#### **Module 9**

Week 1: Climate Change & Water Crisis

Week 2: Case studies & Discussions

Week 3: GIS and RS Applications in Climate Change

Week 4: Recap of previous modules

#### **Module 10**

Internship projects

Final Presentation & Viva

### **Scope and Objectives**

The expanded utilization of GIS innovation in various industries has enhanced the range of opportunities for work in GIS and Remote Sensing. Each zone right from rocket and drones to the urban planning, e-administration, remote sensing and even advertising, industry depends on geospatial data. The abilities required to be a productive GIS skilled person advanced throughout the years. Apart from the civil engineering stream, it can similarly be taken up by the students of different subjects, particularly geography and geology, as a specialization. There is a wide range of job and career in GIS, both in India and abroad. Along these lines, applicants from a wide variety of expert and instructive foundations (e.g., Topography, Urban Planning, Cartography, Engineering, Computer Science, etc.) seek to be efficient GIS experts.

### **Job Positions**

GIS and Remote Sensing experts can get hired at different levels in positions like GIS Mapping

Technician, GIS Data Specialist/Scientist, GIS Business Analyst, GIS Operator, Geospatial Software Engineer, GIS Application Specialist, GIS Engineer, GIS Programmer, GIS Consultant, and GIS Technical Assistant.

- **Prerequisites**
  - Basic understanding of water science (undergraduate level physics and mathematics)
  - Working knowledge of Microsoft Word, Excel and PowerPoint
  - Basic computer navigational skills, ability to use the internet for research, ability to download and install software
- **Technology requirements:**
  - Laptops/desktops
  - GIS-RS Software
- **Methods of instruction**

- Offline & Online Lectures by Instructor and Guest speakers
- Demonstrations of mapping, Discussions and Research
- Group work(Think-pair-share)
- **Module Resources**  
(to be provided by instructor)
  - Book Chapters, Journal articles
  - Tutorials for mapping
  - Relevant blogs, videos tutorials and other media resources

### Learning outcomes

- Practical application of GIS-RS technology in managing water resource
- Flood susceptibility mapping
- Micro watershed planning
- Basin management
- Modeling
- Story Map and dashboard design
- Project development

**Min. Eligibility Criteria:** Graduate in any subjects Specially B.A./B.Sc.,M.A./M.Sc.,B.Tech/M.Tech

**Course Curriculum:** Industry oriented Syllabus

**Examination** will be held at per the university norms

**Total No of Semesters:** 02

**Total Course Fees:**

National Students: **50000/-**

### Semester Breakups

- 25500/- (At the time of Admission)
- 25000/- (Second Semester)

*\*\*Internships & Field excursion costs extra*

**Total No of Seats:** 15

**Admission Process:** First cum first serve basis

### Internship Opportunities

Students will get **Internship and work** Opportunities at National Mission for Clean Ganga (NMCG), Ministry of Jal Shakti, Govt. of India at its New Delhi office for 7 Days or any allied Department/s of Govt. of India for a month

### Knowledge Partners



### Course Coordinators



**Dr. S. Guha**  
Professor, CRA, SAIARD



**Dr. S. P. Sahoo**  
Asst. Prof, IIGST

### Special Classes

Special Classes will be taken by some renowned Geoinformatics specialists from different Govt. organisations, Industry houses and academic institutions like IIRS, NIIT, IIRS, DST, SkyMap Global, AIDASH, Geomatix Sc. Pvt. Ltd etc

### ADMISSION PROCEDURE

- Scan the following self attested documents After payment make a single Pdf file.

Pay the Application Fees Rs. 500/- [non-refundable] & Sem-I Fees through Online mode

- Fill the application form carefully & submit it with the following documents (in both hardcopy and softcopy format):

- Aadhar Card,
- Payment Receipt or DD
- 10<sup>th</sup> Marksheet & Certificate
- 12<sup>th</sup> Marksheet & Certificate
- Graduation Marksheets & Certificate
- Caste Certificate (if applicable)
- Migration Certificate

- Fill up the given Google Form

<https://bit.ly/3PkpZu> & Upload the documents. Also send the hardcopy of these documents either by post on the given address or by hand between 11am to 5pm.

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