

**K. J. SOMAIYA COLLEGE OF SCIENCE AND COMMERCE, AUTONOMOUS**

**CERTIFICATE IN REMOTE SENSING  
TECHNOLOGY AND GEOGRAPHIC  
INFORMATION SYSTEM**

---

**Department of Geology  
2019-2020**

This document contains the structure of course, details of syllabus and evaluation pattern

## Course Details

- **Course type** : Certificate
- **Course Title** : Certificate in Remote Sensing Technology and Geographic Information

- **Preamble**

Remote sensing (RS) deals with the use of satellite images and their analysis for providing up to date information of surface features.

Geographic information system (GIS) is a technology, which enables the analysis of data related to entities, which have geographic distribution.

RS & GIS are increasingly being used to monitor the natural resources, mining, telecommunications, utilities, Groundwater assessment, linking of rivers, National agriculture Atlas, state/district level crop yield estimation etc. RS & GIS can also be used to monitor the effect of environmental management techniques in adhering to global norms.

The subject of Remote Sensing & GIS encompasses several disciplines and it is interdisciplinary nature of the technology that sets it apart from other technologies. This is evident from its wide applications in varied disciplines like Geosciences, Biosciences, Life sciences, Environmental sciences, Physical sciences, Hydrology, Engineering applications, Rural and Urban planning, Land cover and land use, Agriculture, Soil mapping, Medical sciences, IT, Detailed mapping, Library Information systems, Wild-life habitat, Wet land mapping, Utilities (Telecommunications, Electrical, Hydro), Business Decisions, Facilities Mapping, Asset Managements, etc.

- **Objectives of course :**

- Understand the energy interactions in the atmosphere and with the different earth surface features
- Learn about the types of data that can be used in remote sensing, their characteristics and their use in landform evaluation
- Become conversant with use of aerial photography for measurements using photogrammetry methods
- Acquire knowledge about the different satellites and their basic characteristics

- **Learning Outcomes :**

- To enhance employment opportunities and career prospects in industry and academia
- To give them opportunity to acquire additional training simultaneously in multiple fields
- To lay emphasis on entrepreneurial development
- To gain insight into the functioning of RS-GIS in the public sector and corporate world

- **Prerequisites / Eligibility Criteria :**

A candidate who is enrolled in the Faculty of Science/commerce/Arts in the University of Mumbai or has already successfully passed the B.A/B.Com/B.Sc. or M.A/M.Com/M.Sc. degree of University of Mumbai or any other university.

Notwithstanding anything contained above, a candidate shall have to fulfil minimum admission criterion for the Certificate Course as given below, considering the contents of such courses and the minimum maturity level of the candidates to grasp, appreciate and derive maximum benefits from such courses:

<b>Sr. no</b>	<b>Name of the Certificate Course</b>	<b>Minimum Entry/ Admission level Required</b>
1.	Remote Sensing Technology and Geographic Information Systems	First year Degree students of any faculty

A candidate, who is a regular student, shall pursue such Certificate Course simultaneously while he/she is studying for his/her graduation degree in University of Mumbai.

- **Intake Capacity** : 40
- **Duration** : 3 months
- **Course Coordinator** : Mr. Deepak Sahu, Dr. Dnyanada Salvi
- **Career opportunities**
  - Public sector- ISRO, Groundwater Board, NGRI, NIO, AGRI, SAC, and State research centres.
  - Private sector – Rolta, RIL, L&T, ESRI, HereMaps, Capgemini, TomTom, TCS, Arcadis.

- **Syllabus**

Course	Title	Credits	L/Week
USCGI101	Remote Sensing Technology	1	2
USCGI102	Geographic Information System	1	2

Course	Title	Credits	L/Week
USCGIP1	Practical of course USCGI101+ USCGI102	2	3

- **Evaluation Pattern** :

Each Certificate course shall consist of Two Theory Papers (50 marks each), Practical (100 marks), Industrial/Field Visit (30), Project (50 marks) and Viva voice (20 marks); thus totalling to 300 marks.

Each Certificate Course shall be covered in 60 lectures (30 lectures per paper), 12 Practicals (3 hours per week for 12 weeks) and 8 hours of project guidance per batch.

• **Reference Books** :

- Introduction to Geographic Information, Chang, K. Sc., Tata McGraw Hill, 2002
- Remote sensing and Image Interpretation, Lillesand, Kiefer and Chipman. Fifth Ed. Wiley and Sons
- Introductory Digital Image Processing- A Remote Sensing Perspective, John Jensen. Second Ed. Prentice Hall
- Remote Sensing - Principles and Interpretation, Sabins. Third Ed. Freeman
- Aerial photos in geologic interpretation, Ray R.G. 1969 USGS Prof. Paper 373
- Practical Geography – A systematic Approach, Ashish Sarkar