



Certificate Course in Geoinformatics
Programme Structure

Objective	To create professional human resource in the field of Geoinformatic technology equipped with IT and Information Management to cater to global Geo-informatics industry requirements.
Duration	3 Months or 48 Hours
Intake	30 Students
Reservation	1. Within Intake: As per reservation policy of Government of Haryana 2. Over and Above the sanctioned Intake a. Kashmiri Migrants – 02 Seats b. International Students – 10 Seats
Eligibility	Graduate in Engineering, IT, Computer Science, Agriculture, Geography, Science, Commerce and Management, from any recognized University/Institution of National importance with a minimum of 50% marks or equivalent grade (45% marks or equivalent grade for Scheduled Caste/Scheduled Tribes)
Selection Procedure	70 % weight age of Graduation Marks and 30 % weight age of Senior Secondary Marks
Medium of Instruction	English/Hindi
Medium of Expression	English/Hindi
Examination	The mode of examination shall be online and of multiple choice type. The paper setting and evaluation shall be purely internal.
Credit/Grade Interpretation	A+ 85 % or above (Equivalent to DISTINCTION) A Less than 85 % to 60 % (Equivalent to FIRST CLASS) B Less than 60 % to 50 % (Equivalent to PASS) C Less than 50 % to 45 %
Mode	Course shall be in Online mode and classes will be held on Saturday and Sunday.

Note:

1. Fees for the course shall be 5000 /-.
2. Minimum 10 admissions are required to start the course.
3. Fees shall be same for all the reservation categories.
4. No concession in the fee shall be allowed.
5. Fees once paid shall not be refunded in case of admission withdrawal.

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DEPARTMENT OF GEOGRAPHY
Chaudhary Ranbir Singh University, Jind
(Established by the State Legislature Act 28 of 2014)



Certificate Course in Geoinformatics	
Session: 2023-24	
Part A – Introduction	
Subject	Geography
Name of the Course	Certificate Course in Geoinformatics
Course Code	GEO-23/C - 101
Course Learning Outcomes (CLO):	<p>After completing this course, the learner will be able to:</p> <ol style="list-style-type: none">1. provide knowledge about Remote-sensing and GIS.2. understand the uses of these techniques in Geography.3. understand the latest technology in GIS.4. provide awareness about Remote sensing and GIS. <hr/> <p>5* acquire knowledge of functioning of remote sensing and GIS</p>
Max. Marks: 100 Internal Assessment Marks: 40 End-Term Exam Marks: 60	Time:2 hours

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Part B- Contents of the Course

Instructions for Paper-Setter

There will be end term examination at the end of the programme. It will be consisted of 30 multiple choice questions. Each question carry 2 marks.

Topics	Contact Hours
<ol style="list-style-type: none">1. Understanding Scales and Projections mainly Universal Transverse Mercator.2. Aerial photographs: Definition, Scope, Geometry, Their types and advantages.3. Remote sensing: Definition, Scope, origin and history of development in Remote Sensing4. Stages of Remote Sensing: Characteristics and application.5. Electromagnetic Radiation and Electromagnetic Spectrum.6. Spectral Signature of different features of earth surface.7. Sun synchronous and Geostationary Satellites: characteristics, geometry and applications.8. Types of Sensors: Optical (Push broom and Whiskbroom), Microwave, Sonar, Lidar.9. Characteristics of Sensor: Spatial, Spectral, Radiometric and Temporal10. Indian Space Programme: Present and Future perspectives11. NDVI and NDWI: Characteristics and their application.12. Geographic Information System: Definition, Evolution and Historical development.13. Components of Geographic Information System: Characteristics and Applications.14. Various functions of Geographic Information System: Characteristics and their Importance.15. Spatial and Non-Spatial Data: Source and Characteristics and their uses in GIS.16. Raster and Vector model: Characteristics, Uses, Advantages and Disadvantages17. Data Input: Scanning of maps, Errors, Editing and Cleaning of data.18. Introduction to Global Positioning System: Definition, Scope, Characteristics and their Applications.19. Space, Control and User segments: Definition, Scope, Characteristics and their uses.20. IRNSS: Definition, Scope, Characteristics, Uses and Applications.21. Downloading and Working on Google Earth, Bhuvan and USGS data.22. Application of Remote Sensing and GIS in Natural Resource Management23. Application of Remote Sensing and GIS in Agriculture and Forest Management24. Application of UAV's (Drone) in Agricultural and Settlement Analysis	24

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Instructions for practical examiner: There will be Viva-voce exam for internal marks.

Distribution of marks for evaluation
Viva-Voce = 40 marks

Practical consisting of 24 exercises on the below mentioned themes: -

1. Introduction to SAGA GIS (1 exercise)
2. Understanding Image in SAGA GIS (1 exercise)
3. Visual Interpretation of Image in SAGA GIS (1 exercise)
4. Georeferencing and Extraction of Data (1 exercise)
5. Mosaicking Image in SAGA GIS (1 exercise)
6. Subsetting of Image in SAGA GIS (1 exercise)
7. Introduction to Filters in SAGA GIS (1 exercise)
8. Supervised Classification in SAGA GIS (1 exercise)
9. Unsupervised Classification in SAGA GIS (1 exercise)
10. Change Detection in SAGA GIS (1 exercise)
11. Introduction to QGIS (1 exercise)
12. Georeference Image in QGIS (1 exercise)
13. Image to Image registration in QGIS (1 exercise)
14. Making of Shapefiles in QGIS (1 exercise)
15. Digitization in QGIS (3 exercise)
16. Buffering in QGIS (1 exercise)
17. Spatial Data Queries in QGIS (1 exercise)
18. Non-Spatial Data Queries in QGIS (1 exercise)
19. Calculating Brightness Temperature in QGIS (2 exercise)
20. Map Composition in QGIS (2 exercise)

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Suggested Evaluation Methods

➤ **Practicum**

- Class Participation: **NIL**
- Seminar/Demonstration/Viva-voce/Lab records etc.: **40 Marks**
- Mid-Term Exam: **NIL**

End-Term Examination:

60 Marks

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Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Bhatta, B. (2010) Remote Sensing and GIS, Oxford University Publications.
2. Burrough, P.A., and McDonnell, R.A. (2000) Principles of Geographical Information System- Spatial Information System and Geo-statistics. Oxford University Press
3. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda PustakBhawan, Allahabad
4. Heywoods, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Infromation system. Prentice Hall.
5. Jha, M.M. and Singh, R.B. (2008) Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.
6. Nag, P. (2008) Introduction to GIS, Concept India, New Delhi.
7. Burrough, P.A. and McDonnell, R. (2016): Principles of Geographic Information Systems. Oxford University Press, Oxford.
8. Chang, K. T. (2017): Introduction to Geographic Information Systems. Tata McGraw Hill Publications Company, New Delhi.
9. Demers, M. N. (2008): Fundamentals of Geographic Information Systems. John Wiley and Sons, Singapore.
10. Rahman A., (2017): Global Positioning System: Concept, Technique and Application, New Age International Pvt. Ltd, New Delhi.
11. Grewal M. S., (2013): Global Navigation Satellite Systems, Inertial Navigation and Integration, Willey-Blackwell.

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