

**THE GANDHIGRAM RURAL INSTITUTE  
(DEEMED TO BE UNIVERSITY)**

Ministry of Education, Govt. of India  
Accredited by NAAC with 'A' Grade (3<sup>rd</sup> Cycle)

**CENTRE FOR GEOINFORMATICS**

**Gandhigram – 624 302, Dindigul District, Tamil Nadu, India.**

**Prof. N.D. Mani, M.Sc., Ph.D.,  
Director**



Phone : 0451 – 2452371 – 2452375  
Fax : 0451 – 2454466 & 2453071  
E-mail : ndmani@gmail.com  
Mobile : +91 9443015375  
Website : [www.ruraluniv.ac.in](http://www.ruraluniv.ac.in)

Ref: C4Geo/ 2020-2021


Date: 21.01.2021

**CIRCULAR**

For your kind information, the Centre for Geoinformatics offers the following Non major elective courses during the even semester of 2020-2021 academic year.

1. 18GISP02N1 - Basics of Geoinformatics - PG Level - 4 credits
2. 18GISP02N3 - Disaster Management - PG Level - 4 credits
3. 18GISU04N1 - Introduction to Geoinformatics - UG Level - 3 credits

This may please be brought to the notice of the UG/PG students enabling them to register for the courses. They may be requested to contact the undersigned for registration.

  
(N.D. MANI)

**DIRECTOR**  
Centre for Geoinformatics  
The Gandhigram Rural Institute  
(Deemed to be University)  
Gandhigram - 624 302  
Dindigul District, Tamil Nadu, India

To

All Deans /HODs / Directors

## PG Level

<b>18GISP02N1</b>	<b><u>Non-Major Elective (PG Level)</u></b> <b>Basics of Geoinformatics</b>	<b>4 Credits</b>
<b><u>Course Objective:</u></b> The course provides an introduction to various technologies of Geoinformatics and its applications.		
<b><u>Course Outcome:</u></b> CO 1. Understand the technologies of Geoinformatics CO 2. Introduce the concept of Remote Sensing and Digital Image Processing CO 3. Learn the concept of Geographical Information System CO 4. Known Global Navigation Satellite System CO 5. Apply tools of Geoinformatics in various fields		
<b>UNIT I</b> Introduction	Meaning – Scope - Concept of Spatial Technologies - Contributing Technologies – Earth - Projection – Representation of Spatial objects.	
<b>UNIT II</b> Remote Sensing & DIP	Definition – Components – EMR - Remote Sensing Resolutions - Aerial Remote Sensing - Satellite Remote Sensing - Types of Satellites – Satellite Photogrammetry - Image Interpretation - Digital Image Processing: Definition, Stages in Image Processing – Image Classification.	
<b>UNIT III</b> Geographical Information System	Introduction – Definition - Components of GIS – types of data – sources of spatial/attribute data - Geodatabase - Analytical Tools of GIS (Measurement, buffer, overlay, query, spatial interpolation, surface analysis, and network analysis).	
<b>UNIT IV</b> Global Navigational Satellite System	Definition-History - Working Principles – Segments - Advantages – Disadvantages of GNSS - NAVSTAR, GLONASS, GALILEO; Regional – IRNSS, BEIDOU; Augmentation – WAAS, LAAS - Stand alone/DGPS - Modes of GPS Surveying.	
<b>UNIT V</b> Application of Geoinformatics	Natural Resources Management - Environmental Studies - Disaster Management - Utilities Management - Land Parcel Based - Urban Studies - Military Applications – Navigation - Location Based Services – Civil Engineering - Agriculture.	

### **Text Book**

1. Sailful Islam, Geoinformatics, Vayu Education of India, New Delhi, 2013

### **Reference Books**

1. Peter A. Burrough and Rachael A. Mc. Donnell, Principles of Geographical Information System, 3<sup>rd</sup> Edition, Oxford University Press Inc., New York, 2015.
2. Ian Heywood, Sarah Cornelivs and Steve Carver, An Introduction to Geographical Information System, 3<sup>rd</sup> Edition, Pearson Education Pvt .Ltd., New Delhi, 2010.
3. LO. C.P., and Albert K.W.Yeung, Concepts and Techniques of Geographic Information Systems, Prentice-Hall of India, New Delhi, 2009.
4. Lillesand M. Thomas and Ralph W.Kiefer, Remote Sensing and Image Interpretation, 6<sup>th</sup> Edition, John Wiley & Sons, New York, 2017
5. Satheesh Gobi, Global Positioning System – Principles and Applications, Tata McGraw – Hill Publishing Co Ltd, New Delhi, 2005.

## PG Level

18GISP02N3	<b><u>Non-Major Elective</u></b> <b>Disaster Management</b>	<b>4 Credits</b>
<b>Objective:</b> To make the students to understand the relevance of disaster management techniques in community development		
<b>UNIT I</b> Introduction	Nature, characteristics and types of Disasters – Causes and effects of Disaster – Disaster Profile of India – Disaster Management cycle.	
<b>UNIT II</b> Natural and Man Made Disasters	Geological and Mountain Area Disasters (Earthquakes, volcanic Eruption, Landslides and Snow Avalanches) – Wind and Water Related Disasters (Floods and Flash Floods, droughts, cyclones and Tsunamis) – Man Made Disasters (Fires and Forest Fires, Nuclear, Biological and Chemical disaster and Road Accidents).	
<b>UNIT III</b> Natural Disaster Management	Prevention and Preparedness – Preparedness Plan – Disaster Mitigation – Mitigation strategies and management – Reconstruction and Rehabilitation – Damage Assessment, Development of Physical and Economic Infrastructure, Education and Awareness – Roles & Responsibilities of Gos and NGOs.	
<b>UNIT IV</b> Disaster Response and Management	Communication and Activation of Emergency Preparedness Plans – Search, Rescue, Evacuation and other logistic management – Psychological Response and Rehabilitation – Trauma and Stress Management – Rumour and Panic Management – Medical and Health Response to Different Disasters – Relief and recovery management.	
<b>UNIT V</b> Technologies for Disaster Management	Role of IT in Disaster Preparedness – Remote Sensing, GIS and GPS – Modern Technologies for the Emergency communication.	

### **Text Books**

1. Bell, F.G. Geological Hazards: Their assessment, avoidance and mitigation. E & FN SPON Routledge, London. 1999.
2. Nick Carter. W. Disaster Management -A Disaster Manager's Handbook. Asian Development Bank, Philippines. 199.

### **Reference Books**

1. Sisizlatanova& Andrea Fabbrijonathanli, Geometrics solutions for Disaster management, Springer Verlag, 2007.
2. C.EmdadHaque, Mitigation of natural Hazards & disasters, Kluwer Academic publishers group, 2005.
3. Linda C. Bottersl l& ponald A. wilhite, From Disaster response to Risk management. Kluwer Academic publishers group, 2005.
3. Gerard Blokdijk, Disaster recovery planning and services, Gennaio publishers, 2008.
5. Mohamed Gad Large scale disasters : prediction, control and mitigation, Cambridge university press, 2008

### **E-Learning Resources**

1. <http://elearning.irrs.gov.in>
2. <http://onlinecourses.nptel.ac.in>
3. [www.imd.gov.in](http://www.imd.gov.in)

## UG Level

<b>18GISU04N1</b>	<b><u>Non-Major Elective</u></b> <b>Introduction to Geoinformatics</b>	<b>3 Credits</b>
<b><u>Course Objective:</u></b> The course provides an introduction to various technologies of Geoinformatics and its applications.		
<b><u>Course Outcome:</u></b> CO 1. Understand the technologies of Geoinformatics CO 2. Introduce the concept of Remote Sensing and Digital Image Processing CO 3. Learn the concept of Geographical Information System CO 4. Known Global Navigation Satellite System CO 5. Apply tools of Geoinformatics in various fields		
<b>UNIT I</b> Introduction	Meaning - Concept of Spatial Dimension – Contributing Technologies – Earth – Shape - Spatial objects	
<b>UNIT II</b> Remote Sensing & DIP	Definition – Components – EMR - Remote Sensing Resolutions - Aerial - Satellite Remote Sensing. Digital Image Processing: Definition - Stages in DIP – Image Classification	
<b>UNIT III</b> Geographical Information System	Introduction – Definition - Components of GIS – Geodatabase - Analytical Tools of GIS.	
<b>UNIT IV</b> Global Navigational Satellite System	Definition – History - Working Principles – Segments – Global – NAVSTAR, GLONASS, GALILEO; Regional – IRNSS, BEIDOU; Augmentation – WAAS, LAAS.	
<b>UNIT V</b> Application of Geoinformatics	Natural Resources and Disasters Mapping and Management –Environmental Studies -- Urban Studies – Military – Civil Engineering – Agriculture - Navigation - Location Based Services - Facilities Management.	

### **Text Book**

1. Sailful Islam, Geoinformatics, Vayu Education of India, New Delhi, 2013

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1. Peter A. Burrough and Rachael A. Mc. Donnell, Principles of Geographical Information System, 3<sup>rd</sup> Edition, Oxford University Press Inc., New York, 2015.
2. Ian Heywood, Sarah Cornelivs and Steve Carver, An Introduction to Geographical Information System, 3<sup>rd</sup> Edition, Pearson Education Pvt .Ltd., New Delhi, 2010.
3. LO. C.P., and Albert K.W. Yeung, Concepts and Techniques of Geographic Information Systems, Prentice-Hall of India, New Delhi, 2009.
4. Lillesand M. Thomas and Ralph W.Kiefer, Remote Sensing and Image Interpretation, 6<sup>th</sup> Edition, John Wiley & Sons, New York, 2017
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