

Alva's Institute of Engineering & Technology,

Shobhavana Campus, Mijar, Moodbidri
Dakshina Kannada, Karnataka - 574225



ALVA'S
Education Foundation®



Internal Quality Assurance Cell (IQAC)

&

Department of Civil Engineering
Organises

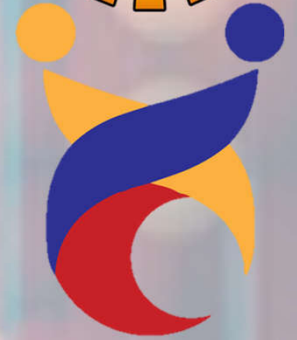
A+

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Three-days hands-on workshop **Basics of Remote Sensing and Geographical Information Systems.**

28th to 30th August 2023



nirf

151 - 300



Venue: CAD lab, Dept. of Civil Engineering
AIET, Mijar Moodbidri

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**Internal Quality Assurance Cell (IQAC) &
Department of Civil Engineering,
Alva's Institute of Engineering and Technology (AIET), Mijar, Dakshina
Kannada**

**Organizes a three-day hands-on workshop on “Basics of Remote
Sensing and Geographic Information Systems”**

The workshop aimed to disseminate knowledge on geospatial among the young minds and teaching faculties, i.e., GIS and Remote Sensing emphasizing the need of multidisciplinary approaches.

About AIET

Alva's Institute of Engineering and Technology in Moodbidri stands as a testament to the pursuit of academic excellence and holistic development.

Established with the aim of fostering academic excellence and holistic development in 2008, the institute is affiliated to Visvesvaraya Technological University, Belagavi. Through its comprehensive programs, dedicated faculty, modern infrastructure (state of the art classrooms, well equipped laboratories, a library with a vast collection of academic resources) and commitment to innovation, the institute plays a significant role in shaping the future engineers and technologists of India

Located in Moodbidri, Karnataka, Alva's educational institution has continually focused on providing quality engineering and technical education to its students and to support them both in academic and extracurricular activities.

AIET is associated with numerous Government and Private Organizations thus working on research and consultancy projects. AIET currently has MoU's with reputed organizations viz., ISRO, NRSC, NAL, RRSC, IIT's, IISc, NIT's, and so on...

Day 1

Inaugural Session

The three day workshop on Basics of Remote Sensing and Geographic Information Systems was held between August 28-30, 2023 at CAD lab, Civil Engineering Department, Alva's Institute of Engineering and Technology, Moodbidri. The workshop began at 9:30 AM with the lighting of the lamps. Dr. H Ajith Hebbar, welcomed the gathering addressing the



need of geospatial and its importance in the real world. He also spoke about the Geoinformatics Research Lab budding at AIET, which will focus on multidisciplinary aspects research integrating engineering, science, humanitarian and various other disciplines. Dr Kurian, the Guest of Honour (Principal Alva's Degree College) gave a keynote address indicating the knowledge system that had evolved in India, and now we are concentrating/studying one aspect viz., Civil, Agricultural, Economics, Sociology, Botany, Zoology, Electronics, Computers etc. He also emphasized the need of cross domain knowledge and how youngsters can adapt them for getting edge in the competitive world. Dr. H G Umeshchandra thanked the guests, principal, management, colleagues, students for the support extended.



Figure: Dr Kurian (Principal, Alvas Degree College) addressing the gathering

Introduction to Remote Sensing and Geographic Information System

Dr. Vinay S, spoke about the basics of RS & GIS followed by select applications. Starting with RS he explained what RS along the working principle is. He elaborated and related the human body with Remote Sensing Sensors. Electromagnetic Spectrum and the role of Spectral Reflectance across various wavelengths was elaborated with real world examples of Deciduous and Evergreen species. Importance of False Colour composition was emphasized with help of an aerial images. Based on where the images/photographs were taken, satellite platforms were categorized. Light was thrown on Visual image interpretation and digital image interpretation. Digital image interpretation involves pattern classification, segmentation, image enhancement, machine learning, etc. He also spoke on evolution of Remote Sensing at Global and Indian context. This was followed by explanation of various resolutions viz spatial, spectral radiometric and temporal. This was followed by describing Geographical Information System and how as an entity each of the departments can contribute to the common platform. Dr Vinay spoke about the capabilities and requirements of GIS, data types and operations that can be performed. He also elaborated on WebGIS and mobile GIS and their implementation and applicability. He also emphasized various applications that included hydrology, forestry, disaster management, environmental economics, climate change *etc.* In the afternoon, he spoke on Maps and Projections, important components of map, scale, map types, etc. in the hands on session, the training focused on importing satellite data from the web portals.



Fig. Dr Vinay S addressing the participants

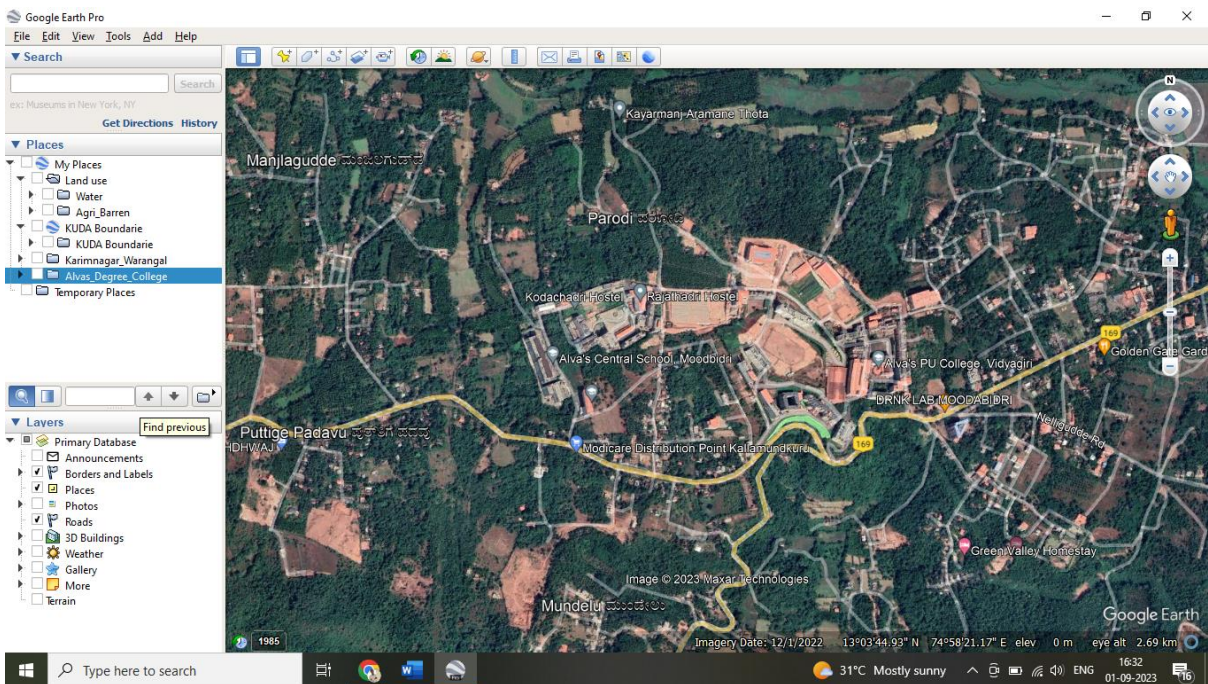


Fig. Google Earth (Screenshot)

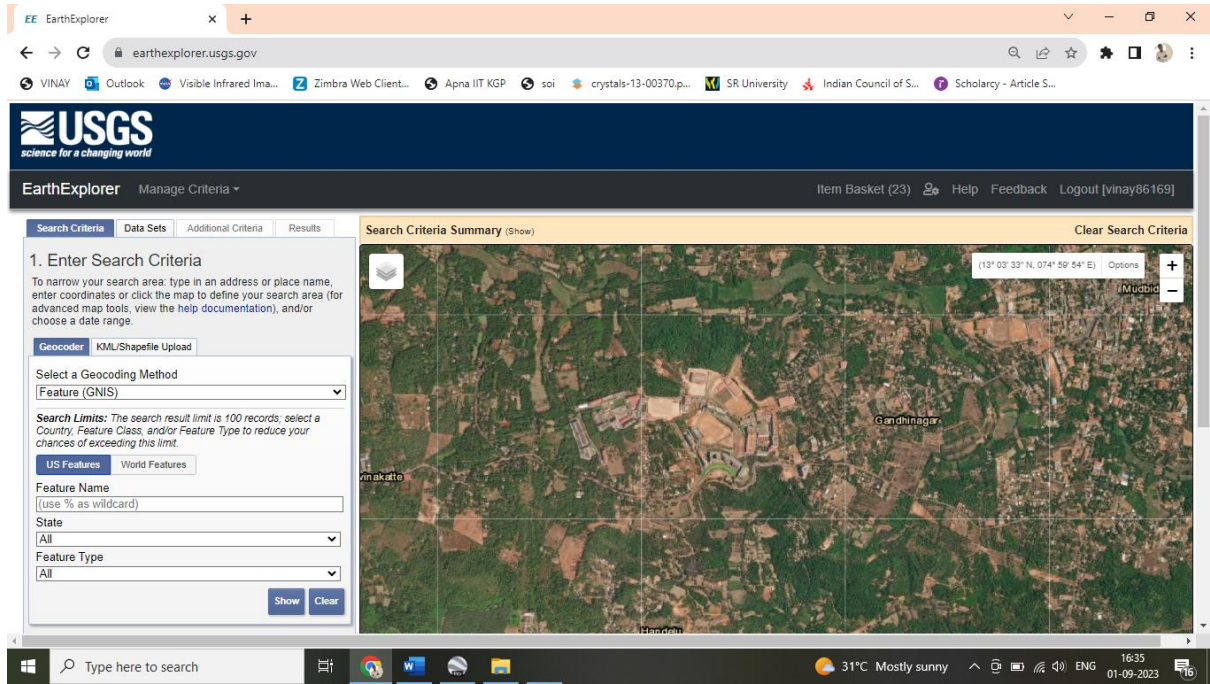


Fig. Earthexplorer (Screenshot)

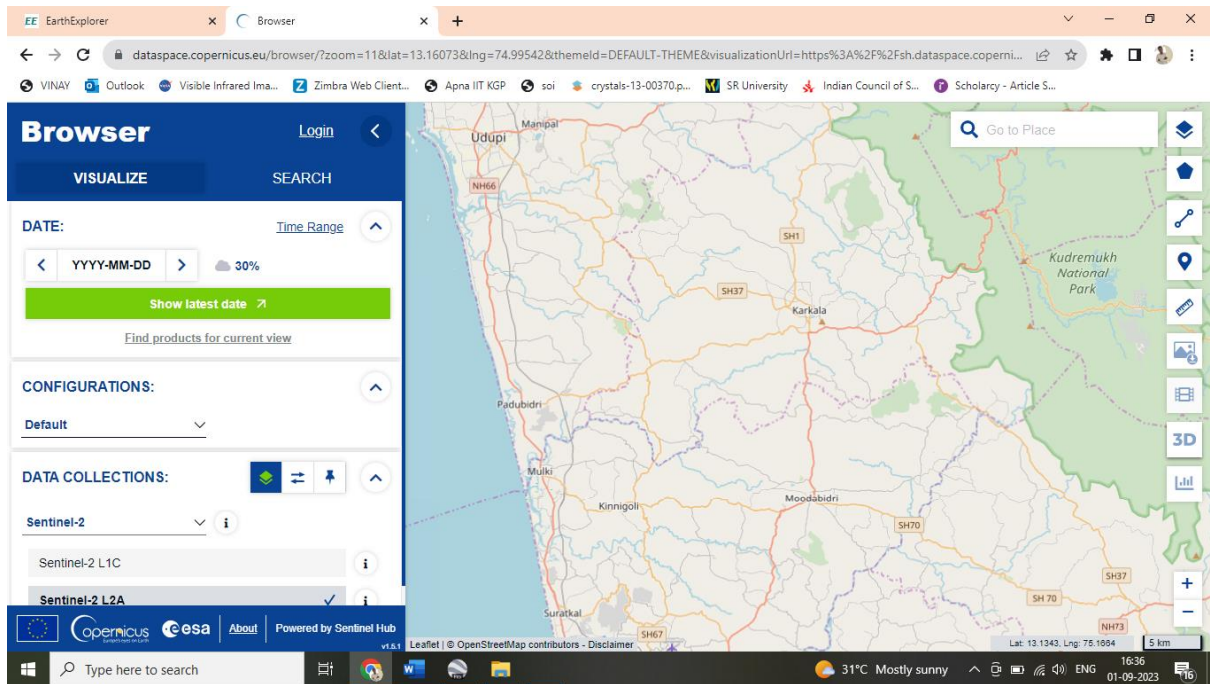


Fig. Dataspace Copernicus (Screenshot)

Day 2

Dr Umeshchandra H G, explained in detail about various data structures used in GIS. He explained about vector file formats, raster file formats, attributes. He also elaborated of the likely advantages and disadvantages, errors, limitations of the spatial data. He also elaborated about the models viz., Spaghetti, Topology, TIN, DEM, etc. Dr Umeshchandra elaborated about compression of Raster data which is essential for distribution. Speaking about vectors he explained about the applicability of points, lines and polygons. He also showed how a real world data can be put in GIS using vectors and rasters while integrating spatial data.



Fig. Dr H G Umeshchadra addressing the participants

Dr Vinay spoke about QGIS, its development, various libraries that are a commonality in both open source and commercial software's. He started the hands-on by showing the layout of QGIS, Plugins etc. On this day, the following components were thought.

- Data importing into the QGIS platform
- Querying and exporting
- Vector mathematics (or, and, sum, geometry, etc)

- Creation of fields,
- Preparation of thematic maps
- Georeferencing of data
- Importing an excel file (CSV)
- Joining multiple databases
- Interpolating data
- Extracting information to the required area of interest

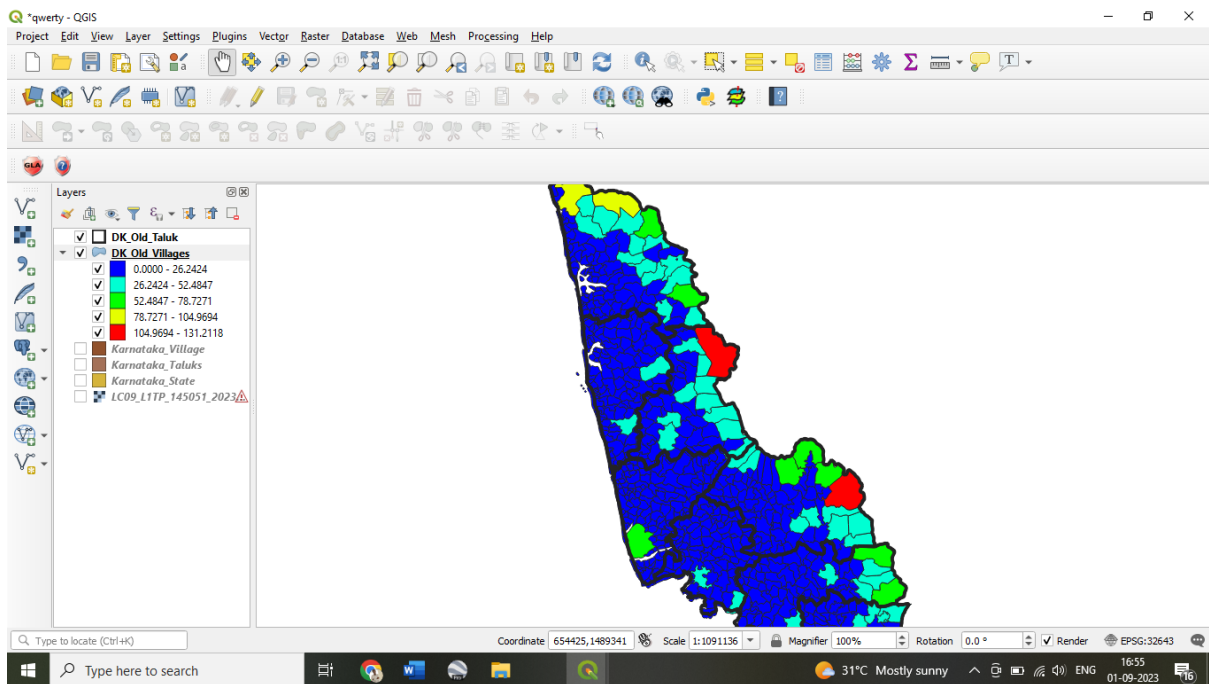


Fig. Screenshot of QGIS

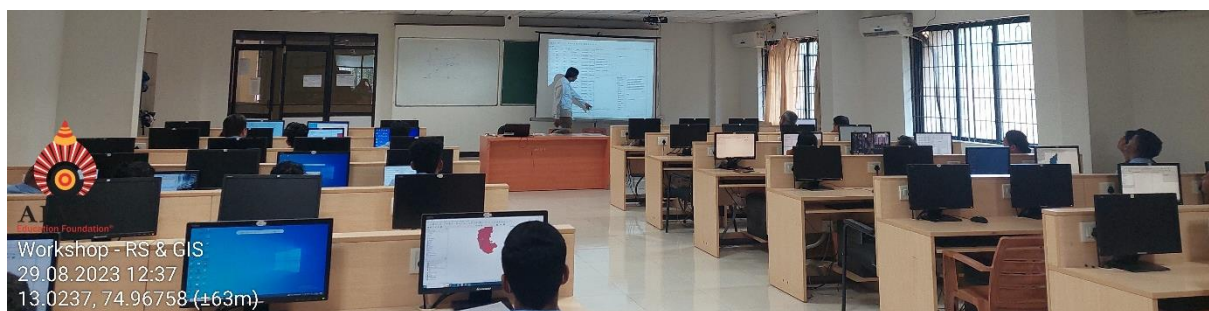


Fig. Participants working on QGIS

Day 3

The workshop began with a revision of the previous class so as to clear the doubts if any. Image processing software viz., GRASS GIS was introduced. The participants were trained about GRASS GIS, such as creating location, mapsets and their importance. Data importing, calculation of vegetation and water indices was explained. This was followed by preparation of Colour composites (TCC and FCC) that are necessary for identification of features. Machine learning using GMLC algorithm was further demonstrated to analyse the land use in the study area. at the end before concluding session, Dr. Vinay demonstrated all the steps carried out for the day using GRASS GIS in a span of 40 minutes.

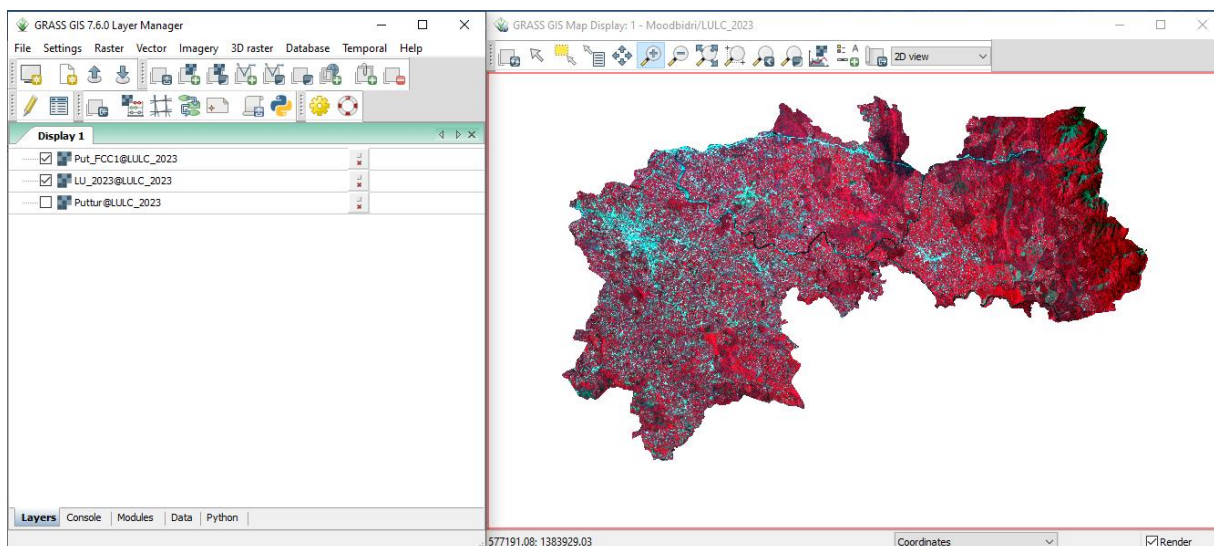


Fig. Screenshot of GRASS GIS

Concluding Session

The Concluding session started at 4:00 PM at CAD lab, Department of Civil Engineering. Dr. Vinay S gave the report of the entire workshop indicating the importance and some deliberations that happened during the workshop hours. Participants were requested to give their feedback and comments over the workshop, for all the participants the concept was new and for few it triggered new ideas, while for



science background students handling computers was a tough task.

Dr. Peter Fernandes, Principal AIET and Chairman IQAC, spoke about the workshops, training programmes that are very common in AEF but the concern was that these were never taken forwards by the participants, he urged the students to move forward in the direction and use the resource person who is specifically brought for GIS and RS. He congratulated the participants, IQAC, Dept of Civil Engineering for completing the workshop. Mr. Vivek Alva spoke about his passion towards space and geospatial. He also indicated about the creation of New Geoinformatics Research Laboratory and asked the participants to take part in the upcoming works pertaining to Western Ghats. He also emphasized the need of multidisciplinary aspect that are necessary for imposing information to the public, decision makers etc. He spoke about humungous data that are available for carrying out spatial analytics that are of need for the current time. Dr. H Ajith Hebbar thanked the management, principal, Dept of Civil Engineering, Colleagues, Participants for supporting and being parts of the workshop.



Fig. Participants giving their feedback



Fig. Participants giving their feedback

ANNEXURES



ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY

(A Unit of Alva's Education Foundation (R) Moodbidri)
Affiliated to Visvesvaraya Technological University, Belagavi.
Approved by AICTE, New Delhi & Recognized by Government of Karnataka
Accredited by NAAC with A+ & NBA (CSE & ECE)

Ref.No.: AIET/IQAC/2022-23/

24/08/2023

Internal Quality Assurance Cell (IQAC)
&
Department of Civil Engineering

To,

Dr. Peter Fernandes
IQAC Chairman
AIET, MIJAR

Subject: Request permission to conduct 3 day hands on workshop on Basic of Remote Sensing and Geographical Information Systems.

Respected Sir,

We are pleased to inform you that AIET-IQAC & Dept of Civil Engineering, are planning to organize a three-day workshop from 28th to 30th August 2023. The event will be conducted for faculty members and select students across all the departments of AIET and Alva's Degree College. We are planning this workshop for 30 participants with an E-Certificate.

We would request you to kindly permit to proceed with the activities planned. Your valuable suggestions and support in this endeavor would be greatly appreciated.

Thank you for your consideration.

(Attached here with the schedule of the workshop)

Through
Dr. Ajith Hebbar
HoD, Civil Engineering
AIET, MIJAR

H.O.D.
Dept. of Civil Engineering
Alva's Institute of Engg. & Technology
Mijar, Moodbidri - 574 225

24 Aug 2023
Dr. Vinay S

Geoinformatics Research Lab,
Associate Prof. Dept of Civil Eng.
AIET, MIJAR

PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar, MOODBIDRI - 574 225, D.K

Schedule

Date\Time	9:15 to 10:30	10:30 to 10:45	10:45 to 12:45	12:45 to 1:45	1:45 to 3:15	3:15 to 3:30	3:30 to 5:00
28 Aug 2023	Inauguration		GIS & RS with Applications (Dr. Vinay S)		Maps and Projection (Dr. Vinay S)		Data Source and Google Earth (Dr. Vinay S)
29 Aug 2023	Vector and Raster Operations (Dr. Umeshchandra)	Break	QGIS (Dr. Vinay S)	Lunch Break	QGIS (Dr. Vinay S)	Break	QGIS (Dr. Vinay S)
30 Aug 2023	GRASS GIS (Dr. Vinay S)		GRASS GIS (Dr. Vinay S)		GRASS GIS (Dr. Vinay S)		Conclusion (4:00 to 5:00)

Contents

- What is Remote Sensing and GIS
- Applications of GIS and Remote Sensing in various domains (Examples)
- What is Map and How to develop maps
- Various Data sources viz., Earth explorer, Survey of India, Bhuvan....etc.
- Working with vectors in Google Earth
- Image processing basics for remote sensing
- Preparation of layers, querying, georeferencing, adding attributes, preparing Maps in QGIS, (Vector Operations)
- Digital image Processing – Indices, Supervised classification, (Raster Operations)



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24/08/2023

CIRCULAR

It is here by informed that a three day hands on workshop on **Fundamentals of Remote Sensing and Geographical Information System** would be organized by IQAC in association with Department of Civil Engineering during **28th and 30th of August 2023**, the venue being CAD Lab, department of Civil Engineering. In this regards all the HODs (Engg and Basic Science) are requested to depute at least one faculty and 2 students (2nd Sem & 4th Sem) for the workshop from each department.

(Course content and Schedule attached herewith)

Dr. Peter Fernandes
Principal & IQAC Chairman
AIET MIJAR

PRINCIPAL
Alva's Institute of Engg. & Technology,
Mijar. MOODBIDRI - 574 225, D.K

To

All Deans of AIET

All Heads of AIET

Principal Alva's Degree College.

Schedule

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QGIS



ALVA'S
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Workshop
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Inaugural Session 28th August 2023



Concluding Session 30th August 2023



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Karnataka 574225, India

Concluding Session 30th August 2023



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