TERNA PUBLIC CHARITABLE TRUST'S
TERNA ENGINEERING COLLEGE
(Approved by AICTE & Affiliated to University of Mumbai)
Plot No. 12, Sector 22, Opposite Railway Station, Nerul (W), Navi Mumbai- 400706. Ph. +91 22 61115444, Fax No.+91 22 61115400
Web : https://ternaengg.ac.in/

Report on

Value Added Course – QGIS Software

Enrolled Students

S.E. Civil Engineering

Academic Year:

2024-2025

Organized by

Department of Civil Engineering, Nerul, Navi Mumbai

TERNA PUBLIC CHARITABLE TRUST'S

TERNA ENGINEERING COLLEGE

Department of Civil Engineering

ACADEMIC YEAR 2024 – 2025

CIRCULAR

All the students of semester IV are hereby informed to enroll their names for add on course on "QGIS" software.

COURSE FEATURES:

Course Duration	: 40 Hours
Beneficiary	: Students & Faculties
Certificate	: Eligible candidates
Mode	: Offline/Online
Schedule	: 31.01.2025 to 12.04.2025

HOD

Dept. of Civil Engg

2.0 About Institute

Terna Public Charitable Trust's Terna Engineering College is one of the well-known and it is located at Nerul, Navi Mumbai on a beautiful 3-acre campus. The institute is affiliated to University of Mumbai, approved by AICTE and accredited by National Board of Accreditation (NBA). This institution offers 7 UG, 3 PhD courses. Highest quality education is catered with curriculum extension by means of exceptional offerings like Engineering Products and Innovation Center (EPIC), Remote centre of IIT Bombay which facilitates student / faculty members to interact with IIT professors through video conferencing, Industry Institute Interaction Cell, Electronics club (collaboration with 25 local electronics SMEs), e-Yantra Embedded Systems and Robotics Lab, Apple lab, Texas Instruments Lab. We are a diverse, talented community united by passion for learning and quest for more. Terna motivates students to make a difference in our campus, in the state, country and around the world.

2.1 About Department:

The Department of Civil Engineering was established in the year 2017. The Mission of Department is to promote the disciplines of Planning, Design, Construction, Operation,

Maintenance and Research. It offers students technical knowledge with technique for better utilization of available resources and greater standardization of construction processes required by construction industry. We intend to develop students by giving training to make use of innovative design methods, techniques and practical implementation. Highly qualified and dedicated faculty are recruited and they are always on their toes to guide the students, form the backbone of the department.

Key Features:

- Well Equipped Laboratories – Materials and Concrete Technology, Geotechnical Engineering, Environmental Engineering, Transportation Engineering, Engineering Geology, Civil Computer Laboratory, Surveying Laboratory, Hydraulics and Fluid Mechanics Laboratories
- Consultancy Services Offered and Fully Equipped with Major Facilities Like Fully Automatic Compression Testing Machine 2000 kN (NABL Accredited), Fully Automatic Universal Testing Machine (UTM 100 Ton- NABL Accredited), Fully Automated Total Station for Professional Surveying
- Consultancy Services Offered for Non-Destructive Testing

- Faculties with Experience in Design and Execution of Residential, Commercial, Oil & Gas, Power Projects
- Faculties with Experience in Research in the Field of Smart Materials & Smart Structures, Pavement Design & Analysis, Geotextile Materials for Soil Stabilization, Geotechnical Engineering, Remote Sensing & GIS
- Active Mentoring Processes for Continuous Assessment in Academics
- Learning Experience Through Active Consultancy Projects
- Industrial Visits-CIDCO, PWD, MMRDA, Rock Museum Nasik
- Internship for Students (With & Without Stipend)
- International Students Chapter Association & Merit Scholarships
- Expert Lectures by Industry Experts
- NPTEL Courses
- Skill Based, Project Based Learning, Interactive and Interest Based Core Domain Learning
- Patents, Designs and Copyright Development
- Achieved 100 % students intern during winter vacations (2019-2020) in renowned organizations like Airport Authority of India (AAI), Public Work Department (PWD), City and Industrial Development Corporation (CIDCO), Rashtriya Chemical Fertilizers (RCF), American Concrete Institute and so many.

3.0 About Course

An add on course training of QGIS software has been introduced by the Department of Civil Engineering, Terna Engineering College, Navi Mumbai for S.E (Civil) students and the course is conducted by Mr. Manish Yadav and Miss. Sudha Chaganti - the PhD research scholars from IIT Bombay. This will be beneficial to students for their project work and ready for industry. Duration of course will be 40 hrs.

4.0 About Instructor

Mr. Manish Yadav has completed his Post-graduation from IIT Bombay in the GIS & Remote sensing field. Now he is perusing PhD through the PMRF Scheme (Prime Minister's Research Fellowship) from the same institute with a specialization in Transportation Systems Engineering. He has an expertization in QGIS software.

Miss. Sudha Chaganti has completed her Post-graduation from NIT Rourkela in Transportation Engineering. Now she is pursuing her PhD from IIT Bombay in Transportation Engineering. She is doing her PhD through the PMRF Scheme (Prime Minister's Research Fellowship). She is expert in QGIS software.

5.0 Schedule

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DEPARTMENT OF CIVIL ENGINEERING
ADD ON COURSE: - QGIS
Class: - S.E (Sem IV)
FH25

Schedule of QGIS

Sr. No.	Date	Duration	Time
1	31/01/25 (Friday)	3 hrs	(1.45 p.m. - 4.45 p.m.)
2	01/02/25(Saturday)	6 hrs	(10.00 a.m. - 1.00 p.m.), (2.00 p.m. - 5.00 p.m.)
3	07/02/25(Friday)	3 hrs	(1.45 p.m. - 4.45 p.m.)
4	14/02/25(Friday)	3 hrs	(1.45 p.m. - 4.45 p.m.)
5	21/02/25(Friday)	3 hrs	(1.45 p.m. - 4.45 p.m.)
6	22/03/25(Saturday)	6 hrs	(10.00 a.m. - 1.00 p.m.), (2.00 p.m. - 5.00 p.m.)
7	29/03/25(Saturday)	3 hrs	(10.00 a.m. - 1.00 p.m.)
8	05/04/25(Saturday)	6 hrs	(10.00 a.m. - 1.00 p.m.), (2.00 p.m. - 5.00 p.m.)
9	09/04/25(Wednesday)	3 hrs	(1.45 p.m. - 4.45 p.m.)
10	12/04/25(Saturday)	4 hrs	(12.15 p.m. - 4.45 p.m.)

Mr. Manish Yadav
Course Instructor

Miss. Sudha Chaganti
Course Instructor

Mrs. Poonam Patil
APC

Dr. Priyanka Salunkhe
HOD

6.0 Syllabus

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Syllabus

Sr. No.	Topic	Hours
1	Basic Introduction of GIS and its application in different field	3
2	Use of Google earth and Introduction of Quantum GIS (Q-GIS) and ArcGIS	3
3	Demonstrate various basic vector attribute functions including attribute database query in QGIS.	6
4	To work on Buffer and Spatial Overlay Analysis on vector data using QGIS and understand their use in GIS applications.	6
5	Perform terrain analysis of a Digital Terrain Model (DTM) using Raster Terrain Analysis tool	6
6	Demonstrate raster overlay operations using QGIS.	6
7	To learn generating heat maps in QGIS platform and how to withdraw inferences	6
8	Overview of Spatial Statistics (Moran`s Index) and its application	4

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7.0 CO, PO & PSO

After completion of the course the student will be able to

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Course Objective-

1	To introduce the fundamental concepts of Geographic Information Systems (GIS)
2	To understand the history, evolution, and applications of GIS in various domains.
3	To learn about GIS components, including hardware, software, data, people, and procedures.
4	To explore spatial data types, their acquisition, storage, and processing techniques.
5	To understand the principles of spatial analysis, topology, and georeferencing.
6	To develop practical knowledge of GIS applications in urban planning, transportation, environment, and disaster management.

Course Outcome-

1	Gain a comprehensive understanding of GIS fundamentals and its importance in spatial data management.
2	Learn to work with spatial and non-spatial data, including raster and vector formats.
3	Develop skills in data capturing, digitization, and geospatial data analysis.
4	Apply spatial analysis techniques such as proximity analysis, network analysis, and overlay operations.
5	Understand the role of GIS in decision-making for land use, natural resources, urban planning, and environmental studies.
6	Acquire hands-on knowledge of GIS software tools like ArcGIS, QGIS, and MapInfo for real-world applications.

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7.1 Program Outcome

PO 1: - Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2: - Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
PO 3: - Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4: - Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5: - Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6: - The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7: - Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8: - Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9: - Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10: - Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11: - Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12: - Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcome

PSO 1: - Graduates will be able to plan, analyze, design and drawing and estimate for residential, commercial, industrial and infrastructure projects. They will be able to work on site for supervision of various construction activities.
PSO 2: - Graduates will be able to use different software related to Civil Engineering for developing skills required by the industry.

8.0 CO, PO & PSO Mapping

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List of Experiments

Exp. No.	List of Experiments	CO	PO	PSO
1	Basic Introduction of GIS and its application in different field	1	1,2,3,4,5,6,7,8,9, 10, 12	2
2	Use of Google earth and Introduction of Quantum GIS (Q-GIS) and ArcGIS	2	1,2,3,4,5,6,7,8,9, 10, 12	2
3	Demonstrate various basic vector attribute functions including attribute database query in QGIS.	2	1,2,3,4,5,6,7,8,9, 10, 12	2
4	To work on Buffer and Spatial Overlay Analysis on vector data using QGIS and understand their use in GIS applications.	3	1,2,3,4,5,6,7,8,9, 10, 12	2
5	Perform terrain analysis of a Digital Terrain Model (DTM) using Raster Terrain Analysis tool	4	1,2,3,4,5,6,7,8,9, 10, 12	2
6	Demonstrate raster overlay operations using QGIS.	4	1,2,3,4,5,6,7,8,9, 10, 12	2
7	To learn generating heat maps in QGIS platform and how to withdraw inferences	5	1,2,3,4,5,6,7,8,9, 10, 12	2
8	Overview of Spatial Statistics (Moran's Index) and its application	6	1,2,3,4,5,6,7,8,9, 10, 12	2

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CERTIFICATE
This is to certify that Mr/Ms Aditya Gangurde
has satisfactory completed value added course (QGIS Software - 40 Hours)
During January 2025 - April 2025. This Course is conducted in association with
IIT Bombay PMRF Scholars.
MR. MANISH YADAV
PMRF SCHOLAR, IIT BOMBAY
MISS. SUDHA CHAGANTI
PMRF SCHOLAR, IIT BOMBAY
DR. PRIYANKA SALUNKHE
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This is to certify that Mr/Ms Vedant Padwal
has satisfactory completed value added course (QGIS Software - 40 Hours)
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This is to certify that Mr/Ms Kavita Gounder
has satisfactory completed value added course (QGIS Software - 40 Hours)
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This is to certify that Mr/Ms Pranjal Prabhu
has satisfactory completed value added course (QGIS Software - 40 Hours)
During January 2025 - April 2025. This Course is conducted in association with
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This is to certify that Mr/Ms Shruti Kumbhar
has satisfactory completed value added course (QGIS Software - 40 Hours)
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This is to certify that Mr/Ms Rushikesh Pashilkar
has satisfactory completed value added course (QGIS Software - 40 Hours)
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CERTIFICATE
This is to certify that Mr/Ms Nilesh Kallur
has satisfactory completed value added course (QGIS Software - 40 Hours)
During January 2025 - April 2025. This Course is conducted in association with
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CERTIFICATE
This is to certify that Mr/Ms Krishna Yadav
has satisfactory completed value added course (QGIS Software - 40 Hours)
During January 2025 - April 2025. This Course is conducted in association with
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MISS. SUDHA CHAGANTI
PMRF SCHOLAR, IIT BOMBAY
DR. PRIYANKA SALUNKHE
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