# CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY

# Kokapet (Village), Gandipet, Hyderabad – 500 075

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# DEPARTMENT OF CIVIL ENGINEERING

# **List of Value Added Courses**

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# CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (Autonomous) GANDIPET, HYDERABAD- 500075

# DEPARTMENT OF CIVIL ENGINEERING

No: C BIT / CEO / 324/ 26/06/2023 Report on

Two-week Practice Oriented Student Internship Program (SIP) on "Software Applications for Sustainable Water Resources Management (SASWRM 2023)" during 29th May to 15th June 2023 in association with AICTE Idea Lab

# About the Internship

This internship is an excellent platform for students and researchers to gain knowledge on applications of different computational tools in Water Resources Engineering. Theoretical knowledge is not solely sufficient to work in real-field problems. Therefore, this internship mainly focused on hands-on training on computational flow modelling, application of artificial intelligence in discharge assessment, remote sensing application, satellite image processing, realistic problems in water supply / distribution system and its solution, Hydrograph studies in flood routing, Rainfall-runoff simulation, Scouring depth prediction, which require an intense knowledge of relevant software and their working. The internship was handled by experts from resource persons from universities of national repute and Industries like IITs, NITs, HMWSSB and CGWB. The internship was conducted for total 90 contact hours with its numerous sessions include training, hands-on and project work. Assignments were given to all interns as homework and the same was evaluated. Assessment was done on a given project related to real-field application thereby enhancing the ability of the participants in carrying out its application in the future research.

The internship was conducted in association with AICTE IDEA Lab, CBIT. The aim of AICTE IDEA Lab in CBIT is to provide all facilities for conversion of an idea into a prototype. With these facilities in the campus, more students and faculty are being encouraged to take up creative work. In this process, students and faculty are getting trained on creative thinking, problem solving, collaboration etc. The IDEA Lab of CBIT is headed by Principal & Professor Dr. P. Ravinder Reddy, who is the chief mentor.

# Organizing Committee:

Patron

Prof. P. Ravinder Reddy Principal, CBIT (A)

# Chairman

Dr. K. Jagannadha Rao Professor & Head, Department of Civil Engineering, CBIT (A)

# Convenors

Dr. Jnana Ranjan Khuntia Assistant Professor Department of Civil Engineering, CBIT (A)

# Dr. Kamalini Devi

Assistant Professor Department of Civil Engineering, CBIT (A)

# Coordinators

Sri E. Maheshwar Reddy, Assistant Professor

Sri Ramanarayan Sankriti, Assistant Professor

Dr. Angshuman Das, Assistant Professor

Dr. B. V. S. Rao, Coordinator, AICTE IDEA Lab CBIT

# RESOURCE PERSONS

 Prof. Kishanjit Kumar Khatua Professor and Dean (AR), NIT Rourkela

 Dr. Bhabani Shankar Das Assistant Professor, NIT Patna

Mr. Mane S R Rohith
 Manager (engg), Shivam section
 Sub division -3, O&M Division -5, HMWS&SB

 Dr. Kamalini Devi Assistant Professor, CBIT (A), Hyd

Sri Ramanarayan Sankriti
 Assistant Professor, CBIT (A), Hyd

 Mr. Ketan Kumar Nandi Ph.D. Scholar, IIT Guwahati

 Mr. Sarjati Sahoo Ph.D. Scholar, NIT Rourkela

Sri Bijay Ketan Mohanta
 Scientist C, Central Ground Water Board, Southern Region, Hyderabad

## Student Volunteers:

- · Edara V S S Sahithi
- Mamatha Choudhary
- K Rahul
- Abdul Rafeh Chouhan
- Macherla Vaishnav Ganesh
- Gadapa Madhu
- Shaik Sana Taslim

- Madu Shri Mokshagna Goud
- Madipally Mallikarjun
- Puppala Swetha
- Boiní Thirupathi
- Chidruppa Vishwa
- Niharika Kamisetty

# Date: 29-05-2023 (Day 1)

An Inaugural ceremony for the internship program was conducted in Main Seminar hall at CBIT, Hyderabad on its first day. The program was started by welcoming the Principal and Patron Prof. P. Ravinder Reddy, Guests Dr. Bhabani Shankar Das, Assistant Professor, NIT Patna (Chief Guest), Er. Mane S. R. Rohith, Manager, Shivam Section, HMWS&SB (Guest of honour), Dr. K. Jagannadha Rao, Head-CED and Chiarman SASWRM-2023, Prof. U. K. Chaudhury, Director I&I, Dr. Jnana Ranjan Khuntia, Dr. Kamalini Devi, Assistant Professors, Convenors SASWRM 2023 at the stage. The inauguration function was started with lightening of the lamp the dignitaries. Then, it started with Saraswati Bandhana. After that, Principal has addressed the gathering and motivated students for the internship and felt that this internship program SASWRM 2023 would be awarding a promising career to the interns. Head, CED has addressed the interns and highlighted about the department and its activities/ achievements. Chief Guest has emphasized on the recent trends of developing ideas for new start-up and the skill development through the internship. Guest of honour addressed some key issues in water distribution and its solution of HMWS&SB. Director I&I focused on the AICTE Idea lab aim and objectives in helping to give the scope for different events. Convener Dr. Kamalini has foregrounded on the significance of conducting the internship. Convener Dr. Jnana Ranjan has accentuated evaluation process and rules and regulation of the internship program. Dr. Angshuman Das, one of the Coordinators SASWRM 2023 delivered vote of thanks at the end. 22 nos. of teaching and non-teaching staffs and 75 nos. of interns from CBIT and other institutions attended this inaugural program.





Fig. 1: Glimpses during inauguration of SASWRM 2023

Session 1: Water Distribution in Twin cities of Hyderabad and Secunderabad.

Speaker: Er. Mane SR Rohith

The session started with the role of HMWSSB in the distribution of drinking water and treatment of water water in the twin cities and its later introduction to the Musi River. Also,

further the topic of Water Cycle was introduced and the role it plays in the availability ground water rain water and surface water on earth. The different sources of water to the two cities were outlined since 1920 when Osmansagar and Himayatsagar served as water source and then with growing population and development of IT Hub, Singur dam (Manjira River Nagarjuna Sagar dam (Krishna River), Yellampally Barrage (Godavari River) were the current sources of water supply to the twin cities.





Fig. 2: Glimpses during Session1: by Er. Rohith SR Manne

# Session 2: Application of Artificial Intelligence in Flow Assessment

The interns were introduced to the concept of machine learning like similarities and differences between human and artificial intelligence and membership functions.





Fig. 3: Glimpses during Session 2: by Dr. Bhabani Shankar Das

Date: 30.05.2023 (Day-2)

The session started with the Introduction and demo of software and ended with hands-on practice session to software like Win Gamma, MATLAB and ANFIS by Dr. Bhabhani Shankar Das. Afternoon session also witnessed Assessment-I (Quiz) on content delivered in previous day's lectures.



Fig. 4: Glimpses during Session 3 and Assessment: by Dr. Bhabani Shankar Das and

Date: 31.05.2023 (Day-3)

Flood routing by using HEC-RAS (Hydrology Engineering Center-River Analysis System) by Dr Bhabani Shankar Das and in the afternoon introduction to the importance of IDEA lab and Innovative Idea management and technology readiness level achievement by Dr. Umakanta Choudhury.



Fig. 5: Glimpses during Session 4 and AICTE Idea Lab session: by Dr. Bhabani Shankar Das and Dr. Umakanta Choudhury

Date: 01.06.2023 (Day-4)

Morning: Online training session and Demo of the ANSYS by Mr.Sarjati Sahoo of NIT Rourkela respectively.

Afternoon: Introduction to hands-on practice session of HEC-RAS software with Dr. Kamalini Devi, Dr. Jnana Ranjan Khuntia and Sri Ramanarayan Sankriti.

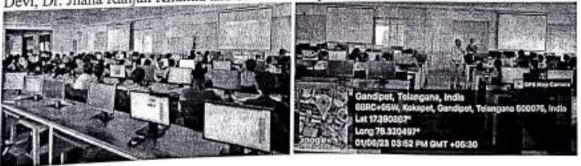


Fig. 6: Glimpses during Session 5 and AICTE Idea Lab session: by Mr. Sarjati Sahoo and Dr.
B. V. S Rao

Date: 02.06.2023 (Day-5)

FN- Dr Kishanjit Kumar Khatua has given one lecture on water conservation and its challenges. Also, he demonstrated of flow parameter measuring techniques in Laboratory and real filed cases.

AN- ANSYS hands-on session in CAD/CAM lab of MED.



Fig. 7: Glimpses during Session 6 and Hands-on Session: by Dr. Kishnajit Kumar Khatua and coordinators

Date: 05.06.2023 (Day-6)

FN-Conveyance Estimation System is explained and demonstrated by Dr. Kamalini Devi. The software CES is used to compute the conveyance of open channel like river/canal. Also, it is used to observe the variation of depth averaged velocity and bed shear stress across the channel.

AN-Assessment -II (Quiz). An assessment of the interns undertaken in the lectures taught after Assessment-I.



Fig. 8: Glimpses during Session 7 and Hands-on session: by Dr. Kamalini Devi and coordinators

Date: 06.06.2023 (Day-7)

Application of GEE in River health management by Mr. Ketan Kumar Nandi

River health management was assessed using NDWI and NDVI which gives a measure of wetness of the river valley in the peninsular rivers that don't carry water throughout the year.

AN-Georeferencing and Digitizing by Sri Ramanarayan S

The students were introduced to the concept of geo-referencing and how it is performed using QGIS. Also there was a demo of digitizing exercise in QGIS.



Fig. 9: Glimpses during Session 8: by Mr. Ketan Kumar Nandi and Sri Ramanarayan Sankriti Date: 7.06.2023 (Day-8)

FN- The morning session comprised of the Application of crop health assessment using Google Earth Engine (GEE) and QGIS with the Indices like Vegetation condition Index, Temperature condition index and vegetation health index. GEE codes for these indices were explained to students followed by DEMO and hands-on session.



Fig. 10: Glimpses during Demo and hands-on session of GEE: by Sri Ramanarayan Sankriti
AN-ANSYS Training session-II

The problem of drawing velocity contours and secondary flow currents in an open channel was explained using ANSYS Fluent by Mr. Sarjati Sahoo.

Date: 08.06.2023 (Day-9)

Formation of Project batches. All the interns have started their project work based to software learnt during training program.

Date: 09.06.2023 (Day-10)

Date: 10.06.2023 (Day-11)

Project Review-I. The review was done by Dr. Jnana Ranjan Khuntia, Dr. Kamalini Devi, Ramanarayan Sankriti and Dr. Angshuman Das.

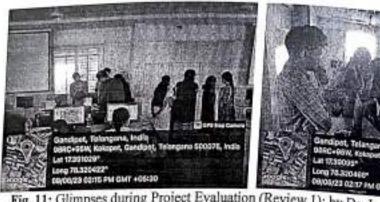


Fig. 11: Glimpses during Project Evaluation (Review 1): by Dr. Jnana Ranjna Khuntia, Dr. Kamalini Devi, Dr. Angshuman Das and Sri Ramanarayan Sankriti

PPT on ground water by Sri Bjiay Ketan Mohanta form CGWB, Govt. of India. He emphasized the various geological formations that enable storage of ground water and also how to get access to data related to ground water depths at various locations at different times of the year.







Fig. 12: Glimpses during Session 9: by Sri Bijay Ketan Mohanta

Date: 12.06.2023 (Day-12)

The students were involved in completion of the internship project. Each internship project was designed with the application of atleast 2-3 different software learnt during the previous days' training sessions.



Fig. 13: Review of work by the Conveners and Coordinators

Date: 13.06.2023 (Day-13)

Project Review-2: All the interns presented their group PPT and submitted their draft report during the evaluation process. The review process completed and assessed by Dr. Kamalini Devi, Dr. Jnana Ranjan Khuntia, Sri Ramanarayan Samkriti. Dr. K. Jagannadha Rao, Chairman SASWRM 2023 and Head of the department was the observer of the review process.

Date: 14.06.2023 (Day-14)

Industrial Visit: An Industrial visit to 23MLD and 51MLD Capacity Sewage Treatment Plants, Attapur of Hyderabad Metropolitan Water Supply and Sewerage Board (HMWSSB) also completed on 14th June 2023. Both 23MLD and 51MLD Capacity Sewage Treatment Plants were well conditioned and working very efficiently. Visit to water treatment plant was made possible for the interns to get an idea of water treatment process in Hyderabad city and further safe release of effluent into the River Musi. Both 23MLD and 51MLD Capacity Sewage Treatment Plants were well conditioned and working very efficiently. The latest 51 MLD STP uses the most advanced waste water treatment technology, C-Tech (cyclic-activated sludge Technology), provided by an Austria-based company, SFC Environmental Technologies Ltd. This technology is extensively used for treating domestic sewage and industrial effluents to the highest possible quality, at a low cost and by using minimum space. Though C-Tech is being used in over 30 plants countrywide, it is for the first time it is being used in the Telangana state by the Water Board. The technology used here with low investment and used 50% less power to get six times better 'outlet' characteristics. The HMWS&SB is using the STP to alleviate pollution in the Musi under the (NRCD) phase-I. People living in Rajendranagar, Attapur, Puranapul, Nayapul, Bahadarpua and nearby localities can breathe fresh air as the stench would

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vanish after treatment at the Attapur STP. The treated water could be used for agriculture and recycle applications like gardening. HMWS&SB is working hard to give the society a green and clear environment. Manger Ms. Ranjitha and her total team were very cooperative and explained each and every facilities clearly to our students/ Interns. Total 120 students and Interns have participated in this visit. The faculty coordinators were Dr, Jnana Ranjan Khuntia, Dr. Kamalini Devi, Sri E. Maheshwar Reddy and Sri G. Vishwanath, Assistant Professors, Department of Civil Engineering, CBIT (A).



Fig. 14: Glimpses of Industrial Visit at STP Attapur

Date: 15.06.2023 (Day-15)

# Valedictory Session

A Valedictory ceremony for the internship program was conducted in N-Block Seminar hall at CBIT, Hyderabad on 15th June 2023. The program was started by welcoming the Principal and Patron Prof. P. Ravinder Reddy, IQAC Director, Prof. N V Koteswara Rao, Dr. K. Jagannadha Rao, Head-CED and Chiarman SASWRM-2023, Prof. U. K. Chaudhury, Advisor I&I, Dr. Jnana Ranjan Khuntia, Dr. Kamalini Devi, Assistant Professors, Convenors SASWRM 2023 at the stage. At First Director IQAC has addressed the gathering and motivated students for the internship and appreciated the initiation on good topic of internship. Head, CED has addressed the interns and congratulated all interns and appreciated the conveners & coordinators for successful completion of internship. Director I&I focused on the AICTE Idea lab aim and objectives in helping to give the scope for different events and appreciated the effort of civil

engineering department, Conveners and coordinators. Convener Dr. Kamalini has announced the winners of best Projects, best performers of the internship program and delivered vote of thanks at the end. Three groups were awarded with best project with first/second/ third prize and 15 participants were awarded with best performer award. Cash prizes and merit certificates were given to all awardees. 22 nos. of teaching and non-teaching staffs and 75 nos. of interns from CBIT and other institutions attended this valedictory program. During the valedictory session, Certificates were distributed to the interns upon the successful completion of the internship -programme. Certificate of Achievement, Certificate of Appreciation and certificate of internship were distributed to the interns in the order of merit. Seven students did not meet the eligibility criteria of getting the certificate. Dr. N. V. Koteswara Rao, Director IQAC distributed the best project certificates to the winner groups. Total 67 interns have received their internship certificates and 8 interns have not met the minimum requirements to get the same. Feedback was taken from the interns on their recommendations for similar programs in future. The interns were very happy from the outcome of the internship.





Fig. 15: Photo of valedictory Session and certificate/ Prize Distribution



Fig. 16: Group photo after successful completion of valedictory ceremony-SASWRM 2023

# Annexure

# Registration Details:

Total Number of Registration: 75 and online registration amount received at STUDENTACTIVITIES Account: Rs. 90,000/- (= 75 nos.\*Rs. 1200/-)

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74.	Teegalapally Chendana	CBIT (A), Hyderabad; CHEM	chendanatee galapally@g mail.com	8500462539	314815
75.	Kammari Shivani	CBIT (A), Hyderabad: CHEM	shivanikam mari0@gma il.com	9346797982	T23052 435758

https://forms.gle/CwzWHoZ36wg3vWUHA



## REGISTRATION FEE

Rs. 1200/- per participant (includes Kit, hands-on, and Certificate)

For more Information, visit https://sites.google.com/cbit.ac.in/saswrm-2023/home Brochure

### ABOUT THE RISTILLED

Challenga Sharets institute ostablished in the Year 1979, esteemed as the premier engineering institute in the states of Telegata and Andhra Pradesh. It is incated in idelic surroundings of Gandipot Laine, Hideratiest The Institute, committed to education knowstion and over the 43 years, has emerged as a dream destination for students with a sewarding career and corporates to source well-rounded engineers. Best academic practices with quality aducation enabled the brettune to establish its Identity in the Technical Education in both the Tokigo Speaking States. The great learning esperiences in the matrix have enriched the lives of students and helped them to develop into a multiskilled and multi-tasking personalities that ensured success in their careers and occupations. With the students being the singular objective, the institute has established excellent intrastructure ruch as state-of - the art laboratories, specious library with printed and digital collection of books and journ sports hostel, and other infrastruors on for early and co-curricular engagements with a total built-up area of about 57,714 m² in the serane ambience of 50 acres to inspire, encourage and pursue academics. In its rejentless strive for Academic excellence, CBIT has scaled great heights both nationally and interrutionally in industry and global universities.

### ABOUT THE DEPARTMENT

Civil Engineering Department of the institute started functioning right from the inception of the inetitute, in the year 1979. It has well qualified, experienced and dedicated faculty and committed supporting staff. Apart from giving their best in academics, the students of the department are highly enthusiastic & actively participate in various co-curricular & extra-curricular activities. The laboratories of the department are well equipped with advanced and tophiclicated instruments, to fully safety training needs of the students and research and consultancy needs of the department as well. The department offers one UG programme (Two Sections) and one PG Programme (Structural Engineering). Conducting seminars, workshops and conferences on the latest developments in civil engineering, arranging expert fectures and industrial

visits for the benefit of staff & students, is a regular feature in the department. The department was offers Consultancy Services for various Government and Private Agencies and has completed a good number of prefigious projects. If it is matter of great price that this Department has submitted the draft for "Notice Policy" for the newty formed Tela

This scadernic year, CED has organised one 6-Day ALCTE sponsored training program on "Crying revol of Bridger and an international Conference "CACID702" in collapsisce with Universities strond and India. An interdecipinary (with Mechanical Engl Dept.) project worth Rs. 9.89 lakha sarctioned by DROC is under progress in current academic year CEO has published 21 research papers in reputed peer reviewed Journals/ conferences. Also, one palant has been granted and one is published. Students of the department are equally good in extraouricular & Colouricular activities and received some awards as well

### ABOUT THE AICTE IDEA LAB OF OBIT

The arm of ARCTE IDEA Lies in CBIT is to provide all facilities for conversion of an idea into a prototype. With those facilities in the comput. more paydents and faculty are being encouraged to take up creative work in this process, students and locally are getting trained on creative finking problem solving collections on The OEA Lab of CBT in headed by Principal & Frohesor Dr. P. Rovincer Racing, who is the crief meetor. The program is being actively guided by Dr. UK Choudhary, Director I & I. Dr. BVS Rao and Dr. P. Sathish are coordinators. We also have strong team of four Technical Guru's. The IDEA lab at CBIT is equipped with 16 3-D Printers, 50 Robotic Kits, About 600 Students have already undergone training for Digital Fabrication using 3-0 Printers and iof prototype elopment. So that they become technically capable and confident to convert idea into prototype. Presently the IDBA Lab at CBIT is also trying to reach school and industries in and around Hyderatad, to train and tivate the students to use IDEA Lab in CEST.

### IMPORTANT DATES

Registration Deadline - 28 May 2020 Confrontkin mail historia

28 May 2003 28 May to 15 June 2025



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## ABOUT THE INTERNSHIP

ABOUT THE INTERNISEP
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### WHO CAN ATTEMD

Studen (UG & PG) Hesearch Scholars VENUE

Department of Guit Engineering, GDIT (AL, Gondoor). Hyderated, 500075

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# ORGANISMS COMMITTEE

Patron

Prot. P. Revinder Radicy Principal, CRIT (A)

Chairman

Dr. K. Jagawadin Rao

Department of Chill Engineering, CBIT (A) Conveners

Dr. Jama Ranjan Khomba Assistant Professor

Department of Child Engineering, CBIT (N)

Dr. Kornalini Devi Assistant Professor

Department of Chill Engineering, CBIT (A)

Coordinators

Sri E. Maheshwar Reddy, Assistant Professo Sri Ramenerayan Benkrik, Assessor Protessor Dr. R. V. S. Roo, Goodmann, ACCTE (CEA Let) CBT

# RESOURCE PERSONS

- 1. Prof. Kishanjil Kumur Khatus Professor and Dean OUR, NIT Rountels
- 2. Dr. Bheberi Sherkar Dea
- Assistant Professor, NT Falso 3. Mr. Mane S.R. Rorett
- Manager (angg), Shivani section Sun disease -3, CSM Division -3, HRWS&SB 4. Dr. Kavsitini Devi
- Assistant Professor, CEIT (A), Hyd 5. Se Remanarayan Sankriti
- Assistant Professor, CBIT (A), Hyd. 6. Mr. Keton Kumer Nand
- Ph.D. Scholar, IT Guestion 7. Mr. Sorjeti Sehoo
- Ph.D. Scholer, N.E. Rosekela
- 8. Srl Dijoy Kelan Motanto Science C. Central Ground Water Board. Southern Region, Hydrolabed

### REGISTRATION FORM

For

Two-week Practice oriented Internable On

Software Applications for Sustainable Water Resources Management

00° May-15" June, 2023

Designation:

Semester and Year: Institute: \_\_\_\_

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Contact Number with STD Code

Mobilel:

Email (Dr.

Transaction ld.: \_\_ Bank \_, Date: \_

Signature: QR code for registration lies



- See Self Color

# Poster



# Any other relevant information/document

Chaitanya Bharathi Institute of Technology (A), Hyderabad-75 Department of Civil Engineering

Two-Week Practice Oriented Internship

Software Applications for Sustainable Water Resources Management
(SASWRM-2023)

Internship Timings: 9 am to 12 noon (FN) and 1pm to 4pm (AN): Total 6 hours per day

Program Schedule: 18 Hours of Live Sessions

5. 3	Resource Person	Topic name	Date	Daniel
ı.	Er. Mane S R Robith Manager (Engg), Shivam section Sub division -3, O&M Division -5, HMWS&SB	Water Distribution: Issues and Solutions	29-05-2023	2 hours (FN)
2.	Dr. Bhabani Shankar Das Assistant Professor, NIT Patna	Application of Artificial Intelligence in Flow Assessment	29-05-2023	2 hours (AN)
3.	Dr. Bhabani Shanker Des Assistant Professor, NIT Patne	Flood Routing by using HEC-RAS	30-05-2023	2 hours
4.	Mr. Sarjati Sahoo Ph.D. Scholar, NIT Rourkela	Application of ANSYS Fluent for Turbulent Flow Modelling	31-05-2023	2 hours (FN)
5.	Sri Ramanarayan Sankriti Assistant Professor, CBIT (A). Hyderabad	Delineation of Catchment Boundary using Remote Sensing and GIS	01-06-2023	2 hours (FN)
6.	Prof. Kishanjit Kumar Khatua Professor and Dean (AR). NIT Rourkela	Methods of Computational Fluid Dynamics in Flow Modeling	02-06-2023	2 hours (FN)
7	Mr. Ketan Kumar Nandi Ph.D. Scholar, IIT Guwahati	Application of Google Earth Engine in River Health Management	05-06-2023	2 hours (FN)
8,	Dr. Kamalini Devi Assistant Professor, CBIT (A), Hyderabad	Flow Modelling in Natural River System using Conveyance Estimation System	06-06-2023	2 hours (FN)
. 8	Sri Bijay Ketan Mohanta Scientist C (Hydrogeology), Central Ground Water Board, Southern Region, Hyderabad	Ground Water Assessment	10-06-2023	2 hours (FN)

# Certificate Sample Copy:









# CERTIFICATE OF INTERNSHIP

This is to certify that Mr. Ms. Tessalapally Chandana, Roll no 160(3)802015

student of CRIT(A), Hyderabad, 100015, has successfully completed with A+ / A / B+ / B grade in the two-week practice oriented internship programme on "Software Applications for Sustainable Water Resources Management (SASWRM-2023)" from 29th May 2023 to 15th June 2023 (90 contact hours) at Chaitanya Sustainable Institute of Technology (Autonomous), Hyderabad organised by Department of Civil Engineering with the association of AICTE Idea Lab.

Dr. Joans Ranjan Khunila

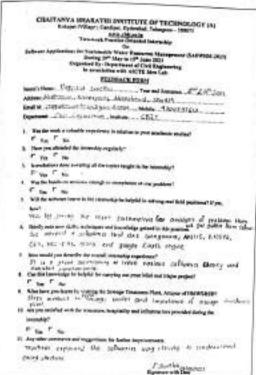
Dr. Umakanta Choudhury

Dr. K. Jagannadha Rao

Prof. P. Ravinder Raddy Principal, CBIT (A)

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# Feedback Form Sample Copy:



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# Prepared by:

Convener: Dr. Jnana Ranjan Khuntia

Coordinator: Sri Ramanarayan Sankriti

Dr. Kamalini Devi Assistant Professor Convenor SASWRM-2023 Dr. Jnana Ranjan Khuntia Assistant Professor Convenor SASWRM-2023 Dr. K. Jagannadha Rao Professor and Head Chairman SASWRM-2023

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# WHO CAN ATTEND

Students (UG & PG) Faculty Members

Research Scholars

Consultants and Industry Professionals

# VENUE

DURATION Seminar Hall ,CBIT ,Gandipet, Hyderabad, 500075

18 Hours (Each day 3hours in the FN session for 6 days)

# CHAIRMAN

ORGANISING COMMITTEE

Principal - CBIT Dr. P. Ravinder Reddy

# CONVENER

Dr.K.JagannadhaRao

Department of Civil Engineering, CBIT

# CO-ORDINATOR

Assistant Professor, Sri. P. Srinivas Reddy

Department of Civil Engineering, CBIT

Sri. M. Kalyan

Assistant Professor

Department of Civil Engineering, CBIT

Dr. T. Chaitanya Srikrishna

Assistant Professor

Department of Civil Engineering, CBIT

# REGESTRATION LINK

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# REGISTRATION

No registration fee, Registration is mandatory

# CONTACT

Sri. M. Kalyan

Email:Kalyan\_civil@cbit.ac.in, Phone: 9030144407

chaitanya\_civil@cbit.ac.in , Phone: 8019206828 Dr. T. Chaltanya Srikrishna



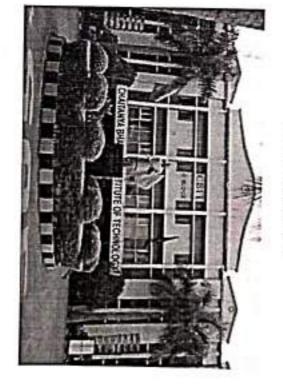


AICTE approved

One Week Practice -Oriented Intensive Training Program

Crying Need in BRIDGE Engineering for CAPACITY-BUILDING

22-27, August 2022



# Organized by

DEPARTMENT OF CIVIL ENGINEERING ChaitanyaBharathi Institute of Technology

Accredited by NAAC-UGC and NBA-AICTE ISO 9001:2015 Certified Institution Affiliated to Osmania University Gandipet, Hyderabad, 500075 (Autonomous under UGC) Telangana State, INDIA



# ABOUT COLLEGE

CBIT, a pioneer in technical education in the state of Telangana, is one of the premier Engineering Colleges in India. It is located in idyllic surroundings of Gandipetlake, Hyderabad and has been standing as a temple of knowledge for the past 42 years. CBIT is an autonomous institution under UGC from 2013 and accredited by NBA-AICTE and NAAC-UGC. The college offers 9 UG and 11 PG programs over the years, CBIT produced several eminent and skillful engineers, spread all over the globe. The institute has received research grants to the tune of Rs. 2.5 Crores from various funding agencies such as AICTE/UGC/DST. Brilliant and meritorious candidates with good EAMCET ranks seek admissions at CBIT. The students are prepared and perfected to secure placements in MNCs through college Career Development Center.

# ABOUT THE DEPARTMENT

Civil Engineering Department of the institute started functioning right from the inception of the institute, in the year 1979. It has well qualified, experienced and dedicated faculty and committed supporting staff. Apart from giving their best in academics, the students of the department are highly enthusiastic & actively participate in various co-curricular & extra-curricular activities. The laboratories of the department are well equipped with advanced and sophisticated instruments, to fully satisfy the training needs of the students and research and consultancy needs of the department as well. The department offers one UG programme (Two Sections) and one PG Programme (Structural Engineering). Conducting seminars, workshops and conferences on the latest developments in civil engineering, arranging expert lectures and industrial visits for the benefit of staff & students, is a granging expert lectures and Private Agencies and has completed a good number of for various Government and Private Agencies and has completed a good number of prestigious projects. It is a matter of great pride that this Department has submitted the draft for 'Water Policy' for the newly formed Telangana State.

# ABOUT THE TRAINING PROGRAMME:

Bridges have been the symbols of Civilization and the standing examples of human Bridges have been the years. Bridge construction dates back to as old as the age of ingenuity over the years. Bridge construction dates back to as old as the age of primitive man and the bridge forms have evolved over centuries posing challenge to principle of this field reveals that although there is not much of change in the basic insight into this field reveals that although there is not much of change in the basic insight into this field reveals that although there is not much of change in the basic principles of analysis and design of bridges, it is the new materials and the principles of analysis and for the budding engineers to keep themselves abreast of the developments in bridge construction while comprehending the basics of bridge developments in bridge construction while comprehending the basics of bridge analysis and design. Realising this need, the Civil Engineering Department of CBIT analysis and design. Realising this training programme by utilizing the services has taken initiation in organising this training programme by utilizing the services of a renowned professional in the field as facilitated by AIC

# TOPICS TO BE COVERED IN THE TRAINING PROGRAM

- Development of the bridge-form globally during the past 3500 years 1 day
- Why do bridges in our part of the world crack and demise much earlier than in many of the first world countries ?? – 2 days
- Economics and quantity-trends in alternative bridge-structure schemes –
   days
- Economics and quantity-trends in alternative flyover-structure schemes 1 day

# OBJECTIVES OF THE TRAINING PROGRAM

This training programme is intended to enable the participants

- Understand and appreciate the evolution of bridge form over the years
- Know the specific reasons for why the bridges in this part of the world are more vulnerable to damages and decay
- Understand the economics of various types of bridge structures and the adaptability of various alternative forms
- . To gain exposure to various alternative form of flyover structures

# ABOUT THE SPEAKER

Dr.Virindra K. Raina

Ph.D.(London), DIC (London), MICE (London), C.Eng.(London), P.Eng. (Ontario, Canada)

- Registered CHARTERED Engineer: UK and Europe
- Registered PROFESSIONAL Engineer: Ontario, CANADA
- Distinguished Chair Professor BRIDGES : AICTE

Dr. Virindra Kumar Raina is a towering personality in the field of bridge engineering. He is a highly qualified and experienced practicing professional civil engineer with sustained private sector experience.

Dr. Raina has completed many challenging consultancy assignments in over 20 countries in the world, like Qatar Sea link (40km long Causeway through the Arabian Gulf). He has designed and supervised construction of over 100,000 lanemeters of concrete bridges in different countries on various types of lanemeters in different substrata conditions. He has impurted training to many senior engineers, all over the world. Dr. Raina is a recipient of various

prestigious awards

# CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (AUTONOMOUS), HYD-75 DEPARTMENT OF CIVIL ENGINEERING

Date: 29-06-2022

No: CBIT/CED/038/25-6-2022.

Note submitted to the Principal:

Sub.: Request for Budget approval for conducting workshop -Reg.

Ref.1. Letter of AICTE, SCRO; from Principal, Email Dated: 13-5-2022.

2: Department letter email to AICTE, SCRO, dated: 19-5-2022.

3: Email from AICTE, SCRO dated: 23-06-2022.

In Ref.1 cited above, AICTE has approved five training programs of 6 days each (every day two sessions of 3 hours each) on "Crying Needs in Bridge Engineering" to be delivered by Prof Dr. Virindra K. Raina, Distinguished Chair Professor - BRIDGES: AICTE to the Faculty and Students (UG & PG) from Civil Engineering and allied disciplines. AICTE, SCRO asked for the consent of CBIT to organise one such programme as a nodal centre. In the Ref2, Cited above, the department of Civil Engineering has prepared the budget estimate (Rs.1,80,000/-) and drafted a letter to the AICTE. AICTE has approved CBIT as a nodal center to conduct the above workshop from 22nd to 27th August, 2022 (Ref 3). The honorarium for the resource person will be borne by the AICTE. The expenses for lunch and snacks are proposed to be met from the registration fees. Hence an amount of Rs 65,000/- is the budget to be sanctioned by the Institute. The proposal and the budget for the workshop may be approved.

Head CED.

Enclosures:

Ref.2 & 3 above

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# CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (A), Hyderabad Department of Civil Engineering

Date: 05-09-2022

# Note Submitted to the Principal:

Sub: CBIT – CED -AICTE Approved One week Training program on Crying Need in Bridge Engineering for Capacity – Building – Adjustment of accounts - Reg.

Ref: 1. Email from Director FDC AICTE dated July 25, 2022.

Ref: 2.Letter for Budget Approval No- CBIT/CED/038/25-06-2022 dated - 29-06-2022.

The following is the expenditure incurred for the training programme mentioned in the subject:

# **EXPENDITURE DETAILS**

	Posterdana		Amount					
s. No	Particulars							
1.	Conveyance charges (To Airport & return) on 21/08/2022							
2.	Conveyance charges (Hotel to CBIT and return)							
	22 nd to 27th August 2022(2000+2000+500)							
3.	Conveying charges (To Airport & return ) 28/08/2022 + 2400 (1)							
4.	Parking charges at Airport on 21/08/2022							
5.	Parking charges at Airport on 28/08/2022		100.00					
6.	Food Fungasor from 23/08/2022 to 28/08/2022	465.41						
0.	a). 23.06.2022							
	b). 24.08.2022	450.40						
_	c). 25.08.2022	326.46						
_	d). 25.08.2022	644.70	3,526.86 400.00					
	c). 27.08.2022	784.95						
	d). 28.08.2022	854.94						
7.	Flower Bouquets for guests							
8,	Flight Tickets	7,871.00						
	a). Delhi to Hyderabad -21/08/2022	8,184.00						
	b). Hyderabad to Delhi – 28/08/2022	250.00						
	c). Aisle seat charges Delhi to Hyderabad	250.00	16,555.00					
	d). Aisle seat charges Hyderabad to Delhi		27,115.0					
9.,	Hospitality and Accommodation at the hotel							
-	Total Expenditure							

Total Expenditure excluding Hospitality and Accommodation at the hotel = 27.782

Advanced Drawn (15,000+12,000) = 27,000

Balanced to be reimbursed

782

An amount of Rs. 782/- is to be reimbursed to HoD (Civil), and the bill for Hospitality and Accommodation at the hotel Rs. 27,115/- to be paid to the account details given in the cancelled cheque attached.

Head, CED

Files

	Chaitanya Bharathi Institut	The state of the s						
	Crying Need in Bridge Engineeric							
5.No Name Participants List Designation								
	Dr.K.Jagannadha Rao	Faculty						
	Dr.M.V.Krishna Rao	Faculty						
	Sri A. Balaji Rao	Faculty						
	Dr. N. R. Dakshina Murthy	Faculty						
	Smt K. Manasa	Faculty						
	Sri. P. Srinivasa Reddy	Eaculty						
	Sri.E Maheshwar Reddy	Faculty						
7 140	Sri. M. Kalyan	Faculty						
	Dr. T. Chaitanya Srikrishna	Faculty						
	Sri. Vishwanath Gopisetty	Faculty						
		Research Scholar, NIT						
11	B.S.Chaitanya	Warangal						
	S.Vinod Kumar	Engineer						
10000	G.Karunakar	ME						
	A.Sai Krishna	ME						
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_	S.Anil	ME						
17	M.Sai Maheshwar Reddy	ME						
-	SK.Humer	ME						
19	P.Rithvik Sai Kumar	ME						
	S.Kavya Sri	ME						
	D.Ashok Kumar	ME						
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	Aoosa Mohammed	BE						
	aivanth Kumar	BE ·						

# CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY Gandipet, Hyderabad – 500075

Report

on

# AICTE Approved

One Week Practice - Oriented Intensive Training Program

or

# Crying Needs in BRIDGE Engineering for CAPACITY-BUILDING 22-27, August 2022

Resource Person – Dr. Virindra K. Raina

Convener - Dr.K.Jagannadha Rao

The Following Topics were discussed in the Training Program by the speaker

DAY - 1

## Development of the bridge-form globally during the past 3500 years

Dr.Virindra K.Raina has briefed about the historical development of bridges

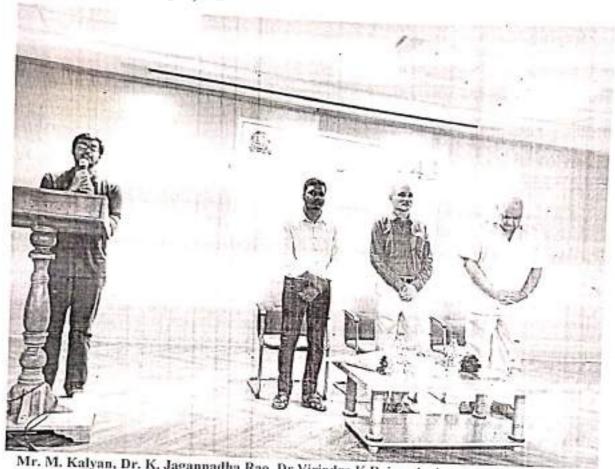
Back in 1502, the great master Leonardo da Vinci produced master sketch for a 240 M stone Structure intended to span the Golden horn inlet in Istanbul but then nearly 500 years ago, when the sketch was made, the available technology was incapable of realising such an ambitious structure. Later in 1840's the transition from timber to steel began. In this period cast iron was tried out by bridge builders in 1856.

Bessemer patented a process for making large quantities of steel economically by the turn of 19th century, the growing use and availability of structural steel and greater skills in analysis, design and construction-methods paved the way for longer span bridges. Many elegant bridges were built, like Lin-dern-thal's manhattan bridge (1909) with 450m span. Amman, a Swiss engineer, Amman's Verrazano narrow bridge in New York was opened in 1964 with a span of 1300m which was a landmark in history of long span suspension bridges.

Dr. Raina also explained the lessons in ensuring aerodynamic stability were learnt in a hard way by the tragedy of the 855 Tacoma Narrows Bridges which fluttered and perished in 1940 at a 64 km/hr wind. Later in 1960's a new type bridge of suspension bridge deck was made for the Tagus Bridge in Libson. Severn Bridge, Wales, and it was the first suspension bridge of the modern type (Aerofoil deck-section), 1962-1966. Dr. Raina also explained The Hyatt Regency hotel walkway collapse as a major introspection based on many a Bridge Disaster. Later he added that the Kings Bridge failure due to brittle fracture did not mean that welding of steel box girders was banned. It only underlined the need for the right welding technique to be made available for the bridges. He then discussed the series of box girder failures of the 1970's could not lead to the conclusion that there was anything fundamentally wrong with the thin plated structures.

Sound design is achieved above all by wisdom and judgment with which the designer applies his results with great courage and judgment are demanded of the Enquirer, as he has a task which requires freedom from bias while at the same time demanding a definite option "good judgment comes out of experience and good experience often comes out of bad judgement".

Dr. Raina concluded the session on Day 1 with a gratitude to a great prof. Fritz Leonhard. who hypothecated the use of A-form pylons with corresponding inclination of planes of cables, fan shaped smaller diameter cables at closer spacing etc., are the new trends in the design to realise the large spans.



Mr. M. Kalyan, Dr. K. Jagannadha Rao, Dr. Virindra K.Raina, during the inaugural session.

# DAY - 2

Why do Bridges in our part of the world crack and Demise much earlier than in many of the first world countries??

Dr. Virindra K. Raina clarified the error we make when determining compressive strength by testing three cubes, which has an accuracy of 3/20. Later, he described the acceptable cube strength criterion, the appropriate time to start concrete curing, concrete mixing drum agitating rpm, effect of wind, relative humidity and ambient temperature for concreting. He then explained why Plastic concrete can develop cracks when the surface evaporation is much more than the rate of bleeding of the concrete. This majorly occurs in slabs and quite less in beams because beams have less surface area exposed to the atmosphere. But the lack of knowledge about this in the filed costed a contractor around \$64M USD.

The solutions to the above mentioned aspects were very clearly explained by Dr. Raina stating that the the cube should be tested when it is wet inside and dry outside, curing is done

right after its initial setting time and the concrete's initial setting time should be 45-60 min without additives and 120-180 min with additives like plasticisers and retarders. While mixing concrete, the speed should be 25rpm and it should be mixed well for 90-120 sec and while transporting the concrete the agitating speed should not be more than 2-5 rpm.

Dr. Raina explained the importance and effect of optimum temperature for concrete work and stated that it should be around 32°C, and variation in temperature will have adverse effects and results in poor durable concrete. The surface evaporation of concrete should be I lit/sqm/hr. This can also be calculated from the Neville's graph. He further suggested that, in order to tackle this issue when the temperatures are high in summers the concreting work should start from 5pm and continue all through night until morning 11am or accordingly where the temperature is below 32°C.

Dr. Raina went on to provide more comprehensive explanations of the various plastic shrinkage, plastic settlement, and contraction cracks, as well as the typical failure modes in concrete structures, such as flexural cracks, shear cracks, flexure-shear cracks, web shear cracks, failure in deep beams, shear-compression failure, cantilever failure, and torsional failure.

### DAY - 3

Dr. Raina continued his talk on "Why do Bridges in our part of the world crack and Demise much earlier than in many of the first world countries??" on Day 3. He explained the various failures in bridge bearings, expansion joints, shrinkage cracks in abutment footings and also suggested measure to rectify such problems. He further continued to explain the pier-column subjected to sea water, delamination of concrete, plastic shrinkage cracks in r.c.wearing course, etc. The cause for shear, flexure and abutment crushing failure in bridges were clearly explained by Dr. Raina and further he suggested the measures to strengthen them.

Dr. Raina classified the Cracks mainly of 2 types, one is dead cracks – which never open, and the second is live cracks -which open and close. The 28days time is a green phase where the concrete is young and gains strength very fast during this phase the top surface shrinks faster than the bottom surface results in the example given 64 million USD loss. After 28 days the phase of the concrete is known as the service phase.

He further discussed the chemical cracks occur after 4 years that mostly occur in the areas of high moisture like Vizag and Bombay. The chemical cracks are due to Sulphate attack and Chloride attack. To avoid this Dr. Raina suggested to use Colloidal concrete (blast furnace slag cement) or use sulphate resisting cement when the temperatures of that area is below 25 degrees and should be strictly avoided in tropical regions

Dr. Raina explained the common repair technique in treating cracks, i.e. epoxy injection. He further added that it is advisable to use a 2-component epoxy (resin + hardener) for effectiveness. He further explained the crack healing by epoxy use various real life examples. He further explained the significance of stapling / stitching in arresting cracks.

# DAY-4

# Economics and quality-trends in alternative bridge-structure schemes

The training course's fourth day is titled "Quantity trends in certain alternative Flyover structure schemes." The program started with the Pearl of Perfection by the great master Leonardo Da Vinci, but the inspiration for it extends back many years to earlier from a log across a stream, successive logs jetting out, a cantilever, etc. The development of bridge forms, grade separators, viaducts, flyovers, etc. were also covered by Dr. Raina. He then went on to describe the requirement and significance of design, drawings, and bill of quantities that the customer is expected to provide.

Dr. Raina explained how to decide the trial dimensions, analysing a structure, designing based on iterations, detailing, drawings, bill of quantities and finally the cost. He then discussed the choice of construction materials, type of bridges to be considered for design based on the field conditions and extended to the efficiency of flanged I & T sections, voided slab deck.

As the discussion went from short span bridges to heavier and longer spans, Dr. Raina explained how circular void cells evolved into rectangular void cells, leading to the creation of the Box section. He continued shortly after by saying that a single cell box was transformed into a multiple cell box whose section depth was limited and offered greater torsional strength.

"FLY-the-traffic-OVER-and-across-an-obstruction" is how Dr. Raina defined the term "FLYOVERS." The significance of the flexibility and stiffness matrix approach of structural analysis was then discussed. Dr. Raina discussed the various types of sectional elements in a flyover girder, stability tower, precast abutments and wingwalls.

# DAY-5

The training program's fifth day is titled "Economics and Quantity - Trends in alternative bridge structural plans." The resource person has described how bridges will be analyzed and developed in accordance with the client's requirements while taking into account a variety of alternative choices, such as the types of bridge, span, deck type, type of concrete, etc. Dr. V.K. Raina also went over the development of the drawings, detailing, and bill of quantities.

The development of building materials and construction techniques, including the voided deck slab, single cell box section, and multiple cell box section, was then covered by Dr. Raina. The resource person has described the relationship between span length and cost per unit of deck plain area as well as the estimated amounts of concrete and steel used in different types of bridge decks.

Dr. Raina also discussed the optimal span lengths for various bridge designs. Dr. Raina went into great depth on the various types of bridge structure, construction, traffic details, construction time, and maintenance for various types of bridges i.e., continuous beam and slab R.C.deck bridge(cast-in-situ), continuous box girder R.C. decks(cast-in-situ), simply supported precast prestressed girders with cast-in-situ R.C. diaphragms, simply supported

P.S.C. box girder. He then went on to discuss how different criteria, such as deck depth, span, cost per unit area, reinforcement, concrete content, prestressing force, etc., affect different bridge types.

### DAY-6

# Economics and quality-trends in alternative Flyover-structure schemes

Dr. Raina has continued his lecture from Day 5 by addressing the significance of span lengths (two, three, and four spans), the span-to-depth ratio, and concrete deck thickness for the safety and efficiency of the bridge structure. Different types of bridges, including continuous beam and slab R.C. deck bridges (cast in situ), continuous box girder R.C. decks (cast in situ), simply supported precast prestressed girders with cast-in-situ R.C. diaphragms, and simply supported P.S.C. box girder, were the subject of the design investigation.

These studies gave us some really useful information for developing a concrete bridge part. The design output was then described by Dr. Raina in terms of the reinforcement requirements based on different span lengths and span-to-depth ratios. Dr. Raina displayed the several forms of bridges, each with a different number of spans, span-to-depth ratios, and the accompanying concrete and reinforcement requirements, showing the most efficient type of bridge based on those specifications. The resource person's extensive material shows how the economics of a bridge is impacted by factors like the number of spans, span lengths, and span-to-depth ratios.

Finally, in addition to the necessary amount of concrete, the reinforcement in terms of kg/cu.m of concrete and kg/unit length was also discussed. Dr. Raina assimilated all of the available data and profoundly recommended the bridge that would be the strongest and most cost-effective.

PROFESSOR & HEAD

Department of Civil Engineering Chaitanya Bharathi Institute of Technology

GANDIPET, HYDERABAD-5000 075





Kokapet ( Village), Gandipet, Hyderatiad, Telangana-500075, www.cbit.ac.in

AICTE Sponsored One week Training Program

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CRYING NEEDS IN BRIDGE ENGINEERING FOR CAPACITY-BUILDING

# CERTIFICATE

This is to certify that Mr. A.Sai Krishna, III Semester M.E., CBIT(A), Hyderabad has participated and successfully completed the AICTE Sponsored One week Training Program on "CRYING NEEDS IN BRIDGE ENGINEERING FOR CAPACITY-BUILDING" organized by the Department of Civil Engineering in association with Prof.V.K.Raina during 22 - 27 August, 2022.

Dr. K. Jagannadha Rao

Dr. P. Ravinder Reddy Principal



# Chaitanya Bharathi Institute of Technology (A) Department of Civil Engineering

## Circular

Date: 23-01-2023

This is to inform you that a value added 3-week course on "Applications of Remote Sensing and GIS" will be conducted out from 3.05-4.05 PM every day far 2<sup>nd</sup> year (3<sup>nd</sup> sensester) anadeurs of A1 and A2 sensions in clausrooms A303/A304 Practical (or Hands-on) sensions are schoduled to be conducted an every Monday (2.05-4.05 PM). Classes will be effective from 25-01-2023 and will continue till 10-02-2023.

Course modules along with content and assessment computents are attached herewith for your reference.

No.	Contest
Module-1	Introduction to remote sensing
Module-2	Satellites and semon
Hands-on	Application of remote sensing in civil engineering disciplines: Environmental engineering applications
Madule-3	Congraphical Information System (GIS):
Module-i	Application of GIS in EIA and WRPM
Hands-on	Application of GIS in civil engineering disciplines: Water resources engineering applications.

Course coordinator

(Dr. D. Bharath Kimur)

HODE

(CED)

# CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY GANDIPET, HYDERABAD – 75

# **LIST OF STUDENTS PARTICIPATED**

15.02.2023

The following students have participated in a 3-week course on "Applications of Remote Sensing and GIS" which was conducted from 25.01.2023 to 10.02.2023 daily from (2:05 pm to 4:05 pm).

Date	Roll Numbers							
17.02.2023	1601-21-732-001-1601-21-732008, 1601-21-732010-1601-21-732-19,							
	1601-21-732-022-1601-21-732-024, 1601-21-732027-1601-21-732032,							
	1601-21-732-034-1601-21-732046, 1601-21-732048-1601-21-732049,							
	1601-21-732-051-1601-21-732-054, 1601-21-732056- 1601-21-732-061,							
	1601-21-732-064-1601-21-732073, 1601-21-732-075 - 1601-21-732093,							
	1601-21-732-095-1601-21-732-131, 1601-21-732-301- 1601-21-732-							
	315.							

The following students had attendance of more than 80% over the entire duration of the course.

PROFESSOR & HEAD

OFFANTMENTO COULT THURSDAY

OMNOMENTO DESCRIBED - 500 STS