

**SKCET**

**Buzz**



25<sup>th</sup> November - 01<sup>st</sup> December 2023



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## SKCET | IIC RANKING

**SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY**  
An Autonomous Institution / Affiliated to Anna University  
Kuniamuthur, Coimbatore - 641 008

**SRI KRISHNA INSTITUTIONS**  
COIMBATORE

**INSTITUTION'S INNOVATION COUNCIL**  
(Ministry of Education Initiative)

**SKCET - INSTITUTION'S INNOVATION COUNCIL (IIC)**

**4 STAR RATING**

We feel immensely happy & proud to announce that SKCET was awarded with a maximum star rating of 4 for the academic year 2022-2023

**Congratulations SKCET!**

**List of the Mentor Institute for Mentor - Mentee Scheme - 2023**

S No	IIC ID	Institute Name	City	State	Zone
60	IC201810392	Paavai Engineering College	NAMAKKAL	Tamil Nadu	Southern/SRO
61	IC201912901	Periyar University	Salem	Tamil Nadu	Southern/SRO
62	IC201810565	Prince Shri Venkateshwara Padmavathy Engineering College	PONMAR	Tamil Nadu	Southern/SRO
63	IC201810252	R.M.K Engineering College	KAVARAPETTAI	Tamil Nadu	Southern/SRO
64	IC201810067	RATHINAM TECHNICAL CAMPUS	COIMBATORE	Tamil Nadu	Southern/SRO
65	IC201810475	S.R.M. Institute of Science & Technology	KATTANKULATHUR	Tamil Nadu	Southern/SRO
66	IC201811324	Sathyabama Institute of Science & Technology	CHENNAI	Tamil Nadu	Southern/SRO
67	IC202014278	Seveetha Institute of Medical and Technical Sciences	Thiruvallur	Tamil Nadu	Southern/SRO
68	IC201810347	Sri Krishna College of Engineering and Technology	COIMBATORE	Tamil Nadu	Southern/SRO
69	IC201811883	SRI RAMAKRISHNA ENGINEERING COLLEGE	COIMBATORE	Tamil Nadu	Southern/SRO
70	IC201811089	Sri Sai Ram Institute of Technology	CHENNAI	Tamil Nadu	Southern/SRO
71	IC201810082	Veer Technological Institute of Science & Technology	AVADI	Tamil Nadu	Southern/SRO
72	IC201810783	VELLORE INSTITUTE OF TECHNOLOGY	VELLORE	Tamil Nadu	Southern/SRO
73	IC201810696	Vinayaka Mission's Kirupananda Variyar Engineering College	SALEM	Tamil Nadu	Southern/SRO
74	IC201810129	Amaliyothi College of Engineering	KOTTAYAM	Kerala	South-West/SWRO
75	IC201811151	B N M Institute of Technology	BANGALORE	Karnataka	South-West/SWRO
76	IC201810661	Basaveshwar Engineering College	BAGALKOT	Karnataka	South-West/SWRO
77	IC201810969	Cambridge Institute of Technology	BANGALORE	Karnataka	South-West/SWRO
78	IC201811190	CMR Institute of Technology	BANGALORE	Karnataka	South-West/SWRO
79	IC201810980	DAYANANDA SAGAR ACADEMY OF TECHNOLOGY AND MANAGEMENT	BANGALORE	Karnataka	South-West/SWRO
80	IC201811841	Dayananda Sagar College of Engineering	BANGALORE	Karnataka	South-West/SWRO

MoE's Institution Innovation Council (IIC) released the Annual Performance report for the academic year 2022 - 23. The event was headed by **Prof.T.G.Sitharam**, Chairman, AICTE and **Dr.Anil Sahasrabudhe**, Chairman, NETF, NBA and NAAC. IIC of SKCET was awarded with maximum of **4 Stars**.The stupendous achievement was attained by organizing various events pertaining to Innovation, Entrepreneurship, Start-up and IPR as prescribed by IIC. SKCET has also been selected as a Mentor Institute to mentor other institutions in organizing IIC activities. We are one among the top 100 Institutions chosen pan India by MoE under this mentor-mentee scheme to train other institutions.

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## CSBS | 19<sup>th</sup> ASIAN ROLLER - SKATING CHAMPIONSHIPS



Poornisha B, student of **Second** year CSBS has secured 4<sup>th</sup> place in the **19<sup>th</sup> Asian Roller Skating Championships**, held at China from 18<sup>th</sup> to 28<sup>th</sup> October 2023. **Principal Madam Dr.J.Janet** appreciated the student on her remarkable success and wished for her future endeavours.

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## CIVIL | STUDENT PARTICIPATION



**Second year students team of Civil Engineering Department** attended the one-day workshop on **"The Importance of Indian standards on construction Management"** conducted by the IGS Trichy chapter at NIT Trichy campus on 29<sup>th</sup> November 2023.

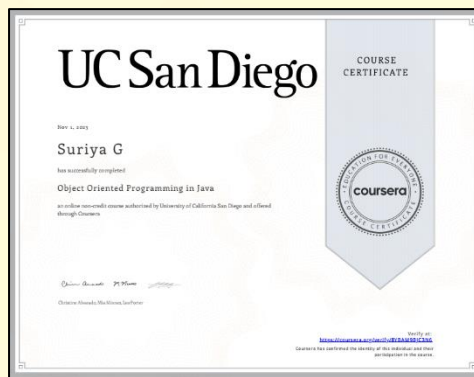
### Session Takeaways:

- National Standards for Sustainable and Resilient Infrastructures
- Consequences of Lack of Standards
- Indispensable IS codes
- Advanced Methods of Deep Foundation Testing Probable updation of IS 2911 code
- BIS Guidelines in Geosynthetic Applications - Sustainable Infrastructure.

S. No	Register Number	Name of the students
1	727722EUCV003	AKASH S
2	727722EUCV004	AKILAN R
3	727722EUCV012	CHANDRA HARI K
4	727722EUCV016	DHARANI PRIYA R V
5	727722EUCV046	SAHIL M
6	727722EUCV056	SREE NARASIMMAN K
7	727722EUCV057	SRIDHANYAA R



## AI&DS | COURSERA CERTIFICATION



**Sanjay M**, student of **First year AI&DS** and **Suriya G**, student of **Second year AI&DS** have successfully completed the course on **Fundamentals of Visualization with Tableau** and **Object-Oriented Programming in Java** respectively. The courses are certified by Coursera.

## CSBS | NPTEL CERTIFICATIONS



**Harshita V**, student of **Second year Computer Science and Business System** has successfully completed 12 weeks NPTEL course on **“Cloud Computing”** - July to October 2023 with **Elite Score**.

# CSY | NPTEL CERTIFICATIONS

<p><b>Elite</b></p> <p><b>NPTEL Online Certification</b> (Funded by the MoE, Govt. of India)</p> <p>This certificate is awarded to <b>SABARI N</b> for successfully completing the course</p> <p><b>Enhancing Soft Skills and Personality</b></p> <p>with a consolidated score of <b>71</b> %</p> <table border="1"> <tr> <td>Online Assignments</td> <td>22.67/25</td> <td>Proctored Exam</td> <td>48.75/75</td> </tr> </table> <p>Total number of candidates certified in this course: 12752</p> <p>Feb-Apr 2023 (8 week course)</p> <p>Indian Institute of Technology Kanpur</p> <p>Roll No: NPTEL23HS30S24571089</p>	Online Assignments	22.67/25	Proctored Exam	48.75/75	<p><b>Elite</b></p> <p><b>NPTEL Online Certification</b> (Funded by the MoE, Govt. of India)</p> <p>This certificate is awarded to <b>KASTHURI KRISHNA L M</b> for successfully completing the course</p> <p><b>Enhancing Soft Skills and Personality</b></p> <p>with a consolidated score of <b>81</b> %</p> <table border="1"> <tr> <td>Online Assignments</td> <td>19.83/25</td> <td>Proctored Exam</td> <td>61.5/75</td> </tr> </table> <p>Total number of candidates certified in this course: 12752</p> <p>Feb-Apr 2023 (8 week course)</p> <p>Indian Institute of Technology Kanpur</p> <p>Roll No: NPTEL23HS30S83391409</p>	Online Assignments	19.83/25	Proctored Exam	61.5/75
Online Assignments	22.67/25	Proctored Exam	48.75/75						
Online Assignments	19.83/25	Proctored Exam	61.5/75						
<p><b>Elite</b></p> <p><b>NPTEL Online Certification</b> (Funded by the MoE, Govt. of India)</p> <p>This certificate is awarded to <b>RANGA RAJA R</b> for successfully completing the course</p> <p><b>Enhancing Soft Skills and Personality</b></p> <p>with a consolidated score of <b>75</b> %</p> <table border="1"> <tr> <td>Online Assignments</td> <td>17.67/25</td> <td>Proctored Exam</td> <td>57/75</td> </tr> </table> <p>Total number of candidates certified in this course: 12752</p> <p>Feb-Apr 2023 (8 week course)</p> <p>Indian Institute of Technology Kanpur</p> <p>Roll No: NPTEL23HS30S73391422</p>	Online Assignments	17.67/25	Proctored Exam	57/75	<p><b>Elite</b></p> <p><b>NPTEL Online Certification</b> (Funded by the MoE, Govt. of India)</p> <p>This certificate is awarded to <b>YAKSHINI VARSHA KS</b> for successfully completing the course</p> <p><b>Ethics in Engineering Practice</b></p> <p>with a consolidated score of <b>80</b> %</p> <table border="1"> <tr> <td>Online Assignments</td> <td>21.63/25</td> <td>Proctored Exam</td> <td>58.5/75</td> </tr> </table> <p>Total number of candidates certified in this course: 3388</p> <p>Feb-Apr 2023 (8 week course)</p> <p>Indian Institute of Technology Kharagpur</p> <p>Roll No: NPTEL23MG41544810034</p>	Online Assignments	21.63/25	Proctored Exam	58.5/75
Online Assignments	17.67/25	Proctored Exam	57/75						
Online Assignments	21.63/25	Proctored Exam	58.5/75						

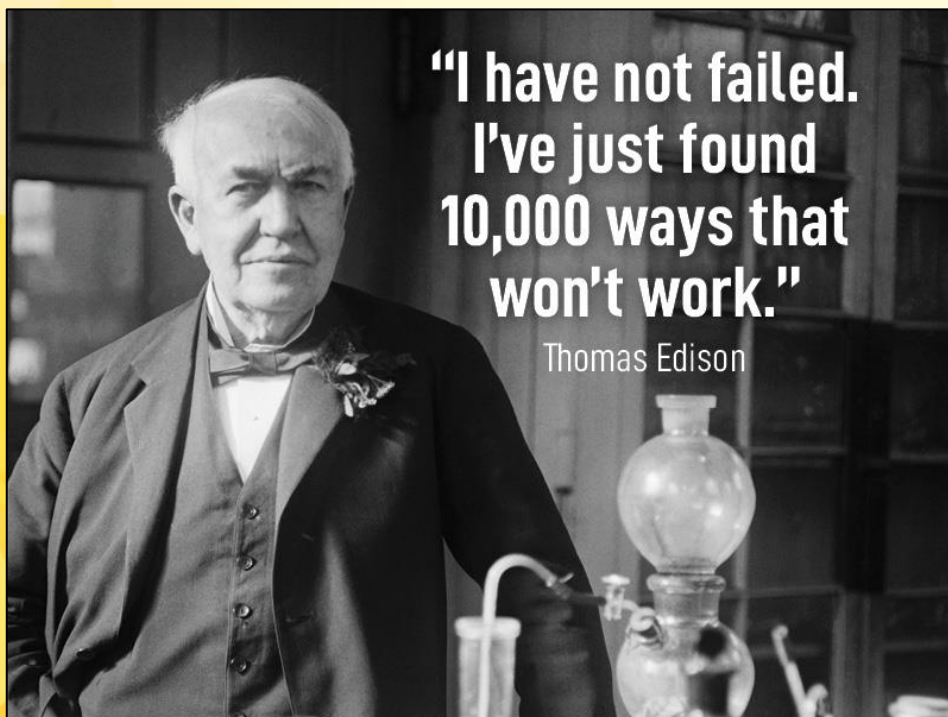
**Yakshini Varsha R, Kasthuri Krishna L M, Renga Raja R, Sabari N** students of Second year **Computer Science and Engineering (Cyber Security)**, have successfully completed a course on “**Enhancing Soft Skills and Personality**” by NPTEL.

## CSY | LINKEDIN CERTIFICATION



Navaneetha Krishnan M, student of First year Computer Science and Engineering (Cyber security), has successfully completed the Course on “Ethical Hacking: Wireless Networking” in 1 hour 45 Minutes organized by LinkedIn Learning on Nov 30, 2023.

## LEGENDARY INSIGHTS



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## EVENTS

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## S&H | EXTENDED HOUR ACTIVITY



**Techie Club** of **SHA** conducted **Sketchy Wonders** for the **First** year students to bring out their artistic skills and creative expressions through sketching. The event helped the students to increase their observational skills, respond to thoughts and concern of the students towards their superheroes.

# S&H | EXTENDED HOUR ACTIVITY



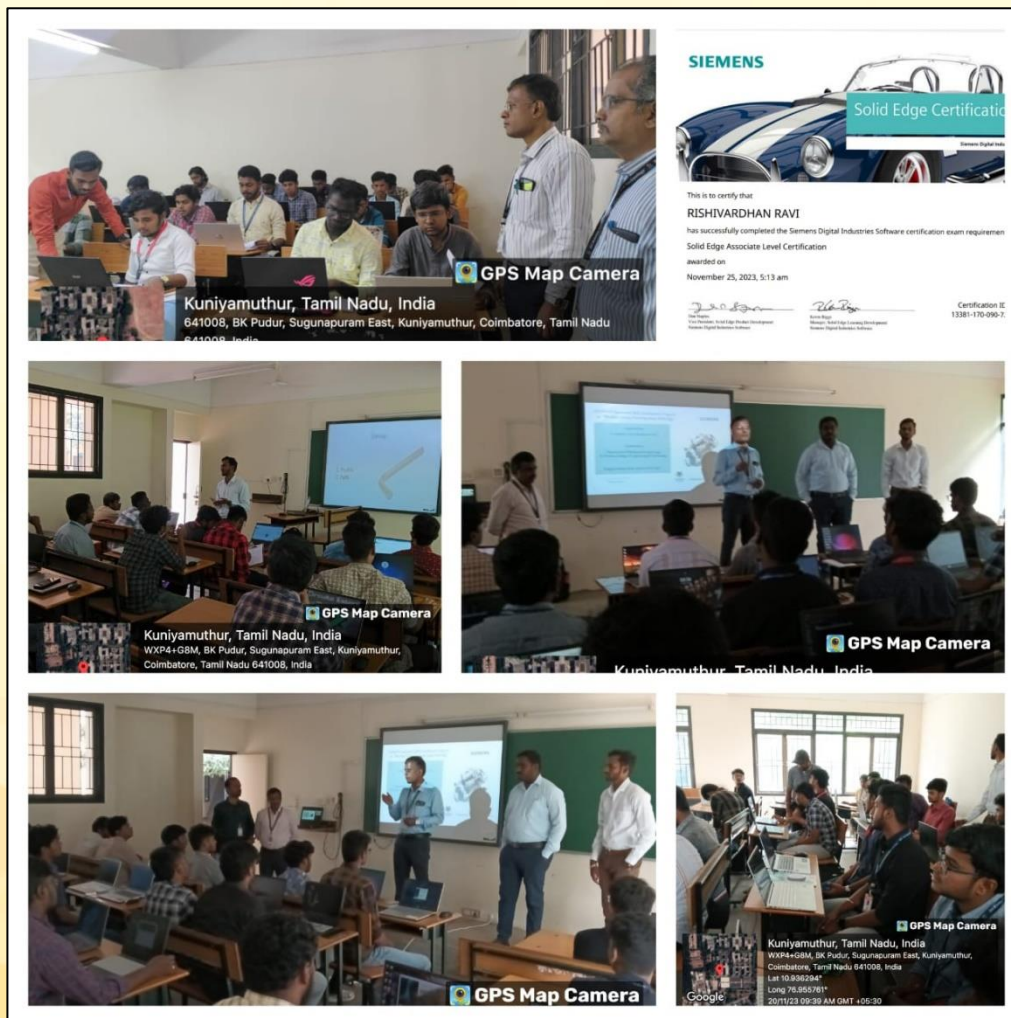
**Extramural Club of SHA** conducted **Music on Mosaic**; a singing competition for the **First** year students to afford them opportunities for cultural and aesthetic experiences through active participation in music and enhance their understanding and appreciation of the arts. These performances pulled the heartstrings of the listeners.

## MECH | SIEMENS SKILL DEVELOPMENT PROGRAMME



Department of **Mechanical Engineering** organized a six Day SIEMENS Sponsored Skill Development Program on “**Machine Design Drawing Using SIEMENS Solid Edge**”. The program was conducted in two batches. The program for batch 1 students was organized from 6.11.23 to 8.11.23 and 15.11.23 to 17.11.23. The program for batch 2 students was conducted on 20.11.23 to 25.11.23. A total of 61 students attended the programme.

# MECH | SIEMENS SKILL DEVELOPMENT PROGRAMME



## Topics Covered:

- Day 1:** Solid Edge Introduction & Parametrically Constrained Sketch
- Day 2:** 3D Model Creation using Extrude, Hole, Draft, Round & Chamfer (Ordered Mode)
- Day 3:** More 3D Modeling with Revolve, Thin Wall, Rib, Pattern (Ordered Mode)
- Day 4:** 3D Model Mastery with Sweep & Loft, Synchronous Driven Features
- Day 5:** Assemblies & 2D Manufacturable Drawing Creation



## MECH | SKILL DEVELOPMENT PROGRAMME ON SMART POLYHOUSE



Department of Mechanical Engineering organized DST SEED sponsored Skill Development Programme on 'Smart Polyhouse' from 22.11.2023 to 24.11.2023 in association with Red Crystal Agro Services. **Mr.Vijayakumar**, Agriculture Engineer and **Mr.Ramalingam**, Director, Red Crystal Agro Services were the resource persons.

### Training takeaways:

- Overview of Agriculture machinery operation and maintenance.
- Agriculture as commercial end to end business process: Pre harvesting and Post harvesting techniques, government policies, financial opportunities and challenges.
- Hands on demonstration of modern irrigation techniques and equipments
- Hands on demonstration of Hexacopter Drones used in agriculture pest control and fertilizer spray applications.
- Organic farming, integrated farming and self sustained farming.

## SOM | ACADEMIC PARTNERSHIP



School of Management initiated a discussion with Bhilai Institute of Technology, Durg for a possible academic partnership for Student Exchange Programs, Collaborative Research and Faculty exchange programs. The discussion included a panel of members - **Dr Arun Arora** – Principal, **Dr. Satya Vardhan Tiwari**- HOD, **Dr Judith Gomes** and **Prof. Abhishek Chakraborty**, Department of Management Studies, Bhilai Institute of Technology, Durg, Chhattisgarh on 28.11.2023.

### Key Discussions:

- Possibilities of Students Exchange Program and Certifications
- Student & Faculty Collaborative Research
- Joint conferences and seminars
- Collaboration with IIM – Raipur
- Projects and Internship in Chhattisgarh industries
- Industrial visits in Bhilai Steel Plant

**Program coordinator: Mr.C.Boopathy**

## M.TECH CSE & CSD | NSS OUT REACH ACTIVITY



Department of **M.Tech CSE** and **CSD** in association with NSS/USVA conducted a School Outreach Activity on the theme "**Bharathiya Bhasha Diwas**". Various competitions like Essay Writing, Poetry Recitation and Speech in Regional Languages on the theme Bharathiya Bhasha Diwas was organized for the school students of **Government High School, Kamaraj Nagar, Sidco** on **24.11.2023**.

Students enthusiastically participated and expressed the significance of our tradition, Dravidian culture and Legacy of Tamil language. The winners were appreciated with prizes and motivated to participate in various competitions in future.

# SOM | GUEST LECTURE ON START - UP ENTREPRENEURSHIP



School of Management organized a Guest Lecture on “Start – Up Entrepreneurship” on 22.11.2023. Mr.R.Vishnuvardhan, Founder & CEO of FarmFam – DreamX Ventures Pvt Ltd was the Resource Person.

## Session Take-aways:

- Skills required to build start-up
- Ways to access market study before starting business
- Ways to overcome initial stage of Business.
- Understanding competitors SWOT
- Ways to build successful start –ups

Program Coordinator: Mr.C.Boopathy

## M.TECH CSE | GUEST LECTURE ON FLUTTER WITH FIREBASE



Department of **M.Tech Computer Science and Engineering** organized a Guest Lecture on "**Flutter with Firebase**" on 28.11.23 for the Second year M.Tech students to make them aware about the latest technologies in Flutter Framework.

**Resource Person:** Mr.Sabarinathan Muthu, Founder & CEO, Gateway Software Solution.

### Session Highlights:

- Firebase Integration
- Crashlytics
- Firebase Cloud Messaging
- Blaze Plan
- Cloud Firestore

# M.TECH CSE | INTERNATIONAL DAY OF VIOLENCE AGAINST WOMEN



Department of **M.Tech Computer Science and Engineering** organized a **Poster making Competition** on account of **International Day of Violence against Women** on 24.11.23 for the First year students.

### Highlights:

- To unite and to prevent Violence against Women & Girls.
- To raise public awareness of the issue.
- To help them understanding the impacts on society

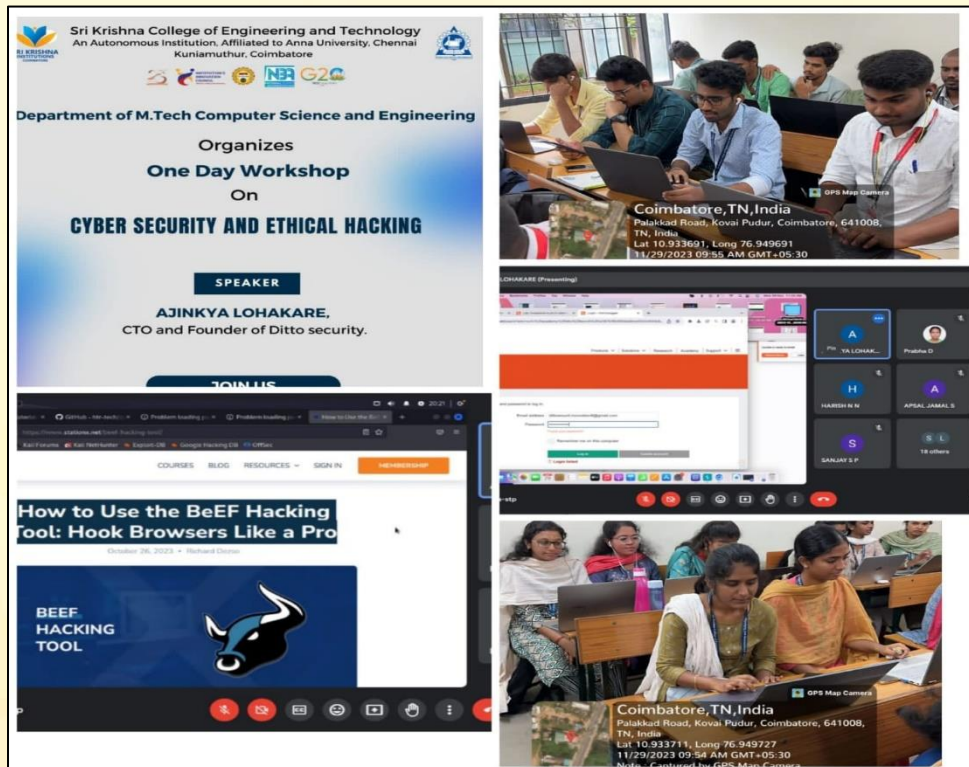
The winners and participants were appreciated with e-certificates.

# MECH | WORKSHOP ON INNOVATION AND ROBOTICS BOOT CAMP



Department of **Mechanical Engineering** organized a one-day workshop on '**Innovation and Robotics Boot camp**'. **Mr.P.Celestine**, Robotics Engineer, Robomatic Pvt Ltd, Coimbatore was the Resource Person. Second year students from the Department of Mechanical Engineering attended the session. The Universal Robo League motto, the purpose and objectives of robotics, team formation, problem identification, solution ideas, Insights into robotic events and the intricacies of robot preparation were the session highlights.

# M.TECH CSE | WORKSHOP ON CYBER SECURITY AND ETHICAL HACKING



Department of **M.Tech Computer Science and Engineering** organized an online workshop on "**Cyber Security and Ethical Hacking**" for the **Pre - final year M.Tech CSE** students to deepen their knowledge on ethical hacking tools.

**Resource Person:** Ajinkya Lohakare, CTO and Founder of Ditto Security, Mumbai.

### Session Highlights:

- HackMe
- Shodan Search Engine
- Zphisher
- Metasploit Nooblinux
- ShellphishGithub
- UserreconGithub
- Null By



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## TUTOR WARD MEETING

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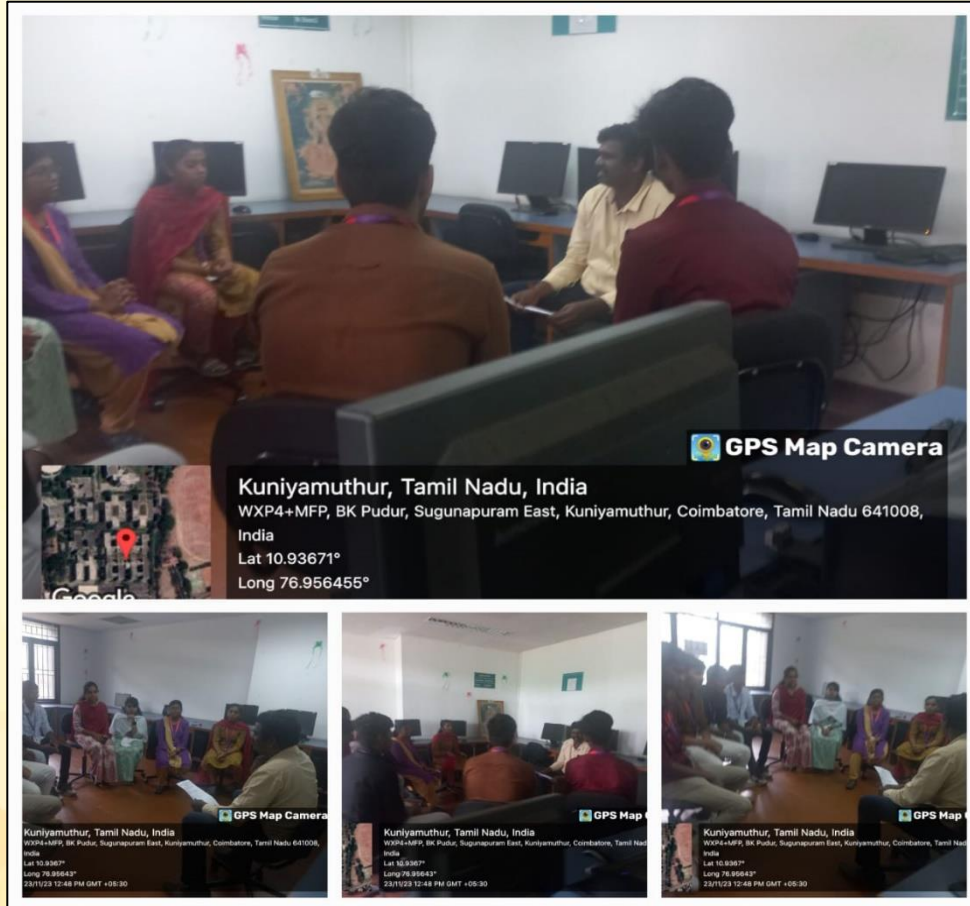


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## M.TECH CSE | CLASS COMMITTEE MEETING



Department of **M.Tech Computer Science & Engineering** conducted **Class Committee Meeting** for the **First** year M.Tech CSE students on 23-11-2023. **Dr.K.N.Sivabalan**, Professor of Information Technology Department, chaired the meeting. The pointers of discussion were: Syllabus Coverage status, Subject Feedback, Industrial training course and importance of participating in extra-curricular activities.

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## TESTIMONIAL BY PLACED STUDENTS

It is an honour to refer to myself as an alumnus of Sri Krishna College of Engineering and Technology. It was a great experience studying at SKCET, a memory to cherish for lifetime. My experience at SKCET was full of learning and grooming. I am thankful to all the faculty members, mentors and entire SKCET faculty members for providing quality education. I would like to thank the entire placement department and faculty members who have tried their level best and brought many well reputed companies for the campus drive. They trained us in systematic manner so that a large number of students can be placed in well reputed companies. They have taken the initiative of giving a bright future for the students and are moving ahead in progression. Once again, my special thanks to the placement department of our college who helped me with all the tips and tricks, all the technical question answering skills and aptitude skills to crack an interview.

**KEERTANA B,  
IT(2021 BATCH),  
VIRTUSA**





## R&D | PATENT PUBLICATION | AI&DS

(12) PATENT APPLICATION PUBLICATION (19) INDIA (22) Date of filing of Application : 16/10/2023	(21) Application No.202341069912 A (43) Publication Date : 24/11/2023
(54) Title of the invention : ARTIFICIAL INTELLIGENCE BASED SMART STUDENT MANAGEMENT SYSTEM TO MONITOR AND INCREASING STUDENT ENGAGEMENT THROUGH CONTINUOUS ASSESSMENT USING IOT AND MACHINE LEARNING ALGORITHMS	
(71) Name of Applicant : IIBU, C. N. S. Balaji Vajpey Address of Applicant: Professor, Department of CSE, Annaamacharya Institute of technology and sciences, Tirupur, Andhra Pradesh India	
(72) Inventor: IIBU, C. N. S. Balaji Vajpey Address of Applicant: Professor, Department of CSE, Annaamacharya Institute of technology and sciences, Tirupur, Andhra Pradesh India	
(73) Assignee: IIBU, C. N. S. Balaji Vajpey Address of Applicant: Professor, Department of CSE, Annaamacharya Institute of technology and sciences, Tirupur, Andhra Pradesh India	
(74) Agent: IIBU, C. N. S. Balaji Vajpey Address of Applicant: Professor, Department of CSE, Annaamacharya Institute of technology and sciences, Tirupur, Andhra Pradesh India	
(51) International Classification: G06F30/02, G06F30/03, G06F30/05, G06F30/08, G06F30/10, G06F30/12, G06F30/13, G06F30/15, G06F30/17, G06F30/18, G06F30/20, G06F30/21, G06F30/22, G06F30/23, G06F30/25, G06F30/27, G06F30/28, G06F30/29, G06F30/30, G06F30/31, G06F30/32, G06F30/33, G06F30/35, G06F30/37, G06F30/38, G06F30/39, G06F30/40, G06F30/41, G06F30/42, G06F30/43, G06F30/45, G06F30/47, G06F30/48, G06F30/50, G06F30/51, G06F30/52, G06F30/53, G06F30/55, G06F30/57, G06F30/58, G06F30/59, G06F30/60, G06F30/61, G06F30/62, G06F30/63, G06F30/65, G06F30/67, G06F30/68, G06F30/69, G06F30/70, G06F30/71, G06F30/72, G06F30/73, G06F30/75, G06F30/77, G06F30/78, G06F30/79, G06F30/80, G06F30/81, G06F30/82, G06F30/83, G06F30/85, G06F30/87, G06F30/88, G06F30/89, G06F30/90, G06F30/91, G06F30/92, G06F30/93, G06F30/95, G06F30/97, G06F30/98, G06F30/99	
(52) Divided to Application Number: NA	
(53) Filing Date: NA	
(54) Title of the invention: NA	
(55) Priority of Addition to Application Number: NA	
(56) Divided to Application Number: NA	
(57) Filing Date: NA	
(71) Name of Applicant: NA	
(72) Inventor: NA	
(73) Assignee: NA	
(74) Agent: NA	
(51) International Classification: NA	
(52) Divided to Application Number: NA	
(53) Filing Date: NA	
(54) Title of the invention: NA	
(55) Priority of Addition to Application Number: NA	
(56) Divided to Application Number: NA	
(57) Filing Date: NA	
(71) Name of Applicant: NA	
(72) Inventor: NA	
(73) Assignee: NA	
(74) Agent: NA	
(51) International Classification: NA	
(52) Divided to Application Number: NA	
(53) Filing Date: NA	
(54) Title of the invention: NA	
(55) Priority of Addition to Application Number: NA	
(56) Divided to Application Number: NA	
(57) Filing Date: NA	

The Patent Office Journal No. 47/2023 Dated 24/11/2023 79184

Patent titled **“Artificial Intelligence based Smart Student Management System to monitor increasing Student Engagement using IoT and Machine Learning Algorithms”** by **Mr.K.Balaji**, Assistant Professor, AI&DS has been published in the IPR Journal identified with Appl.No: 202341069912 A on 24.11.2023.

## R&D | ARTICLE PUBLICATION | MECH

**Dr.R.Ben Ruben**, Assistant Professor, **Mechanical Engineering** has published a scientific article entitled **‘Analysis of barriers affecting Industry 4.0 implementation: An interpretive analysis using total interpretive structural modeling (TISM) and Fuzzy MICMAC’** in Heliyon – A Cell Press Publication. It is a SCIE, WoS and Scopus Indexed Journal with an Impact Factor 4.0.

Heliyon 9 (2023) e22506

Contents lists available at ScienceDirect

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journal homepage: www.cell.com/heliyon

**Analysis of barriers affecting Industry 4.0 implementation: An interpretive analysis using total interpretive structural modeling (TISM) and Fuzzy MICMAC**

R. Ben Ruben<sup>a</sup>, C. Rajendran<sup>b,c</sup>, R. Saravana Ram<sup>b</sup>, Fadoua Kouki<sup>c</sup>, Haya Mesfer Alshahrani<sup>d</sup>, Mohammed Assiri<sup>e</sup>

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<sup>c</sup> Department of Financial and Banking Science Applied College, Mahail Asoor King Khalid University, Saudi Arabia  
<sup>d</sup> Department of Information Systems, College of Computer and Information Sciences, Princess Nourah bint Abdulrahman University, P.O.Box 84428, Riyadh, 11671, Saudi Arabia  
<sup>e</sup> Department of Computer Science, College of Sciences and Humanities Aflaj, Prince Sultan bin Abdulaziz University, Saudi Arabia

**ARTICLE INFO**

**Keywords:**  
Barriers of Industry 4.0  
Implementing Industry 4.0 technologies  
Driving and dependent barriers  
ISM  
Fuzzy MICMAC

**ABSTRACT**

The purpose of this study is to build a structural relationship model based on total interpretive structural modeling (TISM) and fuzzy input-based cross-impact matrix multiplication applied to classification (MICMAC) for analysis and prioritization of the barriers influencing the implementation of Industry 4.0 technologies. 10 crucial barriers that affect the deployment of Industry 4.0 techniques are identified in the literature. Also, the Fuzzy MICMAC approach is applied to classify the barriers. The importance of TISM over traditional interpretive structural modeling (ISM) is shown in this work. Results proved that the barriers, namely IT infrastructure, lack of cyber physical systems, and improper communication models, are identified as the most dependent barriers, and the barriers of lack of top management commitment and inadequate training are identified as the most driving barriers. This study makes it easier for decision-makers to take the necessary steps to mitigate the barriers. The bottom level of the TISM hierarchy is occupied by barriers that need more attention from top management in order to be effectively monitored and managed. This study explains the steps to execute TISM in detail, making it easy for researchers and practitioners to comprehend its principles.

# R&D | PAPER PUBLICATION | ECE

IETE JOURNAL OF RESEARCH  
https://doi.org/10.1080/03772063.2023.2273293

**FPGA Implementation of a Phase Optimizer-Assisted PTS Scheme for PAPR Reduction in OFDM Systems**

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<sup>1</sup>Department of Electronics and Communication Engineering, Dr. N.G.P. Institute of Technology, Coimbatore, India; <sup>2</sup>Department of Electronics and Communication Engineering, Karapagam College of Engineering, Coimbatore, India; <sup>3</sup>Department of Electronics and Communication Engineering, Sri Krishna College of Engineering and Technology, Coimbatore, India

**ABSTRACT**  
This article proposes a phase optimizer-assisted partial transmit sequence (PO-PTS) for minimizing PAPR values in OFDM systems. The novel PO-PTS scheme after validation, based on simulation results, is implemented using a Xilinx system generator on a field programmable gate array (FPGA). The phase optimizer (PO) module is employed to select optimal phase weighting factors to perform scaling with the data sequence in the PTS scheme. The computational complexity and the redundancy involved in producing the candidate signals are significantly reduced by the PO-PTS compared with the conventional PTS method. The proposed method reduces PAPR for a QPSK-OFDM signal by 56.16% compared to the original OFDM signal without compromising on the bit error rate (BER) performance. In addition, the performance of PO-PTS in terms of PAPR reduction for 16-QAM and 64-QAM modulated OFDM systems is also presented to justify the robustness of the proposed scheme. Moreover, when PO-PTS is implemented using FPGA, it uses only 1% of the hardware available in Virtex.

**KEYWORDS**  
Bit error rate; FPGA implementation; OFDM; partial transmit sequence; peak to average power ratio; phase optimization

**1. INTRODUCTION**  
OFDM is a widely used multiplexing scheme for wireless data transmission due to its effective spectrum usage and its robustness to preserve data in a fading channel [1]. It is widely used in IEEE 802.11, digital audio broadcasting (DAB), digital video broadcasting (DVB), Wireless Local Area Network (WLAN), and WiMAX applications [2]. It is also preferred due to its simple receiver implementation which uses a single tap equalizer.

Despite the several advantages stated above, a large PAPR value of OFDM signal can lead to non-linear distortion of the signal during transmission and demands the use of a high power amplifier (HPA). However, the HPA could not resolve the dynamics of the OFDM signal with a large PAPR value due to which the signal is truncated at specific points to result in spectrum distortion, inter-channel interference, and in-band radiation [3]. Moreover, OFDM has a non-constant envelope and it is highly sensitive to the non-linearity of high-power amplifiers [4]. Hence, numerous solutions to minimize PAPR value without compromising on the BER performance at the receiver were suggested in the literature.

The rest of the article is organized as follows. Section 2 discusses the principle of OFDM and its limitation due to its large PAPR value. Section 3 presents a brief survey of the various existing PAPR reduction schemes while Section 4 proposes the PO-PTS scheme for minimizing PAPR. Section 5 focuses on the simulation and comparative analysis of PO-PTS with the existing methods. Section 6 explains the FPGA-based implementation of the PO-PTS-based OFDM system and its significance. Finally, Section 7 presents the conclusion.

**2. OFDM SYSTEM AND PAPR PROBLEM**  
A 16-QAM or QPSK-modulated OFDM signal in the frequency domain is given as

$$D = [D_0, D_1, D_2, \dots, D_{N-1}] \quad (1)$$

The OFDM signal in the time domain is represented as

$$d_n = \frac{1}{\sqrt{N}} \sum_{k=0}^{N-1} D_k e^{j2\pi kn/N}, 0 \leq n \leq N-1 \quad (2)$$


where  $N$  is the number of subcarriers and  $D_k$  is the  $k^{\text{th}}$  frequency domain OFDM symbol.

PAPR of the OFDM signal is defined as the ratio of peak power to average power [5] and is expressed

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**Dr.R.Senthil Ganesh**, Associate Professor, Department of ECE, has published SCI and Scopus indexed Journal titled “**FPGA Implementation of a Phase Optimizer-Assisted PTS Scheme for PAPR Reduction in OFDM Systems**” in the IETE Journal of Research. DoI: <https://doi.org/10.1080/03772063.2023.2273293>.

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## MECH | Ph.D VIVA - VOCE



**Mr.A.Sathish Kumar**, Assistant Professor, Mechanical Engineering has successfully completed his Ph.D Viva-voce on 24.11.23 under the guidance of Dr. R. Soundararajan, Associate Professor, Mechanical Engineering on the topic “**Additive Manufacturing**”. The examiners and subject experts appreciated the scholar and the supervisor for their extensive research work.

## CSBS | APPRECIATION

**Dr.S.Balakrishnan**, Professor and Head, Department of **Computer Science and Business Systems** has received a certificate of appreciation for being a Reviewer for the First **IEEE International Conference on Integrated Intelligence and Communication Systems (ICIICS-2023)** held on 24<sup>th</sup> and 25<sup>th</sup> November, 2023 organized by Sharnbasva University, Kalaburagi.



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## AI&DS | NPTEL CERTIFICATION



Mr.A.Wasim Raja, Assistant Professor of AI&DS has successfully completed “Cyber Security and Privacy” a course by NPTEL, Jul - Oct 2023.

## MECH | FDP ON ADVANCE MATERIALS AND THEIR CHARACTERIZATION



Dr.C.Rajendran, Dr.R.Arunbharathi and Mr.S.Balu Mahandiran, faculty members of Mechanical Engineering Department have actively participated in Faculty Development Program on “Advance Materials and their characterization’ organized by Greater Kolkata College of Engineering and Management from 6.11.23 to 10.11.23

## M.Tech CSE | COURSERA CERTIFICATION



Dr.P.Kavitha Rani, Professor and Head, Department of M.Tech CSE and CSD has successfully completed a certification course titled “Agile Project Management” through Coursera platform in association with GOOGLE on 25.11.2023.

## SOM | CONFERENCE PARTICIPATION

Mr.C.Boopathy, Assistant Professor, SOM has participated in an International Conference on “Recent Advances in Health, Agriculture and Environmental Sciences” organized by Association of Professionals in Biotechnology and Pharmaceutical Research (APBPR) on 28.10.2023.



## M.TECH CSE | NPTEL CERTIFICATION



**NPTEL Online Certification**  
(Funded by the MoE, Govt. of India)

This certificate is awarded to  
**S SREERAJ**  
for successfully completing the course  
**Ethics in Engineering Practice**  
with a consolidated score of **51 %**

Online Assignments	15.42/25	Proctored Exam	36/75
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Total number of candidates certified in this course: 4473

Aug-Oct 2023  
(8 week course)

Prof. Haimanti Banerji  
Coordinator, NPTEL  
IIT Kharagpur

Indian Institute of Technology Kharagpur

swayam

Roll No: NPTEL23MG975533806194 To verify the certificate

No. of credits recommended: 2 or 3

**Mr.S.Sreeraj**, Assistant Professor,  
Department of **M.Tech Computer  
Science and Engineering** has  
successfully completed **NPTEL  
certification** course titled **“Ethics in  
Engineering Practice”** on  
21.11.2023.

## CSE | NPTEL - AICTE FDP

**Dr.S.Oswalt Manoj**, Associate  
Professor of **CSE** has  
successfully completed  
**“Accreditation and Outcome  
Based Learning”** by NPTEL-  
AICTE Faculty Development  
Programme Aug–Oct 2023.



**NPTEL-AICTE  
Faculty Development Programme**  
(Funded by the MoE, Govt. of India)

This certificate is awarded to  
**DR OSWALT MANOJ S**  
for successfully completing the course  
**Accreditation and Outcome Based Learning**  
with a consolidated score of **81 %**

Prof. Andrew Thangaraj  
NPTEL Coordinator  
IIT Madras

(Aug-Oct 2023)

Roll No: NPTEL23GE46S733801310 Duration of NPTEL course : 8 Weeks

The candidate has studied the above course through MOOCs mode, has submitted online assignments and passed proctored exams.  
This certificate is therefore acceptable for promotions under CAS as per AICTE notifications dated 24<sup>th</sup> July 2018, similar to other refresher / orientation courses.  
F.No. AICTE / RIFD / FDP through MOOCs / 2017-18

## CSE | NPTEL CERTIFICATION



**Elite**  
**NPTEL Online Certification**  
(Funded by the MoE, Govt. of India)

This certificate is awarded to  
**DR OSWALT MANOJ S**  
for successfully completing the course

Accreditation and Outcome Based Learning

with a consolidated score of **81** %

Online Assignments	15.67/25	Proctored Exam	65.25/75
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Total number of candidates certified in this course: 1356

Aug-Oct 2023  
(8 week course)

Prof. Haimanti Banerji  
Coordinator, NPTEL  
IIT Kharagpur

Indian Institute of Technology Kharagpur

Roll No: NPTEL23GE46S733801310 To verify the certificate No. of credits recommended: 2 or 3

**Dr.S.Oswalt Manoj, Associate Professor of CSE has successfully completed “Accreditation and Outcome Based Learning” by NPTEL Aug–Oct 2023**

## M.TECH CSE | NPTEL CERTIFICATION

**Mrs.Ram K Shivany, Assistant Professor, Department of M.Tech Computer Science and Engineering has successfully completed NPTEL certification course titled “Ethics in Engineering Practice” on 21.11.2023.**



**NPTEL Online Certification**  
(Funded by the MoE, Govt. of India)

This certificate is awarded to  
**RAM K SHIVANY**  
for successfully completing the course

Ethics in Engineering Practice

with a consolidated score of **55** %

Online Assignments	16.25/25	Proctored Exam	39/75
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Total number of candidates certified in this course: 4473

Aug-Oct 2023  
(8 week course)

Prof. Haimanti Banerji  
Coordinator, NPTEL  
IIT Kharagpur

Indian Institute of Technology Kharagpur

Roll No: NPTEL23MG97S533802967 To verify the certificate No. of credits recommended: 2 or 3

## SOM | ONLINE LECTURE ON ENTREPRENEURSHIP



**Mr.C.Boopathy,** Assistant Professor, **SOM** has participated an online Lecturer on **Entrepreneurship** from Lab to Landscape: Advancements in Bamboo tissue culture technology organized by Institutional Biotech Hub, Bahona College, Jorhat, Assam at 21.11.2023.

## M.TECH CSE | NPTEL CERTIFICATION

**Mr.J.Senthil,** Assistant Professor, Department of **M.Tech Computer Science and Engineering** has successfully completed a **NPTEL certification** course titled **“Programming in Java”** with **Elite level badge** on 28.11.2023.



# CSBS | TECH4ALL CERTIFICATION



**Dr.G.Ignisha Rajathi**, Associate Professor, Department of **Computer Science and Business Systems** has received a certificate of appreciation for mentoring the women students to get certified in the course Data Analytics (MS-DA002) under the Cognizant Foundation's Tech4All, held from 10<sup>th</sup> July 2023 to 14<sup>th</sup> July 2023.

# MECH | NPTEL CERTIFICATION

**Dr.R.Arunbharathi**, Assistant Professor, **Mechanical Engineering** has successfully completed NPTEL course on 'Advanced Machining Process' with Silver Grade. He was also one among the top 5% scorer.





# ECE | NPTEL CERTIFICATION

<div style="text-align: center;"> <h3 style="color: red;">Elite</h3> <h2 style="color: red;">NPTEL Online Certification</h2> <p>(Funded by the MoE, Govt. of India)</p> <p>This certificate is awarded to <b>V R BALAJI</b> for successfully completing the course</p> <p><b>Stress Management</b></p> <p>with a consolidated score of <b>90</b> %</p> <table border="1" style="margin: auto;"> <tr> <td>Online Assignments</td> <td>22.5/25</td> <td>Proctored Exam</td> <td>67.01/75</td> </tr> </table> <p>Total number of candidates certified in this course: 1763</p> <p>Aug-Sep 2023 (4 week course)</p> <p style="font-size: small;">Prof. Haimanti Banerji Coordinator, NPTEL IIT Kharagpur</p> <p style="font-size: x-small;">Indian Institute of Technology Kharagpur</p> </div>	Online Assignments	22.5/25	Proctored Exam	67.01/75	<div style="text-align: center;"> <h3 style="color: red;">Elite</h3> <h2 style="color: red;">NPTEL Online Certification</h2> <p>(Funded by the MoE, Govt. of India)</p> <p>This certificate is awarded to <b>VISVESVARAN C</b> for successfully completing the course</p> <p><b>Stress Management</b></p> <p>with a consolidated score of <b>66</b> %</p> <table border="1" style="margin: auto;"> <tr> <td>Online Assignments</td> <td>22.5/25</td> <td>Proctored Exam</td> <td>43.5/75</td> </tr> </table> <p>Total number of candidates certified in this course: 1763</p> <p>Aug-Sep 2023 (4 week course)</p> <p style="font-size: small;">Prof. Haimanti Banerji Coordinator, NPTEL IIT Kharagpur</p> <p style="font-size: x-small;">Indian Institute of Technology Kharagpur</p> </div>	Online Assignments	22.5/25	Proctored Exam	43.5/75
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<div style="text-align: center;"> <h3 style="color: red;">Elite</h3> <h2 style="color: red;">NPTEL Online Certification</h2> <p>(Funded by the MoE, Govt. of India)</p> <p>This certificate is awarded to <b>SOUNDARI D V</b> for successfully completing the course</p> <p><b>Stress Management</b></p> <p>with a consolidated score of <b>78</b> %</p> <table border="1" style="margin: auto;"> <tr> <td>Online Assignments</td> <td>22.5/25</td> <td>Proctored Exam</td> <td>55.5/75</td> </tr> </table> <p>Total number of candidates certified in this course: 1763</p> <p>Aug-Sep 2023 (4 week course)</p> <p style="font-size: small;">Prof. Haimanti Banerji Coordinator, NPTEL IIT Kharagpur</p> <p style="font-size: x-small;">Indian Institute of Technology Kharagpur</p> </div>	Online Assignments	22.5/25	Proctored Exam	55.5/75	<div style="text-align: center;"> <h3 style="color: red;">Elite</h3> <h2 style="color: red;">NPTEL Online Certification</h2> <p>(Funded by the MoE, Govt. of India)</p> <p>This certificate is awarded to <b>ANISHFATHIMA B</b> for successfully completing the course</p> <p><b>Stress Management</b></p> <p>with a consolidated score of <b>79</b> %</p> <table border="1" style="margin: auto;"> <tr> <td>Online Assignments</td> <td>21.67/25</td> <td>Proctored Exam</td> <td>57/75</td> </tr> </table> <p>Total number of candidates certified in this course: 1763</p> <p>Aug-Sep 2023 (4 week course)</p> <p style="font-size: small;">Prof. Haimanti Banerji Coordinator, NPTEL IIT Kharagpur</p> <p style="font-size: x-small;">Indian Institute of Technology Kharagpur</p> </div>	Online Assignments	21.67/25	Proctored Exam	57/75
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Online Assignments	21.67/25	Proctored Exam	57/75						
<p style="font-size: x-small;">Roll No: NPTEL23HS138S633805106    To verify the certificate     No. of credits recommended: 1 or 2</p>	<p style="font-size: x-small;">Roll No: NPTEL23HS138S633802255    To verify the certificate     No. of credits recommended: 1 or 2</p>								

**Mr.C.Visvesvaran, Ms.D.V.Soundari, Ms.B.Anish Fathima, faculty members, Department of ECE have successfully completed “Stress Management” course offered through NPTEL. Dr.V.R.Balaji, Professor , ECE completed the course with Elite Gold Certification.**

## IT | INFOSYS SPRINGBOARD CERTIFICATION



**Mr.S.Shiva Shankar**, Assistant Professor, IT Department has successfully completed courses on **“Computer Storage & Memory”** and **“Software Testing Techniques”** certified by Infosys Springboard.

Happy Reading!

