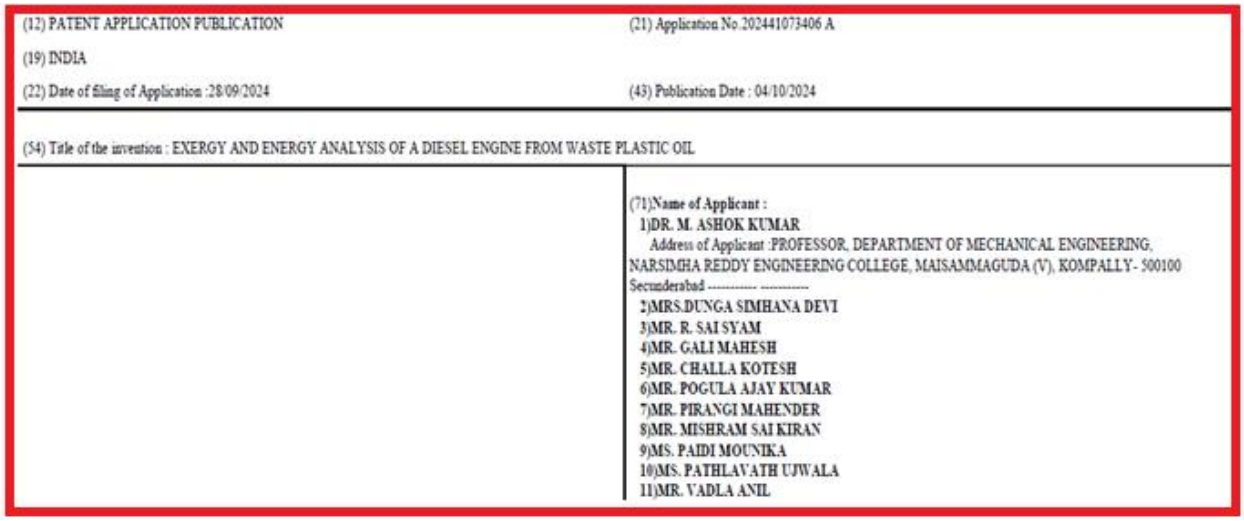
Department of Mechanical Engineering

(JULY-DECEMBER 2024)

Publications

"We are delighted to share that the Department of Mechanical Engineering at Narsimha Reddy Engineering College has secured a significant patent for their invention, 'Exergy and Energy Analysis of a Diesel Engine from Waste Plastic Oil'. This innovative research, led by Dr. M. Ashok Kumar and including a team of dedicated faculty Mrs.D simhana Devi & Mr.R Sai Syam. and UG scholars, highlights our commitment to sustainable energy solutions and cutting-edge research. The patent, published on October 4, 2024, signifies a major step forward in analyzing the parameters of diesel engines using waste plastic oil and underscores the impactful contributions of our Mechanical Engineering department to the field."



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(54) Title of the invention : EXERGY AND ENERGY ANALYSIS OF A DIESEL ENGINE FROM WASTE PLASTIC OIL

(71)Name of Applicant :
1)DR. M. ASHOK KUMAR
Address of Applicant :PROFESSOR, DEPARTMENT OF MECHANICAL ENGINEERING, NARSIMHA REDDY ENGINEERING COLLEGE, MAISAMMAGUDA (V), KOMPALLY- 500100 Secunderabad ---------- ----------
2)MRS.DUNGA SIMHANA DEVI
3)MR. R. SAI SYAM
4)MR. GALI MAHESH
5)MR. CHALLA KOTESH
6)MR. POGULA AJAY KUMAR
7)MR. PIRANGI MAHENDER
8)MR. MISHRAM SAI KIRAN
9)MS. PAIDI MOUNIKA
10)MS. PATHLAVATH UJWALA
11)MR. VADLA ANIL

"We are proud to announce that the paper titled 'ANALYSIS OF A DIESEL ENGINE USING WASTE PLASTIC OIL AS A FUEL,' co-authored by Mrs. Dunga Simhana Devi (Asst. Professor, Mechanical Engineering) and UG Scholars Mr. Challa Kotesh, Mr. Pogula Ajay Kumar, and Mr. Pirangi Mahender from Narsimha Reddy Engineering College, has been published in the International Journal of Multidisciplinary Educational Research. This publication, appearing in Volume 13, Issue 11(1) in November 2024, highlights the innovative research being conducted by our faculty and students in sustainable energy solutions and showcases our college's commitment to impactful academic contributions."

Cover Page

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :9.014(2024); IC VALUE:5.16; ISI VALUE:2.286
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ANALYSIS OF A DIESEL ENGINE USING WASTE PLASTIC OIL AS A FUEL

[1]Mrs.Dunga Simhana Devi
[2]Mr. Challa Kotesh (22X05A0309), [3]Mr. Pogula Ajay Kumar (22X05A0344)
[4]Mr. Pirangi Mahender(22X05A0356)
[1]Asst.Professor, Department of Mechanical Engineering, Narsimha Reddy Engineering College, (UGC-Autonomous)
[2-4] Mechanical Engineering Branch, Narsimha Reddy Engineering College, (UGC-Autonomous)

Abstract:

This study investigates the fundamental characteristics of waste plastic oil (WPO), mixed plastics and tire oil, desulfurized WPO, distilled WPO, and their blends with diesel fuel. A comparative analysis was conducted to evaluate the properties of these different categories of waste plastic fuels against diesel fuels according to ASTM D7467 standards. Additionally, Fourier Transform Infrared Spectroscopy (FT-IR) was utilized to identify the functional groups present in the tested fuels.

The pyrolysis of waste plastics was performed at temperatures between 350°C and 450°C under atmospheric pressure conditions. Following the pyrolysis process, the extracted oil underwent both desulfurization and distillation to eliminate sulfur compounds and refine the product. The findings indicated that the distilled products and their blends demonstrated greater suitability for engine operation compared to the raw oils. Furthermore, engines were able to operate without modifications when using WPO, WPO blends, and their distilled products. However, the performance and emissions of the engine were significantly impacted by the use of virgin raw WPO and distilled WPO due to their higher density and viscosity, lower cetane number, increased sulfur content, and elevated acid values. The FTIR analysis revealed similar spectral peaks in both diesel and various WPO samples, confirming the presence of comparable functional groups.

"We are delighted to share that the paper titled 'PERFORMANCE OF A DIESEL ENGINE USING WASTE PLASTIC OIL,' co-authored by Dr. M. Ashok Kumar, Mr. R. Sai Syam, and UG Scholars Mr. Mishram Sai Kiran, Ms. Paidi Mounika, Ms. Pathlavath Ujwala, and Mr. Vadla Anil from Narsimha Reddy Engineering College, has been published in the International Journal of Multidisciplinary Educational Research. This publication, appearing in Volume 13, Issue 11(1) in November 2024, showcases the innovative research being conducted by our faculty and students in utilizing waste plastic oil as a sustainable fuel for diesel engines. This achievement underscores our college's commitment to impactful academic contributions and addresses crucial aspects of reducing reliance on fossil fuels. "

Cover Page

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Article Received: Reviewed : Accepted
Publisher: Sucharitha Publication, India
Online Copy of Article Publication Available : www.ijmer.in

PERFORMANCE OF A DIESEL ENGINE USING WASTE PLASTIC OIL

[1]Dr.M.Ashok Kumar, [2]Mr.R.Sai Syam
[3]Mr. Mishram Sai Kiran (22X05A0328), [4]Ms. Paidi Mounika(22X05A0337),
[5]Ms. Pathlavath Ujwala(22X05A0340),[6] Mr. Vadla Anil (22X05A0349)

[1]Professor, Department of Mechanical Engineering, Narsimha Reddy Engineering College, (UGC-Autonomous)
[2]Assistant Professor, Department of Mechanical Engineering, Narsimha Reddy Engineering College, (UGC-Autonomous)
[3-6] Mechanical Engineering , Narsimha Reddy Engineering College(UGC-Autonomous)

Abstract

In recent years, hybrid power systems, such as diesel-renewable setups, have been increasingly implemented in remote areas and isolated regions to decrease reliance on diesel-only power generation. However, low-load (up to 30% of the maximum rated power) operation at variable speeds is considered beneficial for maximizing renewable energy integration due to the cost and complexity challenges associated with conventional fixed-speed operation in hybrid systems. With the growing focus on reducing fossil fuel use in the power generation sector, diesel derived from plastic can serve as a viable alternative. In this study, plastic-derived diesel, produced from a blend of high-density polyethylene, polypropylene, and polystyrene in equal parts through vacuum distillation via pyrolysis, was utilized for engine testing. The diesel's properties were evaluated post-distillation.

NPTEL CERTIFICATION (FACULTY)

Mr.Subhrajit Sahoo Asst.Prof in ME Dept. has successfully completed two NPTEL Online Certification courses from IIT Kharagpur, demonstrating a strong commitment to enhancing his skills. He achieved an "Elite" status in "Programming in Java" with a consolidated score of 65%, and also successfully completed "Data Base Management System" with a consolidated score of 57%. These achievements highlight his dedication to continuous learning and his proficiency in key areas of computer science.

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत

This certificate is awarded to

SUBHRAJIT SAHOO

for successfully completing the course

Data Base Management System

with a consolidated score of **57** %

Online Assignments	20.83/25	Proctored Exam	36/75

Total number of candidates certified in this course: **7134**

Jul-Sep 2024

(8 week course)

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

FREE ONLINE EDUCATION swayam शिक्षित भारत, उन्नत भारत

Roll No: NPTEL24CS75S136800699 To verify the certificate No. of credits recommended: 2 or 3

Elite

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत

This certificate is awarded to

SUBHRAJIT SAHOO

for successfully completing the course

Programming in Java

with a consolidated score of **65** %

Online Assignments	19.78/25	Proctored Exam	45.5/75

Total number of candidates certified in this course: **15570**

Jul-Oct 2024

(12 week course)

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

FREE ONLINE EDUCATION swayam शिक्षित भारत, उन्नत भारत

"We are delighted to share that Ms. Dunga Simhana Devi has successfully completed the NPTEL Online Certification course in 'Introduction to Industry 4.0 and Industrial Internet of Things.' She achieved an 'Elite' status with a consolidated score of 75%. This accomplishment reflects her dedication to continuous learning and staying at the forefront of emerging technologies."

Industrial visit and Training

The Department of Mechanical Engineering at Narsimha Reddy Engineering College organized an industrial visit on October 28, 2024. The visit was to Sri Devi Industrial Bus Body Unit in Dulapally, providing students with an opportunity to "Discover the Power of Innovation through Industrial Visits." This initiative aims to bridge the gap between academic learning and practical industry exposure.

"This valuable experience allowed our budding engineers to witness real-world applications of their studies and gain insights into the innovative processes within the bus body manufacturing sector. Such hands-on learning opportunities are crucial in preparing our students for successful careers and underscore Narsimha Reddy Engineering College's commitment to providing comprehensive, industry-relevant education."

"Our Mechanical Engineering students recently gained invaluable industry exposure at Daikin's state-of-the-art facility in Sri City, AP, deepening their understanding of cutting-edge HVAC technologies."

"Beyond the classroom, Narsimha Reddy Engineering College's ME students engaged in a specialized training program at Daikin in Sri City, AP, an experience designed to bridge academic knowledge with real-world manufacturing processes."

"A truly enriching experience awaited our Mechanical Engineering students at Daikin, Sri City, AP, where they delved into the intricacies of air conditioning manufacturing, reinforcing Narsimha Reddy Engineering College's commitment to industry-aligned education."


DAIKIN


GPS Map Camera
Sri City, Andhra Pradesh, India
G293+fgw, Sri City, Andhra Pradesh 517646, India
Lat 13.517689° Long 80.004188°
02/12/24 09:26 AM GMT +05:30
Google

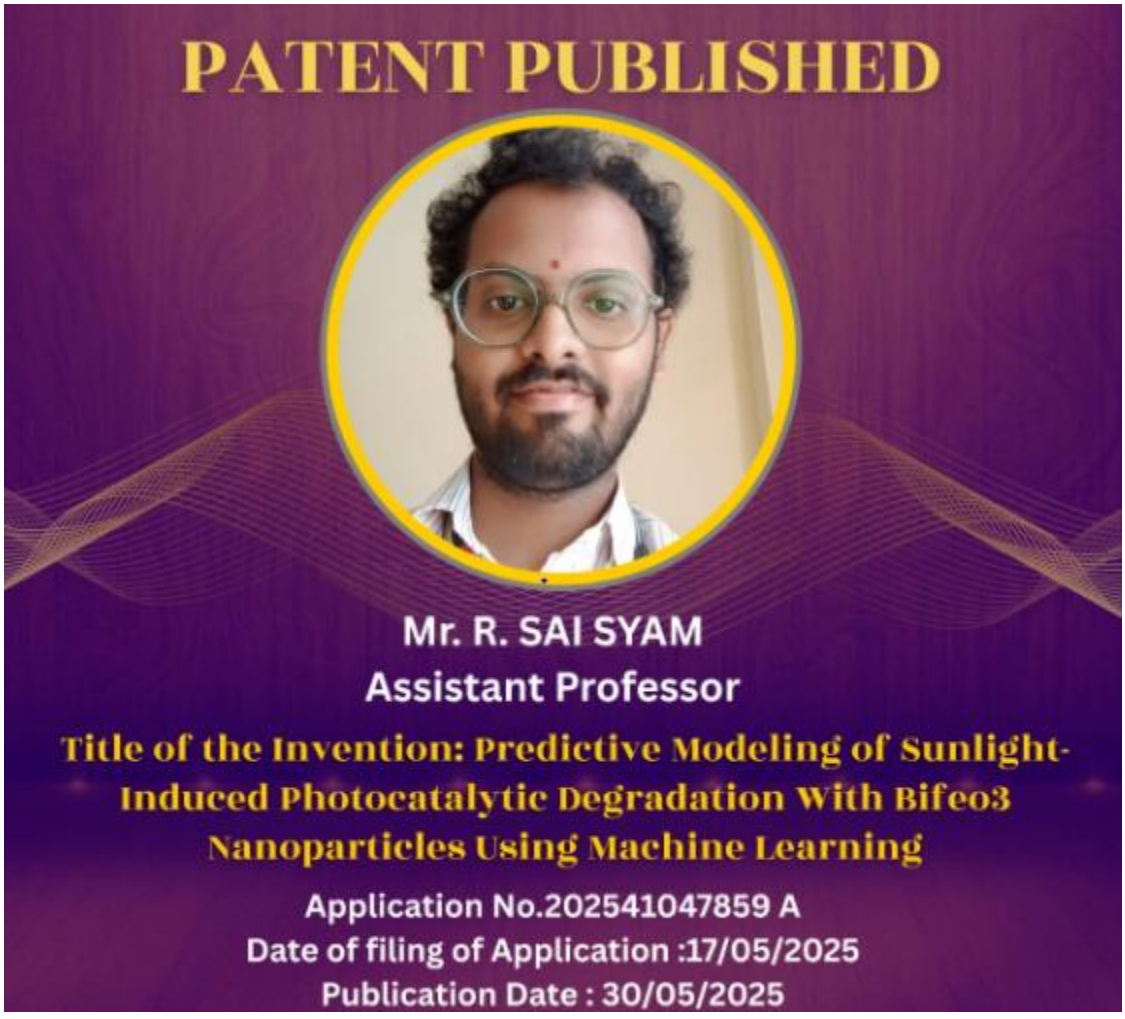

GPS Map Camera
Sri City, Andhra Pradesh, India
Malla Dr, Sri City, Andhra Pradesh 517646, India
Lat 13.515178° Long 80.00125°
02/12/24 09:17 AM GMT +05:30
Google

Department of Mechanical Engineering

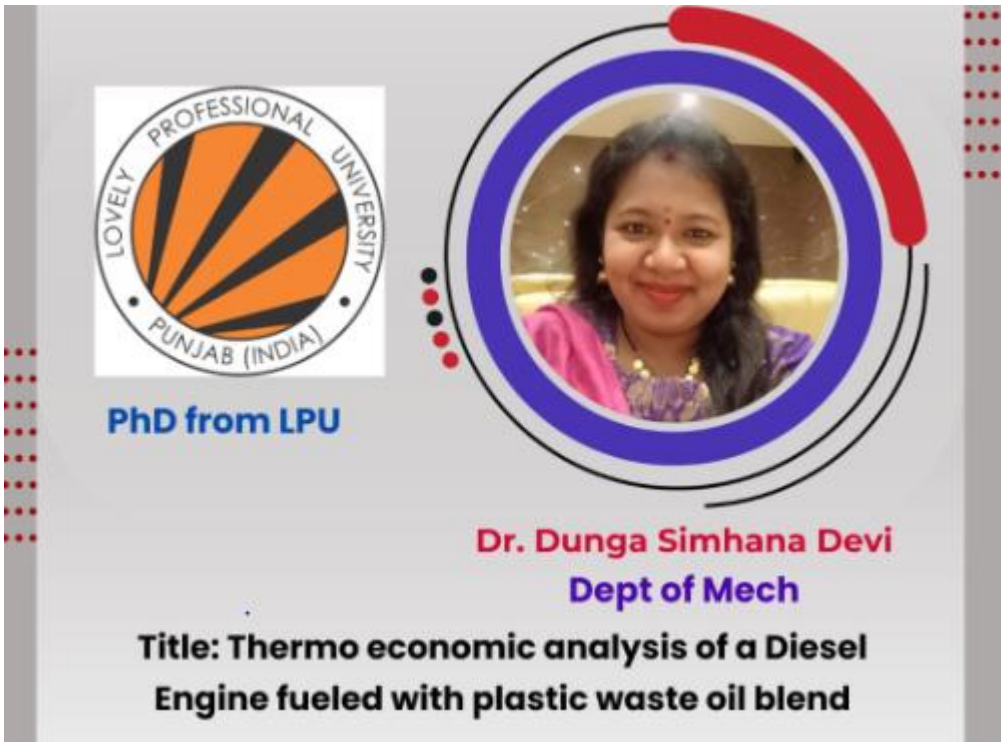
(Jan-June 2025)

Publication

Mr. R. Sai Syam, Assistant Professor in the Department of Mechanical Engineering, has achieved a remarkable milestone with the publication of his patent titled "Predictive Modeling of Sunlight-Induced Photocatalytic Degradation With Bifeo3 Nanoparticles Using Machine Learning." This innovative work, filed on May 17, 2025, and published on May 30, 2025, showcases his dedication to cutting-edge research.



"We are thrilled to announce that Dr. Dunga Simhana Devi from the Department of Mechanical Engineering has successfully completed her PhD from Lovely Professional University (LPU), Punjab, India! Her research focused on the vital topic of 'Thermo economic analysis of a Diesel Engine fueled with plastic waste oil blend,' contributing significantly to sustainable energy solutions."



"We are delighted to share that Dr. Ch. Mohana Rao has successfully completed two NPTEL Online Certification courses, 'Cloud Computing' and 'Introduction to Machine Learning,' both in the Jan-Apr 2025 session. His dedication to continuous learning in these crucial technological fields is highly commendable."

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत

This certificate is awarded to

CH MOHANA RAO

for successfully completing the course

Introduction to Machine Learning

with a consolidated score of **52** %

Online Assignments	21.88/25	Proctored Exam	30/75

Total number of candidates certified in this course: **6009**

Prof. Andrew Thangaraj
Chair
Centre for Outreach and Digital Education, IITM

Jan-Apr 2025

(12 week course)

Prof. Vignesh Muthuvijayan
NPTEL Coordinator
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL25CS46S447007385 To verify the certificate No. of credits recommended: 3 or 4

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत

This certificate is awarded to

CH MOHANA RAO

for successfully completing the course

Cloud Computing

with a consolidated score of **56** %

Online Assignments	24.69/25	Proctored Exam	31.25/75

Total number of candidates certified in this course: **29703**

Jan-Apr 2025

(12 week course)

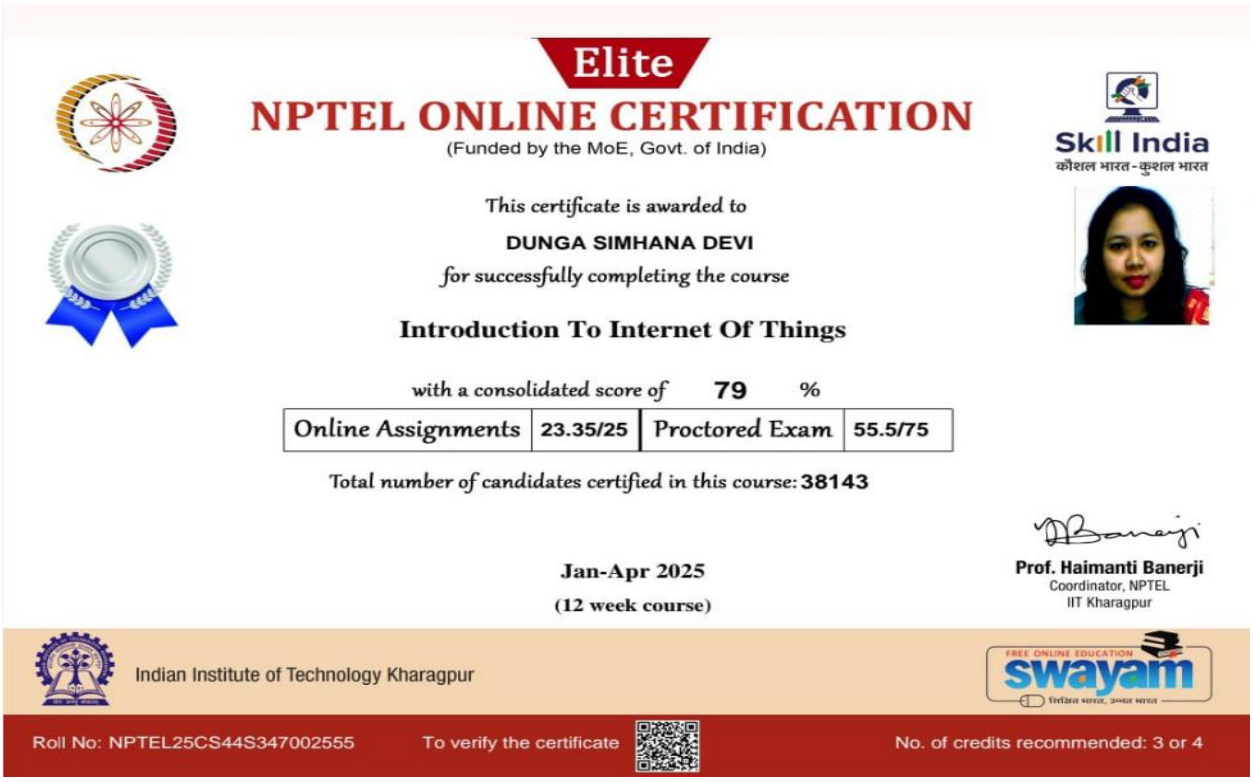
Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

swayam

Roll No: NPTEL25CS11S947000397 To verify the certificate No. of credits recommended: 3 or 4

"We are proud to highlight the continuous professional development of our faculty! Ms. Dunga Simhana Devi has successfully completed three NPTEL Online Certification courses from IIT Kharagpur in the Jan-Apr 2025 session: 'Introduction To Internet Of Things' with an Elite score of 79%, 'Cloud Computing' with an Elite score of 65%, and 'Introduction to Database Systems' with a consolidated score of 50%. These achievements demonstrate her commitment to staying current with emerging technologies."



Elite

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत

This certificate is awarded to

DUNGA SIMHANA DEVI

for successfully completing the course

Introduction To Internet Of Things

with a consolidated score of 79 %

Online Assignments	23.35/25	Proctored Exam	55.5/75

Total number of candidates certified in this course: 38143

Jan-Apr 2025

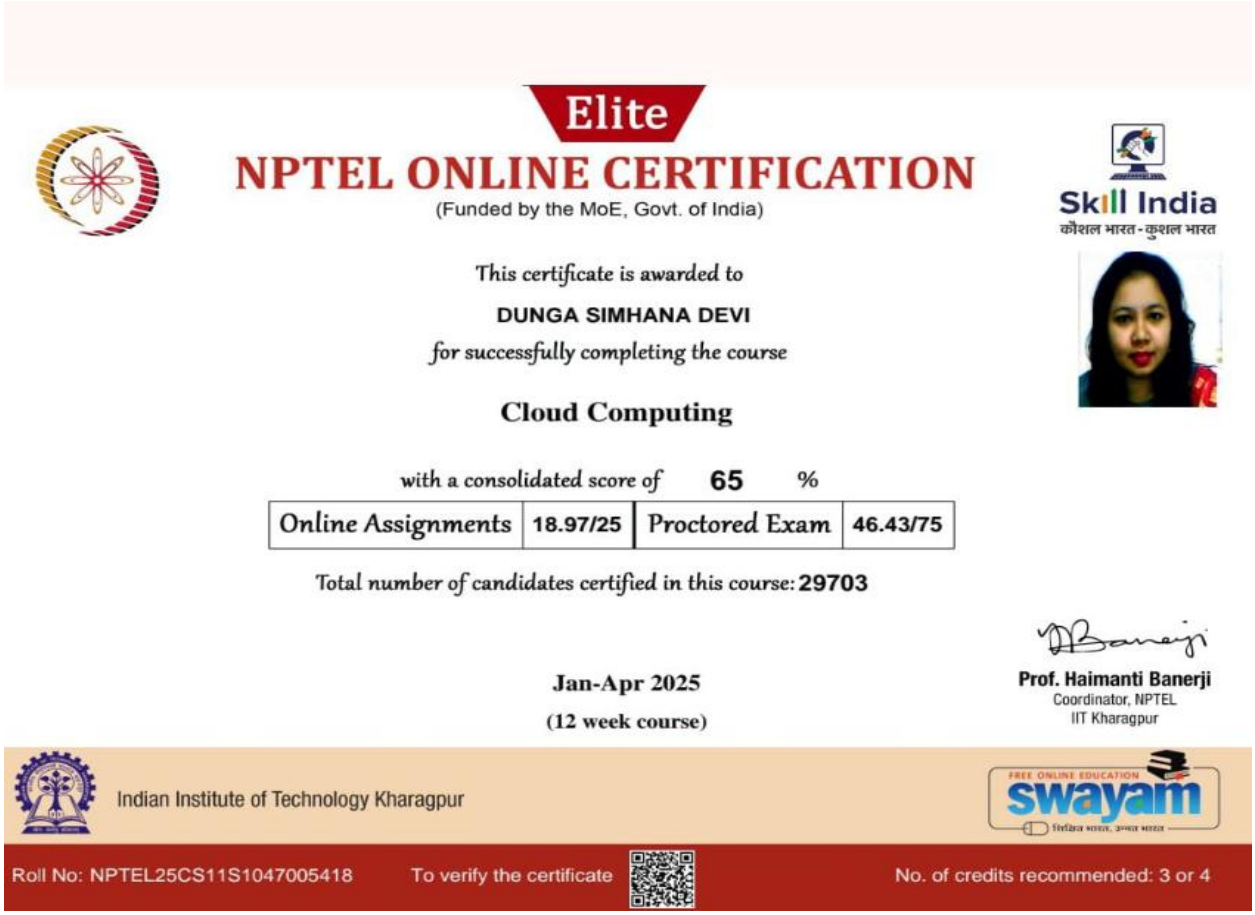
(12 week course)

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

FREE ONLINE EDUCATION swayam

Roll No: NPTEL25CS44S347002555 To verify the certificate No. of credits recommended: 3 or 4



Elite

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत - कुशल भारत

This certificate is awarded to

DUNGA SIMHANA DEVI

for successfully completing the course

Cloud Computing

with a consolidated score of 65 %

Online Assignments	18.97/25	Proctored Exam	46.43/75

Total number of candidates certified in this course: 29703

Jan-Apr 2025

(12 week course)

Prof. Haimanti Banerji
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

FREE ONLINE EDUCATION swayam

Roll No: NPTEL25CS11S1047005418 To verify the certificate No. of credits recommended: 3 or 4

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India

This certificate is awarded to

DUNGA SIMHANA DEVI

for successfully completing the course

Introduction to Database Systems

with a consolidated score of 50 %

Online Assignments	18.63/25	Proctored Exam	31/75

Total number of candidates certified in this course: 2768

Jan-Apr 2025

(12 week course)

Indian Institute of Technology, Madras

swayam

We are proud to celebrate the significant academic accomplishments within our Students Mr. M. Charan and Mr. Y.Y.G.C.K. Reddy, 2nd year Mechanical Engineering have successfully completed the NPTEL 'Product Design and Manufacturing' course, achieving 'Elite + Silver' status for the January-April 2025 session. This demonstrates their dedication to enhancing their skills in a crucial engineering discipline."

Elite

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत

This certificate is awarded to

MANDALOJU CHARAN

for successfully completing the course

Product Design and Manufacturing

with a consolidated score of **75** %

Online Assignments	18.75/25	Proctored Exam	56.11/75

Total number of candidates certified in this course: **3569**

Prof. B. V. Ratish Kumar
Chairman, Centre for Continuing Education
IIT Kanpur

Jan-Apr 2025

(12 week course)

Prof. Satyaki Roy
NPTEL Coordinator
IIT Kanpur

Indian Institute of Technology Kanpur

FREE ONLINE EDUCATION swayam

Roll No: NPTEL25ME67S1247002471 To verify the certificate No. of credits recommended: 3 or 4

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत

This certificate is awarded to

YEDDULA YERRAMREDDY GARI CHARAN KUMAR REDDY

for successfully completing the course

Product Design and Manufacturing

with a consolidated score of **53** %

Online Assignments	19.69/25	Proctored Exam	33/75

Total number of candidates certified in this course: **3569**

Prof. B. V. Ratish Kumar
Chairman, Centre for Continuing Education
IIT Kanpur

Jan-Apr 2025

(12 week course)

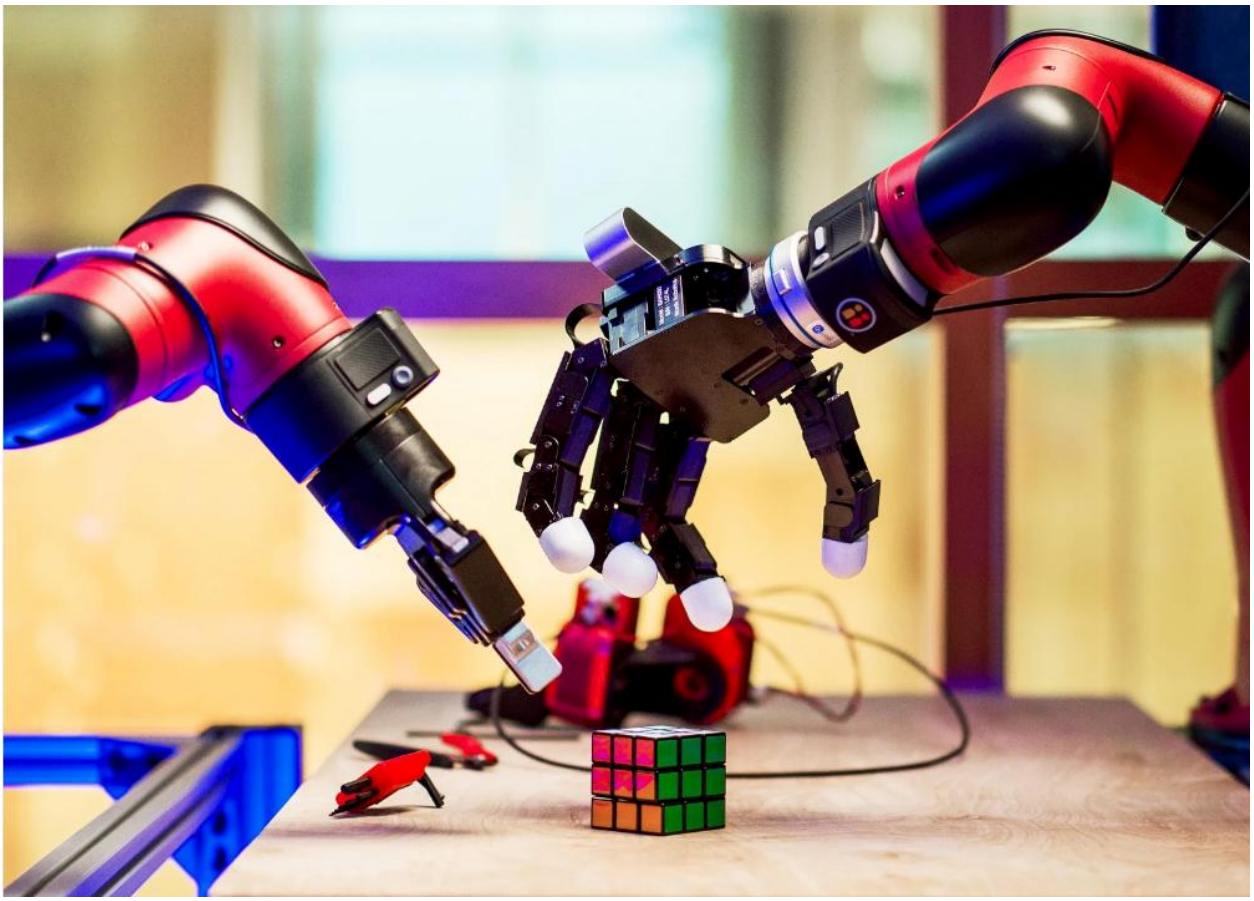
Prof. Satyaki Roy
NPTEL Coordinator
IIT Kanpur

Indian Institute of Technology Kanpur

FREE ONLINE EDUCATION swayam

Roll No: NPTEL25ME67S1147007027 To verify the certificate No. of credits recommended: 3 or 4

"The Mechanical Engineering Department at Narsimha Reddy Engineering College recently hosted an engaging workshop on Fusion 360, providing our students with invaluable hands-on experience in cutting-edge design and manufacturing software. This specialized training equips our future engineers with essential digital skills, enhancing their proficiency in product development and preparing them for industry demands. Such initiatives underscore our commitment to offering practical, skill-oriented education that directly benefits our students' career readiness."



Academic Topper

We are incredibly proud to celebrate the outstanding academic achievements of our Mechanical Engineering students! Congratulations to our top performers: Jammu Balaraju (24X05A0308) from 2nd year, Bura Shiva (23X05A0308) from 3rd year, and Bhujankar Deepika (22X05A0306) from 4th year. Their dedication and hard work exemplify the pursuit of excellence at Narsimha Reddy Engineering College, and we commend them for setting such a high standard for their peers."

S.No.	Year	Roll No.	Name of the Student	CGPA/SGPA	Photo
1	II	24X05A0308	Jammu Balaraju	CGPA:8.00 SGPA:8.00	
2	III	23X05A0308	Bura Shiva	CGPA: 8.16 SGPA: 8.36	
3	IV	22X05A0306	Bhujankar Deepika	CGPA: 8.65 SGPA: 8.71	

Placement

We are pleased to announce successful placements at Surya Tech Solutions, a company at the forefront of technological innovation, providing our students with opportunities in dynamic IT environments.

Our students have secured positions at AEGIS Ltd., a leading firm known for its robust services and solutions, offering valuable career paths in diverse sectors.

We celebrate the placements at Lakshmi Hyundai, a prominent name in the automotive industry, where our graduates will gain hands-on experience in a fast-evolving field.

Several students have been placed with Sutherland, a global leader in process transformation, providing them with exposure to international best practices and professional growth.

S.No.	Name of the Company	No. of Students Placed
1	Surya Tech Solutions	11
2	AEGIS Ltd.,	08
3	Lakshmi Hyundai	16
4	Sutherland	02

Internships Details

"Internships play a crucial role in shaping our students' professional journeys, offering invaluable real-world experience that complements their academic learning. These opportunities allow students to apply classroom knowledge in practical settings, gain industry insights, and develop essential skills for their future careers. We highly encourage all our students to pursue internships as a vital step towards building a strong foundation for their professional success."

Department Name : Mechanical Engineering

Internships Details

S.No	Name of the company	No of students
1	Kintel Power Solutions Pvt LTD	9
2.	Bharat Heavy Electricals Limited	14
3	Vasavi Techo Plast	4

4	South Central Railways Coaching Depot Secunderabad	7
5	Siri Power Systems Technologies Pvt Ltd	12
6	Nexon Motors	5
7	Tata Motors	8
8	Maruti Suzuki Gem Motors	2
9	Power system technologies pvt ltd	3

Roll of honor

We proudly recognize the exceptional academic achievements of our students for the Roll of Honor! Our heartfelt congratulations go to D. Swathi (22X05A0311), P. Mahendar (22X05A0356), and Ch. Aditya (22X05A0308) for their outstanding dedication and performance. Their commitment to academic excellence serves as an inspiration to us all."

Proud Achievement

Our students showcased their creativity and technical skills at the **24-Hour Challenge** during **India Design Week - South India 2025**, held on **24th & 25th April** at **Sairam Institutions, Chennai**.

The event provided our students with an excellent opportunity to work under pressure, think innovatively, and collaborate effectively, reflecting the spirit of futuristic engineering and design.

Mrs. B. Ramya Asst.Prof. from **Narsimha Reddy Engineering College** received a **Certificate of Appreciation** for outstanding mentorship during the prestigious **India Design Week 2025** held at Sairam Institutions, Chennai.


ICTACADEMY

AUTODESK

INDIA
DESIGN WEEK 2025
CHALLENGING. INSPIRING & FUTURISTIC

Certificate of Appreciation

Presented to
B. Ramya
NARSIMHA REDDY ENGINEERING COLLEGE

as the mentor who have successfully motivated and guided students during the 24 Hour Challenge at India Design Week - South India on 24th and 25th April 2025 hosted at Sairam Institutions, Chennai

25

IDW25-3337
C.No

Srikanth V
CEO, ICT Academy