



Jain College of Engineering & Research Belagavi
(Approved by AICTE, New Delhi, Affiliated to VTU Belagavi & Recognized by Govt. of Karnataka)



Department of Mechanical Engineering

Technical Magazine

“MechSpectra-2K24”

Third Edition
2023-2024



About college

At Jain College of Engineering and Research, Belagavi, we are committed to helping our students go beyond the ordinary, setting exceptional standards through innovative thinking and creativity that are nurtured throughout their academic journey. Our approach combines a rigorous academic curriculum with industry relevance, alongside an innovative, values-driven culture, all of which work together to build a strong foundation for the leaders of tomorrow.

Vision and Mission of Institute

Vision

To become a leading institute that offers quality technical education and research, nurturing professionally competent graduates with strong ethical values.

Mission

1. Achieve academic excellence through innovative and effective teaching-learning practices.
2. Establish industry and academia collaborations to cultivate a culture of research
3. Ensure professional and ethical values to address societal needs



About Mechanical Engineering Department

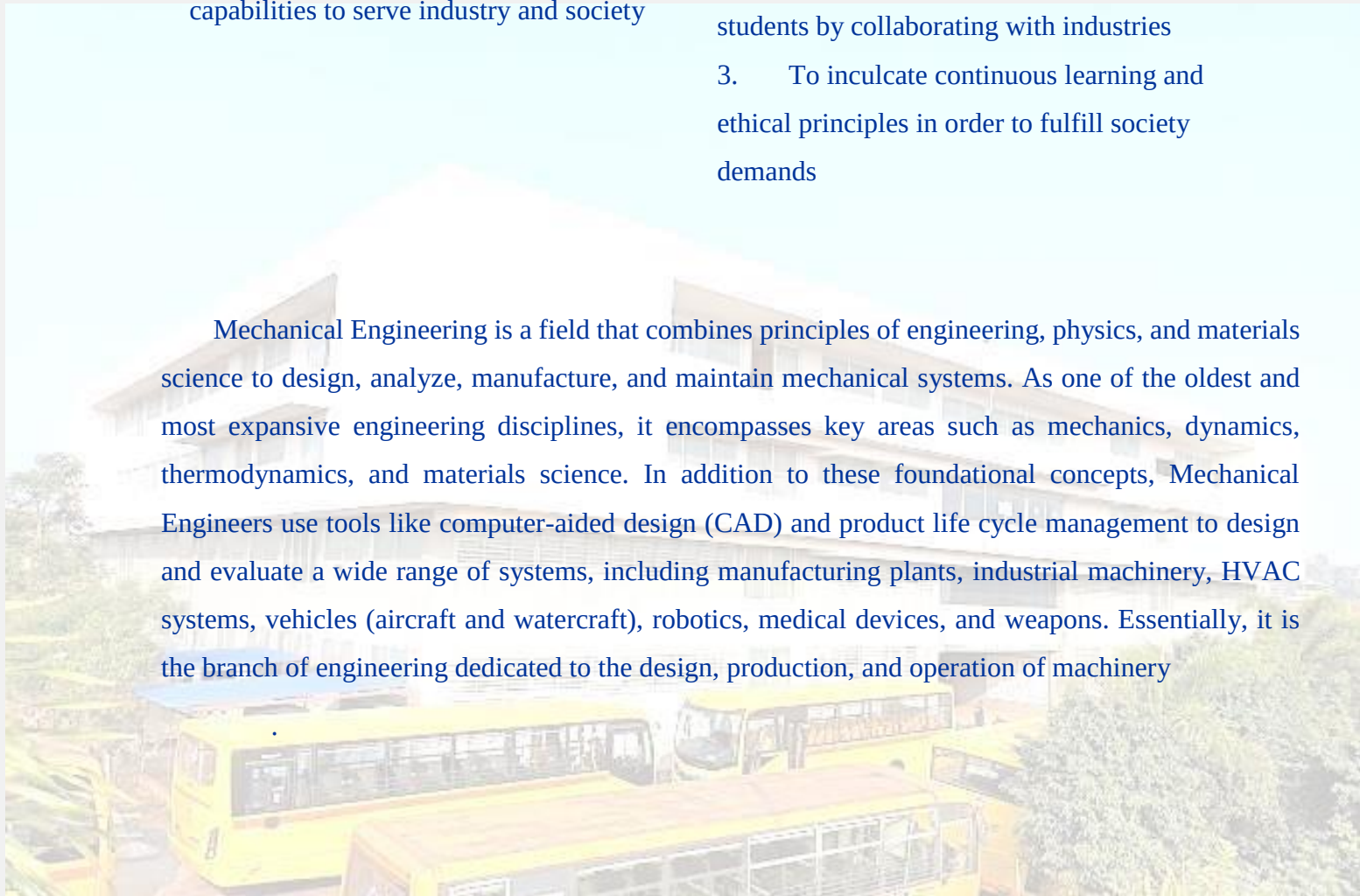
Vision

To develop mechanical engineering graduates with fundamental concepts, practical skills, ethical values and research capabilities to serve industry and society

Mission

1. To cultivate multidisciplinary problem-solving skills, build confidence and contribute to societal improvement
2. To promote research abilities within students by collaborating with industries
3. To inculcate continuous learning and ethical principles in order to fulfill society demands

Mechanical Engineering is a field that combines principles of engineering, physics, and materials science to design, analyze, manufacture, and maintain mechanical systems. As one of the oldest and most expansive engineering disciplines, it encompasses key areas such as mechanics, dynamics, thermodynamics, and materials science. In addition to these foundational concepts, Mechanical Engineers use tools like computer-aided design (CAD) and product life cycle management to design and evaluate a wide range of systems, including manufacturing plants, industrial machinery, HVAC systems, vehicles (aircraft and watercraft), robotics, medical devices, and weapons. Essentially, it is the branch of engineering dedicated to the design, production, and operation of machinery





Principal Message

Dear Students, Faculty, and Alumni,

I am delighted to welcome you to the third edition of our Mechanical Engineering Department Technical Magazine “MechSpectra-2K23”. This edition celebrates the hard work, creativity, and achievements of our students, faculty, and staff.

Mechanical engineering is a field that continues to evolve rapidly, and I am proud of how our department is contributing to this progress. From exciting student projects to innovative research by our faculty, this magazine showcases the spirit of learning, collaboration, and excellence that defines us.

I want to thank everyone who contributed to this issue for their dedication and effort. I also encourage all of you to continue striving for greatness in your studies, research, and projects. Together, we can continue to make meaningful contributions to the world of engineering.

With Warm Regards,

Dr.S.V.Gorabal

Principal,

Jain College of Engineering and Research

“You have to grow from the inside out. None can teach you, none can make you spiritual. There is no other teacher but your own soul.”



HOD's message

Dear Students, Faculty, and Alumni,

It is a pleasure to present the third edition of our Mechanical Engineering magazine "MECHSPECTRA-2K23-24" This publication highlights the hard work and creativity of our students and faculty, showcasing the latest projects, and innovations in the field of mechanical engineering.

Our department continues to grow and evolve, and this magazine is a great way to share the achievements and ideas that make us proud. I hope that this edition inspires all of you to keep pushing boundaries and exploring new possibilities in engineering.

I would like to thank everyone who contributed to this issue, and I look forward to seeing more exciting developments from our department in the future.

**With Warm Regards,
Dr.K.B.Jagadeeshgouda
HOD**

"Perform your obligatory duty, because action is indeed better than inaction."- Bhagavad Gita.

Industrialist Message

Dear Students, Faculty, and Readers,

*I am delighted to share my thoughts for the third edition of the **Mechanical Engineering Department Magazine**. As an industry professional, I am always excited to see how academic institutions like yours are preparing the next generation of engineers.*

Mechanical engineering plays a vital role in many technological innovations today, from automation to sustainable energy solutions. The knowledge and skills you are gaining during your studies will help solve real-world problems and shape the future of various industries.

I am truly impressed by the dedication and creativity shown by the students and faculty in your department. It is clear that you are not only mastering core engineering principles, but also thinking outside the box to drive innovation.

I encourage you all to continue exploring new ideas, collaborating with others, and applying your learning to real-world challenges. The work being done in your department today will help build the solutions of tomorrow.

Congratulations to everyone involved in putting this magazine together. I look forward to seeing all of you succeed and make an impact in the field of mechanical engineering.

Best regards,

Mr. Vijay Pawar

CEO, OMNEITY group

Udyambag Belagavi,

Karnataka

“Success comes from experiences, experiences come from bad experiences.”- Sandeep Maheshwari

Editor message



Dear Students, Faculty, and Alumni,

Welcome to the third edition of the Mechanical Engineering Department Magazine “MECHSPECTRA-2K23” We are thrilled to bring you another issue filled with exciting updates, student achievements, faculty research, and the latest developments in the field of mechanical engineering.

In this edition, we celebrate the hard work and dedication of our students, spotlighting their innovative projects, internships, and academic accomplishments. You’ll also find insightful contributions from our esteemed faculty, showcasing ongoing research and cutting-edge technologies that are shaping the future of mechanical engineering.

As always, this magazine serves as a platform for sharing knowledge, fostering collaboration, and inspiring the next generation of engineers. We’d like to extend our gratitude to all contributors—students, faculty, and staff—whose hard work made this issue possible. Thank you to our readers for your continued support, and we hope you enjoy this edition as much as we enjoyed putting it together.

Happy reading, and we look forward to seeing you all continue to excel in your engineering journey!

Regards,
Prof. Karthik N Ramadurg
Editor
Mechspectra
2K23-24

“Live as if you were to die tomorrow. Learn as if you were to live forever.”

Mahatma Gandhi,

MechhSpectra 2K23-24- Editing Team

Sl no Name

- | | | |
|----|------------------------|----------------|
| 1. | Prof.Karthik Ramadurg | Chief editor |
| 2. | Prof Prasanna M | Co-editor |
| 3. | Mr.Krishnamurthy Goggi | Student editor |
| 4. | Mr.Vibhav Raibole | Student editor |
| 5. | Mr.Vishal | Student editor |
| 6. | Ms.Kshitika D | Student editor |
| 7. | Ms.Kushi Shinde | Student editor |
| 8. | Mr.Mahantesh | Student editor |



List of faculties

Sl.No	Name	Qualification	Designation	Specialization
1	Dr.S.V.Gorabal	Ph.D.	Principal & Professor	Production and Management
2	Prof. Rajshekar Biradar	M.Tech	Assistant Professor	Advance Thermal Power & energy system
3	Prof. Prasanna P Mangaonkar	M.Tech	Assistant Professor	Machine Design
4	Prof. Praveen K Patil	M.Tech	Assistant Professor	Thermal Power Engineering
5	Dr. K B Jagadeshgouda	Ph.D	Professor	Design Engineering
6	Prof. Karthik Ramdurg	M.Tech	Assistant Professor	Thermal Power Engineering
7	Prof. Dhananjaya.B.Patil	M.Tech	Assistant Professor	Design Engineering
8	Prof. Santosh Awade	M.Tech	Assistant Professor	Machine Design
9	Dr. Gangadhar M Kanaginahal	Ph.D	Associate Professor	Manufacturing Science and Engineering
10	Prof. Rayappa. S Mahale	M.Tech	Assistant Professor	Production Management
11	Dr. Sadashiv Bellubbi	Ph.D	Associate Professor	Production Engineering
12	Prof. Ganesh Chitnis	M.Tech	Assistant Professor	Thermal Power Engineering
Techical staffs				
	Mr. MallappaKhatawe	Diploma in Mechanical Engineering	Foreman	
	Mr.Jotiba Badiger	Diploma in Mechanical Engineering		

MOUs Signed by Department of Mechanical Engineering

Improving collaboration between academic institutions and industries is essential today. Students benefit from gaining industry knowledge and exposure alongside a strong academic foundation. Conversely, industries seek graduates who not only excel academically but also have practical experience. Establishing Memoranda of Understanding (MOUs) with various industries aims to foster this interaction, bridging the gap between academic theory and real-world application. Additionally, faculty members can greatly enhance their ability to guide students by gaining insights into the latest industry practices.

Objectives

- To enhance students' skills and knowledge.
- To give an insight into the latest developments/requirements of the industries.
- To promote industrial training / visits.
- To help the delivery of the Internship.
- To help the students for their placement.
- To arrange guest lectures on technology trends.
- To collaborate with faculty in research & consultancy work

Sl no

MOU Signed

1. Abhishek Alloys, Pvt. Ltd. Plot No. 58 Machhe Industrial Estate, Belgaum, Karnataka.
2. Jina Special Steel Works Pvt. Ltd. K.I.A.D.B, Industrial area, Honga, Belagavi, Karnataka
3. CADD engineering tilakwadi belagavi
4. Omneity Group, Udyambag, Belgaum, Karnataka

Placements during 2023-2024

S.No	Name of the student placed	Name of the Employer
1	Chaitra Takkekar	Belgaum Aqua Valves Pvt. Ltd.
2	Kiran Hiremath	Edustation
3	Krishnamurthy Goggi	J Spider and Q Spider
4	Kshitika Doddannavar	Aequs Belagavi
5	Manish Kademani	Aequs Belagavi
6	Natasha Fernandes	Belgaum Aqua Valves Pvt. Ltd.
7	Nehal Godase	Technifix Pvt. Ltd
8	Rahul Patil	Belgaum Aqua Valves Pvt. Ltd.
9	Rekha Chittapache	Belgaum Aqua Valves Pvt. Ltd.
10	Shweta Sasanur	Aequs Belagavi
11	Vaibhav Raibole	Ghatage Patil Industries Ltd.
12	Varsha Holennavar	Ghatage Patil Industries Ltd.
13	Vishal Rudragoudar	J Spider and Q Spider
14	Akash Paschapur	Belgaum Aqua Valves Pvt. Ltd.
15	Anjeneya Mense	J Spider and Q Spider
16	Ashwin Halgekar	Aequs Hubballi
17	Manoj Gondkar	Belgaum Aqua Valves Pvt. Ltd.
18	Omkar Ugare	Creintors Automation Sloutions Pvt. Ltd.
19	Purushottam Jagoji	Belgaum Aqua Valves Pvt. Ltd.
20	Shubham Pawale	Technifix Pvt. Ltd

Students with University Rankings

The Department of Mechanical Engineering offers a distinctive teaching and learning environment, supported by a skilled and experienced faculty. Students are encouraged to participate in co-curricular activities and pursue hobby projects. We are proud to highlight that Mr. Manish Kademani, a student from the 2020-2024 batch of Jain College of Engineering and Research, achieved 6th rank in the Final VTU examination. Additionally, Mr. Ketan Jadav and Miss Mrudula Malshet from the 3rd semester secured 8th and 12th places, respectively, in the VTU examination.



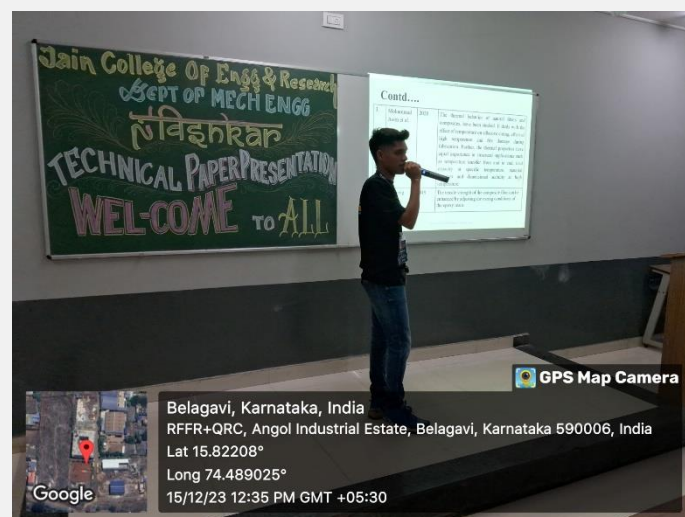
Technical Events

- A session on “Know your tree by QR Code” was arranged by the ME Department for 7th Semester ME students on 25/08/2023 which was delivered Prof. Rahul R B Faculty and NSS Coordinator JCER –Belagavi
- Department of Mechanical Engineering Organizes a “Engineering your Personal finance and Wealth creation” on 27/09/2023 for 7th semester students And key speakers for the sessions were Mr. Mr. Shivaji Shinde, and Mrs. Asha Anneknavekar from Founder, Shivaji Shinde Financial Services, Belagavi.
- A session on “Personality Development and Moral Values” was arranged by the ME Department for 3rd and 7th Semester ME students on 26/02/2024 which was delivered by Sri Jiva, Ramakrishna Ashram, Belagavi



Technical Paper Presentation

Technical presentation skills help students come up with new ideas by creating interesting slides for their talks. Using presentation aids makes the talk more engaging, and making these aids can also build students' confidence. On June 9, 2023, the Mechanical Engineering department Organised a technical paper presentation for students from both inside and outside the college during the technical fest "SAVISHKAR-2K23-24.



Industry visit organized for students

Industrial visits give students a glimpse into the real working environment, including workstations, plants, assembly lines, machines, and systems, while allowing them to interact with skilled and experienced professionals. The department has organized these visits for Mechanical Engineering students..

- The students of 3rd year are taken to industrial visit at Abhishek Alloys Pvt.Ltd belagavi on 4th September 2023.
- The students of 3rd year are taken to industrial visit at Ashok Iron Works Pvt. Ltd belagavi on 27th July 2024
- The students of 3rd year are taken to industrial visit at Shantesh Motors belagavi on 27th July 2024



Industrial projects

Industrial projects are highly valuable for mechanical engineering students, as they offer practical exposure and hands-on experience in real-world engineering situations. Below are some of the industrial projects undertaken by Mechanical Engineering students.



Overall, industrial projects offer a practical, enriching experience that complements the theoretical knowledge gained in the classroom, preparing mechanical engineering students to excel in their future careers.

Project Exhibition

Department of Mechanical Engineering organized for a Pre -final year student's in-house Mini project exhibition and demonstration on 3rd July 2023-2024 in J



YRS/NSS/Social Awareness and Responsibility

Social Awareness and Responsibility involve recognizing, understanding, and valuing the connections between people and their natural environment. This focus emphasizes respectful and caring interactions with others and the world around us. Individuals who are socially aware and responsible contribute to the well-being of their communities and environments, fostering inclusive spaces where everyone feels safe and valued. Such individuals positively impact their families, communities, and the environment; empathize with others and appreciate different perspectives; resolve conflicts peacefully; and build and maintain healthy relationships. The Department of Mechanical Engineering conducts the following social activities

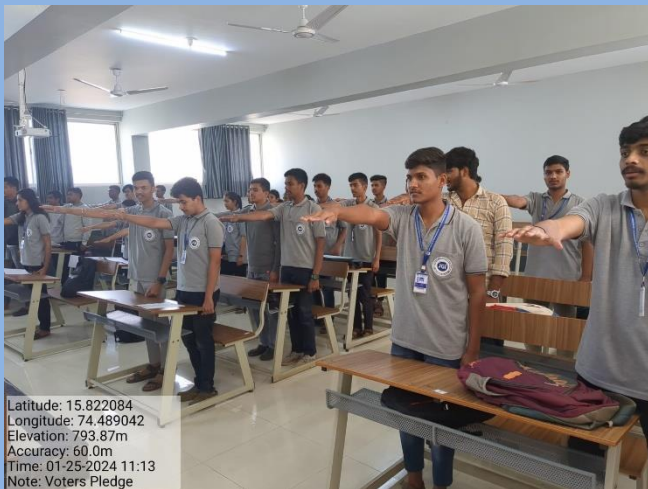
1. Adoption of Tree
2. Awareness of Clean campus
3. National voters day

Adoption of Tree

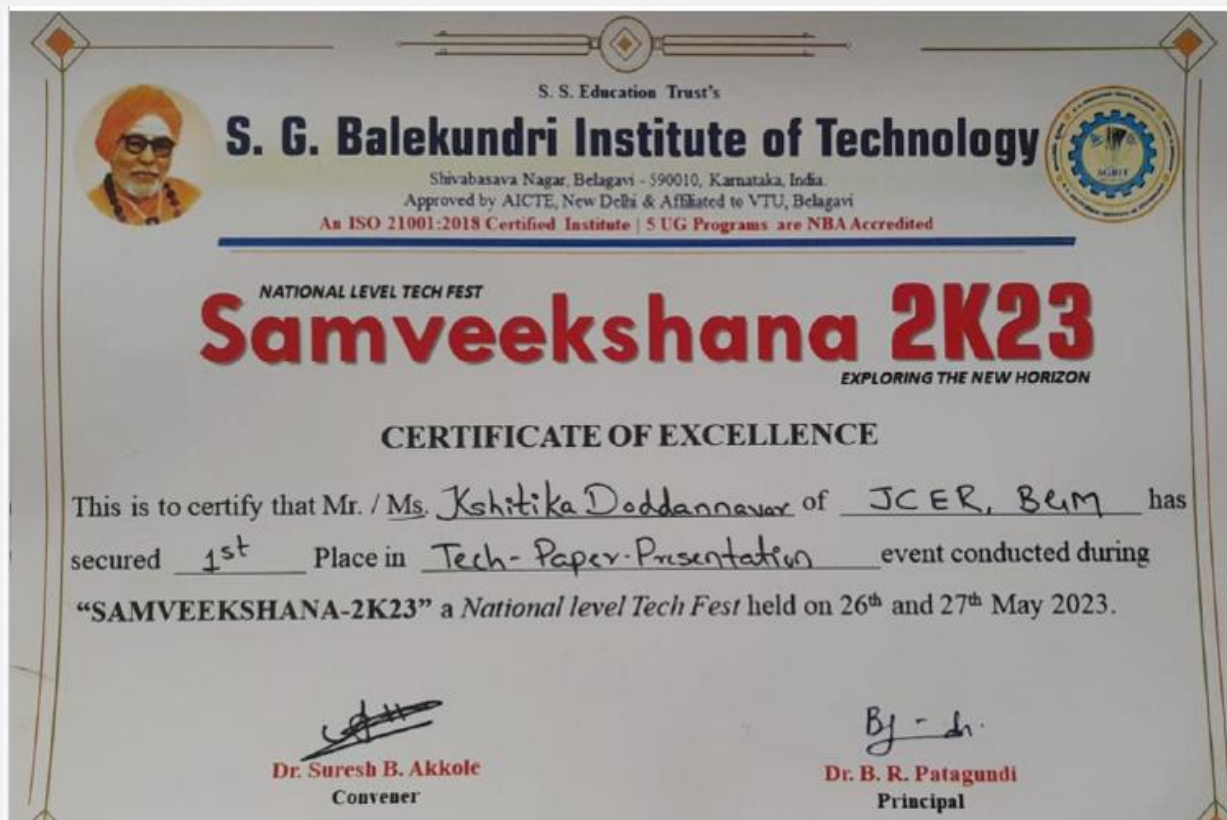


National Voters day

National Voters Day is an important observance that encourages citizens to participate in the electoral process and highlights the significance of voting. Established to promote awareness of voter rights and the importance of registration, the day often features community events like workshops and registration drives. with an elctrorial litracy club on the national vaoters day pledge is taken by department of mechanical engineering students on 25/01/2024.



Students Corner



ICATCHCOME 2023

2023 International Conference on
Advanced Technologies in Chemical, Construction and Mechanical Sciences (ICATCHCOME 2023)
09 - 10, February 2023 | Coimbatore, Tamil Nadu, INDIA

Certificate

This certificate is presented to

**Akash Mirashi**
UG Student, Department of Mechanical Engineering,
Jain College of Engineering and Research, Udyambag,
Belagavi-590008, Karnataka, India.

for presenting the research paper entitled "Design and Analysis of Horizontal Crystallizer for Agro-Chemical Industries" in the 2023 International Conference on Advanced Technologies in Chemical, Construction and Mechanical Sciences (ICATCHCOME 2023) held at KPR Institute of Engineering and Technology, Coimbatore, Tamil Nadu, India during 09 - 10, February 2023. The Conference has been organized by the Center for Research and Development (CfRD), KPR Institute of Engineering & Technology.

Publication Partner

Paper ID: CCM 4016

Organized by

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Coimbatore, Tamil Nadu, INDIA
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Dr. Rajeshkumar L.
Coordinator


Dr. P. Thangaraj
Conference Chair


Dr. Akila M
General Chair



Elite

NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to
ABHISHEK V KANBARKAR
for successfully completing the course

Advanced Machining Processes

with a consolidated score of **67** %

Online Assignments	23.54/25	Proctored Exam	43.5/75
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Total number of candidates certified in this course: **799**

Aug-Oct 2023
(8 week course)

T.V. Bharat

Prof. T. V. Bharat
Head, Centre for Educational Technology
NPTEL Coordinator, IIT Guwahati



Indian Institute of Technology Guwahati



Roll No: NPTEL23ME99S532200134

To verify the certificate



No. of credits recommended: 2 or 3

Google

Jan 28, 2024

Abhishek Kanbarkar

has successfully completed

Foundations of Cybersecurity

an online non-credit course authorized by Google and offered through Coursera

Amanda Brophy

Amanda Brophy
Global Director of Google Career Certificates

COURSE
CERTIFICATE



Verify at:
<https://coursera.org/verify/NWRB99UXB586>
Coursera has confirmed the identity of this individual and their participation in the course.

Faculty corner

Here are the Achievements of Mechanical Engineering Department faculties of JCER during 2023-2024

Sl no	Name of the staff	Publication / Book Chapter / Patent	Title of the Paper Published	Journal /Book	DOI
1	Dr. Gangadhar M Kanaginahal	Book Chapter	Mechanical Alloying of Magnesium and Titanium Alloys	Advancements in Powder Metallurgy: Processing, Applications, and Properties	10.4018/978-1-6684-9385-4.ch005
			Mechanical Alloying of Aluminium Alloys		10.4018/978-1-6684-9385-4.ch004
		Publication	Tensile, compressive, and fracture behavior of Habeshian chopped banana/epoxy core sandwich woven banana composite	Biomass Conversion and Biorefinery	https://doi.org/10.1007/s13399-024-05455-y
		Publication	Influence of Habesha eggshell on the dry sliding wear behavior of epoxy composites		https://doi.org/10.1007/s13399-024-05482-9
		Publication	An experimental study on the hardness, inter laminar shear strength and water absorption behavior of Habeshian banana fiber reinforced composites	Journal of Natural Fibers	https://doi.org/10.1080/15440478.2024.2338930
		Publication	Flexural behavior of epoxy composites reinforced with banana fibers in different architectures: experimental, analytical, and numerical approaches	Biomass Conversion and Biorefinery	https://doi.org/10.1007/s13399-024-05872-z
		Publication	From Powders to Alloys: A Study of the Mechanical Alloying Process and Sintering	Journal of Mines, Metals and Fuels	10.18311/jmmf/2023/45622
		Publication	Influence of Fiber Type on Electrical, Thermal and Mechanical Properties of Glass Fiber reinforced Polymer Composites for Insulation Panel Applications	Journal of The Institution of Engineers (India): Series D	https://doi.org/10.1007/s40033-024-00808-3
		Patent	Solar-Powered Bird And Animal Repeller For Agriculture	INDIAN Patent	Application No: 202341072022 A
2	Prof. Rayappa S Mahale	Book Chapter	Mechanical Alloying of Magnesium and Titanium Alloys	Advancements in Powder Metallurgy: Processing, Applications, and Properties	10.4018/978-1-6684-9385-4.ch005
			Mechanical Alloying of Aluminium Alloys		10.4018/978-1-6684-9385-4.ch004
		Publication	From Powders to Alloys: A Study of the Mechanical Alloying Process and Sintering	Journal of Mines, Metals and Fuels	10.18311/jmmf/2023/45622
		Patent	Solar-Powered Bird And Animal Repeller For Agriculture	INDIAN Patent	Application No: 202341072022 A

		Publication	Fabrication of mechanically alloyed high entropy alloys (20-Fe-20Cr-20Ni-20Mn-20Ti) modified carbon paste electrode sensor for the cyclic voltammetric determination of methyl orange	Inorganic Chemistry Communications	https://doi.org/10.1016/j.inoche.2024.112428
		Publication	Fabrication of Mechanically Alloyed Super Duplex Stainless Steel Powder-Modified Carbon Paste Electrode for the Determination of Methylene Blue by the Cyclic Voltammetry Technique	ACS omega	https://doi.org/10.1021/acsomega.3c09163
		Publication	The Behavior of Banyan (B)/Banana (Ba) Fibers Reinforced Hybrid Composites Influenced by Chemical Treatment on Tensile, Bending and Water Absorption Behavior: An Experimental and FEA Investigation	Journal of Composites Science	https://doi.org/10.3390/jcs8010031
		Publication	Effect of Ball to Powder Ratios on the Phase Transformation of Austenite and Ferrite During Ball Milling of SAF-2507 Super Duplex Stainless Steel Powders	Journal of The Institution of Engineers (India): Series D	https://doi.org/10.1007/s40033-023-00624-1
		Book Chapter	Mechanical alloying: a catalyst for advancing tungsten heavy alloy fabrication	Mechanical Alloying of Ferrous and Non-Ferrous Alloys Processing, Properties, and Applications	https://doi.org/10.1016/B978-0-443-16151-3.00007-5
		Publication	Investigation of wear behavior for three-body made of CA-40 steel and nickel hard cast iron by abrasion method	THIRD INTERNATIONAL CONFERENCE ON ADVANCES IN PHYSICAL SCIENCES AND MATERIALS: ICAPSM 2022	https://doi.org/10.1063/5.0178634
		Book Chapter	A Review on Cyclic Voltammetric Investigation of Toxic Heavy Metals	Frontiers in Voltammetry	10.5772/intechopen.108411
3	Prof. Prasanna Mangaonkar	Publication	Design and analysis of horizontal crystallizer for agro-chemical industries	Materials Today: Proceedings	https://doi.org/10.1016/j.matpr.2023.06.269