



OPJU

UNIVERSITY OF STEEL TECHNOLOGY
AND MANAGEMENT

AYAS

Newsletter 2024

Vol-2; Issue - 1



**Department of
Metallurgical Engineering
Centre of Excellence in Steel Technology**



Metallurgical Engineering OPJU



Metallurgical Engineering at OPJU



Metallurgical Engineering at OPJU

Message of the Vice Chancellor

“

It is with an immense pleasure and pride to present the Volume 2 Issue 1, of the Newsletter “AYAS” 2024 of the Department of Metallurgical Engineering and Center of Excellence in Steel Technology. It extends me an opportunity to connect directly to all of you to share the progress made by the department through this Newsletter. I am delighted to share with you that the department recently added Structural Metallurgy Laboratory in which an Optical Microscope (Model AXIS 5, Make: Carl Zeiss, Germany) with high level of optics enable students to observe the microstructure and carryout quantitative measurement. This laboratory is also catering the students to learn Computational Metallurgy and 3-D printing, AI/ML in steel industries and many upcoming areas of excellence. It is my great pleasure to inform you all that the three students of the department qualified in GATE examination with a good rank in 2024. Many final year students have already placed for jobs in reputed Industries. This shows how the Department is dedicated to shape the students for future needs. A recent Faculty Development Program (FDP) organized by the Department on Iron and Steel Technology attended more than 450 participants. Eminent speakers from Academic Institutions and Industries joined the FDP and shared their thought. I am very happy to say that we provide a very conducive teaching - learning atmosphere to the students with world class class rooms, modern interactive boards and needless to mention about well-qualified teaching staff. All my best wishes to the TEAM META for great success in their future endeavor.

”



Dr. R. D. Patidar
Vice Chancellor

Message of the Head of the Department

“

I am happy to share that “Department of Metallurgical Engineering” is releasing its Volume 2 Issue 1 of departmental newsletter “AYAS” 2024. The department of Metallurgical Engineering and Center of Excellence in Steel Technology are uniquely positioned to make a positive impact on academic curriculum, innovative research on cutting edge technology, and meaningful service activities. The department focuses on interdisciplinary research and broad filed of fundamental and advanced teaching areas such as Advanced Iron and Steel Technology, Modelling and Simulation of Metallurgical Processes, Advanced Material Processing & Characterization and Artificial Intelligence and Machine Learning in Steel Industries. The students are given ample opportunities to gain hands on experience in all advanced lab facilities. The department has collaborations with various R & D organization and iron and steel industries which helps the students to receive better skills for immediate job opportunities and entrepreneurship. The department congratulates the students qualified GATE 2024 and placement for jobs in different organizations. All our best wishes to all the final year students for their future endeavor.

”

Dr. S. Das
Head & Steel Chair Professor



Courses

Diploma in (Metallurgical Engineering)

B.Tech in (Metallurgical & Materials Engineering)

M.Tech (Material Science & Technology)

Ph.D (Metallurgical & Materials Engineering)

Degree Awarded

Ph.D in Metallurgical Engineering

- Ph.D. Scholar **Mr. Pradip Kumar Patra** successfully defended his thesis on "**Development of a hot rolled ultra-high strength steel with YS>700MPa through CSP route**" under guidance of Dr. Rajesh Jha and Dr. Ashok K Srivastava dated March 12, 2024. **Dr. Anindya Basu**, Professor, NIT Rourkela (External Examiner), **Dr. R. D Patidar** (Vice Chancellor), **Mr. Anurag Vijaywargiya** (Registrar), **Dr. S. Das** (HoD) and all faculty members of the department were present in the viva voce.



Newly Added Instruments

- The department of Metallurgical Engineering purchased new instruments for research and laboratory facilities such as **Salt Bath Furnace (1200°C)** and **High-Resolution Optical Microscope**, Make: Carl-Zeiss, Germany, under Centre of Excellence in Steel Technology (COEST).



High Resolution Optical Microscop, Make: Carl-Zeiss



Salt Bath Furnace 1200°C

Publications & Patents

- A. Swarnakar, **M. Kalyan Phani**, Arghya Majumder, Chanchal Biswas, *Study of Green Ball Characteristics and its Relationship with Sinter Bed Permeability*, AIP Conference Proceedings 2888, 020001 (2023)
- B. Appala Raju, K.V.K.S Prakash, **M. Kalyan Phani**, *DRI (Direct Reduced Iron) Accretion To Replace Iron Ore And Quartz Consumption In The Production Of Silico-Manganese*, AIP Conference Proceedings, 2888, 020024 (2023)
- Md Izhar Hussain, **M. Kalyan Phani**, P. Mallikharjuna Rao, A. Majumder, B. N. Roy, *Application of Taguchi Method for Experimental Design of Dephosphorization process of steel through Induction furnace route*, Eur. Chem. Bull. 12(10) (2023) 13030-13048
- **M. Kalyan Phani**, 'Welding-Materials, Fabrication Processes and Industry 4.0', ISBN 978-1-83769-871-4, (2023) (Book Chapter)
- **M. Kalyan Phani**, "Additive manufacturing: Environmental impact, and future perspective" (2023) Springer Nature ISBN 978-981-99-5948-8
- A. Kundu, **P. Biswas**, **D. Patel**, J. Nayak, R. K Verma, A. Mallik, S. Das, *Effect of Low Degree Electromagnetic Field on Solidification Mechanism and Mechanical Properties of Twin Roll Cast Al 7075 Alloy*, JOM (2023) <https://doi.org/10.1007/s11837-023-06173-y>
- **N. Kumar**, J. Jasani, Y. Sonvane, J. G Korvink, A. Sharma, B. Sharma, *Unfolding the hydrogen gas sensing mechanism across 2D Pnictogen/graphene heterostructure sensors*, Sensors and Actuators B: Chemical, 399 (2024) 134807
- **N. Kumar**, A. Sharma, M. K Manoj, B. Ahn, *Taguchi optimized wear and self-lubricating properties of Al-alloy composite reinforced with hybrid B₄C–MoS₂ particulates*, J Mater Res Technol 24 (2024) 4142-4151.
- **M Kalyan Phani**, *Welding Processes in Advanced Manufacturing*, Int J Conf Proc. 3(5) (2024);DOI: 10.31031/ICP.2024.03.000572
- **Dr. Vatsala Chaturvedi** and **Dr. Deepak Patel** received Indian Design Patent entitled "Alloy Mixing and Casting Machine" with application number 387094-00
- **Dr. Prasenjit Biswas** received Indian Design Patent entitled "3D Printing Machine" with application number 387594-001.
- **Dr. Prasenjit Biswas** received Indian Design Patent entitled "Low Degree Electromagnetic Twin Roll Casting Machine" with application number 387595-001.

Research Projects

- **Dr. M. K. Phani & Dr. S. Das** - Controlled In – Line heat treatment of rail steels – Rail Research Centre, Delhi & RUBM, JSP, Raigarh - (Ongoing).
- **Dr. Sibnath Kayal** - Cancer Therapy by Stimuli-Responsive Metal-Organic Framework (MOF) Based Drug Delivery Systems to Africa India Mobility Fund – DBT/Wellcome Trust India Alliance - (Ongoing).
- **Dr. Sibnath Kayal** - Development of a prototype device for oxygen separation from air, a strategic technological solution to control the food spoilage- International Cooperation Bilateral scheme (DST- India and MSTR – Sri Lanka) - (Ongoing).
- **Dr. Satyabrata Das & Dr. Trinath Talapaneni** - Utilization of submerged arc furnace slag (Ongoing).
- **Dr. Nidhi Khobragade & Dr. Vatsala Chaturvedi** - Development of niobium carbide reinforced copper composites through powder metallurgy route - (Seed Money Project- OPJU Ongoing).

Visitors in the Department

- **Mr P K Biju Nair, Executive Director, JSP Raigarh** visited OPJU campus and department of Metallurgical Engineering on April 05, 2024. He visited the departmental laboratories and Centre of Excellence in Steel Technology.



- The guest of honour **Mr. Kimmo Siira, Counsellor Trade and Investments at Ministry for Foreign Affairs of Finland** and **Mr. Chander Dutta, Managing Director at Elematic India Pvt Ltd.** visited OP Jindal University on February 15, 2024. The Honourable Guest, Vice Chancellor (Dr. R. D Patidar), Deans & Directors of all other department visited Centre of Excellence in Steel Technology and laboratories of Metallurgy Department.
- **Dr. Chandrashekar Verma, Regional Officer, AICTE** visited OPJU Campus and department of Metallurgical Engineering on January 10, 2024. He engaged in insightful discussions with our Vice-Chancellor, Registrar, and leadership team, sharing valuable insights and ideas. Dr. Chandrashekar Verma visited Centre of Excellence in Steel Technology.
- **Dr. Goutam Sutradhar, Director NIT Jamshedpur** visited Department of Metallurgical Engineering on March 21, 2024



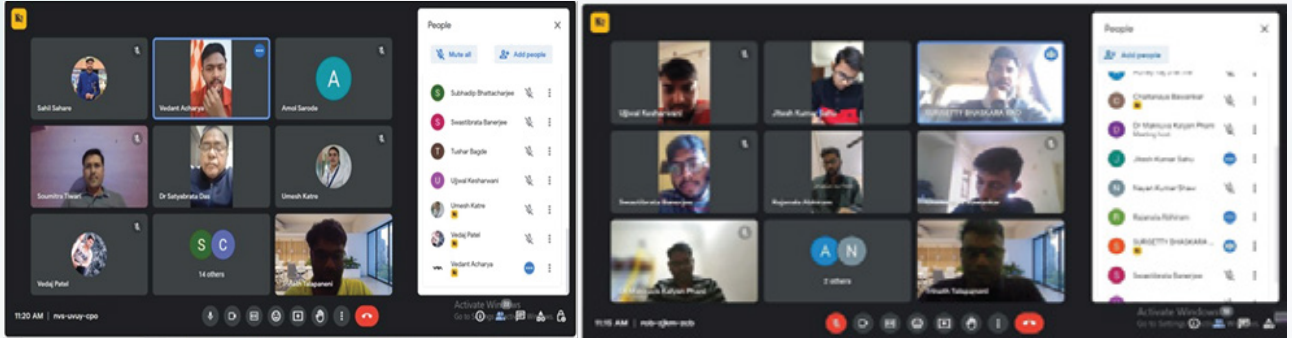
Events: Inauguration of Structural Metallurgy Lab

- The department has established the **Structural Metallurgy Lab** having facility of High-Resolution Optical Microscope, Make: Carl-Zeiss, Germany, was inaugurated by Hon'ble Vice-Chancellor Dr. R. D Patidar. All Deans, Directors of various centres, Head of the Department Dr. S. Das with other faculty members and metallurgical engineering students (Diploma & B.Tech) were present in the inaugural ceremony.



Event - Pre-placement Training

- The department has conducted pre-placement training on November 26, 2023 and providing the technical information to the B. Tech (7th semester) students for PI round of Uno-Minda drive. The Alumni students (Mr. Sahil Sahare, Mr. Umesh Prabhu, Mr. Chailesh, Mr. Swapnil, Mr. Vedant Acharya) working in Uno-Minda at different locations in India also motivated and guided the students for the drive.



- The department conducted an interactive session on January 03, 2024, at 7:00 PM as a part of Pre-Placement Training and provided the technical information and clarified the queries to the B. Tech students (8th semester), for the PI round of JSW Drive.
- The department has conducted an interactive session for B. Tech (8th semester) students with Alumni working in AMNS and by Dr. Satyabrata Das on January 11, 2024, as a part of Pre- Placement Training for PI round of AMNS Drive.

Event - SME Technical Activities

- Society of Metallurgical Engineers (SME), Department of Metallurgy, OPJU** conducted programme on February 29, 2024 to evaluate the student's technical domain. B.Tech (2nd, 4th and 6th semester) and Diploma (Meta-2nd and 6th; Mining-2nd semester) students participated in the technical quiz competition and technical presentations. The technical quiz consisted of 100 multiple choice questions including 80 descriptive questions from Metallurgical Engineering domains. The technical presentation competition consisted of technical topics in the same domains. The duration of the presentation was 20 minutes followed by viva-voce. Mr. Sakir Ali (B.Tech 6th), Ms. Aleena Anthony (B.Tech 4th) and Mr. Viraj Umam (B.Tech 4th) won first, second and third prize respectively in technical quiz. Mr. Sakir Ali (B.Tech 6th), Mr. Rahul Ku. Sahu (B.Tech 4th) and Mr. Vishal Singh (B.Tech 6th) won first, second and third prize respectively in technical presentation competition.



- Society of Metallurgical Engineers (SME), Department of Metallurgy, OPJU** conducted an online 'Technical Talk' entitled "Novel heat treatment to improve temper embrittlement resistance of martensitic stainless steel" delivered by Dr. Kirtiratan Godbole, Assistant Professor, MNIT-Allahabad, U.P. on March 26, 2024.

Events: Faculty Development Programme (FDP)

- Department of Metallurgical Engineering has organised Five Days online Faculty Development Programme (FDP) on *"Iron and Steel Technology: Recent Advancements, Innovations and Future Prospects"* during March 4th – 8th, 2024. The Patron of the FDP, Dr. R. D Patidar (Vice Chancellor), Chairman, Dr. S. Das (Head & Steel Chair Professor) and Convenors of the FDP Dr. Guru Prakash and Dr. Prasenjit Biswas organised 10 sessions of eminent experts from academics (IIT & NIT), industries and R & D centres. The eminent speakers delivered sessions and share their knowledge on recent advancement in iron and steel making process, quality and raw materials assessment and modelling and simulation and utilization of artificial intelligence and machine learning in iron and steel industries. About 450 participants registered and actively participated and gained useful information from all the sessions.

Keynote Speakers



Dr. Gour Gopal Roy
IIT, Kharagpur



Dr. Aniket Dutt
JSL, Hisar



Dr. Sandeep Ghosh Chowdhury
CSIR-NML, Jamshedpur



Dr. Satya Prasad M
N.S. Pvt. Ltd. Chennai



Mr. Vishva Bhandhu
JSP, Raigarh



Dr. N Vishwanathan
JSP, Angul



Dr. Snehanshu Pal
IEST, Shibpur



Dr. Sudhanshu Shekhar Singh
IIT, Kanpur



Dr. Viswanathan N Nurni
IIT, Bombay



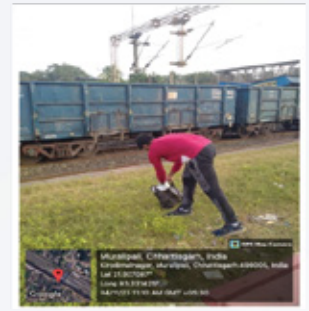
Dr. Appa Rao Chintla
Tata Steel, Jamshedpur

Event - Social Activities

- The Indian government launched the Clean India campaign to make our country a better and cleaner place. Under this, our B. Tech students (5th semester) conducted AICTE activity programme *"Swachhata Hi Seva Abhiyan"* under Green India Initiative in association with NSS on November 03, 2023 from 9:00 to 11:00 AM. The students collected plastic waste from all around the campus. Mr. Hrishikesh Shastri & Dr. Deepak Patel coordinated the program.



- **Mr. Sakir Ali** student of B.Tech (5th semester) has done cleanliness activity (NSS Activity) in Kirodimalnagar Railway Station South East Central Railway Raigarh on November 04, 2023 on the occasion of National Day of Community Services.



- **B. Tech (4th and 6th semester) students** celebrated National Voters Day on January 25, 2024, under the National Service Scheme.



- **B.Tech students (8th semester)** successfully conducted NSS activity under AICTE activity point program at Rabo Higher Secondary School on March 01, 2024. The activities conducted are plantation drive, quiz, women's health and hygiene, waterborne diseases, sports activities and career guidance sessions. The program was coordinated by **Mr. Hrishikesh Shastri** and **Dr. Deepak Patel**.



Events: Session on Know your University

- The main purpose of university education is to impart knowledge to the learners and help them to undergo character development. A session on "Know your University" was conducted at room no. S-01 on December 01, 2023 for the students of B. Tech 3rd and 5th semester. **Mr. Hrishikesh Shastri** coordinated this session and **Dr. Guru Prakash** and **Dr. Deepak Patel** supported the session.



Events: Teacher's Day Celebration

- Teachers' day was celebrated in the department on September 5, 2024 with great enthusiasm. Dr. R. D Patidar (Vice Chancellor), Dr. S. Das (Head & Steel Chair Professor) and all faculty members and staff were present in the celebration. The whole programme was organised by the students of the department. The students expressed their gratitude by giving short speeches and presenting shawls and ramcharitmanas to all faculty and staff members of the department. The students also arranged fun games for the entertainment. All the faculties and staff enjoyed and appreciated the programme.



Knowledge Imparted

- Dr. Guru Prakash delivered lectures on October 31, 2023 to JET, JSPL Raigarh on Fundamentals of Iron & Steel Making, Secondary Steel Making and Continuous Casting of Steel. He invited as Guest Speaker and delivered a talk on "Overview of Iron and Steel Making" on February 09, 2024 in online mode at Utkalmani Gopabandhu Institute of Engineering, Rourkela.
- Dr. Rajesh Jha delivered lectures on October 31, 2023 to JET, JSPL Raigarh on Artificial Intelligence/IoT: Automation & Challenges and Case Studies on DRI, Blast Furnace, LD, Continuous Casting, Plate & Coil Mill.

Awards, Achievements & Excellence

- Dr. S. Das (Head & Steel Chair Professor) of the Department listed in Top 2% Scientists of the world in accordance with latest research survey by the Stanford University. The Honourable Vice Chancellor Dr. R. D Patidar facilitated the Dr. S. Das by presenting memento in the presence of Deans and Directors of various schools and centre with all faculty members of the university for his great achievement.



- Dr. Prasenjit Biswas received 2nd Runner Up prize in Open Badminton Tournament (Men's Doubles) on February 15, 2024 at JSPL Raigarh.
- Prof. Nandalal Acharjee participated in poster presentation in the BPUT Research Conclave 2023 conducted by Biju Patnaik University of Technology, Orissa on December 14, 2023.
- Dr. Trinath Talapaneni invited as a Judge on the eve of National Mathematics Day conducted on December 22, 2023 by the Department of Mathematics, School of Science, OP Jindal University. He also appointed as an Examiner to prepare B. Tech ESE Question paper for Mahatma Gandhi Institute of Technology (MGIT, Autonomous) Hyderabad.
- Mr. Naresh Ku. Mourya (B. Tech 5th semester) secured second position in Poster Presentation competition on "National Energy Conservation Day" on December 14, 2023 organized at OPJU, Raigarh.



- **Mr. Kolli Venkatesh (B. Tech 6th semester)** received the prestigious **OP Jindal Engineering and Management Scholarship (OPJEMS) 2023**. He received scholarship of Rs. 80,000. The OPJEMS is a prestigious scholarship program established by the Jindal Group to support meritorious students pursuing engineering and management studies in India. The scholarship is awarded based on academic excellence, leadership qualities, and social consciousness.
 
- **Mr. Vedaj Patel (B.Tech 8th semester)** received **Academic Excellence award** for securing first position in his class of year 2022-2023.
- **Mr. Vedaj Patel (B.Tech 8th semester)** secured **Best Student Facilitator (Boy)** and **Ms. Ansuiya P (B.Tech 8th semester)** secured **Best Student Facilitator (Girl)** position for the academic year 2022-2023.
- **Mr. Ritesh Kumar Yadav (Diploma 6th semester), Mr. Subham Bhoi (B.Tech 4th semester), Mr. Sakir Ali (B.Tech 6th semester) and Mr. Samir Kumar Bal (M.Tech 4th semester)** received **Academic Excellence award** for securing first position in their class.
- **Ms. Purna Dwivedi, Ms. Sejal Tandekar and Mr. Julfikar Ahemad students of (B.Tech 4th semester)** won first consolation prize on **Tech Lab Event of Technorollix 2024** at OPJU, Raigarh.
- **Mr. Swastibrata Banerjee (AIR 265), Mr. Ujjwal Kesharwani (AIR 389) and Mr. Jitesh Sahu (AIR 435) students of (B.Tech 8th semester)** qualified **Graduate Aptitude Test in Engineering (GATE-2024)**. GATE is an examination conducted in India for students seeking admission to postgraduate programs in engineering, technology, and architecture at various institutes across the country, including the Indian Institutes of Technology (IITs) and the Indian Institute of Science (IISc).

Internship

- An internship gives a student the ample opportunity for career exploration and development and to learn new skills. It offers the employer the opportunity to bring new ideas and energy into the workplace, develop talent and potentially build a pipeline for future full-time employees. B. Tech (7th semester) students undergone Long Term Internship in various renowned iron and steel industries and reputed R & D organisations.



Placements

- Placement is crucial in various contexts, including education, career, and business. M.Tech, B.Tech & Diploma students of Metallurgical Engineering department got significant achievement by getting placed in various top-notch iron and steel industries such as JSW, JSP, JSL, AMNS, UNO Minda etc. around the world known for their quality products, innovative practices and significant contributions to the industry.



Raunak Tripathi
Diploma
JSW



Abhiram Rajanala
B.Tech
JSL



Anikesh Prasad
Diploma
JSP



Akash Upadhyay
Diploma
JSP



Swastibrata Bnerjee
B.Tech
JSL, UNO Minda



Priyanshu Patel
B.Tech
JSP



Abhayraj Sharma
B.Tech
JSL, UNO Minda



Adit Dubey
B.Tech
JSP



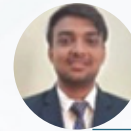
Abhinav Sinha
B.Tech
JSP



Vijay Puneekar
B.Tech
Mahindra &
Mahindra Ltd.



**Subhadip
Bhattachargee**
B.Tech
Tekor Minerals



Ujjwal Kesharwani
B.Tech
UNO Minda



Shubham Ku Sahu
B.Tech
JSP



Sidharth Ku Mishra
M.Tech
MSP



Shubham Bobade
B.Tech
TEKOR MINERALS



Alla Keshavrdhan
B.Tech
UNO Minda



Daneshwar Chandra
Diploma
Arjas Steel



Chaitnaya
B.Tech
UNO Minda



Sanjana Tiwari
B.Tech
JSW



Aditya Bhorde
B.Tech
Subodh Materials
Pvt. Ltd.



Tapabrata Das
B.Tech
AM/NS INDIA



Anusuya P
B.Tech
JSW



Amar Choudhari
B.Tech
UNO Minda



Jammaera Bhasha
M.Tech
SLR Metaliks



Sarode Gangadhar
B.Tech
UNO Minda



Ravi Shankar Singh
Diploma
Arjas Steel



Sanjay Kushwaha
B.Tech
Mivaan Steels Ltd



Santosh Paswan
Diploma
Arjas Steel



Vedaj Patel
B.Tech
JSW



Alok Pratap
B.Tech
JSW



Khushboo Kumari
B.Tech
JSW



Arzoo Patel
B.Tech
JSW



Saurabh Punjabi
B.Tech
UNO Minda



Lokhande Pratik
B.Tech
JSW

Department Structure & Responsibilities



Dr. Satyabrata Das
Prof. & HoD (RDC, DRC, BOS)

Academic Cluster



Dr. Guru Prakash
Associate Professor



Prof. Neeraj Verma
Associate Professor



Dr. Gagan Gupta
*Assistant Professor
Mining*

Admission Cell



Dr. Prasenjit Biswas
Assistant Professor



Dr. Deepak Patel
Assistant Professor



Prof. Neeraj Verma
Associate Professor

Training and Placement



Dr. Trinath Talapaneni
Sr. Assistant Professor



Prof. Nandalal Acharjee
Sr. Assistant Professor



Mr. Naren Mahato
Lab Instructor

Publication & Publicity



Dr. Vatsala Chaturvedi
Sr. Assistant Professor



Dr. Nidhi Khobragade
Assistant Professor



Mr. Hrishikesh Shastri
Scientific Officer

Equipment Utilization & Maintenance



Dr. Guru Prakash
Associate Professor



Dr. Prasenjit Biswas
Assistant Professor



Mr. Vikas Mahato
Scientific Officer



Mr. Y. Santosh Kumar
Lab Instructor



Mr. Naren Mahato
Lab Instructor



Mr. Nishit Agrawal
Lab Assistant

Assessment, Accreditation & Library



Dr. M. Kalyan Phani
Sr. Associate Professor



Dr. Vatsala Chaturvedi
Sr. Assistant Professor



Dr. Nidhi Khobragade
Assistant Professor

Project (Sponsored/ Consultancy) & FDP/ Workshop



Dr. Rajesh Jha
Associate Professor



Dr. Guru Prakash
Associate Professor



Dr. Deepak Patel
Assistant Professor

MoUs & Activities/ Alumni



Dr. Trinath Talapaneni
Sr. Assistant Professor



Prof. Neeraj Verma
Associate Professor



Dr. Deepak Patel
Assistant Professor

Registered Societies (SME, ASM, MAC)



Prof. Nandalal Acharjee
(SME)
Sr. Assistant Professor



Dr. Trinath Talapaneni
(ASM)
Sr. Assistant Professor



Mr. Hrishikesh Shastri
(MAC)
Scientific Officer

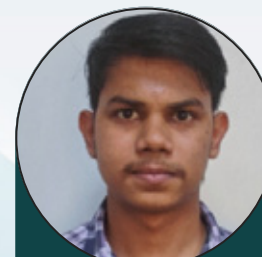
Shining Stars
Gate Qualified Students



Mr Swastibrata Banerjee
Score/Rank – AIR 265



Mr Ujjwal Kesharwani
Score/Rank – AIR 389



Mr Jitesh Sahu
Score/Rank – AIR 435

Photo Gallery





Coordinator: **Dr. Nidhi Khobragade**
(Publication) Assistant Professor
Dept. Metallurgical Engineering

Designer: **Mr. Arjun Gupta**
Dept. Marketing & Outreach

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