# DR. RAJESH KUMAR

**Department of Mechanical Engineering, KIPM Gorakhpur**
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## OBJECTIVE

Dedicated and experienced educator with a strong background in mechanical engineering and have a PhD degree in Mechanical Engg. Seeking a teaching position to leverage my expertise in Thermodynamic Analysis, Strength of Materials, and Machine Design and innovative engineering solutions to inspire and educate students in mechanical engineering. Committed to fostering a dynamic and engaging learning environment that encourages critical thinking, practical application, and academic excellence.

## SUBJECT PROFICIENCY

**Strength of Materials, Machine Design I & II , Engineering Mechanics, Thermodynamics, Heat and Mass Transfer.**

## WORK EXPERIENCE

**KIPM Gorakhpur, U.P., India** **July 2025**
Joined as Assistant Professor in the Department of Mechanical Engineering. Currently teaching "Fundamentals of Mechanical Engineering" to B.Tech. 1st year students.

**MMMUT Gorakhpur, U.P., India** **September 2022 – June 2025**
Joined the institute as Guest Faculty in Depatment of Mechnical Enginnring and teach the following subjects:

- Strength of Materials
- Machine Design I & II

**SIIT, Gorakhpur, U.P.** **June 2012 – July 2013**
**Assistant professor**
Worked as Assistant professor in the Department of Mechanical for the academic year 2012-13 and teaching following subjects

- Engineering mechanics
- Total quality managenment

## EDUCATION

**Ph.D. in Mechanical Engg., NIT Durgapur** **(May, 2024)**
**Thesis Title: "**Thermodynamic Analysis of Advanced Coal-Based Power Generation Systems with $CO_2$ Capture"

- **Supervisor:** Dr. Sujit Karmakar

**M.Tech. in Thermal Engg. , NIT Durgapur, Score- 8.53 CGPA** **(2017)**

**B.Tech. in Mechanical Engg., ITM, GIDA Gorakhpur, Score- 68.32%** **(2012)**

## ACHIEVEMENTS

- Published a research articles in the Internationa Journal of Exergy (IJEX), a Science Citation Index (SCI) journal.

- Presented several research papers in International Conferences.
- GATE qualified seven times; Best Score- GATE-2017, Marks- (66.35/100), Percentile-98.9, AIR-3068

## SKILLS

- **'Cycle-Tempo': Modelling and simulation software for power systems.**
- **Python: Basic computation.**
- **Coal-based Thermal Power Plants.**
- **$CO_2$ Capture Systems.**
- **4-E Analysis (Energy, Exergy, Environment, and Economy).**
- **Sustainability Analysis.**

## PUBLICATIONS

### International Journals:

1. **Kumar, R.,** & Karmakar, S. (2021). Techno-economic analysis of a 500 MWe supercritical coal-based thermal power plant with solar assisted MEA-based CO2 capture. *International Journal of Exergy*, *36*(2-4), 398-413. (SCI)

2. **Kumar, R.,** & Karmakar, S. (2023). Exergy analysis of modified-supercritical power plant with solar assisted feedwater heating and CO2 capture. *International Journal of Exergy*, *41*(1), 91-109. (SCI)

3. **Kumar, R.,** & Karmakar, S. (2025). Analysis and sustainability assessment of coal-based thermal power plants: a case study. *International Journal of Exergy*, *46*(2), 178-197. (SCI)

### Book Chapters:

**1. Kumar, R.,** Anand, R. and Karmakar, S., 2020. Thermodynamic Analysis of a 500-$MW_e$ Subcritical Coal-Fired Thermal Power Plant with Solar-Aided Post-Combustion $CO_2$ Capture. In *Advances in Mechanical Engineering* (pp. 907-919). Springer, Singapore.

**2. Kumar, R.,** Khankari, G., Karmakar, S., 2021. Thermodynamic Analysis of a Combined Power and Cooling System Integrated with $CO_2$ Capture Unit of a 500 $MW_e$ SupC Coal-Fired Power Plant. *Proceedings of the 7th International Conference on Advances in Energy Research* (pp.1185-1198). Springer, Singapore.

### International Conferences:

**1. Kumar, R.,** Anand, R., and Karmakar S. "Thermodynamic Analysis of a 500-MW e Subcritical Coal-Fired Thermal Power Plant with Solar-Aided Post-Combustion $CO_2$ Capture". *IC-RIDME-2018, an International conference organized by NIT Meghalaya, November 8-10, 2018.*

**2. Kumar, R.,** and Karmakar, S. "Thermodynamic Analysis of a 500-MWe Supercritical coal-fired thermal power plant with solar aided post combustion $CO_2$ capture." *ICCARE19, an International conference organised by NIT Durgapur, July 10-12, 2019*

**3. Kumar, R.,** Khankari, G., and Karmakar, S. "Thermodynamic Analysis of a Combined Power and Cooling System Integrated with $CO_2$ Capture Unit of a 500 $MW_e$ SupC Coal-Fired Power Plant". *ICAER-2019, an International conference organised by IIT Bombay, December 10-12, 2019.*

**4. Kumar, R.,** and Karmakar, S. **"**Techno-economic analysis of a 500 MWe supercritical coal-based thermal power plant with solar assisted MEA-based $CO_2$ capture." *IEEES-12, an International conference organised by Hamad Bin Khalifa University, Doha, Qatar held in December 20-24, 2020.*

**5. Kumar, R.,** and Karmakar, S. "4-E Analysis of a Supercritical Coal-based Thermal Power Plant with post combustion $CO_2$ Capture Unit and Feedwater Heating". *ATE-HEFAT-2021, an International conference organised by University of Pretoria, South Africa, July 25-28, 2021*.

## Personal Information

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| Name | : | Rajesh Kumar |
| Gender | : | Male |
| Date of Birth | : | 20/05/1991 |
| Mother's Name | : | Paramjyoti Devi |
| Father's Name | : | Late Rambriksh |
| Spoken Language | : | Hindi and English |

## REFEREES

**Dr. Sujit Karmakar**
Department of Mechanical Engg.,
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Email: skarmakar.me@nitdgp.ac.in
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**Prof. Sanjay Mishra**
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