

Curriculum Vitae

RAHUL BISWAS

+91 7432848939 | biswas018rahul@gmail.com

EDUCATION

Indian Institute of Technology (IIT), Dhanbad M. Tech (Mechanical Engineering)	2021-2023 Ongoing
Kalyani Government Engineering College B. Tech (Mechanical Engineering)	2017-2021 CGPA – 8.82/10
Rajballavpur High School (H.S.) Higher Secondary	2015-2016 CGPA – 82.8/100
Rajballavpur High School (H.S.) Secondary	2013-2014 CGPA – 92.7/100

RESEARCH INTERESTS

Fracture Mechanics, Nano-composite materials, Contact Mechanics, Computational Mechanics, Machine Design, Impact Mechanics.

RELEVANT COURSEWORK

Solid Mechanics, Finite Element Methods, Composite Materials, Machine Design, Theory of Elasticity, Basic Scientific Computing, Kinematics of Machines, Fracture Mechanics

RESEARCH EXPERIENCE

Indian Institute Technology (IIT), Dhanbad	May 2022 - Present
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Masters' Thesis – Mechanical and Fatigue study of Advanced Polymer Reinforced Composite

- Fabricated composite laminates of different stacking sequences using bidirectional woven fibres with resin epoxy.
- Flexural and interlaminar shear strength is analyzed under different strain rates of the laminates.
- Fatigue analysis of laminates is observed.
- Tensile, flexural properties of different laminates are predicted using the finite element method in the ANSYS workbench.

Kalyani Government Engineering College, Kalyani	Sep 2020 - June 2021
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Undergraduate Thesis - Design of Cooling System for Solid Target of Cyclotron

- Designed a cooling system for the solid target of the cyclotron and analyzed the design using ANSYS for beam concentration of 1 kW power at 30 cm diameter circle.
- Then Fins are applied and simulated in ANSYS and experimental analysis is also done.
- The cooling of the collimator is also done using water with help of a spiral channel.

Indian Institute Technology (IIT), Guwahati	Aug 2020 - Feb 2021
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Research Internship - Kinematic Analysis & Synthesis of a 5-Bar Planer Linkage for Writing on a Planer Surface

- Workspace area analysis of the five-bar mechanism is done using the forward kinematics in MATLAB.
- A writing mechanism is developed by the five-bar mechanism using inverse kinematics theory.

Indian Institute Technology (IIT), Guwahati	June 2020 - Aug 2020
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Research Internship - Comparison of Contact Algorithm in ANSYS

- Hertzian and hyper-elastic neo-Hookean contact models are developed in the ANSYS workbench.
- The contact models are simulated using Augmented Lagrange, Normal Lagrange, and Pure Penalty methods.
- Using mesh converge study, the contact characteristics are observed and a comparison is done between the results

of above mentioned three different methods.

Indian Institute Technology (IIT), Kharagpur

Dec 2019 - Jan 2020

Research Internship - Development and characterization of laser clad coatings of SiC-B4C-hBN preplaced powder mixture on Ti-6Al-4V substrate

- Cladding on the Ti-6Al-4V substrate with the help of a Laser beam is done by taking a Stoichiometric portion of SiC-B4C-hBN.
- Hardness, Wear, and Friction Co-efficient and the microstructure of the coating with help of X-Ray Diffraction and Scanning Electron Microscopy are observed.

PROGRAMMING LANGUAGES AND SOFTWARES

- MATLAB (Intermediate), C (Beginner), Python (Beginner)
- AutoCAD (Intermediate), SOLIDWORKS (Intermediate), ANSYS (Intermediate), Catia (Beginner), CNC (Beginner)

CERTIFICATIONS

- Completed a course on “FEM-Linear, Nonlinear analysis & Post-processing” from Coursera in 2022 with a score of 100%.
- Completed a 4-week course on “Getting started with Python” from Coursera in 2020 with a score of 96.6%.
- Completed a 12-week course on “Manufacturing Process Technology” from NPTEL in 2019 with a score of 66%.
- Completed a course on “ANSYS Analysis of Composite Material” from Udemy.

INTERNSHIPS

- Summer Research Intern at Department of Mechanical Engineering, IIT Guwahati guided by Dr. Sachin Singh Gautam (June’20 - Aug’20)
- Winter Research Intern at Laser Laboratory, Department of Mechanical Engineering, IIT Kharagpur guided by Dr. Asimava Roy Choudhary (Dec’19 - Jan’20)
- Summer Intern at Variable Energy Cyclotron Center, Kolkata under Department of Atomic Energy guided by Dr. Pranab Bhattacharyya and Shri Sumantra Bhattacharya (June’19 - July’19)
- Industrial trainee at MYWBUT, Kolkata on “Hybrid Vehicle Design” (June’18 - July’18)

SCHOLARSHIP

- Graduate Aptitude Test in Engineering (GATE) Scholarship

PUBLICATIONS

Journal Papers

1. Pranab Bhattacharyya, **Rahul Biswas**, Arijit Dutta, Anjan Dutta Gupta, Anirban De, Gayatri Banerjee, Paramita Mukherjee (2022), *Mechanical design of target holder for irradiation damage experiment at high power*, Nuclear Inst. and Methods in Physics Research, A (Under review)
2. **Rahul Biswas**, Nisha Sharma, Kalyan Kumar Singh, *Influence of fiber areal density on mechanical properties of basalt fiber/epoxy composites under varying loading rates: an experimental and statistical approach*, Polymer Composites, Accepted (Jan 2023), <https://doi.org/10.1002/pc.27238>
3. **Rahul Biswas**, Nisha Sharma, Kalyan Kumar Singh (2022), *Effect of post-curing on mechanical and failure characterization of basalt fiber/epoxy composites: an experimental and statistical approach*, Composites Part B (Under review)

Conference paper

1. **Rahul Biswas**, Nisha Sharma, Kalyan Kumar Singh (2022), *Numerical analysis of mechanical and fatigue behavior of glass and carbon fiber reinforced polymer composite*, Materials Today Proceedings (Under review)

2. Santosh Kumar, Nisha Sharma, **Rahul Biswas**, Kalyan Kumar Singh (2022), *Effect of temperature on flexural and interlaminar shear strength of symmetric and asymmetric woven basalt fiber reinforced polymer composite*, Materials Today Proceedings (Under review)

LEADERSHIP EXPERIENCE

- Student Organizer of NATIONAL CONFERENCE ON TRENDS AND ADVANCES IN MECHANICAL ENGINEERING held in 2019 by The Association of Engineers, India at Kalyani Government Engineering College.
- Student Organizer of Robotics Competition TECHTIX (Hydraulic Arm) held in 2020 at Kalyani Government Engineering College.
- Founder of Student Automobile Club of Kalyani Government Engineering College.
- Member of Robotics Society of Kalyani Government Engineering College.

HOBBIES

- Sudoku solving - Participated in Sudoku in the inter-college fest.
- Badminton - Represented my college team in the inter-college sports meet
- Running - Avid runner. participated and completed half marathons