

Dr. Shibayan Sarkar

Work Address

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Present Residential Address

A-012, Tower-A, Type V, IIT(ISM) Dhanbad, Dhanbad
– 826004, Jharkhand, India

Permanent Residential Address

14/1 Purbachal, P.O.- Rahara,
North 24 Parganas, West Bengal, Pin -700118,
India

Birth date

20th February 1979, Kolkata, India

Citizenship

India

Education

- | | |
|---|---|
| 2010
Doctor of Philosophy
(24.07.05-31.12.2009)
Award: 29.03.2010 | Indian Institute of Technology Roorkee, Uttarakhand, India. <i>Hydrological Modeling For Flood Flows</i> . A physically based rainfall-runoff-flood inundation model based on statistical distribution functions, catchment geomorphological characteristics, hydraulics of flow and the application of Geomorphologic Information System.

<i>Supervised by:</i> Dr. N.K. Goel, Professor & Dean I.I.T. Roorkee, and Dr. B. S. Mathur, Professor (Retd.) & Emeritus Fellow, Department of Hydrology, I.I.T. Roorkee, India |
| 2005
Master of Engineering in
Water Resources and
Hydraulics Engineering
(University Gold Medal,
84.43%)
(Aug 2003-16.08.2005) | School of Water Resources Engineering, Jadavpur University, Kolkata, India. <i>A Numerical Approach for Prediction of Dissolved Oxygen Through Simulation of Thermal Stratification and Turbulent Kinetic Energy in a Lake</i> . An attempt to solve the One-Dimensional Heat Diffusion Equation by Finite Difference approach to assess the role of variation of thermal diffusivity with depth in a stratified lake system along with effects of Turbulent kinetic energy on stratified thermal structure.

<i>Supervised by:</i> Dr. Asis Mazumdar, Professor and Director, School of Water Resources Engineering, and Dr. Arunabha Chanda, Reader, Department of Mechanical Engineering, Jadavpur University, Kolkata-700032, India |
| 2003
Bachelor of Engineering in
Mechanical Engineering
(71.39 %)
(July 1999-30.06.2003) | Department of Mechanical Engineering,
Jadavpur University, Kolkata-700032, India |

1998 Ramakrishna Mission Residential College, Narendrapur, West Bengal
Higher Secondary (10+2) Council of Higher Secondary Education, India.
(69.7 %)

1996 Ramakrishna Mission Boys' Home High School, Rahara, West Bengal
Secondary (10th standard) Board of Secondary Education, India
(83.89 %)

Countries Visited The Netherlands, Sri Lanka, Bangladesh, China, Singapore, Thailand

Work Experience

Feb 2010 to Dec 2011 Department of Mechanical Engineering
Assistant Professor North Eastern Regional Institute of Science and Technology (NERIST)
(Deemed University), Nirjuli - 791109, Itanagar, Arunachal Pradesh, India

Dec 2011 to Jun 2013 Department of Mechanical Engineering and Mining Machinery
Assistant Professor Engineering, ISM Dhanbad, Jharkhand – 826004

Jun 2013 to April 2021 Department of Mechanical Engineering, ISM Dhanbad, Jharkhand –
Assistant Professor 826004

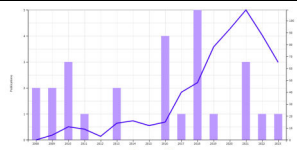
Apr 2021 to till Date Department of Mechanical Engineering, IIT(ISM) Dhanbad, Jharkhand –
Associate Professor 826004

Languages Known English, Hindi, Bengali

Research Area Hydraulic turbine, Pipe Network, Water Resources

Publications

(i) International Journals:	32, SCI (31)
(ii) National Journals:	3
(iii) International Conferences:	16
(iv) National Conference:	6
(v) Reports:	3
(vi) Books / Book Chapters:	2
(vii) Patent:	3



Ph.D. Guidance (Completed - 07, Ongoing – 04)

Completed Thesis:

Sl No	Name of Student, Adm No.	Type	Topic	Remarks
1.	Dr. Dinesh Kumar 2014DR1062 Assistant Professor, UCETI, VBU, Hazaribagh, M.Tech. from IIT Roorkee D.O.J.- 10/03/2014	Part Time,	MODELING AND SIMULATION OF HYDRO KINETIC TURBINE	Sole guide, Registered on – 10.03.2014 Pre submission on – 24.02.2017 Submitted on – 03.03.2017, Corrected Thesis submission-05.06.2017 Defended thesis – 06.07.2017 Awarded on-10.08.2017
2.	Dr. Shantanu Datta 2014DR1063, Assistant Professor, Asansol Engg College,	Part Time,	DETECTION OF BLOCKAGE LOCATION IN PIPE NETWORK	Sole guide, Registered on – 10.03.2014 Pre submission on – 24.04.2018

Sl No	Name of Student, Adm No.	Type	Topic	Remarks
	Asansol, M.Tech. from NIT Agartala D.O.J.- 11/03/2014			Submitted on – 08.05.2018 Defended thesis – 10.11.2018 Corrected Thesis submission-12.11.2018 Awarded on-16.11.2018
3.	Dr. Nitish Kumar Gautam B.Tech. from Darbhanga College of Engineering, Arya Bhatta Knowledge University, Patna 2013DR0235 D.O.J.- 23/07/2013	Full time IIT(ISM) JRF	MODELING OF WATER DISTRIBUTION PIPE NETWORK FOR INDIAN SEMI-URBAN AREA	Sole Guide Registered on – 24.07.13 RTF cleared – 31.10.18 Pre-submission - 16.01.19 Thesis submitted - 07.03.19 Revised Thesis submission-31.10.2019 Defended thesis - 14/01/2020 Awarded on-04.02.2020
4.	Mr. Mandodh Kumar Das B.Tech. 2013DR0208 D.O.J.- 23/07/2013 Ramgovind Institute of Technology, Vinoba Bhave University (VBU), Hazaribagh	Full Time IIT(ISM) JRF	ANALYSIS OF SURFACE MINE CUTTING TOOL WEAR AND TOOL LIFE	Main guide, Co Guide Dr. B.S. Choudhary, Mining Engg, ISM Dhanbad Pre-submission – 23.11.21 Thesis submitted – 14.12.21 Revised Thesis submission-22.03.2022 Defended thesis - 06.04.2022 Awarded on-06.04.2022
5.	Mr. Aditya Kumar Nag M.Tech. from IIT(ISM) Dhanbad B.Tech. from Swami Vivekananda Technical University, Durg, Chhattisgarh 2017 DR 000413 D.O.J.- 01/08/2017	Full time IIT(ISM) JRF	TECHNO-ECONOMIC ANALYSIS OF SAVONIUS HYDROKINETIC TURBINE UNDER VARYING OPERATING CONDITIONS WITH DIFFERENT ARRANGEMENTS	Sole Guide Registered on – 01/08/2017 Pre-submission – 13.06.22 Thesis submitted – 25.07.22 Revised Thesis submission-20.10.2022 Defended thesis - 18.11.2022 Awarded on- 25.11.2022
6.	Mr. Ravindra Bhagat M.Tech. from BIT Sindri B.Tech. from Tilkamanjhi Bhagalpur University 2017 DP 000311 D.O.J.- 13/11/2017	Part Time	PERFORMANCE ANALYSIS OF WHIRLYBIRD HYDROKINETIC TURBINE	Main guide, Registered on – 13/11/2017 External Guide-Dr. Dinesh Kumar, Assistant Professor, BIT Sindri, Thesis submitted – 01.08.2023 Revised Thesis submission-10.10.2023 Defended thesis - 24.11.2023 Awarded on - 04.12.2023
7.	Mr. Rakesh Kumar	Full Time	PERFORMANCE	Sole Guide

Sl No	Name of Student, Adm No.	Type	Topic	Remarks
	M.Tech. from IIT(ISM) Dhanbad B.Tech. from Uttar Pradesh Technical University 18DR0108 D.O.J.-30/07/18	IIT(ISM) JRF	ANALYSIS OF DARRIEUS HYDROKINETIC TURBINE IN DIFFERENT FLOW CONDITIONS	Registered on – 30/07/18 Thesis submitted – 04.12.2023 Revised Thesis submission-05.03.2024 Defended thesis - 02.04.2024 Awarded on - 04.04.2024

Ongoing thesis:

Sl No	Name of Student, Adm No.	Type	Topic	Remarks
1.	Mr. Mahesh Kumar Pandey M.Tech. from NIT Mizoram B.Tech. from Greater Noida Institute of Technology, Uttar Pradesh Technical University 22DR0119 D.O.J.-03/08/22	Full Time IIT(ISM) JRF	MODELING AND ANALYSIS OF HORIZONTAL AXIS HYDROKINETIC TURBINE	Main Guide: Shibayan Sarkar Co-guide: Prof. Mamdud Hossain, Robert Gordon University, Aberdeen, UK Registered on – 03/08/22
2.	Mr. Saumitra Kumar Sharma B.Tech.- Lakshmi Narain College of Technology (LNCT) Bhopal M.Tech.- Rajiv Gandhi Proudhyogiki Vishwavidyalaya (RGPV) Bhopal 24DR0168	Full Time IIT(ISM) JRF	--	Main Guide: Shibayan Sarkar Registered on – 15/07/2024
3.	Mr. Tinkaj Rana B.Tech.- Einstein Academy of technology and Management, Bhuwaneswar M.Tech.- BIT Sindri 24DR0211	Full Time IIT(ISM) JRF	--	Main Guide: Shibayan Sarkar Registered on – 15/07/2024
4.	Mr. Vijay Kumar Chaudhary B.Tech.- Motihari college of engineering, Motihari, Under - Aryabhatta knowledge university (AKU) M.Tech.- IIT(ISM) Dhanbad 24DP0246	Part Time	--	Main Guide: Shibayan Sarkar Registered on – 28/09/2024

M. Tech. Dissertation supervised:**No of Students-** 34 (completed), 01 (ongoing)

1. Vivek Koul (2015) *Analysis of Erosion behaviour in Ball and butterfly Valves at different opening Angles*, 2013MT0012 (Spl: Design)
2. Gaurav Kumar Yadav (2015) *Simulation of an Urban water Distribution Pipe Network and its modification corresponding to Increasing Future Demand*, 2013MT0293 (Spl: Design)
3. Niharika Gupta (2015) *Experimental Analysis of Lubricating Oil and Coal Mining Equipment using Analytical Ferrography.*, 2013MT0088 (Spl: Maintenance Engineering and Tribology) with Dr. Subrata Ghosh as Main Guide.
4. Dhruv Mathur (2015) *Maintenance policy and Criticality Analysis of a Thermal Power Plant.*, 2013MT0241 (Spl: Maintenance Engineering and Tribology) with Dr. Subrata Ghosh as Main Guide.
5. Soumya Sikdar (2015) *Biotribology of Spinal Implant Materials*, 2013MT0248 (Spl: Maintenance Engineering and Tribology) with Dr. Subrata Ghosh as Main Guide.
6. Gaurab Kumar Ghosh (2015) *Analytical Analysis of Heat Transfer for Nanofluids*, 2013MT0118 (Spl: Maintenance Engineering and Tribology) with Dr. Subrata Ghosh as Main Guide.
7. Rajat Tripathi (2016) *Design of Wind Turbine*, 14MT000363 (Spl: Design)
8. Satish Kumar (2016) *Failure Analysis of Shovel Tooth*, 14MT000127 (Spl: Design)
9. Kunal Singh (2016) *Stress Sensitivity Analysis of A Gas Turbine Compressor Disc and Blade Dovetail*, (Spl: Design), 14MT000034, with Mr. S. Ashok Babu, Sc 'F', GTRE, DRDO
10. Mohit Kumar (2016) *Investigation of Dynamic behaviour of fluid in pipe Network*, 14MT000115 (Spl: Thermal)
11. Avhinash Kumar (2016) *Performance analysis of Darrieus Hydrokinetic Turbine*, 2014MT000436, (Spl: Thermal)
12. Monalisa Barla (2016) *Design of Savonius Hydrokinetic Turbine*, 14MT000532, (Spl: Thermal)
13. Pankaj Kumar (2016) *Design of Penstock*, 14MT000551 (Spl: Thermal)
14. Ankush Chhandak (2016) *Optimisation of Friction Dampers for Turbine Blade Vibrations*, 14MT000476, (Spl: Maintenance Engineering and Tribology) with Mr. Dilip Kumar and Mr. Sanjay Barad from GTRE, DRDO, Bangalore
15. Harish Chandra Patel (2017), *Performance investigation of diffuser augmented wind turbine*, 15MT000439, (Spl: Thermal)
16. Sachindra Kumar, (2017), *Numerical simulation of solar updraft tower*, 15MT000365, (Spl: Thermal)
17. Roshni Deepika Hemrom, (2017), *Performance Analysis of Savonius Hydrokinetic Turbine arranged in array corresponding to variable angular velocity of rotor*, 15MT000506, (Spl: Thermal)
18. Mohit Makwana, (2017), *“Investigation of tribological behavior of slurry pump”*, 15MT000516, (Spl: Maintenance Engineering and Tribology)
19. Rahul Gautam, (2017), *“Wear analysis of a power cylinder piston unit for optimized equipment maintenance using ANSYS and OPTISLANG”*, 15MT000511, (Spl: Maintenance Engineering and Tribology)
20. Aditya Kumar Nag (2017), *“Performance investigation of hybrid renewable power resources”*, 15MT000491, (Spl: Design)
21. Tushar Ranjan (2018), *“Design and Analysis of CLT Propellers”*, 16MT001102, (Spl: Design)
22. Aditya Kumar Singh (2018), *“Kinematic and Dynamic Study of Aircraft Arrestor System”*, 16MT001011, (Spl: Design) with Co-Guides: Dr. Balamurugan. G, Principal Scientist, Group Head & Vinod Kumar K, Senior Scientist, Mechanical Systems & Design Group, Structural Tech. Division, CSIR-NAL, Bangalore

23. Vipin Kumar Srivastava (2018), "*Performance of Vertical Axis Darrieus Hydrokinetic Turbine*", 16MT001121, (Spl: Thermal)
24. Rakesh Kumar (2018), "*Effect of Number of Blades on Performance of Helical Darrieus Hydrokinetic Turbine*", 16MT001098, (Spl: Thermal)
25. Ankit Kumar (2019) " *Design of Penstock using Finite Element Method and Obtain Collapse Load*", 17mt002071 (Spl: Design)
26. Gaurang Mital (2019) "*Analysis and Design of Wind Mill Tower for Offshore and Onshore Conditions*", 17mt002073 (Spl: Design)
27. Tanishk Kumar (2020) " *Hydraulic design of fire-fighting centrifugal pumps to avoid overloading and suction lift failure* ", 17KT000181 (Spl: Mech-IIIF Kolkata)
28. Aditya Raj (2020) " *Modelling of Vortex Induced Bladeless Wind Turbine*", 18MT0243 (Spl: Design)
29. Vijay Kumar Chaudhary (2020) " *Numerical analysis of gravitational water vortex turbine flow optimization and vortex turbine power calculation* ", 18MT000606(Spl: Thermal)
30. Ashish Chaudhary (2020) " *Distortion study and reduction in gears after heat treatment*", 17KT000259 (Spl: Mech-IIIF Delhi)
31. Subir Kumar (2022) " *Study of pressure distribution, velocity distribution and erosion wear of Pelton turbine* ", 20MT0411 (Spl: MET)
32. Aditya Kumar Choudhary (2022) "*Prediction and prevention of cavitation on rotor of Kaplan turbine using RBNN*", 20MT0022 (Spl: Thermal)
33. Indrajeet Yadav (2023) "*Erosion wear modeling of the centrifugal pump and its impact on the performance*", 21MT0172 (Spl: Thermal)
34. Shubham Kumar (2024) "*Performance of Hydrokinetic turbine Battery*", 22MT0377 (Spl: Thermal) (ongoing)
35. Koushik Das (2024) "*Modeling and analysis of EV Battery performance* ", 23MT0187 (Spl: Thermal) (ongoing)

R&D Project Details

No of Project- **05 (completed), 02 (ongoing)**

Sl No	Name of Project	Funding Agency	Amount Rs. (Lakh)	Date Applied	Status
1.	Real Time Monitoring and Analysis of Transient Flow in Pipe Network System PI: Shibayan Sarkar	ISM Dhanbad	9.5	Aug, 2013	Approved on 20/12/13 FRS (71)/2013-14/MECH, Completed on December 2016
2.	Investigation on Hydrokinetic Turbine Performance Corresponds to Variable Rotor Shape and Surface Velocity using Different Augmentation Techniques PI: Shibayan Sarkar	Start-Up Research Grant (Young Scientists), SERB DST(SERB) (131)/2015 /454/ Mech Engg	20.62	23.03.2015	Approved on 30.11.2015, File No. YSS/2015/001259 Completed on March 2019 Officially Closed by SERB: 03.06.2020
3.	Modeling of Integrated Water Management for Agriculture Using Pipe Network PI: Shibayan Sarkar	TEQIP - II	1.5	28.09.2015	Approved on 09.11.2015, Completed on 31.07.2016
4.	Augmentation of research facility in the Department	DST-FIST	Approx.: 1.87 Cr	Feb 2019	File No. SR/FST/ET-II/2018/222(C)

Sl No	Name of Project	Funding Agency	Amount Rs. (Lakh)	Date Applied	Status
	of Mechanical Engineering PI: Dr Shailendra Narayan Singh Co-PI: Dr Sachin Kumar Singh, Dr Deepak Kumar Mandal, Dr Pawan Kumar Singh, Dr Vivek Bajpai, Dr Subrata Kumar Ghosh, Dr Alok Kumar Das, Dr Shibayan Sarkar, Dr Amitava Mandal, Dr. Rakesh Kumar	DST(FIST) (229)/2019-2020/643/ MECH.ENG			Start Date: 14.07.2019 Duration: 5 years
5.	Modeling of wear in radial hydraulic turbine PI: Shibayan Sarkar	Empowerment and Equity Opportunities for Excellence in Science, 2019, SERB DST(SERB) (244)/2019-20/684/Mech	36.11759 Lakhs	07.05.2019	Approved on: 15.10.19 File No. EEQ/2019/000119 Completed on November 2022 Officially Closed by SERB: 03.06.2020
6.	Performance analysis of whirlybird hydrokinetic turbine PI: Dr. Dinesh Kumar, Assistant Professor, UCETI, VBU, Hazaribagh Co-PI: Mr. Ravindra Bhagat, UCETI, VBU External Co-PI: Dr. Shibayan Sarkar	Collaborative Research Scheme (CRS), TEQIP	16.43 Lakhs	08.05.2019	Approved on: 17.06.19 File No. 1-5694005989 Completed on: 27.10.2021
7.	Performance Improvement of Darrieus Hydrokinetic Turbine using different J-shape blades and Vortex Generator PI: Anuj Kumar, Assistant Professor, (Department of Thermal and Energy Engineering, School of Mechanical Engineering) VIT, Deemed University (Private), Tamilnadu-632014 Mentor: Dr. Shibayan Sarkar	Teacher Associateship for Research Excellence (TARE), SERB DST(SERB)/TARE/347/2022-23/942/ Mech	18.30 Lakhs 10.05 Lakhs (3.35 Lakhs p.a.) to mentor's Institution	09.03.2022	File No. TAR/2022/000412 Accepted on 06.10.2022 Fund release 1: 3.35 Lakhs on 13.12.2022 Fund release 2: 3.35 Lakhs on 23.08.2024 To be completed on December 2025

Sl No	Name of Project	Funding Agency	Amount Rs. (Lakh)	Date Applied	Status
8.	Design and Development of Portable 3D-Printed Modular Hydrokinetic turbine unit PI: Shibayan Sarkar Co-PI: Amit Rai Dixit	MNRE	28.6 Lakhs	23.06.2022	MNRE/A/2022/248 Under review
9.	Development of a wind turbine condition monitoring system using signal processing and machine learning techniques PI: Sachin Kumar Singh Co-PI: Shibayan Sarkar	CRG, SERB SERB/CRG/424/2023-24/1093/Mech	40.30312 Lakhs	15.03.2023	Approved on: 18.02.24 File No. CRG/2023/002397 To be completed on March 2026

Short Course / Workshop/ Symposium/ Training/ Consultancy Details

Sl No	Name of Short Course / Consultancy	Funding Agency	Consultancy No., No of Participants	Amount Rs. (Lakh)	Duration	CI/Co-CI
1.	Condition monitoring and failure analysis of Machines	Participants from Academic and Industry	CONS/3768/17-18 11 Nos	1.38	March 21-24, 2018	Co-CI with Dr. Sachin Kumar Singh (as CI)
2.	One day Research facility Training Programme on 'wear in fluid machines'	SSR, SERB/EEQ/2019/000119	-- 24 Nos	0.10	14.01.2020	PI: Self
3.	One day Institute visit for School students	SSR, SERB/EEQ/2019/000119	-- 26 Nos	0.10	29.02.2020	PI: Self
4.	Twelve-day Online Refresher Course on "Computational Fluid dynamics in engineering"	MMTTP (Malaviya Mission Teachers Training Program), UGC	ORAC 0156 (Sanction letter - DRD/11011/478/2024-FDC, Dated-09.12.24)	2.706	28.02.2025-11.03.2025	Principal Coordinator: Prof. Shibayan Sarkar Co-Coordinator: Prof. Subrata Kumar Ghosh
5.	Five-day Short-term course on "HydroInnovate: Unleashing the Power of Water with Advanced Hydrokinetic Turbine Technologies"	GIAN and Participants (Course No: 2514020)	ORAC 0159 (Sanction letter - GIAN/S-24-25/235, Dated-10.12.24)	6.64 (0.00)	17.02.2025-21.02.2025	Principal Coordinator: Shibayan Sarkar Foreign Faculty: Prof. Mamdud Hossain, Robert Gordon University, Aberdeen, UK
6.	One day Lab visit to Fluid Mechanics and Fluid Machines	TARE/942/Mech	--	--	19.02.2025	Mentor: Shibayan Sarkar PI. Dr. Anuj

Sl No	Name of Short Course / Consultancy	Funding Agency	Consultancy No., No of Participants	Amount Rs. (Lakh)	Duration	CI/Co-CI
	Lab, Mechanical Engg, and Workshop for the less endowed stakeholders of science, technology, and innovation (STI) and society					Kumar, VIT Vellore, Tamilnadu

Experimental Facilities developed

Sl No	Type (Equipment / Software/ Other)	Name of Equipment (Model No.)/ Software (Version No.)/ any other	Purpose/ Uses / Key Applications	Name of Funding Agency/ Institute Fund / Deptt. Fund/DDF/any other	Cost of Equipment (Rs. In lakhs)	Year of Installation
1.	Software	HAMMER, Bentley Ltd.	To simulate pipe flow in a network	Dept Plan Fund, IIT(ISM)	4.08285	2015
2.	Equipment	PORTABLE CLAMP-ON ULTRASONIC FLOW METER with Portable Ultrasonic Wall Thickness Gauge and data logger system with all Standard Accessories	To measure fluid flow inside Pipeline, un-destructive setup, Research purpose	Dept Plan Fund, IIT(ISM)	6.9845	2015
3.	Equipment	Experimental setup for Real Time Monitoring and Analysis of Transient Flow in Pipe Network System	To study Transient Phenomenon in pipe network, Research Work	FRS Project, IIT(ISM) FRS (71)/2013-14/MECH	9.48	2015
4.	Equipment	Experimental setup for Investigation on Hydrokinetic Turbine Performance Corresponds to Variable Rotor Shape and Surface Velocity using Different Augmentation Techniques	To study performance of HKT in Flume, Research Work	SERB Project DST(SERB)/ 131/15-16/454/ Mech	17.40	2017
5.	Equipment	Pump Characteristics for parallel and series configuration	To study pump and system characteristics while pump installed in series and parallel	Dept Plan Fund, IIT(ISM)	3,46,250/-	2020

Sl No.	Type (Equipment / Software/ Other)	Name of Equipment (Model No.)/ Software (Version No.)/ any other	Purpose/ Uses / Key Applications	Name of Funding Agency/ Institute Fund / Deptt. Fund/DDF/any other	Cost of Equipment (Rs. In lakhs)	Year of Installation
6.	Equipment	Multistage Air compressor test rig	To study performance of air compressor	Dept Plan Fund, IIT(ISM)	5,03,920/-	2020
7.	Equipment	Pipe Friction Apparatus	To calculate friction factor of different material pipeline, for bends and attachments	Dept Plan Fund, IIT(ISM)	82,845/-	2020
8.	Equipment	Bernoulli's Apparatus	To study energy conservation in a real fluid flow	Dept Plan Fund, IIT(ISM)	73,395/-	2020
9.	Equipment	Reynold's Apparatus Setup	To display laminar, transient and turbulent flows	Dept Plan Fund, IIT(ISM)	40,500/-	2020
10.	Software	EDEM	To simulate wear phenomenon in machines, numerically	SERB Project DST(SERB) (244)/2019-20 /684/ Mech Engg	12.78	2020
11.	Equipment	High speed camera	To capture images of particle movement through fluid flow	SERB Project DST(SERB) (244)/2019-20 /684/ Mech Engg	2.76	2020
12.	Equipment	Experimental setup for Investigation of wear in Radial Turbine	To study wear phenomenon in Radial turbine, Research Work	SERB Project DST(SERB) (244)/2019-20 /684/ Mech Engg	14.175	2022

Teaching Experiences (subjects taught)

Sl No.	Details
	<i>In NERIST, Arunachal Pradesh</i>
1.	Fluid Machines, Credit: 04 (Laboratory experiments included)
2.	Fundamentals of Fluid Mechanics, Credit: 04
3.	Thermodynamics, Credit: 04
4.	Engineering Mechanics, Credit: 05
5.	Automobile Servicing III, Credit: 03 (Laboratory experiments included)
6.	Machine Drawing, Credit: 03

	<i>In IIT(ISM) Dhanbad, Jharkhand</i>
7.	Engineering Mechanics
8.	Engineering Graphics
9.	Fluid Machines
10.	Fluid Machines Lab
11.	Fluid Mechanics Lab
12.	Kinematics of Machines
13.	Kinematics of Machines Lab
14.	Optimization theory (M.Tech.), Optimization Theory (B.Tech.)
15.	Computational Lab (Programming in MATLAB etc.) (M.Tech.),
16.	Machine Drawing Lab
17.	Mechanical Engineering – I (combined Strength of Material & Theory of Machine for Non-Departmental Students)
18.	Hydraulic Machines
19.	Hydraulic Machines Lab
20.	Soft Computing I(MATLAB)
21.	Soft Computing II (MATLAB)
22.	Machine Design Lab
23.	AutoCAD and Solid Modelling Lab
24.	Applied Mechanics Lab
25.	Heat Transfer and Fluid Machines Lab
26.	Thermodynamics and Fluid Mechanics Lab
27.	Turbomachinery
28.	Thermal Engineering Lab III

New Course Design

1.	Hydraulic Machines (Laboratory experiments included) – Minor Subject
2.	Hydraulic Machines Lab
3.	Flow and Transport Phenomena Through Piping System
4.	Advanced Optimization Techniques
5.	Erosion and corrosion in Machines
6.	Green Energy

Administrative Activities

Sl No.	Details
1.	Warden of Hostel Block – A, NERIST, Nirjuli, Itanagar, Arunachal Pradesh (26.07.10-14.12.11)
2.	Chairman, Purchase Committee, Hostel, NERIST (Jan 2011-Dec 2011)
3.	Lab-in-charge of CFD lab, Fluid Power and Automation lab, Computer lab of Mechanical Engineering Deptt., NERIST (Jan 2011-Dec 2011)
4.	Warden of Jasper Hostel Block B - ISM Dhanbad (Dec 2013- May 2017)
5.	Lab-in-charge of Drawing Hall (July 2013- June 2019), Fluid Mechanics Lab, CAD Lab, Department of Mechanical Engg., IIT(ISM) Dhanbad (July 2013- till date)
6.	Faculty In charge of industrial training, Department Website, Department of Mechanical Engg., IIT(ISM)Dhanbad (July 2013-July 2015)
7.	Faculty In charge of Training and Placement, Department of Mechanical Engg., IIT(ISM) Dhanbad (July 2015-May 2022)
8.	Faculty In charge of Time Table, Department of Mechanical Engg., IIT(ISM)Dhanbad (Jan 2016 – Oct 2017)
9.	Member Secretary, Goal Setting Committee 2015, ISM Dhanbad
10.	M.Tech. Coordinator (I/C) in Mechanical Engg (Spl: Maintenance and Tribology) - Dec 2014 - May 2015
11.	Visited different companies for Training & Placement campaign of Mechanical Engg Students in (i) Kolkata & Bhubaneswar (25.07.17 – 02.08.2017) (ii) Hyderabad (09.09.17 – 15.09.2017)
12.	Organised One-day industry visit to Koderma Thermal Power Plant, Jharkhand for B.Tech. (3rd Year) Mechanical Engineering Students on 15.09.2017.
13.	Organised One-day industry visit to Chittaranjan Locomotive Workshop, West Bengal for B.Tech. (2nd Year) Mechanical Engineering Students on 16.03.2018.
14.	Coordinator, Mechanical Engg Dept., Junior Research Fellowship Entrance Examination (IIT(ISM) JRF EE – 2018-19
15.	Member, Departmental Survey Committee, June, 2018, Survey Committee to Write off Stores, Department of Mechanical Engg, IIT(ISM)Dhanbad,
16.	DUGC member - 2018
17.	DFSC member - Assistant Professor Recruitment 2019, Nov 2024 to till date
18.	Secretary, Committee for preparing Departmental Review Structure - 2019
19.	Institute Representative, JEE (ADV) 2019 Examination
20.	eOffice Master Trainers – Mech Engg. Department
21.	Departmental Coordinator, Departmental Review (NBA) - 2014, 2018, 2020
22.	Chairman, Documentation Cell, Mechanical Engineering Department, 2020, 2021, 2022
23.	Treasure, International Conference on Industrial Problems on Machines and Mechanism (IPRoMM 2022). 2022
24.	Vice-Chairperson (PG/PhD), Career Development Centre, IIT(ISM) Dhanbad, 06.05.2022 to 01.07.2024
25.	Skill India, GOI, Trainer, TR523423, 20.08.2024 to till date

Extension/ Field Outreach/Extra Curricular Activities

Sl. No.	Title of Project/ Research	Sponsoring Agency & Grant Received	Grant Utilised	Status
1.	Meteorological data collection, monitoring, processing and analysis to evaluate climate variability in the state of Uttaranchal under U-PROBE	Sponsored by DST	--	as a research scholar, IIT Roorkee (July 2006 to April 2009)
2.	Review of Hydrological Studies for Tehri Project	Tehri Hydro Development Corporation (THDC)	--	as a research scholar, IIT Roorkee (December 2008 July 2009)
3.	Barmer to Salaya Pipeline Project	L & T-GULF: Pipeline Engineering	--	as a research scholar, IIT Roorkee (December 2008 to June 2009)
4.	Conducted 4 days field survey and data collection from 25.12.2020 to 28.12.2020 in Tukipur, Landhadi, Sarra rangamatia region on Barakar river.	DST(SERB) 244/19-20/684/Mech.Engg.	10k approx	As PI, DST(SERB) 244/19-20/684/Mech.Engg.
5.	Conducted 2 days field survey and data collection from 14.07.2023 to 15.07.2023 in Pratappur and Giridih region on Barakar river.	DST(SERB) TARE/347/22-23/942/Mech.	10k approx	As Mentor, DST(SERB) TARE/347/22-23/942/Mech.
6.	Visited Universities, Companies, Science and Social organizations in Xi'an and Ningbo, China for China science tour, during 22.10.23-28.10.23	Xi'an people's association for friendship with foreign countries, Xi'an, China	Full sponsor for Travel & accommodation	As Indian Scientist
7.	Member of Silver Medalist Volleyball team (2023) represented IIT(ISM) Dhanbad in 28 th Inter IIT Staff sports meet held in IIT Gandhinagar, during 24.12.23-29.12.23	SPEC, IIT(ISM) Dhanbad	Full sponsor for Travel & accommodation	As Staff of IIT (ISM) Dhanbad

Reviewer

Sl No	Book/Journal/	Publisher	Details	Remarks
1.	Book	McGraw Hill Comp.	K Subramanya (2013) Hydraulic Machines,	Book Published
2.	Book	McGraw Hill Comp.	Agarwal and Agarwal (2013) Engineering Drawing,	Book Published
3.	Journal Paper	ASCE	Ms. No. HEENG-1763R2, (2013) Dedi Liu, Xiang Li, Shenglian Guo, Dan Rosbjerg, Hua Chen (2013) A	Paper Published, http://dx.doi.org/10.1061/(ASCE)HE.1943

			Bayesian probabilistic forecasting model to analyse the uncertainty in real-time dynamic control of the flood limiting water level for reservoir operation, Journal of Hydrologic Engineering,	-5584.0000979
4.	Book	Wiley Science	Chapter –‘Fluid Statics’	Book Name and Author Unknown
5.	Journal: Applied Water Science	Springer	Ms. No. AWSC-D-15-00200 Performance of a system of reservoirs on futuristic front,	Book Name and Author Unknown
6.	Project Proposal	Extra Mural, SERB	File Name: EMR/2016/001492, Proposal Title:Eco- Hydrological and Eco- Hydraulic Modelling for the Restoration of Loktak Lake, India Based on Very High Resolution SAR on 15-Sep-2016	Unknown
7.	Journal Paper	Published in Energy Conversion and Management in February, 2019	Performance investigation of self-adjusting blades turbine through experimental study	https://dx.doi.org/10.1016/J.ENCONMAN.2018.11.066
8.	Journal Paper	Published in Renewable Energy in February, 2019	Velocity and performance correction methodology for hydrokinetic turbines experimented with different geometry of the channel	https://dx.doi.org/10.1016/J.RENENE.2018.08.027
9.	Journal Paper	Rejected - Renewable Energy in Sept, 2020	Performance analysis of two vertical-axis hydrokinetic turbines using variational multi-scale method	RENE-D-19-02458
10.	Journal Paper	Rejected - Renewable Energy in Jan, 2020	Experimental and numerical investigations for designing two bladed Savonius water turbine clusters at different phase shifts and gap distances	RENE-D-19-04109
11.	Journal Paper	Sustainable Energy Technologies and Assessments, ELSEVIER	A Review on Modifications and Performance Assessment Techniques in Cross-flow Hydrokinetic System	SETA-D-21-02707
12.	Project Proposal	MARSDEN FUND, New Zealand, (Fast-Start)	Listening to the heartbeats of a city: Remote sensing of water usage and pipeline condition by understanding the noise in water supply networks	22-UOC-021
13.	Journal Paper	Energy Conversion and Management, ELSEVIER	Assessment of blockage corrections for high-solidity hydrokinetic turbines: experimental and numerical investigations Energy Conversion and Management	ECM-D-23-01030
14.	Journal Paper	Ocean Engineering, ELSEVIER	Analyzing the behavior of an H-Darrieus hydrokinetic turbine equipped with an upstream deflector at various inclination angles and low speeds	OE-D-24-07717

Relationship with Other Institutes

Sl No.	Name of Institute	Details of Relationship	Year	Remarks
1.	School of Water Resources Engineering, Jadavpur University, Kolkata-32	M. Tech. Thesis titled “Analysis of Clear Water Scour Around Eccentric Triangular Piers Arranged in Tandem”	21 June, 2014	Act as External Examiner
2.	School of Water Resources Engineering, Jadavpur University, Kolkata-32	M. Tech. Thesis titled “Simulation of Rainfall-runoff process using HEC-HMS-SMA model (case study: Ajay River Basin, India)”	21 June, 2014	Act as External Examiner
3.	Department of Hydro and Renewable Energy, IIT Roorkee	Delivered a talk on “ Experiences and ideas related to hydrokinetic turbines ” in International workshop on Hydrokinetic Technology	11-10-19	As a speaker in the workshop
4.	School of Water Resources Engineering, Jadavpur University, Kolkata-32	M. Tech. Thesis titled “Model Study of a Distribution Network System of LalGate ESR in Ward No-105 Kolkata through WaterGEMS Software”	05-10-2020	Act as External Examiner (online)
5.	School of Water Resources Engineering, Jadavpur University, Kolkata-32	M. Tech. Thesis titled “Rainfall and temperature variation in West Bengal in last fifty years”	30-08-2021	Act as External Examiner (online)
6.	GIAN	Enrolled as Reviewer	08-03-24	reviewer
7.	Department of Ocean Engineering, IIT Madras	Ph. D. Thesis titled “NUMERICAL ANALYSIS OF LEADING-EDGE CYLINDER PASSIVE FLOW CONTROL DEVICE OF A WELLS TURBINE”	08-03-24	Act as External Examiner, evaluated thesis, Attended PhD Viva Voce
8.	DEPARTMENT OF HYDRO AND RENEWABLE ENERGY, IIT Roorkee	Ph. D. Thesis titled “NUMERICAL MODELLING FOR ESTIMATING WIND ENERGY POTENTIAL FOR THE SOUTHERN REGION OF ANDHRA PRADESH, INDIA”	16-03-24	Act as External Examiner, evaluated thesis
9.	DEPARTMENT OF HYDRO AND RENEWABLE ENERGY, IIT Roorkee	Ph. D. Thesis titled “INVESTIGATIONS ON PELTON TURBINE JETS AND DEFLECTORS”	22-03-24	Act as External Examiner, evaluated thesis
10.	DEPARTMENT OF HYDRO AND RENEWABLE ENERGY, IIT Roorkee	Ph. D. Thesis titled “EXPERIMENTAL INVESTIGATIONS OF PRESSURE FLUCTUATIONS IN FRANCIS TURBINE”	02-07-24	Act as External Examiner, evaluated thesis
11.	R&D Management	Project Proposal on	12-08-24 &	Act as Reviewer

	Division, Central Power Research Institute	“Enhancing Hydro Turbine Flexibility Through Cavitation Control Techniques for Economic Integration of New Renewables”	28-10-24	
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Other Academic Contributions

Sl No.	Details
1.	Organised industrial tour for 4 th year students to Yazuli Hydropower Plant, Arunachal Pradesh on 23 rd October 2010 in NERIST.
2.	Supervised Final Year B.Tech. Project on “Water availability calculation of a hydropower site and design of turbine”, 2011 in NERIST
3.	Supervised Final Year Diploma Project on “Design of Impeller of a centrifugal pump”, 2011 in NERIST
4.	Supervised Final Year Diploma Project on “Design of a manual hand pump”, 2011 in NERIST
5.	Organised industrial training for 2 nd year students to Bushi Tada motor (Maruti Suzuki service station), and Himmat Singh Motor (Tata-Heavy vehicle service station), Bandardewa, Assam in NERIST
6.	Supervised Final Year B.Tech. Project on “Analysis of flow through Centrifugal Pump impeller”, 2012-13 in ISM
7.	Supervised Final Year B.Tech. Project on “Design of draft tube of hydraulic turbine”, 2012-13 in ISM
8.	Supervised Final Year B.Tech. Project on “Thermal Analysis of Tank tube Assembly”, 2013-14 in ISM
9.	Supervised Final Year B.Tech. Project on “Flow Analysis of Francis Turbine”, 2014-15 in ISM
10.	Supervised Final Year B.Tech. Project on “Analysis of Erosion butterfly and gate valve”, 2015-16 in ISM
11.	Supervised Final Year B.Tech. Project on “Analysis of Wind Turbine Blade using CFD”, 2016-17 in IIT(ISM)
12.	Supervised Final Year B.Tech. Project on “Experimental and Analytical Analysis of a Wind Turbine Blade”, 2017-18 in IIT(ISM)
13.	Supervised Final Year B.Tech. Project on “Analysis and estimation of EMF generated from Ocean wave energy converter device using MATLAB”, 2018-19 in IIT(ISM)
14.	Supervised Final Year B.Tech. Project on “Performance study of exhaust gas recirculation cooler corresponding to IFTs”, 2018-19 in IIT(ISM)
15.	Conducted One day Training Programme for Research Scholar under SSR Programme of EEQ project: DST(SERB) (244)/2019-20 /684/ Mech Engg on 14.01.2020 Lecture conducted on - “Fluid Machines” delivered by Prof. Subashisa Dutta, IIT Guwahati “Lubrication in Machines” - Lecture delivered by Prof. (Retd.) P. S. Mukherjee, IIT(ISM) Dhanbad
16.	Conducted One day Institute visit for School students under SSR Programme of EEQ project: DST(SERB) (244)/2019-20 /684/ Mech Engg on 29.02.2020
17.	Supervised Final Year B.Tech. Project on “ Design an In-Stream Tidal Turbine and simulate its performance in the Gulf of Khambhat ”, 2019-20 in IIT(ISM)

18.	Supervised Final Year B.Tech. Project on “ Application of Hydrokinetic turbine in closed conduit (pipeline) to harness excess energy ”, 2021-23 in IIT(ISM)
19.	Supervised Final Year B.Tech. Project on “ Thermal modelling and analysis of automobile battery ”, 2023-24 in IIT(ISM)
20.	Supervised Final Year B.Tech. Project on “ Digitization of Wind Turbine Code ”, 2024-25 in IIT(ISM)

Summer/ Winter School /Short Term Courses Attended

Sl.No.	Details	Organising Institute	Duration	
			From	To
1.	International short course on Urban Water Systems Modelling	UNESCO – IHE Institute for Water Education, Delft, The Netherlands	June 2006	July 2006
2.	Refresher Course on Urban Flood Modelling and Disaster Management	UNESCO-IHE Institute for Water Education, The Netherlands and Department of Hydrology IIT Roorkee, India	October 2006	October 2006
3.	Short term training programme on Teaching Methodology	NERIST (Deemed University), Arunachal Pradesh & National Institute of Teachers Training Institute (NITTTR) Kolkata	03-01-2011	07-01-2011
4.	Staff Development Programme on Recent Advances on Mechanics and their Application in Nano Engineering and Technology	NERIST (Deemed University), Arunachal Pradesh	01-08-2011	12-08-2011
5.	Short term course on Professional skill development programme on MATLAB and SIMULINK for Engineering Applications	Electrical Engg. Dept., ISM Dhanbad	24-06-13	29-06-13
6.	Intensive course on PIPING ENGINEERING	Piping Engineering Cell, IIT Bombay	06-12-13	17-12-13
7.	Workshop on International workshop on Hydrokinetic Technology	Department of Hydro and Renewable Energy, IIT Roorkee	10-10-19	11-10-19
8.	Two-week certification course (online) in Patenting: India Patent Filing: Stats and Procedure	Turnip Innovation Pvt Ltd	30.01.2021	14.02.2021
9.	Judged a Poster Presentation Session at the International Conference on Energy and Power (ICEP2022)	Military Institute of Science & Technology (MIST), Dhaka, Bangladesh	11.12.2022	13.12.2022
10.	Keynote Speaker in the International Conference on the “Cooperation and Integration of Industry, Education, Research	Jilin University, Changchun, P. R. China	18.09.2023	24.09.2023

	and Application”. Topic - Application of Hydrokinetic turbines in open channel and pipe flow			
11.	Visiting Labs and delivering an Invited Lecture on “Hydrokinetic Turbine in Open Channel and Pipe Flow” in the Faculty of Power and Aeronautical Engineering, Warsaw University of Technology, Poland	Faculty of Power and Aeronautical Engineering, Warsaw University of Technology, Poland	17.06.2024	21.06.2024
12.	Expert Lecture on “ An overview of small-scale hydropower and its recent development ” in AICTE Training And Learning (ATAL) Academy Faculty Development Program on Recent trends in sustainable power generation: pathways, energy storage, and application	BIT Sindi, Jharkhand, India	05-08-24	10-08-24
13.	Expert Lecture on “ Role of Draftsman in the Industry, Basics of AutoCAD ” in Pradhan Mantri Kaushal Vikas Yojana (PMKVY) programs	IIT ISM Dhanbad Trainer ID: TR523423	Sept, 2024	Oct 2024

Award Received

Sl No.	Details
1	University Gold medal in 2005 for being first in Master of Engineering in Water Resources & Hydraulic Engineering, Jadavpur University, Kolkata.
2	NFP Fellowship to participate short course on urban water systems modelling in UNESCO – IHE Institute for Water Education, Delft, The Netherlands, 2006
3	Canara Bank publication award - 2018 for Department of Mechanical Engg, IIT(ISM) Dhanbad
4	Indra Mohar Thapar Award (IMTR)- 2023 by Dr. Rakesh Kumar for Publishing the best journal paper in the Department of Mechanical Engg, IIT(ISM) Dhanbad, in which Prof. Shibayan Sarkar is the other Co-Author.

Fellowship Received

Sl No.	Details
1	Funds sponsored by International Centre for Hydropower, Norway to participate Hydro Sri Lanka International conference on Small Hydropower, held on Kandy, Sri Lanka 22 nd to 24 th October 2007.
2	Netherlands Fellowship (NUFFIC) to participate short course on Urban Water Systems Modelling in UNESCO – IHE Institute for Water Education, Delft, The Netherlands held on

	19 th June to 7 th July 2006.
3	MHRD Fellowship to study Ph.D. in Hydrology in Department of Hydrology in IIT Roorkee, Roorkee, Uttaranchal in 2005-2009
4	AICTE (GATE) Fellowship to study Master of Engineering in Water Resources & Hydraulic Engineering, School of Water Resources Engineering, Jadavpur University, Kolkata in 2003-2005.

Professional Membership

- (1) Member, Indian Association of Hydrologists (LM-1449)
- (2) Associate Member, Institute of Engineers (IE), AM 100645-5
- (3) Life member, Indian Society for Technical Education (ISTE), 124624

Name and Addresses of Referees

Name	Referee 1	Referee 2	Referee 3
Occupation or position	Prof. N. K. Goel	Prof. Asis Mazumdar	Prof. Abdus Samad
Address	Professor, Department of Hydrology I.I.T. Roorkee, Roorkee- 247667, Uttarakhand	Professor, School of Water Resources Engineering, Jadavpur University, Kolkata- 700032, West Bengal	Professor, Dept of Ocean Engineering IIT Madras, Chennai- 600036, Tamil Nadu, India,
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Name	Referee 4	Referee 5
Occupation or position	Prof. Ujjwal K. Saha	Prof Mamdud Hossain,
Address	Professor C-107, Department of Mechanical Engineering IIT Guwahati, India	Chartered Engineer and a Fellow of the Institution of Mechanical Engineers Professor, School of Engineering Robert Gordon University, Garthdee Road, Aberdeen, AB10 7JG, Scotland
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Declaration

I certify that above statements are true, complete and correct to the best of my knowledge and belief.



SHIBAYAN SARKAR