



DR. RUTUJA MANOHAR CHAVAN

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DOB: 25/01/1991

EDUCATION

- **Ph.D., Water Recourses Engineering and Management**, Indian Institute of Technology Guwahati, Assam, India, 2018
- **M.Tech., Water Recourses Engineering and Management**, Indian Institute of Technology Guwahati, Assam, India, 2014
- **B.E., Civil Engineering**, Sinhgad College of Engineering, Pune, Maharashtra, India, 2012

ACADEMIC / TEACHING EXPERIENCE

Assistant Professor (Grade I), Department of Civil Engineering, Maulana Azad National Institute of Technology, Bhopal, Dec 2023 to till date

Assistant Professor (Grade II), Department of Civil Engineering, Maulana Azad National Institute of Technology, Bhopal, June 2020 to Dec 2023

Assistant Professor (Tenure), Department of Civil Engineering, VJTI, Mumbai, Jan 2019 to March 2020

Assistant Professor (Adhoc), Department of Civil Engineering, National Institute of Technology, Meghalaya India Aug 2018 to Dec 2018

Assistant Professor (Regular), AIKTC, Panvel, New Mumbai, Maharashtra, India, June 2014 to Dec 2014

COURSES TAUGHT

- Fluid Mechanics
- Fluid Dynamics and Hydraulic Machines
- Hydropower Potential Assessment
- Engineering Hydrology
- Water Resources Engineering and Management
- Hydraulic Transients
- River Engineering
- Water Resources Systems

COURSE Developed (at MANIT Bhopal)

- River Engineering

PUBLICATIONS

JOURNALS

- Farooque Rahman and **Rutuja Chavan** - Machine Learning Application in Prediction of Scour Around Bridge Piers: A Comprehensive Review. Archives of Computational Methods in Engineering, 2024, (Accepted for Publication)
- Harish Patel, Sukhjeet Arora, **Rutuja Chavan** and Bimlesh Kumar- Migrating Scour Depth around a Spur Dike with Downward Seepage Using Multiscale Characterizations. *Experimental Thermal and Fluid Science*, 151, 111071, 2023
- Vikalp Chouhan, E. Padhi, **Rutuja Chavan** and G. Singhal - A Review of Bridge Scour Mitigation Measures Using Flow Deflecting Structures. *ISH Journal of Hydraulic Engineering*, 29(1), 434-447, 2023
- Vikalp Chouhan, G. Singhal and **Rutuja Chavan** - A Review of Sediment Deflection in Rivers using Submerged Vanes. *ISH Journal of Hydraulic Engineering*, 29(4), 514-530, 2023
- **Rutuja Chavan**, Anurag Sharma and Bimlesh Kumar - Turbulence Anisotropy around Bridge Piers in Seepage Affected Sand Bed Channel, *Journal of Turbulence*, 23(1-2), 52-67, 2022
- **Rutuja Chavan**, Bimlesh Kumar and Wen-Xin Hua. Alluvial channel hydrodynamics around tandem piers with downward seepage. *Frontiers of Structural and Civil Engineering*, 14(6), 1445-1461, 2020
- **Rutuja Chavan**, and Bimlesh Kumar- Downward seepage Effects on Dynamics of Scour Depth and Migrating Dune- Like Bedforms at Tandem Piers, *Canadian Journal of Civil Engineering*, 47(1), 13-24, 2020
- **Rutuja Chavan**, Paola Gualtieri and Bimlesh Kumar- Turbulent Flow Structures and Scour Hole Characteristics around Circular Bridge Pier over Non-uniform Sand Bed Channel with Downward Seepage, *Water*, 11(8), 1580, 2019
- **Rutuja Chavan**, B. Venkataramana, P. Acharya and Bimlesh Kumar - Comparison of Scour and Flow characteristics around Circular and Oblong Bridge piers in Seepage affected Alluvial Channel, *Journal of Marine Science and Application*, 17(2), 254-264, 2018
- **Rutuja Chavan**, and Bimlesh Kumar- Prediction of Scour Depth and Dune Morphology around Circular Bridge Piers in Seepage Affected Alluvial Channels, *Environmental Fluid Mechanics*, 18, 4, 923-945, 2018
- **Rutuja Chavan**, and Bimlesh Kumar- Experimental Investigation on Flow and Scour Characteristics around Tandem Piers in Sandy Channel with Downward Seepage, *Journal of Marine Science and Application*, 16, 3, 313-322, 2017
- **Rutuja Chavan**, Anurag Sharma and Bimlesh Kumar- Effect of Downward seepage on Turbulent characteristics and Bed Morphology around Bridge piers, *Journal of Marine Science and Application*, 16, 1, 60-72, 2017
- Anurag Sharma, **Rutuja Chavan** and Bimlesh Kumar- Multi-scale Statistical Characterization of Migrating Pier Scour Depth in Non-uniform Sand Bed channel, *The International Journal of River Basin Management*, 15, 3, 265-276, 2017

CONFERENCES

- **Rutuja Chavan** and Bimlesh Kumar Development of Incipient motion Criteria for Alluvial Channel, National Conference on Water and its Sustainability in mining and

Other Environment: Vision 2050 on March 28-29, 2014, Department of Civil Engineering, Indian School of Mines, Dhanbad

- **Rutuja Chavan**, Pratik Acharya and Bimlesh Kumar -Experimental investigation of turbulent flow structures and scour depth around bridge pier in an alluvial channel with downward seepage, IBMS 2016 Conference on 4th & 5th October 2016 at NDMC Convention centre, New Delhi
- **Rutuja Chavan**, B. Venkataramana and Bimlesh Kumar -Investigation of turbulent flow statistics and bed morphology around circular bridge pier, Proceedings of International Conference on Hydraulics, Water Resources and Coastal Engineering (Hydro2016), CWPRS Pune, India, 8th to 10th December 2016, pp 115-119
- **Rutuja Chavan**, Nairita Mukhopadhyay, Anurag Singh and Bimlesh Kumar - Comparison of existing equation for scour at bridge piers using laboratory and field data, Proceedings of International Conference on Hydraulics, Water Resources and Coastal Engineering (Hydro2016), CWPRS Pune, India, 8th to 10th December 2016, pp 642-648
- **Rutuja Chavan** and Bimlesh Kumar -Flow analysis and scour around piers in tandem arrangement, Proceedings of International Conference on Hydraulics, Water Resources and Coastal Engineering (Hydro2016), CWPRS Pune, India, 8th to 10th December 2016, pp 928-932
- **Rutuja Chavan** and Bimlesh Kumar, Prediction of Scour Depth Using ANN, International Conference on Hydraulics 2017, L. D. College of Engineering, Ahmedabad, Gujarat, India (Accepted)
- **Rutuja Chavan** - Flow Field around Circular and Oblong Piers, Recent Advances in Civil Engineering for Sustainable Development (RACESD- 2021), MANIT Bhopal, 13-14 February, 2021
- Akshay Kumar and **Rutuja Chavan**- Drought and Trend Analysis Sharda River Basin, international conference on water and environment (ICWE-2021), MANIT Bhopal, 22-23 March, 2021
- Deepanshu Khare, **Rutuja Chavan** and Charu Parashar- The Physics of Local Scour at Bridge Piers: A Review , international conference on water and environment (ICWE-2021), MANIT Bhopal, 22-23 March, 2021
- Varun Mishra and **Rutuja Chavan**- World Water Scenario, international conference on water and environment (ICWE-2021), MANIT Bhopal, 22-23 March, 2021
- Mohit Khandelwal and **Rutuja Chavan**- Rehabilitation of Dams, international conference on water and environment (ICWE-2021), MANIT Bhopal, 22-23 March, 2021
- Akansha Sejkar, Rutuja D. Telrandhe and **Rutuja Chavan**- Impact of Climate Change on Water Resources, international conference on water and environment (ICWE-2021), MANIT Bhopal, 22-23 March, 2021
- Vihang Pathare and **Rutuja Chavan**- Urban Water Governance in India: An Assessment, international conference on water and environment (ICWE-2021), MANIT Bhopal, 22-23 March, 2021 (Best Paper Award)
- Varun Mishra and Rutuja Chavan- Hydro Power Potential in India: A Review, 26th International Conference on Hydraulics, Water Resources and Coastal Engineering (HYDRO 2021 INTERNATIONAL) at SVNIT Surat, Gujarat, India, December 23-25, 2021
- Varun Mishra, Rutuja Chavan and Ruchi Khare, Numerical Study on Hydrokinetic Turbine, 2nd International Conference on Computational Sciences- Modelling, Computing

and Soft Computing (CSMCS 2022) at Department of Mathematics, Manipal Institute of Technology, Karnataka, India, March 28-30, 2022

- Manjeet Dehariya and Rutuja Chavan- Study of Various Shapes of Gryones Using Flow 3D, 27th International Conference on Hydraulics, Water Resources, Environmental and Coastal Engineering (HYDRO 2022 INTERNATIONAL) at Punjab Engineering College, Chandigarh, India, December 22-24, 2022
- Suniti Kumari, H. Tiwari and Rutuja Chavan - A review on Hydrodynamics of River Meandering, 27th International Conference on Hydraulics, Water Resources, Environmental and Coastal Engineering (HYDRO 2022 INTERNATIONAL) at Punjab Engineering College, Chandigarh, India, December 22-24, 2022
- Prabhat Singh and Rutuja Chavan- Bed Load Transport in Non-uniform Sand Bed Channel: A Review, 27th International Conference on Hydraulics, Water Resources, Environmental and Coastal Engineering (HYDRO 2022 INTERNATIONAL) at Punjab Engineering College, Chandigarh, India, December 22-24, 2022
- Rita Tiwari and Rutuja Chavan- An Approach to Utilize the Static Energy of Obstructed Water to Enhance the Use of River Flows for Agricultural Water Supplies, 27th International Conference on Hydraulics, Water Resources, Environmental and Coastal Engineering (HYDRO 2022 INTERNATIONAL) at Punjab Engineering College, Chandigarh, India, December 22-24, 2022
- Farooque Rehman, A. Thawait and Rutuja Chavan- Groundwater Quality Assessment for Drinking Purpose in Bhopal City, M.P. Utilizing GIS and Water Quality Index, 27th International Conference on Hydraulics, Water Resources, Environmental and Coastal Engineering (HYDRO 2022 INTERNATIONAL) at Punjab Engineering College, Chandigarh, India, December 22-24, 2022
- Suniti Kumari, Ankur Sharma, H.L. Tiwari and Rutuja Chavan- Advancements in Turbulence Modeling for Hydraulic Applications: A Comprehensive Review, 28th International Conference on Hydraulics, Water Resources, River and Coastal Engineering (HYDRO 2023 INTERNATIONAL) at NIT Warangal, India, December 21-23, 2023
- Farooque Rahman and Rutuja Chavan- Scour Analysis Around Bridge Piers Using Machine Learning: A Review, 28th International Conference on Hydraulics, Water Resources, River and Coastal Engineering (HYDRO 2023 INTERNATIONAL) at NIT Warangal, India, December 21-23, 2023
- Shivangi Singh, Kartikey Mishra, Rutuja Chavan, H.L Tiwari, -Advancements and Challenges in Hydrological Modeling: A Comprehensive Review, 28th International Conference on Hydraulics, Water Resources, River and Coastal Engineering (HYDRO 2023 INTERNATIONAL) at NIT Warangal, India, December 21-23, 2023
- Kushagra Dubey, Suniti Kumari and Rutuja Chavan- Impact of Urbanization on Groundwater: A Review, International Conference on Future of Water Resources (ICFWR 2024) at IIT Roorkee, India, January 18-20, 2024
- Shivangi Singh, Kartikey Mishra, Rutuja Chavan and H.L Tiwari -Assessing the Impact of Climate Change on Crop Yields: A Review of Modeling Tools and Strategies for Sustainable Agriculture, International Conference on Future of Water Resources, at IIT Roorkee, India, January 18-20, 2024
- Suniti Kumari, Dr. H. L. Tiwari and Rutuja Chavan -Innovative Strategies for Sustainable Sediment Management: A Review on Bridge Pier Scour Reduction, Roorkee Water Conclave (RWC-2024) at IIT Roorkee, India, March 3-6, 2024

- Farooque Rahman and Rutuja Chavan - Impact of Climate Change on Bridge Scour: A Review, Roorkee Water Conclave (RWC-2024) at IIT Roorkee, India, March 3-6, 2024
- Suniti Kumari, Dr. H. L. Tiwari and Rutuja Chavan -Application of Large Eddy Simulation for Scour Prediction around Bridge Piers: A Review, International water conference for sustainable development goals (IWCSGDG-2024) at MANIT Bhopal, India, March 22-23, 2024
- Shivangi Singh, Kartikey Mishra, Rutuja Chavan and H.L Tiwari -Overview of Crop Sensitivity to Climate Variables: A Comprehensive Review, International Water Conference on Sustainable Development Goals (IWCSGDG-2024) at MANIT, Bhopal, India, 22-23 March, 2024

PATENT

- S. Mishra, P. Prasad, D. Kumar, R. Chavan - Automated Drainage Cleaning System (2024), Design no: 411019-001, India

Student Mentorship

PhD Guidance

Mr. Vikalp Chouhan, Ph.D. Research Scholar at SNU Delhi, jointly with Dr. Gopal Das Singhal, Nov 2020 (Ongoing)

Ms. Suniti Kumari, jointly with Dr. H. L. Tiwari, Dec 2021 (Ongoing)

Mr. Farooque Rehman, Ph. D. Research Scholars at MANIT Bhopal, June 2022 (Ongoing)

Mr. Manjeet Dehariya, jointly with Dr. M. K. Choudhary, July 2023 (Ongoing)

MTech Guidance

Mr. Deepanshu Khare (Jointly with Prof. Charu Parashar), MTech Scholar, - Study of Flow Field around Piers with Multiphysics Approach (2021)

Mr. Akshay Kumar – Drought and Trend Analysis: Sonbhadra Region (2021)

Ms. Abhilasha Bansal - Flow Field and Bed Morphology around Groynes (2022)

Mr. Akanksh Mamidala – Rainfall Analysis of Sugur Small Hydro Power Plant (2022)

Ms. Annapurna Verma - Pier Shape Effect on Local Scour (2022)

Mr. Hansraj Uke - Scour around Single and Tandem Piers (2022)

Mr. Sanjay Patle (Jointly with Prof. Charu Parashar) – Flood Analysis of Wainganga River Basin and Computation of Upper Wainganga Dam Inflow (2022)

Mr. Guguloth Santhosh- Comparison of Various Scour Depth Prediction Criteria (2022)

Mr. Varun Mishra (Jointly with Dr. Ruchi Khare) - Effect of Number of Blades on the Performance of Hydrokinetic Turbine (2022)

Mr. Prabhat Singh - Experimental and Numerical Comparison of Scour Depth and Bed Morphology Prediction Criteria Around a Single Pier (2023)

Ms. Rita Tiwari - Surge Analysis of Pipe Line of Chhapi–Jhalawar-Jhalarpatan Water Supply Project (2023)

Mr. Manjeet Dehariya - Study of Flow Field and Bed Morphology around Groynes in Series (2023)

Mr. Kushagra Dubey – Prediction of Bed Load Transport Criteria (2024)

MISCELLANEOUS

- Invited as a Hydraulic Expert to the conference on Silk Tech Park Development at Pachmarhi by the Directorate of Sericulture Madhya Pradesh, February 13-15, 2024
- 2021, October 12 Delivered a talk on "Sedimentation and Dam Stability" in webinar at National Institute of Disaster Management, Delhi
- Invited as a Session Chair to HYDRO 2020, organized by NIT Raurkela
- Invited as a Session Chair to international conference on "Latest Trends in Civil, Mechanical and Electrical Engineering" (LTCMEE- 2021), April 12-13, 2021, organized by MANIT Bhopal
- Invited as a Session Chair to Recent Advances in Civil Engineering for Sustainable Development (RACESD-2021), held at Department of Civil Engineering, MANIT Bhopal
- 2021, Feb 26 Delivered a talk in TEQIP based sponsored workshop "Recent Trends on Technologies for Environmental and Water Resources Management" held at Department of Civil Engineering, NIT Sikkim
- 2021, Feb 9 Delivered a talk in TEQIP based sponsored Short Term Course "Challenges and Opportunities in Civil Engineering Infrastructure" held at Department of Civil Engineering, Indira Gandhi Institute of Technology, Sarang
- 2020, Aug 08 Delivered a talk on "Recent Advancement in Scour Study" in a webinar at Pimpri Chinchwad college of Engineering Nigdi, Pune
- Organized International Conference on Water and Environment, MANIT Bhopal, 22-23 March 2021 (Coordinators: Dr. Kamal Singh, Dr. Rakesh Kumar, **Dr. Rutuja M. Chavan**)
- Organized five days training Programme on Dam Break Flood Modelling Using Hec-ras, MANIT Bhopal, 15-19 March 2021 (Coordinators: Dr. Jyoti Sarup, Dr. M. K. Choudhary, **Dr. Rutuja M. Chavan**)
- Organized High End Workshop (KARYSHALA) on Advanced Application of Hyperspectral and Microwave Remote Sensing under the Accelerate Vigyan scheme- A SERB Initiative, MANIT Bhopal, 25 to 31st July 2022 (Coordinators: Dr. Jyoti Sarup, Dr. M. K. Choudhary, **Dr. Rutuja M. Chavan**)