

# Curriculum Vitae

Dr. Nav Kumar Mahato, M.Sc., M.Phil, PhD  
Associate Professor,  
Department of Mathematics,  
School of Basic and Applied Sciences,  
Adamas University, Kolkata  
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## Objective

To contribute through dedication, hard work and sincerity towards the overall growth of the institute wherein I get the opportunity of employing my academic, technical and scientific knowledge and prove my credentials as a reputed professional.

## Academic Details

- ❖ Ph.D. (Applied Mathematics) from IIT (ISM), Dhanbad in 2013.  
Area of Specialization: Solute Transport Modeling in Porous Media, and its Analytical and Numerical Solutions.  
**Thesis Title:** *Study of solute transport modeling along unsteady groundwater flow in Aquifer.*
- ❖ M. Phil. (Applied Mathematics) from Indian School of Mines University, Dhanbad in 2007.  
OGPA: 8.64 out of 10.  
Area of Specialization: Groundwater Hydrology.  
Division/Class: First Division.  
**Dissertation Title:** *One-dimensional dispersion along unsteady groundwater flow in semi-infinite Aquifer.*
- ❖ M. Sc. (Mathematics and Computing) from Indian School of Mines, Dhanbad in 2006.  
OGPA: 6.93 out of 10.  
Area of Specialization: Mathematics and Computing.  
Division/Class: Second Division.

- ❖ B. Sc. (Hons.) Mathematics from Sindri College, Sindri under Vinoba Bhave University Hazaribagh in 2003.  
Division/Class: First Class with Distinction.
- ❖ Xth +2 from Model English High School, Sindri under Central Board of Secondary Education, New Delhi in 1999.  
Marks: 59.80%  
Division/Class: Second Division.
- ❖ Matriculation from Rajendra High School, Domgarh under Bihar Secondary Examination Board Patna in 1997.  
Marks: 60.86%  
Division/Class: First Division.

### Research Interest

- ❖ Hydrodynamics dispersion, solute transport modelling in unsaturated and saturated media using analytical/numerical, statistical and soft computing techniques.
- ❖ Mathematical modeling of sediment transport

### Computer Based Coding Skills

- ❖ Programming Languages: C and C++
- ❖ MATLAB Coding, Python Coding (Beginner), R-Programming (Beginner)

### Teaching Experience

- ❖ Associate Professor (August, 2018 – Till date) in Adamas University, Barasat, Kolkata, West Bengal.
- ❖ Assistant Professor (July, 2015 – July, 2018) in Adamas University, Barasat, Kolkata, West Bengal.
- ❖ Assistant Professor (August, 2013 – June, 2015) in C. V. Raman College of Engineering, Bhubaneswar, Orissa.
- ❖ Assistant Professor (August, 2011 – August, 2013) in NSHM Knowledge Campus, Durgapur, West Bengal.
- ❖ Assistant Professor (January, 2010 – August, 2011) in Bengal College of Engineering and Technology, Durgapur, West Bengal.
- ❖ Lecturer (July, 2008 – December, 2009) in Bengal College of Engineering and Technology, Durgapur, West Bengal.

## Teaching Interest

**Undergraduate (UG) Level:** Engineering Mathematics I & II, Transform Calculus, Ordinary differential Equation, Functions of Several Variables, Linear Algebra, Functions of Complex Variable, Integral Transforms, Linear Programming Problem, Numerical Analysis, Probability and Statistics, Elementary Data Science, Descriptive Statistics.

**Postgraduate (PG) Level:** Advanced Numerical Analysis, Partial Differential Equation, Fluid Dynamics, Integral equations and boundary value problems, Statistics for Management, Stochastic Process, Mathematics for Data Science, Machine Learning and Applications, Applied Mathematics and Statistics.

## Academic Responsibility Handled

I have chaired **SEVEN** Departmental Council/ BoS meetings (First on 07<sup>th</sup> February 2017 and second on 6<sup>th</sup> March 2018, Third on 8<sup>th</sup> March 2019, Fourth on 16<sup>th</sup> April 2021, Fifth on 8<sup>th</sup> March 2022, Sixth on 22<sup>nd</sup> December 2022 and seventh on 17-06-2023) for preparation of course structure and detailed syllabi for Undergraduate/ Postgraduate programmes running under the Department of Mathematics, School of Basic and Applied Sciences, Adamas University, Kolkata, West Bengal.

## Headed in Undergraduate (UG) /Postgraduate (PG) program

Headed program structure and course syllabi development of following UG/PG programs

1. 4-Year B.Sc. (Hons) Mathematics (As per regulation of NEP-2020)
2. 4-Year B.Sc. (Hons) Applied Statistics and Data Science (As per regulation of NEP-2020)
3. 2-Year M.Sc. Tech (Statistics and Data Science)

## Seed Money Project

Project Title: Development and implementation of monitoring and spraying pesticide in crop using Agriculture drone.

Role: Principal Investigator (PI)

Seed money amount: INR 1,00,000 (One Lakh only)

Duration: 06 Months

## Administrative Responsibility Handled

1. Head of Department (1<sup>st</sup> December 2018-Till date), Department of Mathematics, School of Basic and Applied Sciences, Adamas University, Barasat, Kolkata, West Bengal.
2. Departmental In-Charge (20<sup>th</sup> October 2016-30<sup>th</sup> November 2018), Department of Mathematics, School of Science, Adamas University, Barasat, Kolkata, West Bengal.

3. Member of Ph.D. core committee, School of Science, Adamas University, Barasat, Kolkata, West Bengal.
4. Time-table Coordinator, Department of Mathematics, School of Science, Adams University, during July, 2015- December 2016.
5. Examination Coordinator, School of Science and School of Biotechnology, Adamas University, during July-December 2017.

### Additional Responsibilities Handled

1. Champion of NAAC criteria-I at Adamas University, Kolkata
2. Member of NIRF task force during AY 2020-21 at Adamas University, Kolkata
3. School level coordinator of Planning and Monitoring Committee at Adamas University, Kolkata
4. School level coordinator of Central Library Committee at Adamas University, Kolkata
5. Member of Board of Research at Adamas University, Kolkata

### Research Papers Published in Journals

1. Paul T., Singh R. K., and **Mahato N. K.**, 2024. Fate and Transport of Solute with Temporally Varying Pulse Type Input Source under Sorption in Heterogeneous Porous Formation. *Pollution*, Vol 10(3), pp 915-928. (Scopus) (Q3)
2. Radha R., Paul T., Singh R. K., **Mahato N. K.**, and Singh M.K., 2024. Solution of pollutant dispersion in porous medium under linear sorption using finite element method, *Mathematics and Computer Science, Volume 3, John Wiley and Sons, USA*.
3. Paul, T., **Mahato, N.K.**, Singh, R.K. and Das, P., 2024. Study of Pollutant Transport under Linear Sorption in a Groundwater Reservoir, *IOP Conf. Series: Earth and Environmental Science 1382, 012010. doi:10.1088/1755-1315/1382/1/012010*.
4. Paul, T., **Mahato, N.K.** and Singh, R.K., 2022. Study of solute dispersion under linear sorption in a semi-infinite porous formation. *Journal of Physics: Conference Series, Vol 2349*.
5. Singh, R.K., Paul T., **Mahato N. K.**, and Singh, M.K., 2021. Contaminant dispersion with axial input sources in soil media under non-linear sorption. *Environmental Technology*, Vol 44(13), Taylor & Francis, pp 1903-1915. IF:2.2 (Q1) DOI: 10.1080/09593330.2021.2016992.
6. Singh, R.K., **Mahato, N.K.**, Das, P. and Singh, M.K., 2019. Solute dispersion along and against the groundwater flow in two-dimensional finite aquifer. In AIP Conference Proceedings (Vol. 2072, No. 1, p. 020010). AIP Publishing LLC. <https://doi.org/10.1063/1.5090250>. (SCOPUS)
7. Roy, R, Samanta S, Patra S, **Mahato N K**, and Saha R (2018), In silico identification and characterization of sensory motifs in the transcriptional regulators of ArsR-SmtB family, *Metallomics (Royal Society of Chemistry)*, vol.10, pp1476--1500. DOI: 10.1039/C8MT00082D

8. **Mahato, N K** , Begam, S, Pintu Das and Singh, M K(2015), Two-dimensional Solute Dispersion Along and Against the Unsteady Groundwater Flow in Aquifer, *J. Groundwater Research*, vol.3, 4/1, pp-44-67.
9. Singh M K, **Mahato N K**, and Kumar N (2015), Pollutant's horizontal dispersion along and against sinusoidally varying velocity from a pulse type point source, *Acta Geophysica Versita (Springer)*, vol. 63(1), pp. 214-231. DOI: 10.2478/s11600-014-0244-3 Impact factor: 1.365.
10. Singh M K, Kumari, P and **Mahato N K** (2013), Two Dimensional Solute Transport in Finite Homogeneous Porous formation, *Int. J. Geo. Earth Environ. Sci. (CiBTech)*, vol. 3 no.2, pp35-48.
11. Singh M K, **Mahato N K** and Singh V P (2013), Analytical Approach to One-dimensional Solute Dispersion along and against Transient Groundwater flow in Aquifer Systems, *Groundwater Research Series (AGGS)*, vol. 2, no. 1, pp 65-78.
12. Singh M K, **Mahato N K** and Kumari, P (2011), Comparative study of analytical solutions for time-dependent solute transport along unsteady groundwater flow in semi-infinite aquifer, *Int. J. Geosciences*, 2(4), pp 457- 467, DOI:10.4236/ijg.2011.24048.
13. Singh M K, **Mahato N K** and Singh P (2011), Longitudinal dispersion with constant Source Concentration along unsteady Groundwater Flow in Finite Aquifer: Analytical Solution with Pulse Type Boundary condition, *Natural Science*, Vol.3, No.3, pp 186-192, DOI: 10.4236/ns.2011.33024.
14. Singh M K, **Mahato N K** and Singh P (2008), Longitudinal dispersion with time dependent source concentration in semi-infinite aquifer, *J. Earth System Science (JESS)*, Springer, Vol.117, no.6, pp 945-949.

### Research paper published in Proceeding of National/International Conferences

1. Singh M K and **Mahato N K** (2006), Analytical solution for horizontal dispersion along unsteady groundwater flow in semi-infinite aquifer, *Proceedings of The Mathematical Society*, B. H.U., Varanasi, Vo1.22, pp 25-31.
2. Singh M K, Singh P and **Mahato N K** (2007), Solute transport model with time dependent source concentration in aquifer, *Proceedings of National Seminar on Modern Trends in Geophysical Sciences and Techniques*, ISMU, Dhanbad, 12-14 Nov., pp 215-218.
3. Singh M K, **Mahato N K** and Ahamad S (2011), Solute transport Model with transient Groundwater Flow in Homogeneous Semi-infinite Aquifer: Analytical Solution, *Proceeding of international Seminar on Recent Advances in Geosciences*, ISM, Dhanbad, 11-13 Jan., 2011.
4. Singh M K, Kumari P & **Mahato N K** (2011), Two-Dimensional Non-reactive Solute Transport Along Unsteady Groundwater Flow In Finite Aquifer, *Proceedings of International Conference on CONIAPS-XIII, June14-16, at UPES Dehradun*.

5. Singh M K, **Mahato N K**, Ahamad S , Singh, V P & Dragoni, W (2011), Longitudinal Dispersion along Transient Groundwater Flow in a Finite Aquifer, *Groundwater Research Series*, IGWC, 4(1), pp 400-417.
6. Singh M K and **Mahato N K** (2012), Analytical modeling of solute transport in homogeneous porous media with Cauchy type boundary condition, *International Conference of RAIT, IEEE Explore*, pp903-908. DOI:10.1109/RAIT.2012.6194587.
7. Singh M K, **Mahato N K** and Singh V P(2012), Analytical Approach to Solute Dispersion along and against Transient Groundwater flow in a Homogeneous Finite Aquifer: Pulse Type Boundary Conditions, *Earth and Space,(ASCE)*, pp796-808,
8. Singh M K and **Mahato N K** (2012), Two Dimensional Solute Transports for Temporally Dependent Source Concentration in Semi-Infinite Aquifer, *proceeding of International Conference on Modeling and simulation of Diffusive Processes and Applications(ICMSDPA-12)*, pp 39-43.
9. **Mahato, N K** and Singh, M. K.(2013), Comparative study of 2-D solute transport with temporally dependent source concentration in homogeneous porous media, *Proceeding of Recent Advances in Mathematics and its Applications(RAMA)*, pp122-132.
10. **Mahato N K**, Singh M K and Begam S(2014), Temporally Dependent Solute Dispersion with Cauchy-type Boundary Condition in homogeneous semi-infinite Aquifer, *proceeding of International conference on modelling and Simulation of Diffusive Processes and Applications (ICMSDPA-14)*, pp 33-39.

### Details of Papers Presented in National/International Conferences

1. Singh M K and **Mahato N K**, One-dimensional solute dispersion along unsteady groundwater flow in semi-infinite aquifer, National Seminar on Recent Advances in Theoretical & Applied Seismology, *March 20-21, 2006, ISM Dhanbad.*
2. Singh M K and **Mahato N K**, Analytical solution for horizontal dispersion along unsteady groundwater flow in semi-infinite aquifer, 22nd Annual Conference of the Mathematical Society, *Dec.15-16, 2006, BHU Varanasi.*
3. Singh M K and **Mahato N K**, Contaminant transport analysis along unsteady ground water flow in aquifer, National Seminar on Recent Advances in Theoretical & Applied Seismology, *March 21-22, 2007, ISM Dhanbad.*
4. Singh M K, Singh P and **Mahato N K**, Solute transport model with time dependent source concentration in aquifer, National Seminar on Modern Trends in Geophysical Sciences and Techniques, *12-14 Nov., 2007, ISM Dhanbad.*
5. Singh M K, Singh P and **Mahato N K**, Comparative study of analytical solution for conservative solute transport along unsteady groundwater flow in semi-infinite aquifer, National Conference on

Mathematical Sciences and Applications: State of the Arts (NCMSA), January, 14-16, 2010, Jadavpur University, Kolkata.

6. Singh M K, **Mahato, N K** and Ahamad S, Solute Transport Modeling of Time-Dependent Solute Concentration with Mixed type Boundary Condition: Analytical Solution, 26<sup>th</sup> Annual Conference of the Mathematical Society, *Nov.28-29, 2010, BHU Varanasi.*
7. Singh M K, **Mahato N K** and Ahamad S., Solute Transport Model with Transient Groundwater Flow in Homogeneous Semi-infinite Aquifer: Analytical Solution, *International Seminar on Recent Advances in Geosciences, Jan. 11-13, 2011, ISM Dhanbad.*
8. **Singh M K** and Mahato N K, Analytical modeling of solute transport in homogeneous porous media with Cauchy type boundary condition, *International Conference of RAIT- March15-17, 2012, ISM, Dhanbad.*
9. Singh M K and **Mahato N K**, Two dimensional solute transports for temporally dependent source concentration in semi-infinite Aquifer, *International Conference on Modeling and simulation of Diffusive Processes and Applications, Oct. 08-12, 2012, BHU Varanasi.*
10. **Mahato N K** and Singh M K Comparative study of 2-D solute transport with temporally dependent source concentration in homogeneous porous media, *National Conference on Recent Advances in Mathematics and its Applications (RAMA) Feb.14-16, 2013, ISM, Dhanbad.*
11. **Mahato, N K** and Singh, M K Temporally dependent solute dispersion with Cauchy-type boundary condition in homogeneous semi-infinite aquifer, *International Conference on Modeling and simulation of Diffusive Processes and Applications, Organized by Department of Mathematics, October, 29-31, 2014, BHU, Varanasi.*
12. Singh R K., **Mahato, N K** and Singh, M. K., Contaminant Transport along Groundwater Flow through Two dimensional Finite Porous Medium, *National Seminar on Application of Graph Theory to promote interdisciplinary and multidisciplinary research in allied social science, engineering and technology, Organized by Department of Mathematics, Sushil Kar College April 26-27, 2019, Champahati, South 24 Parganas, West Bengal.*
13. **Mahato, N K**, Paul T., and Singh R. K., One Dimensional Solute Dispersion under Linear Sorption in a Semi-infinite Porous Formation: A Comparison study, National Conference on Modern Mathematics and its Applications (MMA-2022) Organized by Department of Mathematics, Institute of Science, Banaras Hindu University, January 30-31, 2022, Varanasi, UP.

## Membership of Professional Bodies:

- ❖ Life Member of The Indian Society for Hydraulics, Pune
- ❖ Life Member of Society of Applied Mathematics, ISM, Dhanbad.



## Invited Talk/ Lecture presented

1. Presented a lecture on “*Innovative Pedagogical Approaches in Mathematics during a week-long faculty development programme on Innovative Pedagogical Approach in Interdisciplinary Teaching and Learning Process*” organized by School of Education, Adamas University, Kolkata, West Bengal.
2. Presented an invited talk on “*Paradigm Shift in Education Strategies of Mathematics*” during Celebration of National Education Day on 11<sup>th</sup> November 2021 organized by School of Education, Adamas University, Kolkata, West Bengal.
3. Presented an invited talk on “*Fate and Transport of Solute with Temporally Varying Pulse Type Input Source under Sorption in Heterogeneous Porous Formation*” Workshop on Recent Trend in Applied Sciences, organized by Physics and Applied Mathematics Unit (PAMU), Indian Statistical Institute, Kolkata-700108, India during 04-05, January 2024.
4. Presented an Invited talk on “*Modeling of Fate and Transport of Solute with Temporally Varying Pulse Type Input Source under Sorption Porous Formation*” in the Workshop on “*Recent Development of Mathematical Sciences on Biological and Dynamical Systems with Fuzzy and Fractional Environments*”, organized by the Department of Mathematics, Mahadevananda Mahavidyalaya, from 19 Jun. 2024 to 29 Jun. 2024.

## Details of Undergraduate/Postgraduate/PhD Student Guided

SL No.	Student Details	Programme	Title of the Project/Thesis	Year of Passing
1.	Mr. Tapan Paul Registration No: AU/2019/05/0004019	PhD (Mathematics)	Modeling of solute transport in Geological Formations	Pre-submission seminar done
2.	Mr. Dipak Maji Registration No: AU/2020/0005567	PhD (Mathematics)	Optimal control on Mathematical Modelling of Influenza	Ongoing
3.	Mr. Samrat Dhar Registration No: AU/2023/0011192	PhD (Commerce)	An Empirical Study on Impact on Private Sector Non-Life Insurance Company in India	Ongoing
4.	Ms. Pallabi Sanyal Chakraborty Registration No: AU/2023/0011196	PhD (Commerce)	A Study of Business Expansion Strategies of Private Sector General Insurance Company in India	Ongoing



## Details of Undergraduate/Postgraduate

SL No.	Student Details	Programme	Title of the Project	Year of Passing
1.	Moushakhi Barik Reg. No.: AU/MSC/2015/420 Roll No.: PG\0506001\2015	M.Sc. (Mathematics)	Study of One-Dimensional Solute Dispersion problems in Homogeneous Saturated Media-Modified Solution	2017
2.	Sushant Kumar Roll No.: UG/05/BSMATH/2019/005	B.Sc. (Hons) Mathematics	Adomian Decomposition Methods for Solution of Non-linear Differential Equation	2022
3.	Rupsa Dawn Roll No.: UG/05/BSTDA/2021/004	B.Sc. (Hons) Statistics and Data Analytics	A Study of Some Machine Learning Approaches for Heart Disease Prediction	2024
4.	Dibyojit Ghoshal Roll No.: UG/05/BSTDA/2021/002	B.Sc. (Hons) Statistics and Data Analytics	Deep Learning Methods for Detection and Classification of Potato Leaf Diseases	2024

## Details of Workshop/Training Program Attended

Sl. No.	From	To	Institute/Industry	Sponsored by	Name of the Course
1.	20 <sup>th</sup> March 2013	24 <sup>th</sup> March 2013	Indian School of Mines, Dhanbad	Indian School of Mines, Dhanbad	Certificate Course of Soft Computing Methods
2.	01 <sup>st</sup> June 2015	05 <sup>th</sup> June 2015	C V Raman College of Engineering, Bhubaneswar	C V Raman College of Engineering, Bhubaneswar	Recent Advances in Computational Mathematics
3.	18 <sup>th</sup> December 2016	20 <sup>th</sup> December 2016	Indian School of Mines, Dhanbad	Indian School of Mines, Dhanbad	Training program on "Groundwater Contamination and Modelling Approaches"
4.	25 <sup>th</sup> June 2018	06 <sup>th</sup> July 2018	IIT(ISM), Dhanbad	Indian National Science Academy	Concept of Fluid Dynamics and Applications (CFDA-2018)
5.	14 <sup>th</sup> October 2019	18 <sup>th</sup> October 2019	IIT Kharagpur	AICTE, Quality Improvement Programme (QIP)	Short term course on 'Hydrodynamics and Sediment Transport in Unsteady Flows'

## Conference/Workshop organized:

- ❖ Committee member of Global Summit on Sustainable Science and Technology (GS3T), 15<sup>th</sup> to 16<sup>th</sup> September 2022, School of Basic and Applied Sciences, Adamas University, Kolkata.
- ❖ Organizing chair of 5-Day International workshop on Data Science and its Applications, 26<sup>th</sup> to 30<sup>th</sup> April 2022.

## Personal Details:

Father's Name	Late Sudhir Chandra Mahato
Mother's Name	Smt Tarulata Mahato
Date of Birth	02/11/1981
Nationality and Religion	Indian, Hindu
Marital Status	Married
Corresponding Address	At- Sindri Basti, Post-Domgarh, PS-Sindri, Dist.- Dhanbad-8281071, Jharkhand Mobile: 9556873672, 8825268294

## References:

1. Dr. Mritunjay Kumar Singh, Professor, Department of Mathematics and Computing, Indian Institute of Technology (Indian School of Mines), Dhanbad-826004.

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2. Dr. Madhusudan Chakraborty, Ex-Professor, IIT Kharagpur and Ex-Director, IIT Bhubaneswar, Odisha

**Mobile No. :** +91-9007385542


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## Declaration

I, Nav Kumar Mahato, hereby declare that all the above information furnished by me is true to the best of my knowledge.

Dated: 13/01/2025

Place: Barasat, Kolkata

  
(Nav Kumar Mahato)