

Dr. Chayanika Rout

CONTACT INFORMATION

Assistant Professor Grade II,
Indian Institute of Engineering Science and Technology,
(IIST), Shibpur, Howrah 711103, West Bengal, India

Email: fantu.rout@gmail.com
chayanika.math@faculty.iiests.ac.in
chayanika@math.iiests.ac.in

FIELD OF INTEREST

Operations Research: Inventory Modeling, Supply chain management, Fuzzy logic, Multi-criteria decision making

PERSONAL PROFILE

Date of Birth : 19/11/1991
Mother Tongue : Bengali
Other languages known : English and Hindi
Nationality : Indian
Hobbies : Sketching, Singing, Dancing, Solving Rubik's Cube

EDUCATION

2015-2021

Ph.D. in Operations Research under the joint supervision of Prof. Adrijit Goswami and Prof. Debjani Chakraborty in Department of Mathematics, Indian Institute of Technology Kharagpur, West Bengal 721302, India.

2013-2015

M.Sc. in Applied Mathematics with CGPA 9.36 out of 10 from Indian Institute of Technology Kharagpur, West Bengal 721302, India.

2010-2013

B.Sc. (Hons) in Mathematics with 82.37 percent from Jogamaya Devi College, University of Calcutta, West Bengal 700026, India.

2008-2010

Higher Secondary Examination under WBCHSE with 87.71 percent from Bidya Bharati Girls' High School, Kolkata, West Bengal 700053, India.

2008

Madhyamik Pariksha under WBBSE with 93.75 percent from Bidya Bharati Girls' High School, Kolkata, West Bengal 700053, India.

ACHIEVEMENTS & AWARDS

- Offered the role of **Assistant Professor Grade-I** at **Indian Institute of Management (IIM) Rohtak** in 2024.
- Qualified in Joint Admission Test (JAM 2013) conducted by the Indian Institute of Technology Delhi. **All India Rank 100.**

- Qualified in Graduate Aptitude Test in Engineering (GATE 2015) conducted by the Indian Institute of Technology Kanpur. **All India Rank 67.**
- **Silver medalist** in M.Sc. in Mathematics at IIT Kharagpur (2015) for securing the highest marks in the Department.
- Institute Junior Research Fellowship (2015-2017) and Senior Research Fellowship (from 2017-2020) at Indian Institute of Technology Kharagpur.
- Awarded scholarship by Ministry of Human Resource Development (MHRD) of India from 2010-2013.

JOURNAL PUBLICATIONS

- Ghosh, D., **Rout, C.** and Goswami, A., 2025. Integrating imperfect production, screening errors, item deterioration, rising transportation costs, and carbon emissions for sustainable optimization. *Journal of Industrial and Management Optimization*, vol.21 (3), pp. 2052-2073. DOI: <https://doi.org/10.3934/jimo.2024162>.
- Ghosh, D., **Rout, C.** and Goswami, A., 2024. A model of an integrated supply chain with imperfect production, product deterioration, and quality inspection errors. *SADHANA*, vol.49 (2), pp. 187. DOI: <https://doi.org/10.1007/s12046-024-02502-2>.
- **Rout, C.**, Paul, A., Kumar, R. S., Chakraborty, D. and Goswami, A., 2021. Integrated optimization of inventory, replenishment and vehicle routing for a sustainable supply chain under carbon emission regulations. *Journal of Cleaner Production*, vol.316, pp. 128256. DOI: <https://doi.org/10.1016/j.jclepro.2021.128256>.
- **Rout, C.**, Kumar, R. S., Paul, A., Chakraborty, D. and Goswami, A., 2021. Designing a single-vendor and multiple-buyers' integrated production inventory model for interval type-2 fuzzy demand and fuzzy rule based deterioration. *RAIRO - Operations Research*, vol.55 (6), pp.3715-3742. DOI: <https://doi.org/10.1051/ro/2021174>.
- Paul, A., Kumar, R. S., **Rout, C.** and Goswami, A., 2021. A bi-objective two-echelon pollution routing problem with simultaneous pickup and delivery under multiple time windows constraint. *OPSEARCH*, vol.58 (4), pp. 962-993. DOI: <https://doi.org/10.1007/s12597-020-00481-6>.
- Paul, A., Kumar, R. S., **Rout, C.** and Goswami, A., 2021. Designing a multi-depot multi-period vehicle routing problem with time window: Hybridisation of tabu search and variable neighbourhood search algorithm. *SADHANA*, vol.46 (3), pp. 183. DOI: <https://doi.org/10.1007/s12046-021-01693-2>.
- **Rout, C.**, Chakraborty, D. and Goswami, A., 2021. A production inventory model for deteriorating items with backlog-dependent demand. *RAIRO - Operations Research*, vol.55, pp. S549–S570. DOI: <https://doi.org/10.1051/ro/2019076>.
- **Rout, C.**, Paul, A., Kumar, R. S., Chakraborty, D. and Goswami, A., 2020. Cooperative sustainable supply chain for deteriorating item and imperfect production under different carbon emission regulations. *Journal of Cleaner Production*, vol.272, pp.122170. DOI: <https://doi.org/10.1016/j.jclepro.2020.122170>.
- **Rout, C.**, Chakraborty, D. and Goswami, A., 2020. An EPQ model for deteriorating items with imperfect production, two types of inspection errors and rework under complete backordering. *International Game Theory Review*, vol.22 (2), pp.1-18. DOI: <https://doi.org/10.1142/S0219198920400113>.

- **Rout, C.**, Kumar, R. S., Chakraborty, D. and Goswami, A., 2019. An EPQ model for deteriorating items with imperfect production, inspection errors, rework and shortages: a type-2 fuzzy approach. *OPSEARCH*, vol.56 (3), pp. 657–688. DOI: <https://doi.org/10.1007/s12597-019-00390-3>.

CONFERENCE PUBLICATIONS

- Kumar, R. S., **Rout, C.** and Paul, A., 2023. A type-2 fuzzy based hybrid AHP-TODIM MCDM approach for green supplier selection. 3rd International Conference on Mathematical Techniques and Applications (e-ICMTA-2022), *AIP Conference Proceedings*, vol.2852 (1). DOI: <https://doi.org/10.1063/5.0164612>.
- Paul, A., **Rout, C.** and Karmakar, S., 2023. An ameliorating EOQ model with partial pre- and post-payments and waiting time-dependent partial backordering. 2nd International Conference on Applied Mathematics in Science and Engineering, *AIP Conference Proceedings*, vol.2819 (1). DOI: <https://doi.org/10.1063/5.0137241>.

CONFERENCES & WORKSHOPS ATTENDED

- Cooperative sustainable supply chain for deteriorating item and imperfect production under different carbon emission regulations, delivered talk as an **Invited Speaker** at Young Scientist Symposium in the International Conference on Mathematical Sciences and Engineering (ICMSE 2025) from June 9–11, 2025, Mizoram University, Aizawl.
- Integrated optimization of inventory, replenishment and vehicle routing for a sustainable supply chain under carbon emission regulations, delivered talk as an **Invited Speaker** at the International Conference on Mathematical Sciences: Emerging Applications in Engineering & Environmental Sustainability (ICMS-2025), from May 29–30, 2025, Department of Mathematics, Applied Science Cluster, School of Advanced Engineering, UPES Dehradun.
- 6-day online Short-Term Programme on the theme ‘Research Methodology and Quantitative Analysis’ organized by UGC-Malaviya Mission Teacher Training Centre, Indian Institute of Technology Kharagpur, Centre for Teaching Learning and Virtual Skilling (CTLVS) from March 10–17, 2025.
- **Rout, C.** and Paul, A., A single-vendor and multi-buyers’ supply chain model with inspection errors under carbon tax strategy, presented in the 2nd International Conference on Applied Mathematics in Science and Engineering held at Centre for Data Science, Institute of Technical Education and Research, Siksha ‘O’ Anusandhan Deemed to be University, Bhubaneswar, March 24-26, 2022. (Oral presentation)
- Part 1 of the online UHV Refresher 1 FDP organized by All India Council for Technical Education (AICTE) from February 7 – February 11, 2022. (Workshop)
- 5-day online Faculty Development Programme on the theme ‘Inculcating Universal Human Values in Technical Education’ organized by All India Council for Technical Education (AICTE) from September 27 – October 1, 2021. (Workshop)

- **Rout, C.,** Chakraborty, D. and Goswami, A., An EPQ Model for deteriorating items with backlog-dependent demand, presented in the 9th Research Scholars' Day held at Department of Mathematics, Indian Institute of Technology Kharagpur on September 01, 2018. (Oral presentation)
- **Rout, C.,** Chakraborty, D. and Goswami, A., An imperfect production inventory model for deteriorating items with inspection errors under rework and shortages, 29th Annual Meeting of Production and Operations Management Society (An International Conference), Houston, USA, May 04-07, 2018. (Oral presentation)
- **Rout, C.,** Chakraborty, D. and Goswami, A., An EPQ model for deteriorating items with imperfect production, two types of inspection errors and rework under complete backordering, International Symposium on Operations Research and Game Theory: Modeling and Computation, ISI Delhi, India, January 09-11, 2018. (Oral presentation)
- International Training Workshop on Fuzzy Logic and Applications (ITWFLA), held at Indian Institute of Technology (BHU), Varanasi from March 20-25, 2017. (Workshop)
- Inventory Management in Supply Chain, held at Department of Industrial and Systems Engineering, Indian Institute of Technology Kharagpur from March 03-05, 2017. (Workshop)
- Knowledge Dissemination Programme on Gradient Based Numerical Optimization Algorithms, held at Indian Institute of Technology Kharagpur from December 07-11, 2015. (Workshop)

MEMBERSHIP OF REPUTED SOCIETIES (2018)

Production and Operations Management Society (POMS)

Membership ID: 30978

EDITORIAL BOARD MEMBER

Journal Name: Advances in Transportation and Logistics

REVIEWER

Journal Names:

- Computers and Industrial Engineering
- Expert Systems with Applications
- Journal of Cleaner Production
- Sustainability

TEACHING EXPERIENCE

- Assistant Professor, Department of Mathematics, Indian Institute of Engineering Science and Technology (IIST), Shibpur, West Bengal (August 2025 till present)
- Post Doctoral Fellow, National Law University Meghalaya, Shillong, Meghalaya (June 2024 to June 2025).

- Assistant Professor, Centre for Data Science, Institute of Technical Education and Research, Siksha ‘O’ Anusandhan (Deemed to be University), Bhubaneswar, Odisha (May 2021 to June 2024).
- Teaching Assistant for NPTEL Open Online course on Transform Calculus and its applications in Differential Equations at Indian Institute of Technology Kharagpur for January - April 2019 (Completed), January - April 2020 (Completed), January - April 2021 (Completed) and January - April 2022 (Completed).
- Teaching Assistant for Optimization Techniques course of M.Tech. at Indian Institute of Technology Kharagpur during the session 2018-2019.
- Teaching Assistant for Mathematics I and Mathematics II at Indian Institute of Technology Kharagpur from July 2016 till April 2018.
- Teaching Assistant for NPTEL Open Online course on Constrained and Unconstrained Optimization at Indian Institute of Technology Kharagpur for July - October 2017 (Completed).

COURSES TAUGHT AT THE UNDERGRADUATE LEVEL

- Discrete Mathematics [Siksha ‘O’ Anusandhan University (Engineering)]
- Introductory Graph Theory [Siksha ‘O’ Anusandhan University (Engineering)]
- Pattern Recognition [Siksha ‘O’ Anusandhan University (Engineering)]
- Basic Mathematics (National Law University Meghalaya)
- Calculus for Data Science (National Law University Meghalaya)
- Probability for Data Science (National Law University Meghalaya)
- Statistics for Data Science (National Law University Meghalaya)
- Business Mathematics (National Law University Meghalaya)
- Mathematics for Computer Science (National Law University Meghalaya)
- Linear Algebra for Machine Learning (National Law University Meghalaya)
- Optimization for Machine Learning (National Law University Meghalaya)
- Descriptive Statistics (National Law University Meghalaya)
- Mathematics I and III (IEST Shibpur)

EXTRACURRICULAR ACTIVITY

- Representative in the Women’s Council during the academic session 2018-2019 at Indian Institute of Technology Kharagpur.
- Coordinator of the Music and Dance Club during the academic session 2024-2025 at National Law University Meghalaya.