Dr. Susanta Mandal

Assistant Professor
Department of Mathematics
St. Paul's Cathedral Mission College
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Areas of specialization: Fluid Mechanics

Teaching Interest:

- Linear Algebra
- Numerical Analysis
- Computer Programming (Fortran, C, C++, Python)
- Differential Equation (ODE & PDE)
- Multivariate Calculus
- Mechanics
- Mathematical Modelling
- Mathematical Software (SageMath, Mathematica, Matlab etc.)

Research Interest

- Boundary Layer Theory
- Bio-fluid Dynamics
- Magneto-hydrodynamics (MHD)

Technical Skill

Fortran, C, C++, SageMath, Python, Mathematica, Matlab, LaTeX

Research And Publications

Award of doctoral degree: Awarded Ph. D degree in Mathematics in 2022 (Title of the thesis: Entropy analysis of flow and heat transfer of electrically conducting nanofluids)

Publications:

1. Shit G C, Haldar R**, Mandal S**. Entropy generation on MHD flow and convective heat transfer in a porous medium of exponentially stretching surface saturated by nanofluids. Advanced Powder Technology. 2017 Jun 1;28(6):1519-30.
2. Shit GC, **Mandal S**. Entropy analysis on unsteady MHD flow of Casson nanofluid over a stretching vertical plate with thermal radiation effect. International Journal of Applied and Computational Mathematics. 2020 Feb;6(1):2..
3. **Mandal S**, Shit GC. Entropy analysis on unsteady MHD biviscosity nanofluid flow with convective heat transfer in a permeable radiative stretchable rotating disk. Chinese Journal of Physics. 2021 Dec 1;74:239-55.

4. **Mandal S**, Shit GC. Entropy analysis of unsteady MHD three-dimensional flow of Williamson nanofluid over a convectively heated stretching sheet. Heat Transfer. 2022 Mar;51(2):2034-62.
5. **Mandal S**, Shit GC, Shaw S, Makinde OD. Entropy analysis of thermo-solutal stratification of nanofluid flow containing gyrotactic microorganisms over an inclined radiative stretching cylinder. Thermal Science and Engineering Progress. 2022 Sep 1; 34:101379.
6. **Mandal S**, Shit G C. Entropy analysis of unsteady magnetohydrodynamic thin liquid film flow of Maxwell nanofluids with variable fluid properties. Materials Chemistry and Physics. 2023 Jan 1; 293:126890.
7. Mandal, S., Mukherjee, S., Shit, G. C., Vajravelu, K.: Entropy analysis of MHD flow in nanofluid over a rotating disk with variable viscosity and nonlinear thermal radiation. Z Angew Math Mech. 105, e202301027 (2025). https://doi.org/10.1002/zamm.202301027.

Resource Person

1. Acted as a resource person in Two-day Online Workshop on "**Application of SageMath in Industry**" in "Mathematics in Data Science: Latest Industrial Exposures and Grooming Scopes" organized by Dept. of Mathematics Raidighi College & Dept. of Mathematics and Dept. of Computer Science Sonarpur Mahavidyalaya on 15th October, 2020 from 03:00 p.m. to 05:00 p.m. (IST).
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PAPER PRESENTATIONS IN SEMINARS/CONFERENCES

1. Presented a paper at 13th International Conference on Mathematical Science for Advancment of Science and Technology (MSAST 2019): during 21-23, December, 2019 Organized by the the Institute IMBIC, India having branches in Japan and Sweden. Title: **Convective Heat Transfer and Entropy Analysis On MHD Radiative Boundary Layer Nanofluid Flow**
2. Presented a paper at 14th International Conference on Mathematical Science for Advancement of Science and Technology (MSAST 2020): during 21-23, December, 2020 Organized by the Institute IMBIC, India having branches in Japan and Sweden. Title: **Convective Heat Transfer and Entropy Analysis On Unsteady MHD Casson Nanofluid in Presence of Radiation**.
3. Presented a paper at 1st International Conference on Applied Engineering and Natural Sciences (ICAENS-2021): during 1-3 November in 2021 at Konya/Turkey. Title: **Convective Heat Transfer and Entropy Analysis on un steady MHD radiative boundary layer biviscosity nanofluid flow.**
4. Presented a paper at 15th International Conference on Mathematical Science for Advancement of Science and Technology (MSAST 2021): during 21-23, December, 2021 Organized by the the Institute IMBIC, India having branches in Japan and Sweden. Title: **Convective Heat Transfer and Entropy Analysis on MHD Maxwell nanofluid flow involving gyrotactic microorganisms.**
5. Presented a paper at National Conference on 3rd National Conference on Recent Advancement in Physical Sciences: during December 19-20, 2021, jointly Organized by Department of Chemistry, Department of Physics and Department of Mathematics, National Institute of Technology, Uttarak hand, India.
   Title: **Convective heat transfer and entropy analysis on unsteady three-dimensional MHD Williamsan nanofluid flow containing gyrotactic**

microorganisms

6. Presented a paper at Presented a paper at 18th International Online Conference on Mathematical Science for Advancement of Science and Technology (MSAST 2024): during 21-23, December, 2024 Organized by the Institute IMBIC, India having branches in Japan and Sweden. Title:**Entropy Generation of Mhd Nano-Bioconvective Fluid Flow and Heat Transfer With Motile Microorganism and Chemical Reaction**

National Workshop Attended

1. Participated in the short-term course on Differential Equations- Theory, Computation and Applications: during 7-March 03, 2017 Organized by the Department of Mathematics, Indian Institute of Technology, Kharagpur, India.
2. Attend at Recent Development in Mathematical Modelling in Engineering Sciences: during December 27- 31, 2021 Organized by the Department of Mathematics, National Institute of Technology, Uttarakhand, India.
3. Attend the e-Colloquium on Recent Advancements in Fluid Flow and Heat Transfer: during 19-25, October, 2020 Organized by the Department of Mathematics, National Institute of Technology, Uttarakhand, India.

Faculty Development Programmes

1. Successfully completed the five day Online International Faculty Development Programme on "Financial Mathematics, SPDE Theory, Mathematical Modelling and Current Numerical Trends" organized by School of Advanced Sciences (SAS), VIT-AP University, India, held from 24th to 28th June 2024.

2. Successfully completed online TWO - WEEK FACULTY DEVELOPMENT PROGRAMME on "ADVANCED CONCEPTS FOR DEVELOPING MOOCS" from 02 - 17 July, 2020 and obtained Grade A.

3. Successfully completed online one week Faculty Development Programme on "OPEN SOURCE TOOLS FOR RESEARCH" from 08 - 14 June, 2020 and obtained Grade A+.

4. Successfully completed TWO-WEEK REFRESHER COURSE IN "MATHEMATICS" organized by "Department of Mathematics, Ramanujan College" from 16-30 March 2021 and obtained Grade A+.
5. **Successfully completed** the international Online Workshop on Initiation into Linear Algebra from 28th September 2020 to 3rd September 2020
6. **Successfully completed** TWO WEEK Refresher course in Mathematics organized by the Department of Mathematics, Ramanujan College from 16-30 March 2021

7. Successfully completed the five days national level online workshop on Software in Mathematics and Statistics (WSMS-2021) on 02-06 August 2021 organized by the Department of Mathematics, National Institute of Technology Tiruchirappalli

Seminar Participation

1. Participated in the Webinar on "Open Educational Resources" organized by St. Paul's Cathedral Mission College on 1st July, 2020.
2. Participated in the two-day webinar on Mathematics and its recent trends held on the 28th & 29th September, 2020 organized jointly by Biomathematical Society of India, Department of Mathematics and Quality Assurance Cell, Moulana Azad College
3. Participated in the International E-Workshop held during 21-23, 2020(from 6.00 p.m. to 9.00 p.m., each day)
4. Participated a webinar on awareness of Dengue on 14th August, 2020 during 3.00 p.m.-5.00 p.m., organized jointly by NSS unit and Quality Assurance Cell (IQAC), St. Paul's Cathedral Mission College, Kolkata
5. Attended the State Level Webinar on A Cosmic Voyage organized by the Department of Mathematics in Collaboration with Internal Quality Assurance Cell, New Alipur College on 24 th July, 2020
6. Attended the lecture series at e-Colloquium on Recent advancements in Fluid Flow and Heat transfer during 19th -25th Oct
7. Participated in the five days online short-term course on Numerical Solution of Differential Equations held on 16th to 20th September, 2020
8. Attended at Recent Development in Mathematical Modeling in Engineering Sciences held at the Department of Mathematics, National Institute of Technology Uttarakhand
9. Attended in Applied Mathematics and Computational methods held at the Department of Mathematics, School of Advanced Sciences, VIT-AP University, Andhra Pradesh during 07-09,2022
10. Participated in the two-day Faculty Development workshop on Systematic Implementation of Service-Learning practice Integrating Whole Person Education on 17th and 18th of August 2022
11. Participated in the in the "State Level Online Workshop on Artificial Intelligence " from 25.09.2023 to 13.10.2023 organized by the Department of Mathematics and IQAC of Uluberia College, Howrah in Collaboration with Bijoy Krishna Girl's College, Howrah .
12. Participated in the Two-day National Conference on "Recent Trends in Mathematics and its Applications" (RTMA-2025) organized by the Department of Mathematics, in collaboration with IQAC, Bidhan Chandra College, Asansol-713304, West Bengal, India, on April 4-5, 2025.

Text Book Publication

1. **S. Jana, S. Kar, S. Mandal,** Mathematics for Competitive Examinations, Academic Publisher, Kolkata, Fourth Edition, 2016, ISBN: **978-81-933395-8-9.**

2. **S. Mandal,** A Beginer's Companion of LaTeX, Academic Publisher, Kolkata, August, 2024, ISBN: **978-93-93662-47-7.**