Curriculum Vitae

Dr. Sarifuddin

M.Sc.(Applied Mathematics), Ph.D.(Bio-Fluid Dynamics)
Assistant Professor
Berhampore College,
P.O. – Berhampore,
Dist - Murshidabad, PIN - 742101
West Bengal, India
Email: sarifuddin@berhamporecollege.in
Link : ResearchGate
Link : Google Scholar

Work Experience:

- **March, 2017 – Present**: Assistant Professor, Department of Mathematics, Berhampore College, Berhampore, West Bengal, India.

- **March, 2010 – March, 2017:** Assistant Professor, Department of Mathematics, Raiganj Surendranath Mahavidyalaya, Raiganj, Uttar Dinajpur, West Bengal.

Major Research Interest:

- Mathematical modeling of Microneedle-Mediated Drug Delivery
- Mathematical modeling of Drug eluting stent and Drug coated balloon angioplasty
- Blood flow through Stenosed Artery and Heat & Mass Transfer
- Computational Fluid Dynamics & Mathematical Biology
- Mathematical Biology

Ph.D. Students (co-guide):

Past:

1. **Prosanjit Das** (degree awarded in 2023)
   Title: Some model studies on solute dispersion through arterial vessels

2. **Sayantan Biswas** (degree awarded in 2023)
   Title: Solute transport through realistic atherosclerotic plaque - A study relevant to intravenous drug delivery

Present:

1. **Tanmoy Bhuimali**

Refereed Journal Articles:

1. International Journal for Numerical Methods in Fluids, John Wiley & Sons Ltd.
2. International Journal of Heat and Mass Transfer, Elsevier.
3. Computers in Biology and Medicine, Elsevier
4. Modern Applied Science, Canadian Center of Science and Education.
5. Cardiovascular Engineering and Technology (CVET), BMES
6. Journal of Biomedical Science and Engineering(JBISE)
7. Applications and Applied Mathematics (AAM)
8. Propulsion and power research
9. Nonlinear Engineering – Modelling and Application
10. Journal of Brazilian Society of Mechanical Science and Engineering

Research Publications:

1. Tanmoy Bhuimali, **Sarifuddin** and Prashanta Kumar Mandal, "Modelling receptor-mediated endocytosis in hollow microneedle-based verapamil delivery through viscoelastic skin", **Computer Methods In Biomechanics & Bio Engineering, DOI:** https://doi.org/10.1080/10255842.2025.2477223

2. Tanmoy Bhuimali, **Sarifuddin** Diganta Bhusan Das and Prashanta Kumar Mandal, "Modelling Hollow Microneedle-Mediated Drug Delivery in Skin Considering Drug Binding", **Pharmaceutics,** 2025, 17, 105, **DOI:** https://doi.org/10.3390/pharmaceutics17010105

3. Tanmoy Bhuimali, **Sarifuddin** and Prashanta Kumar Mandal, "Metabolism and retention of verapamil dictate microneedle-based drug delivery: analytical and numerical study", **Proceeding of the Royal Society A,** 480: 20240100 (2024), **DOI:** https://doi.org/10.1098/rspa.2024.0100

4. Jyotirmoy Rana, Prosanjit Das, **Sarifuddin**, Prashanta Kumar Mandal, Ramkarn Patne, "Dispersion of a non-uniform solute slug in pulsatile viscoelastic fluid flow", **Physics of Fluids, 36 (9) (2024), DOI:** https://doi.org/10.1063/5.0228723

5. **Sarifuddin** & Prashanta Kumar Mandal, "Plaque heterogeneity and the spatial distributions of its components dictate drug-coated balloon therapy", **Scientific Reports, 14,** Article number: 4412 (2024), **DOI:** https://doi.org/10.1038/s41598-024-54756-9

6. Prosanjit Das, **Sarifuddin**, Mainul Haque and Prashanta Kumar Mandal, "Unsteady solute transport in Casson fluid flow and its retention in an atherosclerotic wall", **Physica D: Nonlinear Phenomena,** 460 (2024) 134094, **DOI:** https://doi.org/10.1016/j.physd.2024.134094

7. Md. Asif Ikbal , Prashanta Kumar Mandal and **Sarifuddin,** "Mathematical Studies of non-Newtonian Blood Flow through a Patient-Specific Atherosclerotic Artery", **Journal of Applied Nonlinear Dynamics,** 12(3) (2023) 441-451, **DOI:**10.5890/JAND.2023.09.002

8. Prosanjit Das, **Sarifuddin**, Jyotirmoy Rana and Prashanta Kumar Mandal, "Unsteady solute dispersion in the presence of reversible and irreversible reactions", **Proceeding of the Royal Society A**, Published: **24 August 2022, DOI:** https://doi.org/10.1098/rspa.2022.0127

9. Sayantan Biswas, **Sarifuddin** and Prashanta Kumar Mandal, " Unsteady transport and two-phase binding of a drug in an atherosclerotic artery", **Physics of Fluids,** 34, 041905 (2022), **DOI:** https://doi.org/10.1063/5.0086963

10. Sayantan Biswas, **Sarifuddin** and Prashanta Kumar Mandal, "An unsteady analysis of two-phase binding of drug in an asymmetric stenosed vessel", **Biomed. Phys. Eng. Express 8 (2022) 015014, DOI:** 10.1088/2057-1976/ac3d9b

11. Sayantan Biswas, **Sarifuddin** and Prashanta Kumar Mandal, "Arterial pharmacokinetics in a patient-specific atherosclerotic artery a simulation study", **GANIT J. Bangladesh Math. Soc**. 41.1 (2021) 62–77, **DOI:** https://doi.org/10.3329/ganit.v41i1.55027

12. Prosanjit Das, **Sarifuddin**, Jyotirmoy Rana and Prashanta Kumar Mandal, "Solute dispersion in transient Casson fluid flow through stenotic tube with exchange between phases", **Physics of Fluids,** 33, 061907 (2021)**, DOI:** https://doi.org/10.1063/5.0052770

13. **Sarifuddin**, Reima D Alsemiry, Prashanta Kumar Mandal, "Effects of coating properties on controlled delivery from an embedded drug-eluting stent: A simulation study", **Journal of Biological Systems (2021), DOI:** https://doi.org/10.1142/S0218339021500145

14. Reima D. Alsemiry, **Sarifuddin**, Prashanta K. Mandal, Hamed M. Sayed, Norsarahaida Amin, "Unsteady Analysis on Intravenous Drug Delivery and its Uptake in Tissue", **Journal of Applied Nonlinear Dynamics,** Vol. 10(3) (2021) 531-546, **DOT:** 10.5890/JAND.2021.09.012

15. **Sarifuddin**, Somnath Roy and Prashanta Kumar Mandal, "Computational model of stent-based delivery from a half-embedded two-layered coating", ***Computer Methods in Biomechanics and Biomedical Engineering (2020), DOI:*** https://www.tandfonline.com/doi/full/10.1080/10255842.2020.1767775.

16. Prosanjit Das, **Sarifuddin** and Prashanta Kumar Mandal, "Solute dispersion in Casson fluid flow through a stenosed artery with absorptive wall", ***Journal of Applied Mathematics and Physics (ZAMP)***, **DOI:** https://doi.org/10.1007/s00033-020-01322-8 (2020).

17. Reima D. Alsemiry, **Sarifuddin**, Prashanta K. Mandal, Hamed M. Sayed and Norsarahaida Amin, "EFFECTS OF PULSATILITY AND DOUBLE STENOSES ON POWER LAW MODEL OF BLOOD FLOW AND MASS TRANSPORT IN VESSEL", ***JP***

Journal of Heat and Mass Transfer, Vol. 19(1), 2020, 97-128, **DOI:** http://dx.doi.org/10.17654/HM019010097

18. Reima D. Alsemiry, **Sarifuddin**, Prashanta K. Mandal, Hamed M. Sayed and Norsarahaida Amin, "Numerical Solution of Blood Flow and Mass Transport in an Elastic Tube with Multiple Stenoses", ***BioMed Research International***, Hindawi, Vol. 2020, **DOI:** https://doi.org/10.1155/2020/7609562

19. **Sarifuddin,** "CFD Modelling of Casson Fluid Flow and Mass Transport Through Atherosclerotic Vessels", ***Differential Equations and Dynamical Systems*** (2020)**,** **DOI:** https://doi.org/10.1007/s12591-020-00522-y

20. **Sarifuddin**, Prashanta Kumar Mandal, "Effect of Interstitial Fluid Flow on Drug-Coated Balloon Delivery in a Patient-Specific Arterial Vessel with Heterogeneous Tissue Composition: A Simulation Study", ***Cardiovascular Engineering and Technology (CEVT)***, Vol. 9(2) (2018), 251-267

21. Prashanta K. Mandal, **Sarifuddin**, Vijaya B. Kolachalama, "Computational model of drug-coated balloon delivery in a patients specific arterial vessels with heterogeneous tissue composition" ***Cardiovascular Engineering and Technology (CEVT),*** Vol.7(4) (2016), 406-419.

22. Ramprosad Saha, **Sarifuddin**, J. C. Misra, Prashanta Kumar Mandal, "Impact of luminal flow on mass transport through coronary arteries : a study relevant to drug-eluting stent" ***International Journal of Mathematics and computation,*** Vol. 27(3) (2016).

23. Akash Pradip Mandal, **Sarifuddin**, Prashanta Kumar Mandal, "An unsteady analysis of arterial drug transport from half-embedded drug-eluting stent" ***Applied Mathematics and Computation,*** Vol. 266 (2015), 968-981.

24. **Sarifuddin,** Prashanta Kumar Mandal, "Effect of Diffusivity on the Transport of Drug Eluted from Drug-Eluting Stent" ***International Journal of Applied Computational Mathematics***, 2, 291-301 (2016).

25. **Sarifuddin,** Chakravarty, S., and Mandal, P.K**.,** "Numerical simulation of Casson fluid flow through differently shaped arterial stenoses" ***Journal of Applied Mathematics and Physics (ZAMP)***, 65, 767-782 (2014).

26. **Sarifuddin**, "Simulation of Casson fluid flow and heat transport in differently shaped stenoses" ***Journal of Mechanics in Medicine and Biology***, Vol. 14, No. 2 (2014) 1450024 (27 pages).

27. **Sarifuddin,** Chakravarty, S., and Mandal, P.K**.,** "Physiological flow of shear–thinning viscoelastic fluid past an irregular arterial constriction" ***Korea-Australia Rheology Journal***, 2, 1-12, (2013).

28. **Sarifuddin,** Chakravarty, S., and Mandal, P.K., "Heat transfer to micropolar fluid flowing through an irregular arterial constriction" ***International Journal of Heat and Mass transfer***, *56,* 538-551 (2013).

29. Ikbal, Md. A., Chakravarty, S., **Sarifuddin**, Mandal, P. K., "Unsteady analysis of viscoelastic blood flow through arterial stenosis" ***Chemical Engineering Communications (CEC)***, 199, 40-62 (2012).

30. Ikbal, Md. A., Chakravarty, S., **Sarifuddin**, Mandal, P. K., "Numerical simulation of mass transfer to micropolar fluid flow past a stenosed artery" ***International Journal of Numerical Methods in Fluids,*** *Published online,* 67, 1655-1676 (2011).

31. **Sarifuddin,** Chakravarty, S., and Mandal, P.K., "Effect of asymmetry and roughness of stenosis on non-Newtonian flow past an arterial segment" ***International Journal of Computational Methods (IJCM)***, 6, 361-388 (2009).

32. **Sarifuddin,** Chakravarty, S., and Mandal, P.K., "Effect of heat of mass transfer on non-Newtonian flow – links to atherosclerosis" ***International Journal of Heat and Mass transfer***, 52, 5719-5730 (2009).

33. **Sarifuddin**, Chakravarty, S., Mandal, P.K., and Andersson, H.I., "Mass transfer to blood flowing through arterial stenosis" *Journal* ***of Applied Mathematics and Physics (ZAMP)***, 60, 299-323 (2009).

34. **Sarifuddin,** Chakravarty, S., Mandal, P.K., and Layek G.C.,"Numerical simulation of unsteady generalised Newtonian blood flow through differently shaped distensible arterial stenoses" ***Journal of Medical Engineering & Technology***, 32, 385-399 (2008).

35. Chakravarty, S., **Sarifuddin** and Mandal, P.K., "Effect of surface irregularities on unsteady pulsatile flow in a compliant artery" ***International Journal Of Non-Linear Mechanics***, 40, 1268-1281 (2005).

36. Chakravarty, S., Sarifuddin and Mandal, P.K., "An unsteady flow of two-layered blood stream past a tapered flexible artery under stenotic conditions" *Computational Method of Applied Mathematics*, 4, 391-409 (2004).

Paper published Conference Proceeding:

1. Yan Bin Tan, Norzieha Mustapha and **Sarifuddin,** "Blood Flow through a Stenosed Artery Bifurcation under The Effects of Gravity" ***AIP Conf. Proc****. 1635, 241 (2014); http://dx.doi.org/10.1063/1.4903590, Conference date: 12–14 August 2014 , Location: Langkawi, Kedah Malaysia.*

Major Research Collaboration:

1. **Vijaya B. Kolachalama, Ph.D**. Charles Stark Draper Laboratory, 555 Technology Square Cambridge, MA, USA – 02139, Cardiovascular Division, Brigham and Women's Hospital, 75 Francis Street Boston, MA, USA – 02115.
2. **Professor H I Andersson**, Norwegian University of Science and Technology, Trondheim, Norway.
3. **Professor Norsarahaida Amin** and **Dr. Norzieha Mustapha**, UTM Centre for Industrial & Applied Mathematics (UTM-CIAM), Universiti Teknologi Malaysia, 81310 UTM Skudai, Johor, Malaysia.
4. **Professor G. C. Layek**, Department of Mathematics, Burdwan University, Burdwan, West Bengal, India.
5. **Prof. P. K. Mandal** and **Prof. S. Chakravarty**, Visva-Bharati, Santiniketan, West Bengal, India.
6. **Professor J. C. Misra,** Department of Mathematics and **Dr. Somnath Roy**, Department of Mechanical Engineering, Indian Institute of Technology, Kharagpur, India
7. **Reima D. Alsemiry,** Department of Mathematics, Faculty of Science, Taibah University, P. O. Box 89, Yanbu 41911, Saudi Arabia.
8. **Professor Hamed M. Sayed,** Department of Mathematics, Faculty of Education, Ain Shams University, Roxy 11757, Cairo, Egypt
9. **Jyotirmoy Rana**, Department of Mathematics and **Ramkarn Patne** Department of Chemical Engineering, Indian Institute of Technology, Hyderabad 502285, India
10. **Diganta Bhusan Das,** Chemical Engineering Department, Loughborough University, Loughborough LE11 3TU, Leicestershire, UK

Awards / Recognition:

⁂ Visited as a visiting researcher at UTM Centre for Industrial and Applied Mathematics (UTM-CIAM), Universiti Teknologi, Malaysia, during March 19, 2014 to April 16, 2014.

Invited lecture/ Paper present in Seminar / Conference / Symposia:

1. International Conference on "Emerging Frontiers in Mathematical and Computational Science (EFMCS-2024)" during 24th - 26th October, 2024, North-Eastern Hill University, Shillong, Meghalaya, India. Presented a paper entitle "**Mathematical investigation of coating properties affecting controlled drug delivery from various types of embedded drug-eluting stent**s".
2. International Conference on Mathematical Sciences and Applications (ICMSA-2020), February, 26-28, 2020, University of Kalyani, Kalyani, West Bengal. Presented a paper entitle "**Role of coating properties and embedment on drug delivery from Drug-eluting stent**".
3. International Conference on Exploring Advances in Mathematical Sciences 2017 (ICEAMS-2017), March 23-24, 2017. University of Gour Banga, Malda. Attended and

present paper entitled **"Mathematical modeling of arterial drug delivery from half-embedded drug eluting stent".**

4. **Indo-German Conference on** "Modelling, Simulation and Optimization in Applications", 22 - 24 February, 2017, Department of Mathematics, Bankura University, West Bengal, India, **Present a paper title- "CFD modelling of Casson fluid flow and mass transport through atherosclerotic vessels".**
5. National Seminar on Advancement of Mathematical Science, Assam Academy of Mathematics & Dept. of Math. Gauhati University, Guwahati, on 22nd December, 2015. **Present a paper title- "Numerical Simulation of Casson fluid flow and mass transfer in stenosed coronary arteries".**
6. National Seminar on Exploring Advancement in Mathematics (NCEAM -2015), Dept. of Math., University of Gour Banga, Malda, West Bengal, 16 -17 December, 2015. **Present a paper title- "Simulation of non-Newtonian blood flow past an irregular arterial segment".**
7. National Seminar on Analysis of Nonlinear System (ANS – 2011) Dept. of Mathematics, Siksha Bhawan, Visva-bharati, Santiniketan, 26 – 27 March, 2011. **Present a paper title- "On shear-thinning viscoelastic blood flow through differently Shaped constricted arterial segment".**

Orientation / Refresher Course/ Workshop/ FDP :

1. 14 days UGC Sponsored Refresher Course during 10th January to 22th January 2022 in **Mathematics,** Pt. Ravishankar Shukla University, Raipur.
2. 21 days UGC Sponsored Refresher Course during 8th June to 28th June 2018 on "E**nvironmental Science and Disaster Management**", Ranchi University, Ranchi.
3. Global Initiative of Academic Network Course on "**Immesed Boundary Methods for Turbulent Incompressible Flows**" Indian Institute of Technology, Kharagpur, during December 18-22, 2017.
4. Short Term Course on C**omputer Applications,** Aligarh Muslim University, Murshidabad Centre, West Bengal, during February 15, 2016 to February 21, 2016.
5. **2nd International Mathematics in Industry Study Group Malaysia** (MISG-2014) held between March 17-21, 2014 at Universiti Teknologi Malaysia, 81310 Johor Bahru, Malaysia.
6. 21 days Refresher UGC Sponsored Refresher Course during 18th Novebmer to 7th December 2013 in "**Mathematical Methods, Technique and Applications"** , Jadavpur University, Kolkata.
7. 28 days UGC Sponsored **Orientation Program** during 13 September to 10 October**,** 2012 at the UGC-Academic Staff College, Kumaun University, Nainital, India.
8. Seven days workshop on **Statistical Method: An Interdisciplinary Approach.** Dept. of Mathematics and Botany, Raiganj Surendranath College, Raiganj, Uttar Dinajpur, W.B. Indaia, during September 5-11, 2012.

Seminar / Conference / Symposia/ Workshop attended:

1. Two days awareness workshop on "NAAC Accreditation for Non-Accredited Higher Education Institutions", on 16-17 August 2019., Organised by University of Kalyani.
2. One day workshop on "Use of ICT in teaching learning administrative practices in Higher Institution & introduction of E-Learning module", on 30th August, 2018. Organised by Berhampore College.
3. One day orientation programme on International Museum day, 18th May, 2018. Organised by Archaeological Survey of India.
4. One day state level seminar on " Introduction of CBCS at undergraduate level" on 7th January, 2018. Organised bu WBCUPA, Murshidabad Unit.
5. UGC sponsored National seminar on "Swarana o Samiskhona: Prasango Ramendra Sundor Tribedi saithya o kormosadhana" on 25th & 26th March, 2017. Organised by Berhampore College in collaboration with S.R.F. college, Beldanga.
6. UGC sponsored National seminar on "Relevance of Sanskrit Education in Modern India" on 18th & 19th March, 2017. Organised by Berhampore College in collaboration with S.R.F. college, Beldanga.
7. National Seminar on Women Empowerment: *Miles to go ..*, Shree Agrasen Mahavidyalaya, Dalkhola, West Bengal, 28 – 28 August, 2015.
8. Workshop on Preparation of SSR (*Self Study Report*) for Assessment and Accreditation, University of Gour Banga, Malda, West Bengal, on 8th August, 2015.
9. National Seminar on Different Horizons of Lokosangskriti, Raiganj Surendranath Mahavidyalaya, Raiganj, West Bengal, 2 – 3 May, 2015.
10. Workshop on Change in Question Pattern, Redistribution of Marks & Introduction to OMR Sheet at UG Level, University of Gour Banga, Malda, West Bengal, on December 18, 2014.
11. Workshop on Know Your CAS, Shree Agrasen Mahavidyalaya, Dalkhola, West Bengal, on February 14, 2015.
12. National Seminar on Mathematics of Nonlinear System (MNS – 2010), Dept. of Mathematics, Siksha Bhawan, Visva-bharati, Santiniketan, 20 - 21 March, 2010.

Participation in Webinar:

- Five days FDP on "Mathematical Biology and Bio-statistics" during 26th - 30th July, 2021, organised by Amity Institute of Applied science, Amity University, Kolkata.
- Five days, "Indo-US SPARC Short Term Course on Immersed Boundary and Meshless Methods for Navier-Stokes Equations", on July 06-10, 2021; conducted by Department of Mechanical Engineering, Indian Institute of Technology Kharagpur and University of Illinois Urbana-Champaign; under the aegis of the SPARC, Ministry of Human Resource Development, Government of India
- Three days, "ONLINE WORKSHOP ON SIMULATION METHODS IN SCIENTIFIC COMPUTING", on June 14-16, 2021, Conducted by NSM Nodal Centre on HPC & AI, Indian Institute of Technology Kharagpur
- FDP on 'Online Teaching, Learning and Evaluation' , Jointly organised by Berhampore College, Kejuri College and K.K. Das College, 26th to 30th September, 2020.

- Short Term Course on 'Matlab-Statistics And Data Science' , Department of Applies Science, Sagar Institute of Research and Technology, Bhopal, during 27th July to 1st August, 2020.
- Webinar on 'Exploring Science: Its Beauty and Necessity', Organised by Khatra Adibasi Mahavidyalaya, on 20th September, 2020.
- International Webinar on 'Environmental Deterioration on our Health', Jointly organised by Bankura Christan College and K J R Govt. General Degree College, 25th August, 2020.
- National Webinar on 'Application of Mathematics', organised by Seth Anandram Jaipuria College, Kolkata, 11th August, 2020.
- International Webinar on 'Algebra and Topology', Organised by Prabhu Jagatbandhu College, Howrah, on 19th to 20th July , 2020.
- Webinar on 'Assessment of the Impact of COVID-19 Pandemic on the Social Processes around us', Organised by Berhampore College, on 15th & 16st July, 2020.

Administrative Experience/ Responsibility:

- Member, Board of Studies (BOS), University of Gour Banga (2015-2017).
- HOD, Department of Mathematics, Raiganj Surendranath Mahavidyalaya (2010-2017).
- Co-coordinator of NAAC, Berhampore College (2018-2025)
- Member of IQAC, Berhampore College (2019-2025)
- Co-ordinator IQAC, Berhampore College (From June, 2025)

Membership in Scientific Societies:

1. Life member, International Association of Engineers (IAENG).
2. Life member, Indian Science Congress (ISC)

Articles published in Local / Popular magazine:

1. Sarifuddin, "Archimedes - Ganith, Padhertho-bidya abong Projukti-bidyar Ek Biswaikar Samarnoy", Bigyan Bhabna, published from Berhampore, West Bengal, 1st year, 3rd issue, November – 2005.
2. Sarifuddin, "Arsenic: Ekti Jiban Maran Samashaya", Bigyan Bhabna, published from Berhampore, West Bengal, 2nd year, 2nd issue, November – 2006.
3. Sarifuddin, "Dalton abong Paromanubader 200 bachar", Bigyan Bhabna, published from Berhampore, West Bengal, 3rd year, 1st issue, March – 2009.
4. Sarifuddin, " Leonhard Euler Ganith jogoter ekti biswaikar naam", Bigyan Bhabna, published from Berhampore, West Bengal, 3rd year, 4th issue, December – 2009.
5. Sarifuddin, "Higs Boson (Iswar kana?) kana abhiskarer nepothya", Uttar Reethi, published from Raiganj, West Bengal, Vol. 5, No. 2-3, October, 2015.