NAME : Dr. S. NARMATHA

DESIGNATION : ASSISTANT PROFESSOR

DATE OF BIRTH : 20.08.1981

EMAIL ID. : narmatha@ldc.edu.in, narmathasathyaa@gmail.com

DESIGNATION **:** Assistant Professor in Mathematics
Joint Co-ordinator of Internal Quality Assurance Cell (IQAC)
Coordinator of Lady Doak College

EDUCATIONAL QUALIFICATION:

Degree	**Subject**	**Name of the College**	**Institution/University**	**Year of passing**
B.Sc.(spl)	Mathematics	Lady Doak College	Madurai Kamaraj University	2001
M.Sc.	Mathematics	Lady Doak College	Madurai Kamaraj University	2003
M.Phil.	Mathematics	Madurai Kamaraj University (DDE)	Madurai Kamaraj University	2004
Ph.D.	Mathematics	The Madura College	Madurai Kamaraj University	2021

Cleared the National Eligibility Test (**NET**) for **Lectureship with Junior Research Fellowship (JRF)** in Mathematical Sciences - organised jointly by the **University Grant Commission and the Council of Scientific and Industrial Research** in the year 2005

TEACHING EXPERIENCE

Designation	**Subject**	**Institution**	**Period:from**	**Period:To**
Teacher	Mathematics	Vikaasa School	June, 2003	June, 2005
Lecturer (SF)	Mathematics	Lady Doak College	04.07.2005	03.07.2013
Assistant Professor (Aided)	Mathematics	Lady Doak College	04.07.2013	Till date

AREA OF RESEARCH: NON LINEAR DIFFERENTIAL EQUATIONS

WORKSHOPS/SEMINARS/ CONFERENCES ATTENDED

- Scilab India Conference 2014 organized by FOSSEE**, Indian Institute of Technology, Bombay**, Maharashtra, India, on 3rd and 4th December, 2014.
- National IQAC conference on "Higher Education of Women in India – Opportunities and Challenges" organized by the **Bishop Cotton Women's Christian College, Bangalore** on 26th February, 2016.
- 5th National Level Workshop on NIRF India Rankings 2024 for Higher Educational Institutions organized **by Institute for Academic Excellence (IAE), Hyderabad** on 13th & 14th December, 2023
- National conference on "Recent Development in Mathematics and its applications" organized by **The Madura College, Madurai, Tamil Nadu**, India on 9th January 2015.
- National conference on "Recent Trends in Pure and Applied Mathematics" organized by **Madurai Sivakasi Nadar Pioneer Meenakshi Women's college**, Poovanthi on 23rd January 2015.
- National level seminar on "Modern Trends in Mathematics" at **Shrimati Indira Gandhi College, Tiruchirapalli**, Tamil Nadu, India on 22nd December 2016.
- National-level Workshop titled "EXPLORE: Endless Possibilities," held from January 22 to 24, 2025, at **CHRIST (Deemed to be University)**, Kengeri Campus, Bengaluru.

PAPERS PRESENTED				
S. No.	**Title of the paper**	**Level of the Programme**	**Conducted by**	**period**
1.	Analytical solution of boundary value problems in reactive gas absorption	National Conference on Advances and Applications in Mathematical Modelling	The Madura College, Madurai, Tamil Nadu, India	15th and 16th April 2013

2.	Application of new approach to Homotopy perturbation method in solving a system of nonlinear self-igniting reaction diffusion equations	1st International Conference on "Discrete Mathematics and Data Sciences"	SASTRA Deemed to be University, Thanjavur, Tamil Nadu, India	28th and 29th September, 2018
3.	Comparison between the new Homotopy perturbation method and modified Adomain decomposition method in solving a system of non-linear self igniting reaction diffusion equations	International Conference on "New Frontiers in Mathematics and Computing",	Lady Doak College, Madurai, Tamil Nadu	18th and 19th February, 2019
4.	Semi-analytical solution for amperometric enzyme electrode modelling with substrate cyclic conversion using a new approach to homotopy perturbation method	International Conference On Recent AdvancesIn Pure And Applied Mathematics	Raja Doraisingam Government Arts College,Sivagangai, Tamil Nadu, India	27thand 28thAugust, 2019
5.	Pore network model of deactivation of immobilized glucose isomerase inpacked-bed reactors: An analytical approach using the new homotopyperturbation method	International Conference on New Avenues in Applied Sciences	Lady Doak College, Madurai, Tamil Nadu, India	2nd and 3rd February, 2023

PAPERS PRESENTED (AS CO-AUTHOR WITH STUDENTS)				
S. No.	**Title of the paper**	**Level of the Programme**	**Conducted by**	**Period**
1.	An Approximate Analytical Solution to an Epidemic Model for News Spreading on Twitter using New Homotopy Perturbation Method	An IQAC sponsored two day International Conference on Recent Trends in Modern Mathematics	St. John's College, Palayamkottai, Tamil Nadu, India	23rd and 24th September, 2021
2.	Mathematical Analysis of a Tuberculosis Epidemic Model with Non-Linear Incidence Rate and Treatment	International Conference on Pure and Applied Mathematics	T.B.M.L. College, Poraiyar, Tamil Nadu, India	24th and 25th March, 2022
3.	A Mathematical Analysis on a Novel Epidemic Mathematical Model on COVID-19	International Conference on New Avenues in Applied Sciences	Lady Doak College, Madurai, Tamil Nadu, India	2nd and 3rd February, 2023
4.	An Approximate Analytical Solution to an SEIR tuberculosis disease model	International Conference on New Avenues in Applied Sciences	Lady Doak College, Madurai, Tamil Nadu, India	2nd and 3rd February, 2023
5.	Global Dynamics of an SVEIR Epidemic Model with Herd Immunity: An Analytical Approach	International Conference on New Avenues in Applied Sciences	Lady Doak College, Madurai, Tamil Nadu, India	2nd and 3rd February, 2023
6.	An Approximate Analytical Solution to a Predator – Prey Mathematical Model in a Limited Area UsingNew Homotopy Perturbation Method	UGC sponsored National conference on "Recent Trends in Pure and Applied Mathematics with Industrial Applications"	Arul Anandar College (Autonomous), Karumathur, Madurai, India	9th March, 2023

7.	An Approximate Analytical Solution of a Predator-Prey Model with Fear Effect	National Conference on Recent Advancements in Pure and Applied Mathematics (RAPAM – 2024)	Mannar Thirumalai Naicker Colloge Madurai, India	15th March, 2024

PUBLICATIONS

S. No.	Title of the Article	Name of the Journal	Volume, Issue, Page No.	DOI/URL address	Year of publication
1.	Analytical solution of boundary value problem in reactive gas absorption	International Journal of Mathematical Archive	Vol. 4, No 6 (2013)	https://www.ijma.info/index.php/ijma/article/view/2179	2013
2.	Analytical Solution of Nonlinear Dynamics of a Self-Igniting Reaction-Diffusion System Using Modified Adomian Decomposition Method	International Journal of Chemical Engineering	Volume 2014, Article ID 825797, 8 pages	http://dx.doi.org/10.1155/2014/825797	2014
3.	Comparison between the new Homotopy perturbation method and modified Adomain decomposition method in solving a system of non-linear self igniting reaction diffusion equations	International Journal of Emerging Technologies and Innovative Research	Vol.6, Issue 5, page no.51-59	https://www.jetir.org/view.php?paper=JETIR1905010	2019

4.	Semi-analytical Solution for Surface Coverage Model in an Electrochemical Arsenic Sensor Using a New Approach to Homotopy Perturbation Method,	International Journal of Modern Mathematical Sciences	17(2): 85-110.	http://www.modernscientificpress.com/Journals/ViewArticle.aspx?XBq7Uu+HD/8eRjFUGMqlRdLU35/lkF3kq6HWR2eZ9Z+jZkIHdVEyEnk7ir5dp1Ez	2019
5.	Semi-analytical solution for amperometric enzyme electrode modelling with substrate cyclic conversion using a new approach to homotopy perturbation method	Advances in Mathematics: Scientific Journal	Vol.8, no.3, 239–265 (Special issue on ICRAPAM)	http://research-publication.com/wp-content/uploads/2019/12/AMSJ-2019-N3-27.pdf	2019
6.	A comparison among the Homotopy based methods in solving a system of cubic autocatalytic reaction-diffusio equations	Journal of Information and Computational Science	Page No: 1130-1141.	http://www.joics.org/gallery/ics-2038.pdf	2019
7.	Mathematical Analysis of Reversible Inhibitor Biosensor Systems in Dynamic Mode	Singapore Journal of Scientific Research	10(3), 229-265	https://scialert.net/abstract/?doi=sjsres.2020.229.265	2020
8.	Mathematical Analysis of the Predator-Prey Holling Type-II Effect of Fading Memory using a new approach to Homotopy perturbation method	Journal of Xidian University	14(3), 1035-1047	https://drive.google.com/file/d/1Ge0LePe1aPUw8dkrk9uOAn33sQRAbqw_/view	2020

9.	An approximate analytical solution to turing instabilities and spatio-temporal chaos in ratio-dependent Holling– Tanner model using a new approach to Homotopy perturbation method	Journal of Xidian University	14(3), 1035-1047	https://drive.google.com/file/d/1pi1L-9Vsbflp2wTWC9AvVGFX7BkxDtDt/view	2020
10.	Approximate analytical solution to a model of virus dynamics in computer network	Journal of Xidian University	14(11), 725 – 748	https://drive.google.com/file/d/1ZRSKuXvfecHk3HBIZTgOsnHKivKfcXiA/view	2020
11.	Application of new approach to Homotopy perturbation method in solving a system of nonlinear self-igniting reaction diffusion equations	Mathematics In Engineering Science And Aerospace	12(1), 231-24	http://nonlinearstudies.com/index.php/mesa/article/view/1921	2021
12.	Approximate analytical solution of non-linear reaction-diffusion equations in a cubic-autocatalytic reaction with Michaelis – Menten decay	AIP Conference Proceedings	2378, 020020, 1-24	https://aip.scitation.org/doi/abs/10.1063/5.0058275	2021
13.	Mathematical analysis of prey predator system with immigrant prey using a new approach to Homotopy perturbation method	Materials Today: Proceedings	37(2), 1183-1189	https://www.sciencedirect.com/science/article/pii/S2214785320348276	2021

14.	Mathematical analysis of prey-predator system with intraspecies competition	Journal of Information and Computational Science	11(9), 427-443	https://drive.google.com/file/d/1pYl6wDMU-srLhRkNVhuwJUE4KYG1cuTn/view	2021
15.	An approximate analytical solution to an epidemic model for news spreading on twitter using new Homotopy perturbation method	Proceedings, Recent Trends in Modern Mathematics (RTMM-2021), St. John's College, Palayamkottai.	101-117	https://drive.google.com/drive/u/0/folders/1WFN13IEU1ckL4N6XaHBPc4R74OPc_xb2	2021
16.	Application of new homotopy perturbation method in solving a simple predator prey model with rich dynamics	Advances and Applications in Mathematical Sciences	21(4), 2015-2025	https://www.mililink.com/upload/article/1735393102aams_vol_214_february_2022_a36_p2015-2025_b._seethalakshmi,_v._ananthaswamy_and_s._narmatha.pdf	2022
17.	Mathematical Analysis of an SIR epidemiological model: new trends	GIS Science Journal	9(8), 1150-1167	http://www.gisscience.net/VOLUME-9-ISSUE-8-2022/	2022
18.	Semi-analytical solution to a system of non-linear differential equations involving non-Michaelis-Menten parameters using a new approach to Homotopy perturbation method	Nonlinear Studies	29(3), 841-850	http://www.nonlinearstudies.com/index.php/nonlinear/article/view/2911	2022

19.	Semi analytical solution to an SIR model using new approach to Homotopy perturbation method	Mathematics in Engineering, Science and Aerospace	13(4), 1053-1069	http://www.nonlinearstudies.com/index.php/mesa/article/view/3018	2022
20.	Approximate Analytical Solution to a PoreNetwork Model of Deactivation of ImmobilizedGlucose Isomerase in Packed-Bed ReactorsUsing Akbari-Ganji's Method	Communications in Mathematics and Applications	13(3), 865-875	https://doi.org/10.26713/cma.v13i3.1805	2022
21.	Tuberculosis Epidemic Model with Non-Linear Incidence Rate and Treatment: An Analytical Approach	Journal of Information and Computational Science	13(1), 52-67	https://drive.google.com/file/d/1hREqHcCMlYpE-V5n3r67CaE188DYEwbp/view	2023
22.	An Approximate Analytical Solution to a Predator – Prey Mathematical Model in a Limited Area Using New Homotopy Perturbation Method	Proceedingsof UGC Sponsored National Conference On Recent Advances Of Pure And Applied Mathematics With Industrial Applications-2023 ISBN : 978-9394448-01-8	40-48	https://drive.google.com/file/d/1c7lBS87CitdhGlYyaHw9iunaq-7U_yzQ/view?usp=drive_link	2023

23.	Pore Network Model of Deactivation of Immobilized Glucose Isomerase in Packed-bed Reactors: An Analytical Approach Using the New Homotopy Perturbation Method	International Journal of Modern Mathematical Sciences	21(1), 12-19	https://modernscientificpress.com/Journals/ViewArticle.aspx?XBq7Uu+HD/8eRjFUGMqlRZbGhS3gpG1GzmHjSLgzI4s/oIe4W06OozH2FYS5RCDQ	2023
24.	Global Dynamics of an SVEIR Epidemic Model with Herd Immunity: An Analytical Approach	Journal of Information and Computational Science	13 (6), 189 – 206	https://joics.org/vol-13-issue-6-2023/	2023
25.	A Mathematical Analysis on a Novel Epidemic Mathematical Model on COVID-19	Journal of Information and Computational Science	13 (6), 207 – 223	https://joics.org/vol-13-issue-6-2023/	2023
26.	An Approximate Analytical Solution to an SEIR tuberculosis disease model	Journal of Information and Computational Science	13 (6), 224 – 244	https://joics.org/vol-13-issue-6-2023/	2023
27.	Application of Akbari–Ganji's method in solving the standard Gray-Scott model	Mathematics in Engineering, Science and Aerospace	14(4), 1171-1179	http://nonlinearstudies.com/index.php/mesa/article/view/3071	2023
28.	Application of Akbari – Ganji's Method in Solving a Surface Coverage Model	International Journal of Modern Mathematical Sciences	22(1), 15-24	https://modernscientificpress.com/Journals/ViewArticle.aspx?XBq7Uu+HD/8eRjFUGMqlRboMaQPv2dGpyKf3xb+Jm/UlarRerRoIGR1a/HEEk3k4	2024

29.	Mathematical Analysis of a Prey-Predator Population Model with a Nonlinear Harvesting Rate Using New Homotopy Perturbation Method	Journal of Xidian University	VOLUME 18(6), 647-656	https://doi.org/10.5281/Zenodo.11668430	2024
30.	An Approximate Analytical Solution of a Predator-Prey Model with Fear Effect	Indian Journal of Natural Sciences	15(84) , 74768 - 74773	https://tnsroindia.org.in/JOURNAL/issue84/ISSUE%2084%20-%20JUNE%2084%20-%20FRONT%20PAGE%2002.pdf	2024

AWARDS RECEIVED

- **Katie Wilcox Teacher of the Year Award**: Awarded by Lady Doak College for the academic year 2021–2022.
- **Dr. Lakshmanan Rajendran Researcher of the Year Award**: Presented by The Madura College for the academic year 2021–2022.

INVITED TALK:

- Delivered a special lecture on "Nonlinear Mathematical Models: An Analytical Approach" at the ***International Seminar on Neoteric Applications in Mathematics*** held at Thiagarajar College, Madurai, on 8th and 9th November 2022.
- Delivered an invited lecture on "Nonlinear Mathematical Models: An Analytical Approach" as the Chief Guest for the ***Valedictory Function of the PG Mathematics Association (Self-Financed)***, held at The American College, Madurai, on April 3, 2025.