

PROF. (Dr.) SANTOSH KUMAR

Department of Mathematics
College of Natural and Applied Sciences
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Academic Qualification:

- Ph. D.(Mathematics) from A. M. U. Aligarh, U.P., India.
- M. Phil. (Mathematics) from A. M. U. Aligarh, U.P., India.
- P.D.C.A. (Computer Sc.) from A. M. U. Aligarh, U.P., India.
- M.Sc. (Mathematics) from Dr. B. R. Ambedkar Univ. Agra, U.P., India.

Experience Details:

- 2013- till to date: Associate Professor at University of Dar es Salaam, Tanzania.
- 2009-2013: Associate Professor at The University of Dodoma, .
- 2003-2009: Associate Professor/Asst. Professor/Sr. Lecturer/ Lecturer at U.P. Technical University, India.

Ph. D Supervised:

1. **Alfred Hugo**, *Modelling Infectiology and Optimal Control of Newcastle Disease in poultry farm in Tanzania*, Department of Mathematics, University of Dar es salaam, Tanzania (Co-guides: Prof. O. D. Makinde, Faculty of Military Science, Stellenbosch University, South Africa and Dr. Fred D. Chibwana, Department of Zoology and Wildlife Conservation, College of Natural and Applied Sciences, University of Dar es Salaam, Tanzania) (**Thesis Submitted**).

2. **Terentius Rugumisa**, *Some Fixed point theorems in Partial Metric Spaces*, Department of Mathematics, The Open University of Tanzania, (Co-guide- Prof. M. Imdad, Department of Mathematics, Aligarh Muslim University, Aligarh, India) (Thesis submitted).

MSc Dissertation Supervised:

S.No.	Name of Student	Title	Year
1.	Alberto Kimbuya Mathias	Brouwer's Type Fixed Point Theorems and Its Applications	2012
2.	Frank Ezekiel	Computational Techniques of Nonlinear Elliptic	2012

	Ochanga	Equations Using Perturbation Methods (Co-supervised with Dr. John Ham, St. Johns University)	
3.	Matao Paul M.	Some Fixed Point Theorems For Multivalued Maps	2013
4.	Mhanga Johari	Some Fixed Point Theorems for Iterated Contraction Maps	2013
5.	Silas ,C. Ruth	A Comparison of convergence among various Iteration Processes	2015
6.	Mohamed Hemed Mohamed	Laplace's Equation With Application in Electrostatics (African Institute for Mathematical Sciences, Tanzania)	2015
7.	Fundi, Awenza	Numerical Simulation of Singularly Perturbed Parabolic Partial Differential Equations Using Finite Element Method (Co-supervised with Prof. E.W. Mureithi, University of Dar es salaam, Tanzania)	2016
8.	Oluwaseyi Malonia Ajiboye	Modelling the Motion of Mass Spring System (African Institute for Mathematical Sciences, Tanzania)	2016
9.	Kessy, Johnson Allen	Some Fixed Point Theorems for Hybrid Maps in Partial Metric Spaces	2017
10.	NIYIGABA Emmanuel	Mathematical Modelling and Analysis of Electromagnetic - Ball –Suspension Control System (Co-supervisor : Prof. Joyati Debnath, Department of Mathematics, Winona State University, USA)	2017

Examiner of MSc Dissertation

1. Kissa Mboya, Mathematical Modelling of The Optimal Control of Hepatitis B Virus (Hbv) Infectiology in the Presence of Cytotoxic Cells, Submitted to Department of Mathematics, University of Dar es salaam.
2. Alpha Omega SOKO, The Korteweg de Vries and Takahashi Satsuma Approaches to solitons, (African Institute for Mathematical Sciences (AIMS), Tanzania).
3. Emmanuel NIYIGABA, Application of Linear Algebra to Control Systems, (African Institute for Mathematical Sciences (AIMS), Tanzania).
4. Michael Peter Kajala, Comparative Analysis of Numerical Methods for Solving Nonlinear System of Equations, (African Institute for Mathematical Sciences (AIMS), Tanzania).
5. Peter Chidiebere Nwokolo, Mathematical Approaches to Blood Spatter Analysis, (African Institute for Mathematical Sciences (AIMS), Tanzania).
6. Reinhilde Peter Massawe, Comparative Analysis of Numerical Methods for Solving Linear System of Equations, (African Institute for Mathematical Sciences (AIMS), Tanzania).

Present and Past Responsibility at School Level:

- Working as Coordinator of Post Graduate Studies Programs in Department of Mathematics, College of Natural and Applied Sciences, UDSM, Tanzania since June. 2014 till now.
- Worked as Coordinator of Post Graduate Studies Programs in School of Mathematical Sciences, College of Natural and Mathematical Sciences, UDOM, Tanzania from Nov. 2009 till Aug. 2013.

Programs/Proposals Developed:

- Prepared and revised “**Master of Science in Mathematics (M.Sc.)**” program for School of Mathematical Sciences, College of Natural and Mathematical Sciences, *University of Dodoma*, Tanzania in the year 2010.
- Revised **BSc Mathematics programme** for School of Mathematical Sciences in the *University of Dodoma*, Tanzania in the year 2012.
- Participated in **MSc Mathematics programme** revision at *University of Dar es salaam* in March, 2014.
- Participated in **MSc Mathematical Modelling** programme revision at *University of Dar es salaam* in March, 2014.
- Participated in development of proposal for **taught PhD programme** for Department of Mathematics, *University of Dar es salaam*, 2015-16.
- Prepared “**MSc (Industrial Mathematics)**” program for *University of Busitema, Uganda* in 2014.

Research Interest : Nonlinear Analysis: Fixed Point Theory/ Approximation Theory
Mathematical Modelling, Ordinary and Partial Differential Equations.

Research Publications:

1. M. Imdad, **Santosh Kumar**, Aqeel Ahmad, *On nonlinear non-self hybrid contractions*, Radovi Matematicki., 10(2)(2001), 233-244 ([MR1981096](#)).
2. M. Imdad, **Santosh Kumar**, M. S. Khan, *Remarks on some fixed point theorems satisfying implicit relations*, Radovi Matematicki, 11(1)(2002), 135-143([MR1971330](#)).
3. M. Imdad, **Santosh Kumar**, *Common fixed point theorems for four non-self mappings*, J. Indian Math. Society, 70 (2003), 97 – 111(MR2289312).
4. M. Imdad, **Santosh Kumar**, *Rhoades type fixed point theorems for a pair of non-self mappings*, Jour. of computers Math. Appl., 46(2003), 919-927(MR2020449 (2004h:47082)).
5. M. Imdad, **Santosh Kumar**, *Boyd and Wong type fixed point theorems for two pairs of non-self mappings*, Nonlinear Analysis Forum, 8(1) (2003), 69-78 (MR2039337).
6. M. Imdad, D. R. Sahu, **Santosh Kumar**, *Fixed point theorems in symmetrizable topological spaces*, Nonlinear Analysis Forum, 9(1)(2004), 97-107 (MR2111370 (2005h:54048)).
7. M. Imdad, **Santosh Kumar**, D. R. Sahu, *Fixed point iteration process for nonlipschitzian nearly non-expansive mappings*, J. Indian Math. Society, 72(2005), 203-210 (MR2291489 (2007m:47141)).

8. **Santosh Kumar**, M. Imdad, *A general common fixed point theorem without continuity*, J. Indian Acad. Math., 27 (2) (2005) 215-229 (MR2259518 (2007d:54030)).
9. M. Imdad, Javid Ali, **Santosh Kumar**, *Rhoades type fixed point theorems in normed linear spaces*, Mathematical Sciences and Appl., (2006) 23-31.
10. **Santosh Kumar**, *Remarks on certain selected fixed point theorems - II*, Kathmandu J. Sc. Engg. Tech., Vol. 1 (IV) (2007), DOI: 10.3126/kuset.v3i2.2894.
11. Vinai K. Singh, **Santosh Kumar**, *Iteration process with errors for local strongly H-accretive type mappings*, Fixed Point theory, 9(1) (2008), 351-362. (MR2421747 (2009k:47189)) (Zbl 1222.47116).
12. Vinai K. Singh, **Santosh Kumar** and A.K.Singh, *(α, β) - L^p 2 -norm orthogonality and characterizations of 2 - inner product spaces*, J. Appl. Funct. Anal. USA, 3(4) (2008), 485-495(MR2387475 (2009c:46036)).
13. **Santosh Kumar** and K. Jha, *Remarks on fixed point theorem under implicit relations*, The Nepali Mathematical Sciences Report, 27 (1-2), 2007(MR2445222).
14. Vinai K. Singh, **Santosh Kumar**, *Mapping ϕ in normed linear spaces and characterization of orthogonality problem of best approximation in 2-norm*, General Mathematics Vol. 17, No. 2 (2009), 73–85, (MR2520827 (2010g:46012)) (Zbl 1199.41185).
15. **Santosh Kumar**, *Approximating fixed point of generalized nonexpansive mappings*, International J. of Math. Sci. & Engg. Appls., Vol. 6 No. IV (2012), 361-367.
16. **Santosh Kumar**, *A short survey of the development of fixed point theory*, Surveys in Mathematics and Its Applications, Vol. 8, (2013), 91-101.
17. **Santosh Kumar**, *A note on a fixed point theorem*, Advances in Fixed Point Theory, Vol. 3(2) (2013), 439-442.
18. Rizwan Khan and **Santosh Kumar**, *Using exploit patterns to develop secure software*, VSRD International Journal of Computer Science & Information Technology, Vol. 3 (6) (2013), 257-260.
19. **Santosh Kumar**, *Some Applications of Fixed Point Theory*, Engineering Mathematics Letters, Vol 2014 (2014), Article ID 10.
20. **Santosh Kumar**, *Some Fixed Points for Iterated Contraction Maps*, J. Applied Functional Analysis, Vol. 10, No.'s 1-2 (2015), 31-39.
21. Alfred Hugo, Isambi Sailon Mbalawata, Oluwole Daniel Makinde and **Santosh Kumar**, *Parameter Estimation of Eco-epidemiological Model for Newcastle Disease in Tanzania*, International Journal of Current Research Vol. 8, Issue 08,(2016), pp. 35910-35917.
22. Alfred Hugo, Oluwole Daniel Makinde, **Santosh Kumar** and Fred F Chibwana, *Optimal Control and Cost Effectiveness Analysis for Newcastle Disease Eco-Epidemiological Model in Tanzania*, J. Biological Dynamics, Vol.11 No. 1, (2016), 190-209.
23. Terentius Rugumisa and **Santosh Kumar**, *Unique common fixed point theorem for pairs of multi-valued mappings in partial metric spaces*, Advances in Fixed Point Theory, Vol. 7(3), (2017), 391-412.
24. **Santosh Kumar**, Terentius Rugumisa and M. Imdad, *Common Fixed Points in Metrically Convex Partial Metric Spaces*, Konuralp Journal of Mathematics, Vol. 5 (2)(2017) (Accepted 2017).
25. **Santosh Kumar** and Terentius Rugumisa, *An implicit relation for four non-self mappings in partial metric space*, Jnanabha Vol.47, No.1, June 2017 (Accepted).

Conference Papers:

1. **Santosh Kumar**, Terentius Rugumisa, *A Fixed Point Theorem for Multivalued Mappings in Complete Partial Metric Spaces*, Proceedings of the third EAUMP conference under the theme: advances in mathematics and its applications held at Makerere University, Kampala Uganda from 26th to 28th October, 2016.
2. **Santosh Kumar** and Silas C. Ruth, *A Numerical Comparison of Convergence Among Fixed Point Iteration Processes in for real valued Functions*, Proceedings of the third EAUMP conference under the theme: advances in mathematics and its applications held at Makerere University, Kampala Uganda from 26th to 28th October, 2016.
3. Eunice Mureithi, **Santosh Kumar**, Makungu James and Aweza Fundi, *Numerical Solution of a Singularly Perturbed Heat Equation Using Galerkin Finite Element Method*, Proceedings of the third EAUMP conference under the theme: advances in mathematics and its applications held at Makerere University, Kampala Uganda from 26th to 28th October, 2016.
4. Emmanuel Niyigaba, Joyati Debnath and **Santosh Kumar**, *Feedback Linearization and Optimal Control of Electromagnetic Ball Suspension System (EMBSS)*, Hawaii University International Conference, 2017.
5. Emmanuel Niyigaba, Joyati Debnath and **Santosh Kumar**, *Linearization and Optimal Control Flow in Electromagnetic Ball Suspension System*, Proceeding of PHYSCON 2017 (Accepted).

Books Published:

1. **Santosh Kumar**, Computer Based Numerical and Statistical Techniques, S. Chand Publications (2007), ISBN-10: 81-219-2939-3, ISBN-13: 9788121929394.
2. Peter V. O Neil and **Santosh K. Sengar**, A Text Book on Engineering Mathematics Vol. 2, Cengage Learning (2008) (Coauthor: Peter V. O Neil, Albama University, U.K), ISBN-13: 978-81-315-0424-6, ISBN-10: 81-315-0424-7.
3. Peter V. O Neil and **Santosh K. Sengar**, A Text Book on Engineering Mathematics Vol. I, Cengage Learning (2008) (Coauthor: Peter V. O Neil, Albama University, U.K), ISBN-13: 978-81-315-0692-9, ISBN-10: 81-315-0692-4.
4. Peter V. O Neil and **Santosh K. Sengar**, A Text Book on Engineering Mathematics Vol. III, Cengage Learning (2009) (Coauthor: Peter V. O Neil, Albama University, U.K), ISBN-13: 978-81-315-1189-3, ISBN-10: 81-315-1189-8.
5. Peter V. O' Neil, **Santosh K. Sengar**, Rakesh Mohan, A Text Book on Engineering Mathematics Vol. II(UTU), Cengage Learning (2010) (Coauthor: Peter V. O Neil, Albama University, U.K and Rakesh Mohan, DIT Dehradun, India), ISBN-13: 978-81-315-1330-9, ISBN-10: 81-315-1330-0.
6. **Santosh Kumar**, C++ Programming with Numerical Techniques, S. Chand Publications India (2010), ISBN-10: 81-219-3610-1, ISBN-13: 9788121936101.
7. **Santosh K. Sengar**, S. P. Singh, Advanced Calculus, Cengage Learning (2011) (Coauthor: S. P. Singh, St. Memorial University, New Found land, Canada), ISBN-13: 978-81-315-1540-2, ISBN-10: 81-315-1540-0 (10).

8. Ajay Mittal, Naveen Agarwal, **Santosh Kumar** and V. Anand, Computer Science and Information Technology (for GATE), Cengage Learning India, 2014.
9. Anbu Kumar, M Ashok Kumar, **Santosh Kumar** and V. Anand, Civil Engineering (for GATE), Cengage Learning India, 2014.
10. Sandeep Joshi, Naveen Babu, **Santosh Kumar** and V. Anand, Electrical Engineering (for GATE), Cengage Learning India, 2014.
11. Sandeep Joshi, Naveen Babu, **Santosh Kumar** and V. Anand, Electronics and Communication Engineering (for GATE), Cengage Learning India, 2014.
12. Nilanjan Mallik, **Santosh Kumar** and V. Anand, Mechanical Engineering (for GATE), Cengage Learning India, 2015.

Book Chapter:

1. **Santosh Kumar** and Terentius Rugumisa, *Rhoades type fixed point theorem for Partial Metric Spaces (Chapter-9)*, Recent Advances in Fixed Point Theory and Applications, Nova Science Publishers, (2017), ISBN: 978-1-53612-085-1;

Contribution to Society:

- Worked as a member of translating team for senior secondary school mathematics books under Ministry of Human and Resource and Development, Govt. of India.
- Member of Higher Degrees Research and Publication Committee (**HDRPC**), College of Natural and Applied Sciences, University of Dar es Salaam, Tanzania since 2015.
- Chair a paper presentation session at “The 2ND EAUMP Conference held at The Nelson Mandela African Institute of Science and Technology, Arusha, Tanzania” from August 22nd - 25th, 2012.
- Faculty Board Member of Faculty of Commerce and Business Studies, St. John’s University of Tanzania, since Jan, 24, 2012 till Nov. 2013.
- Member of College Board in College of Natural and Mathematical Sciences, University of Dodoma, Tanzania, since July 26, 2012 till Aug. 2013.
- Member of School Board in School of Mathematical Sciences, College of Natural and Mathematical Sciences, University of Dodoma, Tanzania, Since Nov., 30, 2012 till Aug. 2013.
- Member of Indian Mathematical Society, India.
- Life time member of Vijnana Parisad of India.

Reviewer of the Journals:

1. Acta Mathematica Scientia, A Journal of Mathematics by Elsevier Publication, USA.

2. Varahmihir Journal of Mathematical Sciences, M.P., India.
3. Kyungpook Mathematical Journal, South Korea.
4. Jnanabha Journal, India.
5. Tanzania Journal of Science, University of Dar es Salaam, Tanzania.

Date : 27.06.2017

Place : Dar es salaam

(Santosh Kumar)