Curriculum Vitae

1. **Name:** Dr.(Mrs) Sarita Thakar
2. **Designation** Professor and Head
3. **Institute:** Shivaji University, Kolhapur.
4. **Educational qualification:**
   B.Sc., M. Sc., M.Phil., Ph.D. (Mathematics) (University of Pune)

   Title of M. Phil Thesis: On some properties of planar motion of satellite under gravity.
   Work was carried out at University of Poona.

   Title of Ph. D. Thesis: Studies on some aspects of motion analysis.
   Work was carried out at University of Poona
5. **Specialization**: Classical Mechanics, Fluid Dynamics, Numerical Analysis
6. **Awards:**
   1. NBHM scholarship for perusing M. Sc. in Mathematics (1985-1987)
   2. CSIR (JRF) (1987-1989)
   3. CSIR (SRF) (1989-1992)
   4. Financial assistance by NBHM to present the research work at International Congress of Mathematicians (ICM) held at Hyderabad 2010.
7. **Teaching Experience**: 25 years for PG
   North Maharashtra University, Jalgaon, Aug.1992-Oct. 2005
   Shivaji University, Kolhapur Oct. 2005-till date
8. **Particulars about research work directed:**
   Ph.D. : 4 completed , 3 ongoing
   M. Phil. : 2completed, 1 ongoing

   Name of Ph.D. student and Title of Thesis:
   1. Ashwini Sakalkar: Studies on motion analysisof conservative and nonconservative dynamical systems
   2. Sachin Wani:Studies on numerical methods for one dimensional nonlinear Burgers equation
   3. Ashwini Kulkarni:Studies on nonlinear oscillators
   4. Asma Shaikh:Numerical Analysis of Volterra Integro-Differential Equations with Delay

   Name of M.Phil. student and Title of Dissertation:
   1.Indrayani Sutar:On symmetries of nonlinear oscillators

2.Sunil M. Kumbhar: Lie symmetries of a coupled nonlinear Burgers equation.

9. **Publications:**

National **25** , International:**09**

1. "On some properties of planar motion of satellite under gravity" Indian journal of pure and applied Maths vol 21 no. 10,pp 915-964 Oct 1990 jointly with prof. K.C.Sharma.

2. "Constants of motion of a general space vehicle" Indian journal of pure and applied Maths vol 25 no. 7, pp 785-799 July 1994 jointly with prof. K.C.Sharma.

3. "Stability and invariance of N coupled deployable members of a space craft" Proceedings of the workshop on space dynamics and celestial mechanics, Muzaffarpur conducted by IUCCA Sep 1995 pp 93-101.

4. "Group invariant solutions and optimal system of two dimensional wave equation" J. differential equations and dynamical systems, Vol. 3 July 1998 pp 275-288.

5. "Stability of N coupled deployable members" JIMS Vol. 66, No.1-4, 1999 pp 65-71.

6. "Modified Adaptive Nystrom method" proceeding of FACM 2005 Patiala, Punjab, 4-5 March 2005,pp 471-477 jointly with Sachin Wani.

7. "A way to generate higher order invariants" Journal of sciences vol XXXIII © 2005 pp 111-114.

8. Generation of first integral of equations of motion. Journal of Indian academy of Maths. Vol.30, no.1 (2008) pp. 205-219

9. 'Note on Noether's theorem – a variational form' Bull. Cal. Math Soc.,100 (6) (2008) pp. 653-658

10. "Applications of canonical transformations to generate invariants of non conservative system" Indian journal of pure and applied Maths vol 39 no. 4, pp.353-368 Aug 2008.

11. "Invariants of non linear oscillators" Bull. Kerala Math Assoc. Dec 2008

12. "Stability analysis Of Mixed Euler method for one dimensional nonlinear Burgers equation" Bulletin of Kerala Mathematics Association December 2009 issue, jointly with Sachin Wani.

13. “Stability and Convergence Of Mixed Euler method for one dimensional non-linear Burgers equation with moving Mesh” The journal of Indian academy of Mathematics Vol.33 No.1 (2011) pp 201-224 jointly with Sachin Wani.

14. “ An analysis of backward Euler method for one dimensional Burgers equation with moving mesh” Proceedings of International conference on Fluid Dynamics and its applications, 20-22 July 2011, BNM Institute of technology, Bangalore. Pp 565-571.

15. “Modeling through nonlinear oscillators” Bulletin of Marathwada Mathematical society vol. 12, No.2, Dec 2011 pp 46-55

. 16. “Second order scheme for Burgers equation” J.Pure and applied Physics Vol 23 No. 4, Oct-Dec. 2011 pp 645-649.

17. “Analysis of Modified Average Method for one dimensional non linear Burgers equation with Moving Mesh”, jointly with Sachin Wani, International Organization of Scientific Research (IOSR) Journal of Mathematics, Vol.3, No.1 (2012) 24-36.

18. “Modified adaptive Nystrom Method”, International Journal of Mathematical Sciences and Engineering applications, Vol.6, No.1 (2012) 31-37, jointly with Sachin Wani.

19. “On solutions of nonlinear oscillators with position dependent damping” Bull. Kerala Math Assoc.Vol.9 No.1 June 2012,pp 199-204jointly with Indrayani Sutar.

20. “The general solution of the generalized Emden Fowler equation”Bull. Of Kerala Mathematics Association, Vol. 9,No 2 Dec. 2012,pp 285-295.

21. “Group invariant solutions of fourth order ODE” Recent trends in computer science and applications and computational Mathematics, Himalaya Publishing house PVT Ltd. ISBN: 978-93-5097-319-6 jointly with Shradha Sanye.

22. “Weighted Average Method for one dimensional non linear Burgers equation”, International Journal of Physical, Chemical and Mathematical Sciences, Vol. 2, No.1 (2013) 16-27, jointly with Sachin Wani.

23. “Linear Method for two dimensional Burgers equation”, Accepted for publication in international journal of Ultra Scientist of physical sciences, Vol. 25, No.1 (2013) jointly with Sachin Wani.
24. “Crank-Nicolson type method for Burgers equation” International journal of Applied Physics and Mathematics, April 2013 jointly with Sachin Wani.
25. “Analytical solution of Burgers like equation” Ultra Scientist Vol.25(1)A,127-134(2013)jointly with Sunil Kumbhar
26. " Numerical Stability of RK method for Voltera Delay Integro Differential Equations" Bull. Of Kerala Mathematics Association, Vol. 11,No 2 Dec. 2014,pp 189-207jointly with Asma Shaikh.
27. "Numerical solutions of nonlinear Fredholm Integro differential equations of Second kind", Indian journal of Industrial and applied Mathematics, Vol.5, No.2, July-Dec. 2014, pp 131-140 jointly with Asma Shaikh.
28. "Analytical and Numerical stability of Voltera Delay Integro-differential equations", Journal of Indian Academy of Mathematics, Vol.37,No.1,2015 pp 83-100 jointly with Asma Shaikh.
29. " Crank Nicolson type method with moving mesh for Burgers equation" Asian J of Mathematics and Applications" Vol.2014 Article ID ama0122, 8pages , http://scienceasia.asia
30. " Backward Euler method for one dimensional nonlinear Burgers equation with moving mesh" Asian J of Mathematics and Physics Vol.2013 Article ID ama0064, 10pages , http://scienceasia.asia
31. Similarity solutions of non-autonomous Lienard type equations, Accepted for publications , Journal of Indian Mathematical society , jointly with Ashwini Kulkarni.
32. Approximate solution of Voltera Delay Integro differential Eqautions by

    using Hermite polynomials, The J of Indian Academy of Mathematics

    Vol.38 No.2 , 2016,pp 233-150, jointly with Asma Shaikh

33. Numerical solutions of one dimensional Burgers equation using Cole Hopf transformation and cubic B-spline Galerkin FEM, Bulletin of Kerala

Mathematics Association Vol.13 N0.2 Dec. 2016,pp 161-172 jointly with Sunil Kumbhar

34. " Integrability Analysis of generalised modified Emden type equation" , Indian J of Mathematics (Allahabad Mathematical Society) jointly with Ashwini Kulkarni.

10. Books Published

1. Differential equations, M.Sc. (Part I) all units SIM, Shivaji University
2. Real Analysis, M.Sc. (Part I) two units , SIM, Shivaji University
3. Mathematics and statistics for management, MBA (Part I) two units, SIM , Shivaji University.
4. Operation Research I , M.Sc. (Part II) two units , SIM, Shivaji University
5. Numerical Analysis, M.Sc.(Part I), SIM, Shivaji University
6. Operation Research II , M.Sc. (Part II) two units , SIM, Shivaji University
7. Functional Analysis, M.Sc. (Part II) two units , SIM, Shivaji University

10. Training programs attended:

National 8, International **01**

1. UGC sponsored Summer School on Distribution Theory, Madurai Kamraj University, Madurai(TN) , April 1987 .
2. UNESCO Regional training programme on " Mathematical modeling of fluid flows , Diffusion & Environmental pollution", IIT Kanpur, March 12-24, 2001.
3. Refresher course on Mathematics, North Maharashtra University, Jalgaon, 26-2-1996 to 23-3-1996.
4. Refresher course on Mathematics, North Maharashtra University, Jalgaon, 08-7-1996 to 04-8-1996.
5. Refresher course on Mathematics, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra, 03-9-2001 to 30-9-2001.
6. Refresher course on Mathematics, University of Pune, Pune, 03-04-2001 to 30-4-2001.
7. Workshop on New direction in applied mathematics, IISc Bangalore, 01 Jan to 03 Jan 2010.
8. Workshop on Recent advances and its applications in Mathematical modeling, Sri Padmavati Mahila Vishvavidyalayam, Tirupati, 01Feb to 05 Feb. 2010.
9. National workshop on Algebra , Shivaji University, Kolhapur 21-26 Dec. 2015.
10. National workshop on Linear Algebra and its applications, Shivaji University, Kolhapur March 2018.

11. Papers presented at Conferences/ Seminars/Symposia etc.

National **10**, international **06**

1." Motion analysis of a Lagrangian" 55th Annual conference of IMS held at Delhi 27-30, Dec 1989.
2. " A note on Noether's theorem and constants of motion for mobile boundaries"

International conference on differential equations and its applications to oceanography,Goa University, Dec 1990.

3. " Stability and invariance of N deployable members of a space craft", workshop on space dynamics and celestial mechanics , Dr.B.R.Ambedkar University, Muzzafarnagar, Sep 1995.
4. " Local and non-local symmetries of two dimensional wave equation",63rd Annual conference of IMS Ahmednagar(MS) 27-30 Dec.1997.
5." Conservation laws of dynamical system through canonical transformations", Joint 9th National conference of the vigyan parishad of India on Applied and industrial Mathematics and 5th Annual conference of Indian society of information theory and applications, Netaji Subhas Institute of Technology, New Delhi, Feb.2002.
6. " A method for the numerical integration of the first order differential equation" National conference on Mathematical and computer applications in science and engineering, Patiala, 27-28 Jan.2003.
7." Determination of invariants of nonlinear dynamical systems",69th Annual conference of IMS at Lucknow University, 27-30 Dec.2003.
8. " Invariants of Invariants of non conservative dynamical systems", international conference on current trends in industrial and applied Mathematics (ICCTIAM07) MS University Baroda, Jan.2007.
9. " Invariants of non linear oscillators", International conference on recent trends in computational partial differential equations.IIT Bombay, Powai Dec.2008.
10. " Applications of Noether's theorem to nonlinear oscillators through canonical transformations" International Congress of Mathematicians held at Hyderabad, 19-27 Aug. 2010.
11." An analysis of backward Euler method for one dimensional Burgers equation with moving mesh" International conference on Fluid Dynamics and its applications, BNM Institute of technology, Bangalore, 20-22 July 2011
12." Invariants of generalized Emden Fowler equation"77th Indian Mathematical Society Annual Conference , RTM University, Nanded 27-30 Dec. 2011.
13." Symmetry group of Burgers Equation a model of mono-dispersive sedimentation" National conference on Advances in Mathematical sciences , Kadi sarva vishvavidyalaya, 7-8 Dec 2012
14. " Group invariant solution of fourth order differential equation**",** National conference on RTCSACM, Indira college of Commerce and science, Pune, 21-22 Dec 2012.

12. Sessions chaired at conferences:07

1. National conference on Numerical analysis and its applications, Gokhale Centenary College, Ankola Karnataka state , 10-11 Jan 2014.

2. International conference on advances in Dynamical system. Central University of Rajasthan 10-13 March 2014.

3. National conference on recent trends in Mathematics, Ramkrishna Paramhansa Mahavidyalay, Osmanabad, 28 Sep. 2014

4. National conference on Current practices in Mathematics, Statistics and actuarial sciences North Maharahtra University Jalgaon 7-8 March 2013

5. National conference on Analysis and its Applications Dept. of Mathematics Karnataka University, Dharwad (Karnataka) 15-16 Mar. 17,

6. National conference on differential equations and dynamical systems, Shivaji University, Kolhapur(MS) Dec 2013

7. National conference on differential equations 2015, Shivaji University, Kolhapur 29-30 Jan 2015

13. Lecturers Delivered at instructional workshops:

1. Delivered four lectures Sturm Liouville Theory at Refresher course in Mathematics conducted by Deptt. Of Mathematics, North Maharashtra University, Jalgaon during 27.02.95-25.03.95, 13-15 March 95.
2. Delivered two lectures on "Classroom teaching and curriculam development" at J.T.Mahajan college of Engineering, Faizpur 13 Sep. 2002.
3. Delivered two lectures on "Applications of Lie groups to control systems" at D.Y.Patil Institute of Technilogy, Pune during Winter school on Mathematical modeling of engineering systems, 17 Dec. 2003
4. Delivered a lecture on 'C and C++ Basic' at workshop on Mathematical software conducted by the Deptt. On 31/1/2009 to 2/2/2009.
5. Delivered a key note address at the seminar on "Mathematical Modeling and its applications" on 12 Feb 2011 conducted by Shri Pancham Khemraj Mahavidyalaya Sawantwadi ,Sindhudurga(MS)
6. Delivered 10 Lectures on "Riemann integration on Rn" at Gogate Jogalekar College, Ratnagiri. 26-28 Feb 2011
7. Deliveered 5 lectures on Advanced Calculus for distance education students in the Department of Mathematics during 25-30 Aug. 2011.
8. Delivered 7 lectures on information theory for M.Phil, Pre PhD Bridge course.

14. Lecturers Delivered at conferences/workshops seminars: 10.

1. "Conservation laws of non conservative dynamical systems" 68th Annual conference of IMS held at Shivaji University, Kolhapur , 27-30 Dec. 2002..

2. " Applications of Lie Algebra to differential equations" National conference in Mathematics, Y C Institute of science, Satara, Dec.2005.

3." Modelling through differential equations" Mathematical Modeling and its applications held at Shri. Pancham Khemraj Mahavidyalay, Sawatwadi (MS).

4." Numerical methods for parabolic systems" National conference on Numerical analysis and its applications, Gokhale Centenary College, Ankola Karnataka state , 10-11 Jan 2014.

5." Mathematical analysis of sedimentation" State level conference on Recent Advances in Mathematics and applications, Karmaveer Sonawane Arts ,Commerce and science college, Satana 2014.

6." Polynomial invariants for classical dynamical systems" International conference on advances in Dynamical system. Central University of Rajasthan 10-13 March 2014.

7." Mathematical analysis of time dependent Bi-dispersive sedimentation" National conference on recent advances in in Mathematics, Deogiri college, Aurangabad(MS)23-25 Dec. 2014.

8." Polynomial invariants for non-autonomous systems", National conference on recent trends in Mathematics, Ramkrishna Paramhansa Mahavidyalay, Osmanabad, 28 Sep. 2014

9." Research methodology" Applications of advanced Mathematics and research methodologies in Mathematical sciences, Shri Vijaysinha Yadav Arts and science college, Peth Vadgaon (MS) 4/2/2015

10." Applications of differential transforms" State level seminar on Mathematical analysis, Matoshri Bayabai Shripatrao Kadam Kanya Mahavidyalay, Kadegaon 4/2/2015.

11. " The general solution of Lane Emden type equation" Annual conference of IMS, Banaras Hindu University, Varanasi(UP)22-25 Jan. 2013

12. " Burgers equation :A brief Survey" National conference on Current practices in Mathematics, Statistics and actuarial sciences North Maharahtra University Jalgaon 7-8 March 2013

13. "Mathematical Analysis of artificial satellite"National conference on Analysis and its Applications Dept. of Mathematics Karnataka University, Dharwad (Karnataka) 15-16 Mar. 17,

14. Research scheme/projects undertaken

UGC (Major): 1 completed
UGC(Minor): 1 completed
CSIR: Development of simple efficient reliability techniques for Weibull and Gamma distributed random variables
Principle investigator: H.V.Kulkarni
Co-principle investigator: S.H.Thakar
2013-2016
Scheme No. 25(0211)/13/EMR-II
Date of commencement:21/4/2013
Date of termination: 30/4/2016
Amount sanctioned: 1400167

15. Membership of professional bodies:

1. Life member of Indian Mathematical society
2. Life member of Industrial and applicable mathematical society
3. Life member of the journal of Indian academy of Mathematics.
4. Life member of Indian Science Academy

16. Workshops Conducted: 03

17. Conferences conducted :National 02.

18. Administrative experience: Head of the University department 09 years

20. Member of different Administrative and Academic bodies:

Departmental Research Committee: 06 years

Research Recognition Committee: 06 years

Board of Studies:**15 years** (North Maharashtra University, Jalgaon (3 terms), Shivaji University, Kolhapur (2terms), DKTE

Faculty of Science (Shivaji University): **3 year**

Academic and administrative committee of Central School (Kendriya Vidyalay) Jalgaon : **4 years**

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