

CURRICULUM VITAE

Name : Dr. Vinayak Shamrao Kulkarni

Present Position : **Professor**
 Department of Mathematics,
 University of Mumbai,
 (NAAC Re accredited A++ Grade CGPA 3.65)
 Mumbai - 400098

Educational Qualifications : **M.Sc. (Mathematics), Ph.D. (Mathematics)**

Teaching Experience : 29 years

Research Experience : 22 years

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Research Fields :

- Applied Analysis (AMS 97I40, 97I50, 97I99)
- Partial Differential Equations (AMS 35J25, 35J67, 35K05, 35K20, 35K35, 35K50),
- Boundary Value Problems in Heat Conduction (AMS 34B05, 34B07),
- Integral Transforms (AMS 44A05, 44A10),
- Fractional Calculus (AMS 26A33, 35R11, 44A10, 74S40),
- Applied Numerical Analysis (47N40, 65L20, 65L60, 65N06, 65N12, 65N30),
- Mechanics of Deformable Solids (AMS 74A10, 74C05, 74F05, 74G75, 74H15),
- Heat and Mass Transfer (AMS 80A20, 80A23, 80M10, 80M20).

Software's and Tools : MathCAD, Maple

h- index and Citations :

Database	Id	Documents	Citations	h index
Scopus	56030178800	31	240	9
Web of Science	AAM-6413-2020	29	196	8
Research Gate	Vinayak Kulkarni-7	28	219	7
Google	QxQQgLgcAAAAJ	65	368	12
ORCID	0000-0002-2507-4458			
Vidwan id	568790 (Vidwan Score 9.2)			

Academic Positions :

Sr. No.	Position	Institute	Period	
			From	To
01	Contributory Lecturer	PVP College Loni, Ahilyanagar	08/07/1996	16/08/1998
02	Lecturer	SVM College of Engineering, Chincholi, Nasik	17/08/1998	19/10/2002
03	Lecturer (MPSC Selection)	Government College of Engineering Chandrapur	21/10/2002	31/12/2005
04	Assistant Professor (MPSC)	Government College of Engineering Chandrapur	01/01/2006	23/10/2006
05	Assistant Professor Senior Scale (MPSC)	Government College of Engineering Chandrapur and Chatrapati Sambhajanagar	24/10/2006	23/10/2011
06	Assistant Professor Selection Grade (MPSC)	Government College of Engineering Chatrapati Sambhajanagar and Chandrapur	24/10/2011	05/03/2013
07	Associate Professor	University of Mumbai	06/03/2013	05/03/2016
08	Professor	University of Mumbai	06/03/2016	Till date

Research Outline :

- My research approach focuses on the rigorous mathematical analysis and well-posed modeling of complex physical phenomena, specifically within the framework of Boundary Value Problems involving Fractional-Order Partial Differential Equations.
- My work bridges classical and non-classical continuum mechanics by applying fractional calculus to modeling materials with memory effects, anomalous diffusion, and non-local interactions.
- My analysis covers the full spectrum of behaviors, ranging from fractional parabolic equations (representing diffusion) to fractional hyperbolic equations (representing wave propagation and vibrations).
- The non-local characteristics of fractional-order differential operators, allow them to act as powerful tools for modeling memory effects in physical systems. Unlike classical integer-order

derivatives, which are local and depend only on the instantaneous state, fractional derivatives involve integral operators with kernels that integrate over the entire historical trajectory of the system.

- Mathematical analysis provides crucial insights in phase-change phenomena followed by valuable inputs and scientific predictions of system which plays vital role in further experimental analysis in the fields of Heat Transfer, Thermal Engineering, Structural Engineering, Material Science, Nano materials and structures and many more.
- My research agenda is driven by a multidisciplinary and transdisciplinary approach, designed to bridge the methodological gap between abstract mathematical concepts and complex, real-world challenges. By fostering a multidisciplinary applications, I create robust, new analytical frameworks that move beyond traditional paradigms to offer actionable insights and solutions for practical and societal problems..
- I have derived the most generalized heat equation in the field of non-classical theory of thermoelasticity (Refer Partial Differential Equations in Applied Mathematics, Vol. 5, 2022, Elsevier, Scopus indexed).

Web links :

- <https://www.scopus.com/authid/detail.uri?authorId=56030178800>
- <https://www.webofscience.com/wos/author/record/AAM-6413-2020>
- <https://www.researchgate.net/profile/Vinayak-Kulkarni-7>
- <https://orcid.org/0000-0002-2507-4458>
- <https://mathscinet.ams.org/mathscinet/author?authorId=794522>
- <https://scholar.google.co.in/citations?user=jlhbp9MAAAAJ&hl=en>
- <https://sciprofiles.com/profile/VinayakKulkarni>
- https://mathematics.mu.ac.in/staff_details.php?id=8
- <https://vidwan.inflibnet.ac.in/profile/568790>

Research Publications:

- **Research Papers published in International Journals : 65**
(Published by Elsevier, Springer, Taylor's & Francis, Wiley, Sage Publications and indexed by Scopus, Web of Science and MathSciNet with high impact factor)
- Research Papers published in International Proceedings : 06
- Research Papers published in National Journals : 02
- Research Papers presented in International Conferences : 22
- Research Papers presented in National Conferences : 05
- **Total Research Contribution : 100**

Research Guidance:

- **Ph.D. Degree Awarded Students : 08**
(Two interdisciplinary students from Thermal and Structural Engineering each)
- M. Phil. Degree Awarded students : 02
- M.Sc. Projects Completed : 10
- Ph.D. students in progress : 07

Research Projects:

- Completed Major Research Project Sanctioned and funded by UGC of Rs. 10, 42,500/- (Rs. Ten lakhs forty two thousand and five hundred only), entitled, "Mixed boundary value problems in thermoelasticity and its applications in Engineering". For the three years during 1st July 2015 to 30th June 2018.
- Completed Major Research Project Sanctioned and funded by UGC of Rs. 4, 79,000/- (Rs. Four Lakhs seventy nine thousands only) entitled, "Critical study of thermoelastic problems", for three years during 1st April 2007 to 31st March 2010.

Multidisciplinary Collaboration

- Considering interdisciplinary and multidisciplinary relevance of my research area, I have done collaborative research work in the area of Thermal Engineering and Structural Engineering at Government College of Engineering, Chatrapati Sambhajnagar, an Autonomous Institute of Government of Maharashtra. Two students of Thermal Engineering and Structural Engineering each awarded Ph.D. degree in my position as a Associate Research Guide.

Professional Activities and Contribution:

- **NEP 2020:** Actively contributing in the implementation of National Education Policy (NEP 2020) at University of Mumbai, Mumbai at UG and PG level.
- **NAAC:** Served as a Co-ordinator of SSR III of National Assessment and Accreditation Council (NAAC) at University of Mumbai, Mumbai.
- **NIRF:** Contributed in National Institutional Ranking Framework (NIRF) at University of Mumbai, Mumbai.
- **UDRF:** Contributed in University Department Ranking Framework (NIRF) at University of Mumbai, Mumbai.
- **IQAC:** Working as a Member of Internal Quality and Assurance Cell (IQAC) at University of Mumbai, Mumbai.
- **PM USHA:** Contributed in the preparing proposal of Pradhan Mantri Uchchatar Shiksha Abhiyan at University of Mumbai, Mumbai.
- **Syllabus Designing and Curriculum Development:** Actively contributed in the syllabus designing and academic curriculum development in the capacity of Chairman/ Member of Board of Studies (BOS) at the Post Graduate and Under Graduate Level in the various academic Institutes and Universities.

Honours and Achievements:

- Awarded a travel support grant to attend and contribute to the **International Congress of Mathematicians (ICM)** which will be held July 23 - 30, 2026 in Philadelphia, Pennsylvania, USA. Travel support is offered by the **American Mathematical Society (AMS)** with generous funding from the Simons foundation and in collaboration with the International Mathematical Union (IMU) and its Commission for Developing Countries (CDC).
- Honoured by the Best Teacher Award in the academic year 2022-23 by University of Mumbai.
- Delivered Keynote/ Expert Invited lectures at National and International level Conferences/ Seminars/ Workshops etc.
- Chaired technical sessions in National and International Conferences/ Seminars.
- Recognized Ph.D. Supervisor in Mathematics, University of Mumbai.
- Ex recognized Ph.D. Supervisor in Mathematics, RTM Nagpur University.
- Ex recognized Associate Ph.D. Supervisor in Mechanical and Structural Engineering

(Interdisciplinary Research Work), Government College of Engineering, Chatrapati Sambhajanagar, an Autonomous Institute of Government of Maharashtra.

- Ph.D. Thesis examiner of Indian University.
- Life member of ISTE, ISTAM, IMS, MMS etc.
- Served as a member of **Academic Council**, University of Mumbai, Mumbai.
- Contributed as a **Chairman BOS** in Mathematics, University of Mumbai, Mumbai.
- Member of BOS in Mathematics, University of Mumbai, Mumbai.
- Ex member of RRC in Mathematics, University of Mumbai, Mumbai.
- Member of BOS in Mathematics, an Autonomous Institute, Government of Maharashtra, Government College of Engineering Jalgaon and Chatrapati Sambhajanagar.
- Member of BOS in Mathematics, RTM Nagpur University.
- Ex Member of BOS in Mathematics, Dr. Bhaba University, Mumbai.
- Member of BOS in Mathematics, Mithibai College, an Autonomous Institute, Mumbai.
- Ex Member of Board of Studies in Mathematics, Gondwana University, Gadchiroli.
- Ex Member of Life Long Learning and Extensions, University of Mumbai.
- Actively worked in Syllabus designing of B.Sc. and M.Sc. University of Mumbai.
- Designed Computational Lab for the purpose of Soft Computing skills.
- Actively worked in students related activities like admission, examination, cultural etc.

Participation in Professional Academic Activities :

- Best Practices in Higher & Technical Educational Institutes, NAAC, Bengaluru.
- Academic Leadership, RUSA, University of Mumbai.
- NAAC Awareness Programme for Universities, NAAC, Bengaluru.
- Moodle Learning Management System, IQAC, University of Mumbai.

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