



Faculty Details

Dr.	Raj	Kumar	Photograph
Designation	Assistant Professor		
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	Residence	-	
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Web Page	ORCID: <a href="https://orcid.org/0000-0001-6959-4351">https://orcid.org/0000-0001-6959-4351</a> ResearchGate: <a href="https://www.researchgate.net/profile/Raj-Kumar-329?ev=hdr_xprf&amp;tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6ImxvZ2luIiwicGFnZSI6ImhvbWUiLCJwb3NpdGlvbil6Imdsb2JhYmEhIYWRlciJ9fQ">https://www.researchgate.net/profile/Raj-Kumar-329?ev=hdr_xprf&amp;tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6ImxvZ2luIiwicGFnZSI6ImhvbWUiLCJwb3NpdGlvbil6Imdsb2JhYmEhIYWRlciJ9fQ</a> Google Scholar: <a href="https://scholar.google.com/citations?user=USJWQSAAAAAJ&amp;hl=en">https://scholar.google.com/citations?user=USJWQSAAAAAJ&amp;hl=en</a>		

**Educational Qualification**

Degree	Institution	Year
Ph.D.	Mohanlal Sukhadia University, Udaipur	2024
M.Sc. (Mathematics)	Central University of Rajasthan, Ajmer	2017
B.Sc. (PCM)	Govt. Bangur College, Didwana, Nagaur, (Maharishi Dayanand Saraswati University, Ajmer)	2015
Sr. Secondary	Bharatiya Sikshan Santhan, Ladnun, Nagaur,	2012
Secondary	Sanskar Sr. Secondary School, Ladnun, Nagaurjjj	2010

**Career Profile**

Dr. Raj Kumar currently serves as an Assistant Professor in the Department of Mathematics at Zakir Husain Delhi College, University of Delhi, where he has been a faculty member since March 31, 2023. He earned his Ph.D. from the Department of Mathematics and Statistics at University College of Science, Mohanlal Sukhadia University in Udaipur, Rajasthan, India. His doctoral research focused on the innovative fields of bicomplex space and fractional calculus, particularly the development of Riemann-Liouville fractional differential and integral operators within bicomplex frameworks.

Dr. Kumar is embarking on the analysis of various fractional operators across a broad range of frequency domains. His scholarly contributions include a significant publication in the esteemed *Mathematical*

*Methods in the Applied Sciences* (Wiley, SCI, Q1), followed by articles in other prestigious international journals, including *Advances in Applied Clifford Algebras* (Springer, SCIE) and the *Proceedings of the National Academy of Sciences, India: A Physical Sciences* (SCI, Q2).

In addition to his research, Dr. Kumar serves as a reviewer for the *American Journal of Mathematical and Computer Modelling* (Science Publishing Group, USA). He has presented his research at numerous international conferences and has been invited as a key resource person to deliver talks at various institutions. He actively participates in workshops, webinars, seminars, and lecture series organized at both national and international levels by esteemed universities.

Dr. Kumar has excelled in various national-level examinations, including CUCET, IIT-JAM, NBHM, and CSIR-UGC NET, achieving an All India Rank under 100 in each and earning the Junior Research Fellowship (JRF) and subsequently the Senior Research Fellowship (SRF) from UGC-India. He was also selected for the Mathematics Training and Talent Search (MTTS) Program in 2016 while studying at IIT-Madras.

During his undergraduate studies, he was recognized for his outstanding performance in sports and secured first place at the Youth Development Centre (YDC). He was awarded the Gold Medal for academic excellence and achieved the top position in each year of his graduation. As captain of his college cricket team, he demonstrated leadership both on and off the field. Additionally, Dr. Kumar holds a yellow belt in karate. He has been imparting knowledge to undergraduate students since 2017, demonstrating his commitment to education and mentorship.

### **Administrative Assignments**

Worked as

1. Member, New Building Committee, Zakir Husain Delhi College

Working as

1. Member, Enabling Unit, Zakir Husain Delhi College
2. Member, Sport Advisory Committee, Zakir Husain Delhi College

### **Areas of Interest / Specialization**

Bicomplex Analysis, Fractional Calculus, Special Functions, Electromagnetics

### **Subjects Taught**

1. Complex Analysis
2. Group Theory-2
3. Differential Equations
4. Group Theory
5. Real Analysis
6. Calculus
7. Algebra
8. Probability and Statistics
9. Linear Algebra
10. Mathematica
11. Python
12. Sequence and Series of Functions
13. Number Theory
14. Theory of Equations and Symmetries

**Research Guidance**

NIL

**Publications Profile**

1. Goswami M.P. and Kumar R. Riemann–Liouville fractional operators of bicomplex order and its properties. *Math Meth Appl Sci.* (A Wiley Journal), 45; 1-22. IF-2.321, doi:10.1002/mma.8135
2. Goswami M.P. and Kumar R. Generalization of Riemann-Liouville operators in bicomplex space and its applications. *Mathematics and Statistics* 11(5): 802-815, 2023 DOI: 10.13189/ms.2023.110506
3. Goswami M.P. and Kumar R. The Laplace Bicomplex Transform of Riemann-Liouville Fractional Operators: Properties and Implications, *Journal of Rajasthan Academy of Physical Sciences*, 21(3 & 4), 223-242.
4. Goswami M.P. and Kumar R. Bicomplex Fourier Transform of Riemann-Liouville Fractional Operators of Bicomplex Order and Application, *Applied Mathematics-A Journal of Chinese Universities*
5. Goswami M.P. and Kumar R., and Agarwal R.P. Bicomplex Mellin Transform of Riemann-Liouville Fractional Operators of Bicomplex Order and Applications, *Special Functions and Integral Transforms*
6. Goswami M.P. and Kumar R. Bicomplex Green's Theorem and Application, *Ukrainian Mathematical Journal*.
7. Goswami M.P. and Kumar R. Bicomplex Caputo Derivative: A Comparative Study with Bicomplex Riemann–Liouville Operators and Applications, *Proc. Natl. Acad. Sci., India, Sect. A Phys. Sci.* <https://doi.org/10.1007/s40010-024-00885-9>

**Conference Organization/ Presentations**

1. Presented a paper entitled **Riemann-Liouville fractional operators of bicomplex order and its properties** in **International Virtual Conference on Recent Applications of Mathematical Sciences (RAMS-2021)** organized by Department of Mathematics & Statistics, University College of Science, Mohanlal Sukhadia University, Udaipur-313001 (Raj.), India, from 15th to 16th July, 2021.
2. Presented a paper entitled **Riemann-Liouville fractional operators of bicomplex order for functions of bicomplex variables and applications** in **The 4th International Conference on Mathematical Modelling, Applied Analysis and Computation-2021 (ICMMAAC-21) (A virtual conference)** organized by Department of Mathematics, Faculty of Science, JECRC University, Jaipur (Raj.), India, from 5th to 7th August, 2021.

**Research Projects (Major Grants/Research Collaboration)**

NIL

### Awards and Distinctions

1. Cleared (**JRF**) CSIR-UGC NET Exam December-2018.
2. Cleared IIT-JAM-2016 and CUCET-2015.
3. Selected for **MTTS-2016** (Mathematics Training and Talent Search Program) and **attended** at **IIT-Madras** from May 23rd to June 18th, 2016.
4. Secured **First position** at college level in **B.Sc. III year**-2015.
5. Awarded for **Outstanding Performance in Sports and Youth Development Center** at college-2015.
6. Secured **First position** at college level in **B.Sc. I year** - 2013.
7. Secured **First position** at school level in **Intermediate** – 2012.
8. Secured **First position** at Tehsil level in **High School** – 2010

### Association With Professional Bodies

Nil

### Other Activities

#### 1. Membership and Extra Curricular:

- (i) Passed the requirements in mental and physical development for the rank of **SICHI** and awarded with **Yellow Belt** by **Seiko Kai Karate International India**, approved by **Karate India Organization (KIO)**, affiliated with **World Karate Federation (WKF)**, recognized by **International Olympic Committee (IOC)**
- (ii) **Lifetime membership** of MathTech Thinking Foundation (MTTF)UID - MTTF3017660
- (iii) Worked as **Department Representative (DR)**, Department of Mathematics, Central University of Rajasthan, Ajmer 2016-2017

#### 2. Webinar/ Seminar/Workshop/STTP/ Lecture Series

- (i) Participated in **Online Workshop on Assessment** by **Professor S. Kumaresan**, organized by Mathematics Training and Talent Search (**MTTS**) Trust, from 7th to 8th January, 2022.
- (ii) Participated in the **webinar** on Scope of **Career in Data Science and Artificial Intelligence through Mathematics**, organized by the Department of Mathematical Sciences, **P.D. Patel Institute of Applied Sciences**, Charotar University of Science and Technology, Changa, Anand, 388421, Gujarat, India, on 7th August, 2021.
- (iii) Participated in three days virtual training **workshop** on **Publication, Scopus Indexed Journals** jointly organized by Research, Community Service, Industry Linkage and Technology Transfer Directorate, MTU, Tepi Campus, **Ethiopia** in collaboration with **MathTech Thinking Foundation**, India, from 29th to 31st July, 2021.
- (iv) Participated in **webinar** on **Research Opportunities in Mathematics** organized by BPHE society's Ahmednagar College, Ahmednagar, Department of Mathematics, on 26<sup>th</sup> July, 2021.
- (v) Participated in **One-week International Virtual Workshop on LaTeX and Statistical Analysis Using MATLAB: An Indispensable Tool for Researchers and Scientists** organized by **MTTF- Society of Computational Mathematics**, Registration UID: TWLSA2205003, from 22nd to 28th May 2021.

- (vi) Participated in **35th Annual Conference of the RAMANUJAN MATHEMATICAL SOCIETY** organized by Department of Mathematics, **Central University of Rajasthan**, from 28th to 30th December, 2020.
- (vii) Participated in Virtual **Lecture Series on Theory and Application of Special Functions and Fractional calculus** organized by Department of Mathematical Science, **P. D. Patel Institute of Applied Science**, Charotar University of Science and Technology, Changa, Gujrat, from 25th to 27th September, 2020.
- (viii) Participated in **A two-day International Webinar on Algebra, Analysis and Topology** organized by Department of Mathematics, Bankura University and Bankura Mathematical Society, **Bankura University**, from 13th to 14th August, 2020.
- (ix) Attended two-day **workshop on Research Methodology** organized by the office of the Research Representative and the office of the Dean, Post Graduate Studies, **Mohanlal Sukhadia University, Udaipur**, from 28th to 29th January, 2020.
- (x) One-week **STTP on Fractional Calculus Applications in Control, Computing, Signal and Image Processing** at RAIT, Nerul, **Navi Mumbai**, from 2nd to 7th December 2019.