

ACADEMIC PROFILE



DR. KOUSHIK DAS

Assistant Professor in Mathematics (W.B.E.S.) (presently serving on additional charge as Officer on Special Duty (OSD) in the Education Directorate, Department of Higher Education, Government of West Bengal,)

M.Sc., Ph.D.

Email: koushikdas.maths@gmail.com

- **Specialization:** Applied Functional Analysis and Optimization, Advanced Algebra, Operator Theory and Graph Theory
- **Date of joining in this college:** 05.02.2025
- **Total teaching experience in college level:** 11 years 4 months
- **Area of research:** Set-valued Optimization, Nonlinear Optimization, Optimization Theory
- **Title of Ph.D. thesis (if any):** Set-Valued Optimization Problems under Generalized Cone Convexity
- **Research guidance (if any):** Nil
- **Research projects [completed / ongoing] (if any):** Nil
- **List of publications:**

A. Published papers in Journals:

[1] Koushik Das. “Set-valued minimax programming problems under higher-order σ -arcwisely connectivity”. In: SeMA J. (2025), pp. 1–23. doi: <https://doi.org/10.1007/s40324-025-00390-y>.

[2] Koushik Das. “Set-valued fractional-type optimization problems with κ -cone arcwise connectedness of higher-order”. In: Control Cybernet. 53.4 (2024), pp. 503–532. doi: <https://doi.org/10.2478/candc-2024-00021>.

[3] Koushik Das and C. Nahak. “Sufficiency and duality for set-valued optimization problems with κ -cone arcwise connectedness of higher-order”. In: Opsearch (2025), pp. 1–25. doi: <https://doi.org/10.1007/s12597-025-00922-0>

- [4] Koushik Das. “Set-valued minimax fractional programming problems with higher-order ρ -cone arcwise connectedness”. In: Jnanabha 54.2 (2024), pp. 120–130. doi: <https://doi.org/10.58250/jnanabha.2024.54211>
- [5] Koushik Das. “Set-valued optimization problems with higher-order (p, r) - ρ -cone arcwise connectedness”. In: J. Adv. Math. Stud. 17.4 (2024), pp. 398–413.
- [6] Koushik Das. “Higher-order Mond-Weir duality of set-valued fractional minimax programming problems”. In: Yugosl. J. Oper. Res. (2024), pp. 1–27. doi: <https://doi.org/10.2298/YJOR231215046D>
- [7] Koushik Das. “Higher-order σ -cone arcwisely connectedness in optimization problems associated with difference of set-valued maps”. In: Results Control Optim. 16 (2024), 1–18 (100440). doi: <https://doi.org/10.1016/j.rico.2024.100440>.
- [8] N. Abdulaleem, J. Cen, and Koushik Das. “Sufficiency and duality for E-differentiable vector optimization problems under generalized convexity”. In: Hacet. J. Math. Stat. 54.1 (2024), pp. 125–141. doi: <https://doi.org/10.15672/HJMS.xx>.
- [9] Koushik Das. “Set-valued semi-infinite programming problems with τ -cone arcwise connectedness of higher-order”. In: Dyn. Contin. Discrete Impuls. Syst. Ser. A Math. Anal. 31.4 (2024), pp. 251–278.
- [10] Koushik Das. “Set-valued parametric optimization problems with higher-order ρ -cone arcwise connectedness”. In: SeMA J. 81.4 (2024), pp. 589–607. doi: <https://doi.org/10.1007/s40324-023-00344-2>.
- [11] Koushik Das, I. Ahmad, and S. Treanta. “Cone arcwise connectivity in optimization problems with difference of set-valued mappings”. In: SeMA J. 81.3 (2024), pp. 511–529. doi: <https://doi.org/10.1007/s40324-023-00338-0>.
- [12] Koushik Das, S. Treanta, and T. Botmart. “Set-valued minimax programming problems under σ -arcwisely connectivity”. In: AIMS Math. 8.5 (2023), pp. 11238–11258. doi: <https://doi.org/10.3934/math.2023569>.
- [13] Koushik Das, S. Treanta, and M. B. Khan. “Set-valued fractional programming problems with σ -arcwisely connectivity”. In: AIMS Math. 8.6 (2023), pp. 13181–13204. doi: <https://doi.org/10.3934/math.2023666>.
- [14] Koushik Das. “Second-order optimality conditions and duality theorems for set-valued semiinfinite programming problems”. In: Dyn. Contin. Discrete Impuls. Syst. Ser. A Math. Anal. 30.3a(2023), pp. 219–242.

- [15] Koushik Das and S. Treanta. “Constrained controlled optimization problems involving second order derivatives”. In: Quaest. Math. 46.6 (2023), pp. 1093–1103. doi: <https://doi.org/10.2989/16073606.2022.2055506>.
- [16] Koushik Das. “Set-valued minimax fractional programming problems under ρ -cone arcwise connectedness”. In: Control Cybernet. 51.1 (2022), pp. 43–69. doi: <https://doi.org/10.2478/candc-2022-0004>.
- [17] Koushik Das. “Optimality conditions for parametric set-valued optimization problems via second order contingent epiderivative”. In: J. Adv. Math. Stud. 15.2 (2022), pp. 194–208.
- [18] Koushik Das and M. E. Samei. “Using ρ -cone arcwise connectedness on parametric set-valued optimization problems”. In: J. Inequal. Appl. 57 (2022), pp. 1–17. doi: <https://doi.org/10.1186/s13660-022-02792-2>.
- [19] M. Hsini, L. Mbarki, and Koushik Das. “Existence of solutions of anisotropic problems with variable exponents with robin boundary conditions”. In: Math. Notes 112.6 (2022), pp. 898–910. doi: <https://doi.org/10.1134/S0001434622110244>.
- [20] Koushik Das. “On constrained set-valued optimization problems with ρ -cone arcwise connectedness”. In: Sema J. (2022), pp. 1–16. doi: <https://doi.org/10.1007/s40324-022-00295-0>.
- [21] Koushik Das, S. Treanta, and T. Saeed. “Mond-Weir and Wolfe duality of set-valued fractional minimax problems in terms of contingent epi-derivative of second-order”. In: Math. 10.6 (2022), p. 938. doi: <https://doi.org/10.3390/math10060938>.
- [22] Koushik Das. “Sufficiency and duality of set-valued fractional programming problems via second order contingent epiderivative”. In: Yugosl. J. Oper. Res. 32.2 (2022), pp. 167–188. doi: <https://doi.org/10.2298/YJOR210218019D>.
- [23] Koushik Das. “Set-valued optimization problems with (p, r) - ρ -cone arcwise connectedness”. In: Jnanabha 51.2 (2021), pp. 249–260. doi: <https://doi.org/10.58250/Jnanabha.2021.51232>.
- [24] Koushik Das and S. Treanta. “On constrained set-valued semi-infinite programming problems with ρ -cone arcwise connectedness”. In: Axioms 10.4 (2021), p. 302. doi: <https://doi.org/10.3390/axioms10040302>.
- [25] S. Treanta and Koushik Das. “On robust saddle-point criterion in optimization problems with curvilinear integral functionals”. In: Math. 9.15 (2021), p. 1790. doi: <https://doi.org/10.3390/math9151790>.
- [26] Koushik Das and C. Nahak. “Parametric set-valued optimization problems under generalized cone convexity”. In: Jnanabha 51.1 (2021), pp. 1–11. doi: <https://doi.org/10.58250/Jnanabha.2021.51101>.

- [27] Koushik Das, C. Nahak, and D. Roy. "Set-valued optimization problems under cone convexity". In: U.P.B. Sci. Bull., Ser. A 83.4 (2021), pp. 69–82.
- [28] Koushik Das and C. Nahak. "Set-valued optimization problems via second-order contingent epiderivative". In: Yugosl. J. Oper. Res. 31.1 (2021), pp. 75–94. doi: <https://doi.org/10.2298/YJOR191215041D>.
- [29] Koushik Das and C. Nahak. "Sufficiency and duality of set-valued semi-infinite programming problems under generalized cone convexity". In: Acta Univ. M. Belii Ser. Math. 2020 (2020), pp. 95–111.
- [30] Koushik Das and C. Nahak. "Optimality conditions for set-valued minimax fractional programming problems". In: SeMA J. 77.2 (2020), pp. 161–179. doi: <https://doi.org/10.1007/s40324-019-00209-7>.
- [31] Koushik Das and C. Nahak. "Optimality conditions for set-valued minimax programming problems via second-order contingent epiderivative". In: J. Sci. Res. 64.2 (2020), pp. 313–321. doi: <https://doi.org/10.37398/JSR.2020.640243>.
- [32] Koushik Das and C. Nahak. "Sufficiency and duality in set-valued optimization problems under (p, r) - ρ - (η, θ) -invexity". In: Acta Univ. Apulensis 62 (2020), pp. 93–110. doi: <https://doi.org/10.17114/j.aua.2020.62.08>.
- [33] Koushik Das and C. Nahak. "Optimization problems with difference of set-valued maps under generalized cone convexity". In: J. Appl. Math. Inform. 35.1–2 (2017), pp. 147–163. doi: <https://doi.org/10.14317/jami.2017.147>.
- [34] Koushik Das and C. Nahak. "Set-valued minimax programming problems under generalized cone convexity". In: Rend. Circ. Mat. Palermo 66.3 (2017), pp. 361–374. doi: <https://doi.org/10.1007/s12215-016-0258-6>.
- [35] Koushik Das and C. Nahak. "Approximate quasi efficiency of set-valued optimization problems via weak subdifferential". In: SeMA J. 74.4 (2017), pp. 523–542. doi: <https://doi.org/10.1007/s40324-016-0099-4>.
- [36] Koushik Das and C. Nahak. "Optimality conditions for approximate quasi efficiency in set-valued equilibrium problems". In: SeMA J. 73.2 (2016), pp. 183–199. doi: <https://doi.org/10.1007/s40324-016-0063-3>.
- [37] Koushik Das and C. Nahak. "Set-valued fractional programming problems under generalized cone convexity". In: Opsearch 53.1 (2016), pp. 157–177. doi: <https://doi.org/10.1007/s12597-015-0222-9>.
- [38] Koushik Das and C. Nahak. "Sufficiency and duality of set-valued optimization problems via higher-order contingent derivative". In: J. Adv. Math. Stud. 8.1 (2015), pp. 137–151.

[39] T. K. Dutta, S. Kar, and Koushik Das. “Power ternary semirings”. In: Afrika Mat. 26.7-8 (2015), pp. 1483–1494. doi: <https://doi.org/10.1007/s13370-014-0300-9>.

[40] Koushik Das and C. Nahak. “Sufficient optimality conditions and duality theorems for set-valued-optimization problem under generalized cone convexity”. In: Rend. Circ. Mat. Palermo 63.3 (2014), pp. 329–345. doi: <https://doi.org/10.1007/s12215-014-0163-9>.

B. Published papers in Seminars/Symposia/Conferences: NIL

C. Published Books / Chapters in Books:

[1] S. Kar and Koushik Das. “On k-regular ternary semirings”. In: Proceedings of the International Conference on Algebra 2010: Advances in Algebraic Structures. World Scientific. 2012, pp. 356–368. doi: https://doi.org/10.1142/9789814366311_0024.

[2] Koushik Das and C. Nahak. “Solutions of Parametric Set-Valued Optimization Problems of Higher-Order”. In: Computational Intelligence for Data Analysis, Optimization Techniques for Decision-making and Information Security, Editors: V. Kumar, M. Mittal and A. Kumari, Bentham Science Publishers Pte. Ltd., Singapore 3 (2024), pp. 18–35. doi: <https://doi.org/10.2174/9789815196320124030005>.

D. Participation in Seminars/Symposia/Conferences/Workshops:

Title of the invited lecture /paper (oral/poster) presented	Title of Conference /Seminar with date	Organized by	Level
Sufficient optimality conditions and duality theorems for set-valued optimization problem under generalized cone convexity (Oral)	41st Annual Conference of OMS & ICIMSC-2014, 4–5 Jan 2014	Dept. of Mathematics, KIIT University	International
Set-valued Optimization Problems under (p, r) - ρ - (η, θ) -invexity (Oral)	Research Scholars' Day 2014, 21–22 Jan 2014	Dept. of Mathematics, IIT Kharagpur	Institute
Approximate Quasi Efficiency in Set-valued Equilibrium Problems (Oral)	6th Research Scholars' Day, 13–14 Mar 2015	Dept. of Mathematics, IIT Kharagpur	Institute

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Optimization problems with difference of set-valued maps under generalized cone convexity (Contributed Oral Talk)	ICNDAO-2015, 9–11 Dec 2015	Dept. of Mathematics, Jadavpur University	International
Set-valued semi-infinite programming problems under generalized cone convexity (Oral)	ICRTMSA-2016, 9–11 Feb 2016	Dept. of Mathematics, University of Burdwan	International
Optimality conditions for approximate quasi efficiency in set-valued equilibrium problems (Oral)	National Seminar on Analysis and Applications, 10–11 Mar 2016	Dept. of Mathematics, West Bengal State University	National
Set-valued minimax programming problems under generalized cone convexity (Oral)	TOPAS-2017, 16–17 Dec 2017	Dept. of Mathematics, IIT Kharagpur	National
Set-valued fractional programming problems under generalized cone convexity (Oral)	NSCTMA-2019, 8 Mar 2019	Dept. of Mathematics, Jadavpur University	National
Sufficiency and Duality in Set-Valued Optimization Problems under (p, r) - ρ - (η, θ) -Invexity (Oral)	MSAST 2019, 21–23 Dec 2019	IMBIC	International
Approximate quasi efficiency of set-valued optimization problems via weak subdifferential (Oral)	ICAACA-2020, 20–22 Jan 2020	Dept. of Mathematics, Jadavpur University	International
Optimality conditions for set-valued optimization problems via second-order contingent epiderivative (Oral)	National Webinar on Recent Advances in Mathematics, 24 Aug 2020	Dept. of Mathematics & IQAC, WBSU	National

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Sufficiency and duality of set-valued fractional programming problems via second-order contingent epiderivative (Oral)	MAA 2020, 2–4 Nov 2020	Dept. of Mathematics, NIT Jamshedpur	International
Set-valued minimax fractional programming problems via second-order contingent epiderivative (Oral)	Studies on Scientific Developments..., 1–3 Feb 2022	Turkish Journal of Mathematics	International
Set-valued fractional programming problems with σ -arcwisely connectivity (Oral)	RTAM-2024, 14–15 Mar 2024	Dept. of Applied Mathematics, University of Calcutta	National
On constrained set-valued optimization problems with ρ -cone arcwise connectedness (Oral)	NSAADMA-2024, 3 Apr 2024	Dept. of Mathematics, Sree Chaitanya College	National
Sufficiency and duality for set-valued optimization problems with higher-order κ -cone arcwise connectedness (Oral)	ICRAMDS-2024, 27–28 Jun 2024	MANIT Bhopal	International
Set-valued minimax programming problems with higher-order sigma-cone arcwise connectedness (Oral)	ICFS-2025, 10–11 Sep 2025	Krishnagar Government College	International

➤ Participation in OP/RC/FIP/FDP:

Name of the Course	Place	Duration	Sponsoring Agency
66th Orientation Programme	UGC - HRDC, Jadavpur University	21.08.2017 to 18.09.2017	UGC
Refresher Course in Mathematics	UGC - HRDC, University of North Bengal	07.12.2018 to 27.12.2018	UGC

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Inter/Multidisciplinary Refresher Course in Oceanic Studies	Online by the UGC-Human Resource Development Centre, University of Calcutta, in the Department of Marine Science, University of Calcutta	February 07-22, 2023	UGC
NEP 2020 Orientation & Sensitization Programme	University of Calcutta	05.02.2024 to 15.02.2024	University of Calcutta
Faculty Development Programme on 'Latest Trends on Computational Mathematics - Theory, Methods & Applications'	Department of Mathematics, JIS University	26.02.2024 to 01.03.2024	Department of Mathematics, JIS University
Faculty Development Program on "Navigating the Future with Cutting-Edge Technology"	UEM Kolkata in association with HRDC, IEM-UEM Group	18th March to 22nd March, 2024	UEM Kolkata in association with HRDC, IEM-UEM Group
NEP 2020 Orientation & Sensitization Programme	UGC-Malaviya Mission Teacher Training Centre, Central University of Gujarat	12th April to 22nd April 2024	UGC-Malaviya Mission Teacher Training Centre, Central University of Gujarat
NEP 2020 Orientation & Sensitization Programme	UGC-Malaviya Mission Teacher Training Centre, University of Calcutta	07.05.2024 to 17.05.2024	UGC-Malaviya Mission Teacher Training Centre, University of Calcutta
Short Term Course on "Research Methodology" (Sciences)	UGC-Malaviya Mission Teacher Training Centre, Bharathiar University, TamilNadu	06.08.2025 to 12.08.2025	UGC-Malaviya Mission Teacher Training Centre, Bharathiar University, TamilNadu
Short Term Program on Women, Work and Labour in Contemporary Times	UGC-Malaviya Mission Teacher Training Centre, Pondicherry University, Pondicherry	01.09.2025 to 06.09.2025	UGC-Malaviya Mission Teacher Training Centre, Pondicherry University, Pondicherry
Refresher Course in Mathematical Sciences (Mathematics/ Statistics / Operational Research/ Computer Sciences)	Centre for Professional Development in Higher Education (CPDHE) UGC - Malaviya Mission Teacher Training Centre (MMTTC) University of Delhi Delhi - 110 007	3rd October 2025 to 16th October 2025	Centre for Professional Development in Higher Education (CPDHE) UGC - Malaviya Mission Teacher Training Centre (MMTTC) University of Delhi Delhi - 110 007

➤ **Membership of Learned Societies/ Editorial Boards, etc. (if any):**

1. Life Member of Calcutta Mathematical Society, Life Membership Card No.: LD/107
2. Member of International Society on Multiple Criteria Decision Making
3. Member of Working Group on Generalized Convexity (WGGC)

➤ **Patents (if any): Nil**

➤ **Awards (if any):**

1. Awarded National Scholarship by Govt. of West Bengal at the Secondary Stage in 2000
2. Qualified GATE 2009 conducted by Indian Institute of Technology Roorkee
3. Qualified National Eligibility Test (CSIR & UGC NET) in June 2009, December 2009 and December 2010
4. Awarded Junior Research Fellowship (UGC JRF) at Department of Mathematics, Jadavpur University on 21.07.2010
5. Awarded Junior Research Fellowship (CSIR JRF) at Department of Mathematics, Indian Institute of Technology Kharagpur on 19.07.2011
6. Awarded Senior Research Fellowship (CSIR SRF) at Department of Mathematics, Indian Institute of Technology Kharagpur on 01.08.2013

➤ **Other notable activities (if any):**

Alongside his academic and research pursuits, Dr. Das actively contributes to higher education administration through his role in the Education Directorate, supporting policy implementation, academic governance, faculty service matters, and institutional development across government-aided colleges of Bankura, Jhargram and Purba Bardhaman districts in West Bengal.
