



# Miranda House

## UNIVERSITY OF DELHI

**Dr. Meetu Bhatia Grover**  
**Associate Professor**  
**Department of Mathematics**  
**Miranda House**  
**University of Delhi**

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### Academic Qualifications

**Ph.D.** Department of Mathematics, University of Delhi, 2013.

**Title:** Some Aspects of Optimality and Duality in Vector Optimization.

**M.Phil.** Department of Mathematics University of Delhi, 2004.

**Title:** Various Aspects Of Set Valued Optimization.

Joint CSIR – UGC National Eligibility Test (NET) for Lectureship held on 25 June 2000,  
in the subject – Mathematical Sciences.

**M.A. Mathematics** Miranda House, University of Delhi 2000.

**B.A (H) Mathematics** Miranda House, University of Delhi, 1998.

**Field of Specialization:** Multiobjective Optimization, Vector Optimization.

**Total Teaching Experience:** ~ 22 years

### Teaching at Miranda House

S.No.	Position Held	From	To
1	Associate Professor AL 13 A	14.01.2017	Till Date
2	Assistant Professor AL 12	14.01.2014	13.01.2017
3	Assistant Professor AL 11	14.01.2009	13.01.2014
4	Assistant Professor (Permanent) AL 10	13.1.2009	
5	Assistant Professor (Temporary)	12.04.2006	12.01.2009
6	Lecturer (Ad hoc)	16.07.2002	07.04.2006



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### List of Publications

1. Suneja S.K., Grover M. B. and Kapoor M., Higher Order Optimality and Duality in Fractional Vector Optimization Over Cones, Tamkang Journal of Mathematics, Volume 48, pp 273-287, 2017 (ISSN:0049-2930).
2. Grover M.B. and Kapoor M., Higher-order duality for multiobjective optimization problems containing support functions over cones, Opsearch, Volume 53, Issue 3, pp 523–537, 2016 (ISSN:0030-3887).
3. Suneja S.K. and Bhatia M., Vector Optimization with Cone Semilocally Preinvex functions, An International Journal of Optimization and Control: Theories & Applications 4(1), 11-20, 2014 (ISSN:21460957).
4. Suneja S.K., Grover M. B. and Kapoor, M., Second Order Multiobjective Symmetric Duality in Vector Optimization over Cones Involving Rho ( $\rho$ ) Invexity, American Journal of Operational Research, 4(1), 1-9, 2014 (ISSN:23246537).
5. Suneja S.K., Sharma S., Grover M. B. and Kapoor M., Different Approach to Cone-Convex Optimization, American Journal of Operations Research, 3, 536-541, 2013 (ISSN:21608830).
6. Suneja S.K., Grover M. B. and Kapoor M., Rho( $\rho$ )-Cone Convexity and its Generalizations in Vector Optimization, Mexican Journal of Operations Research, 2(1), 47-66, 2013 (ISSN:20075138).
7. Suneja S.K., Lohan P. and Bhatia M., Higher-order cone-pseudoconvex, quasiconvex and other related functions in vector optimization, Optimization Letters, 7, 647-664, 2013 (ISSN: 18624472).
8. Bhatia M., Higher Order Duality in Vector Optimization over Cones, Optimization Letters, 6(1), 17-30, 2012 (ISSN:18624472).
9. Suneja S.K., Khurana S. and Bhatia M., Optimality and Duality in Vector Optimization Involving Generalized Type I Functions over Cones, Journal of Global Optimization, 49(1), 23-35, 2011 (ISSN:09255001).
10. Suneja S.K., Srivastava M. and Bhatia M., Higher Order Duality in Multiobjective Fractional Programming with Support Functions, Journal of Mathematical Analysis and Applications, 347, 8-17, 2008. (ISSN:0022-247X).
11. Suneja S.K. and Bhatia M., Cone Convexity and Related Functions in Optimization Over Topological Vector Spaces, Asia Pacific Journal of Operational Research, 24(6), 741-754, 2007 (ISSN:0217-5959).
12. Srivastava M. and Bhatia M., Symmetric Duality for Multiobjective Programming using Second Order  $(F, \rho)$ -Convexity, Opsearch, 43(3), 274-295, 2006 (ISSN: 0030- 3887).



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### Research Projects

1. Delhi University Innovation Project (2015-2017): (MH-309) Reward Network as A Form of Experiential Marketing (Rs. 2,34,595).
2. Delhi University Innovation Project (2013-2015): (MH-202) Gender Socialization: A Comparative Perspective of Patrilineal and Matrilineal Societies (Rs.2,01,211).
3. UGC Minor Research Project (2011-2012): A study of certain optimization problems and application of CAS PI: Dr. S.K. Suneja, (Rs.85,000).

### Membership Of Professional Bodies

1. A member of the working group on generalized convexity (wggc), founded during the 15<sup>th</sup> International symposium on mathematical programming in Ann Arbor (Michigan, USA), August 1994. It is a growing, interdisciplinary group of scholars from operations research, economics, Engineering, applied sciences, mathematics, statistics, among others, with an interest in Generalizations of the classical concept of a convex function.
2. Member of Mathematical Programming Seminar Group, Department of Mathematics, University of Delhi.

### Administrative Responsibilities

1. Nodal Officer Semester End University Examination, May - June 2021.
2. Member Task Group NIRF (2021, 2022, 2023).
3. Member Committee of Courses for Honors and Post-Graduate Studies in the Department of Mathematics, University of Delhi, Delhi (23.07.2020 to 22.07.2022).
4. Staff Advisor, Mathematics Society, Department of Mathematics, Miranda House (2020- till date).
5. Subject Expert Interview Panel (1 August 2019), The Department of Operational Research, University of Delhi for conducting Personal Interviews for admission in Master of Operational Research (MOR) Programme.
6. Teacher – in Charge Department of Mathematics, Miranda House from 1 August 2017 to 31 July 2019.
7. Member committee regarding fixation of pension as per 7th pay commission (2018-19), Miranda House.



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8. Deputy Coordinator Central Evaluation Centre at Miranda House during November – December 2018.
9. Facilitator and Mentor in the Inspire Internship and flavor of research Programme 2010, 2014, 2017, 2018 at the D. S. Kothari Centre for Research Innovation in Science Education, Miranda House.
10. Coordinator Intensive Interactive Programme, Management and Cultural Contexts, organized jointly by Miranda House, Sri Ram College of Commerce and Utrecht Business School, The Netherlands, from 25-29 January 2016 and 21-25 October, 2013.
11. Coordinated Intensive International Program at HU Business School Utrecht, University of Applied Sciences, Utrecht, The Netherlands, June 30 to July 4, 2014.
12. Coordinator of the add-on course Operations Research (2012-2014).
13. Member, Photography Society-Snapshot (2018- till date).
14. Member, Quiz Society, Jigyasa (2012-2017).
15. Member, International Collaborations, Exchange Programme and Research Initiative (2012-2016).
16. Member, College Connectivity Committee (2010-2012).
17. Member Working Group for Review of Tempest College festival (2010).
18. Member Film Club (2009-2011).
19. Member Placement Cell (2006-2008).
20. Faculty Advisor to Students Union, Miranda House, University of Delhi. (2006-2008).

### **Seminars/Workshops Organized**

1. Co-ordinated a two-day workshop on Group Theory at Department of Mathematics, from 27-29 January 2021.
2. Coordinated Lecture Series - Conceptual Introduction to Differential Calculus held online in September - October 2020.
3. Coordinated a two-day workshop - Calculus the Geometrical Way, held on 19-20 September 2019 at Miranda House, University of Delhi.

### **Seminars/Workshops/Conferences/FDP attended**

1. Participated in the 53rd Annual Convention of the ORSI and international webinar entitled “Role of Operation Research during Pandemic” in association with Operational Research Society of Nepal from 17-19, Dec 2020.



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2. One week FDP on “Advanced Pedagogical techniques”, from 29-10.2020 to 5.11.2020 organized by Teaching Learning Centre, Ramanujan College under the aegis of PMMMNMTT.
3. FDP held online on Development and Implementation of MOOCs, 21-27 October 2020 organized by Teaching Learning Centre under the aegis of PMMMNMTT Ramanujan College, University of Delhi.
4. FDP on ICT Enabled Teaching – Learning 07-13 September 2020, organized by Janki Devi Memorial College in collaboration with Teaching Learning Centre under the aegis of PMMMNMTT Ramanujan College, University of Delhi.
5. Participated in Transforming Teaching-Learning Process using ICT Tools, organized by PGDAV College, University of Delhi, from 28th to 30th August, 2020.
6. Participated in the National Webinar on Financial Mathematics: Pedagogy and Career Perspectives, organized by the Department of Mathematics, Lady Shri Ram College for Women, from July 27 to July 31, 2020.
7. Completed the Three-week online Certificate Course SLC-Course01 on “Introduction to Computer Algebra System: Maxima (An Open-Source Software)” from 27.06.20 to 18.07.20, Hansraj College.
8. FDP on Open-Source Tools for Research, 8-14 June 2020, organized by Teaching Learning Centre under the aegis of PMMMNMTT Ramanujan College, University of Delhi.
9. FDP on Managing Online Classes and Co Creating Moocs:2.0, 18 May – 3 June 2020, organized by Teaching Learning Centre under the aegis of PMMMNMTT Ramanujan College, University of Delhi.
10. FDP on Recent Trends in Research Methodology, E-Contents, Mathematical and Statistical Methods in Open Education World, 17-23 December 2019, Organized by Kalindi College in collaboration with Mahatma Hansraj Faculty Development Centre (MHRFDC) PMMMNMTT Hansraj College, University of Delhi.
11. Participated in Workshop on Computational Optimization on 5 February 2016 organized by Department of Mathematics, Sri Venkateswara College, University of Delhi.
12. Participated in the International Conference on International Conference on Recent Advances in Optimization Theory and Applications (RAOTA-2016) held at University of Delhi, North Campus, from January 30 to 31, 2016.
13. Participated in the 4 weeks UGC sponsored Orientation Programme (OR-78) conducted by the Centre for Professional development and Higher Education (CPDHE), University of Delhi from November 10, 2014 to December 6, 2014 and obtained grade A.
14. Participated in the 3 weeks/ 18 Days UGC sponsored Refresher Course conducted by the Centre for Professional development and Higher Education (CPDHE), University of Delhi in Mathematical Sciences (Mathematics/ Computers/ Operational Research/ Statistics) from December 14, 2013 to January 4, 2014.
15. Participated in the workshop on Foundation Course- Building Mathematical Ability, organized by UGC-ASC programme of the CPDHE, University of Delhi June 2013.



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16. Participated in the CIMPA- UNESCO-INDIA research school on Generalized Nash Equilibrium Problems, Bilevel programming and Mathematical Programming with Equilibrium Constraints, held at University of Delhi during November 25-December 6, 2013.
17. Participated in the International Conference, The Legacy of Srinivasa Ramanujan, held during 17-22 December 2012, University of Delhi.
18. Attended two-day International Workshop on Six Sigma, Lean Philosophy & Taguchi Methods, organized by ISI – Delhi, 4-5 February 2011.
19. Participated in ICWM 2010 held at University of Hyderabad, August 17-18, 2010.
20. Participated in the training programme on Optimization Theory and Applications, held during February 10-14, 2010 at Convention Centre, University of Delhi.
21. ILL Workshop Tier II "ICT Capacity building" conducted at MH from 11 – 16 January 2010.
22. Participated in the National Meet on History of Mathematical Sciences held at Conference Center, University of Delhi, 7-9 January 2010.
23. Presented the paper Vector Optimization with Cone Semilocally Preinvex Functions, at the 8th Triennial Conference of Association of Asia Pacific Operational Research Societies (APORS-2009) held at Jaipuria Institute of Management, Jaipur during December 6-9, 2009.
24. Attended the workshop on Paper I: Calculus (B.Sc. (Hons) Mathematics held on 22 September, 2009 at ILL (3rd Floor Library Building), South Campus.
25. Participated in the Pre-ICM, International Convention on Mathematical Sciences, held at Conference Centre, University of Delhi, December 18-20, 2008.
26. Completed a five-day Training Course on Statistical Package for Social Sciences (SPSS) organized by Delhi University Computer Centre from June 9 to June 13, 2008.
27. Participated in the Research Scholars' Seminar held at the Department of Mathematics, University of Delhi, during March 31- April 2, 2008 organized by UGC-DRS (SAP) programme of the Department of Mathematics, University of Delhi.
28. Attended a workshop on "Mathematical Awareness" on February 20, 2008 at South Campus University of Delhi.
29. Presented the paper Second Order Symmetric Duality in Vector Optimization over Cones, at the 40th Annual Convention of Operational Research Society of India, organized by ORSI, Delhi Chapter during December 4-6, 2007 at the Indian National Science Academy, New Delhi.
30. Presented the paper, Optimality and Duality in Vector Optimization involving Generalized Type-I Functions over Cones, at the 40th Annual Convention of Operational Research Society of India, organized by ORSI, Delhi Chapter from December 04 to December 06, 2007 at the Indian National Science Academy, New Delhi.



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31. Attended a workshop on Optimization and its Applications, organized by the Operational Research Society of India (ORSI), Delhi Chapter on November 29 - December 03, 2007 at New Convention Centre, University of Delhi, Delhi.
32. Participated in the International Symposium on Mathematical Programming for decision making: Theory and Applications, held at Indian Statistical Institute, Delhi during 10-11 January 2007.
33. Presented the research paper, Higher Order Duality in Multiobjective fractional programming with support functions, at the National Symposium on Recent Advances in Optimization Theory and Applications (RAOTA-2006) held at Academic Research Centre, University of Delhi during 27-28 October 2006.
34. Attended a workshop for application courses in Mathematics, Mathematics for Social Sciences, Basic Statistics and Computer Applications held from 27 to 28 July 2006 at South Campus.
35. Presented the research paper, Symmetric Duality for Multiobjective Programming using Second Order (F, $\rho$ )- Convexity, at the International Conference on Operations Research Applications in Infrastructure Development in conjunction with the 2005 annual convention of Operational Research Society of India, held at J. N. Tata Auditorium, National science seminar complex, Indian Institute of Science, Bangalore during December 27-29, 2005.
36. Participated in the Sixth International Conference of the Association of Asia Pacific Operational Research Societies within IFORS, held at hotel Grand Intercontinental, New Delhi, during December 8-11, 2003.