

CURRICULUM VITAE

Name: Dr. Ritu Arora

Designation: Assistant Professor (Stage III)

Department: Mathematics and Statistics

University: Gurukul Kangri (Deemed to be University) Haridwar-249404 (UK)

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Professional Summary

Over twenty year of teaching experience for undergraduate and post-graduation, actively involved in the research area of Metric Spaces, Fixed point theory, Fuzzy metric spaces, Wavelet Theory, Inventory Theory, Reliability theory, Sustainable Supply Chain, Smart Production Modelling, Bio-Energy Supply chain and Optimization.

Professional Experience (Assistant Professor-Mathematics)

- Gurukul Kangri (Deemed to be University), Haridwar, India March 2011-Till now
- Graphic Era University Jan 2005 - Mar 2011

Topic of Ph. D. Thesis: Existence of coincidence and fixed points of maps and relations

Membership of Professional Bodies:

- Life Membership of “Indian Society Technical Education”.
- Life Membership of “The Indian Science Congress Association”, Haridwar Chapter.
- Life Membership of “Him Science Congress Association (HSCA)” Himachal Pradesh.
- Life Membership of “The Indian Science Congress Association”.

Administrative Responsibility

- Member of Board of Studies.
- Member of Departmental Research Committee.
- Member of Time Table Committee.
- Member of Garbhasta Chattra Parampara
- Member of IQAC

Dissertation Guidance

S.No.	Name of the student	Topic of the dissertation	Date of Submission
1.	Sohan Singh	Operation research technique	1.7.2008
2.	Khushbu	An elastico-viscous second-grade fluid due to a rotating disc with uniform high suction	31.5.2017

3.	Sadiya	A study of evaluation of student's performance by using defuzzification techniques	28.9.2020
4.	Astha Goyal	Non-normal and non-solid cone in topological space	28.9 2020

Research Guidance (Ph.D.)

- Awarded Ph.D. Degree. 05
- Guiding Ph.D. Students. 03

Award

- Awarded for best oral presentation of research paper at GTER-2012 (international conference), Feb, 2012.

S. No.	Name of Research Scholar	Topic of Ph. D. Thesis	Date of Submission
1.	Mohit Kumar	Existence of fixed point theorems in fuzzy metric space	5.10.2016
2.	Narottam Singh Chauhan	A certain study of ordinary and partial differential equations through wavelets and multi-wavelets	15.05.2017
3.	Vaishali Tyagi	Reliability analysis of multi-state systems under various failure and repair strategies	22.02.2021
4.	Madhulika	Numerical Methods for Integral Equations and differential equations by using wavelets and operational matrix	24.05.2022
5.	Renu	Optimization of some production inventory model under fuzzy approach	29.07.2022

Publications in peer reviewed journals:

2024-2025

Prajwal Panwar, Anand Chauhan, Anubhav Pratap Singh and ***Ritu Arora** (23 May 2025), “ Multi-objective optimization of sustainable supply chain for multi-generation biofuels”, Process integration and optimization for sustainability ISSN No.1867-4943. impact factor 2.4 (2023).

<https://doi.org/10.1007/s41660-025-00533-8>

Prajwal Panwar, Anubhav Pratap Singh, Anand Chauhan and ***Ritu Arora** (07 April 2025) “Optimization of a macro-algae-based biodiesel supply chain: a multi-objective approach”. Discover Sustainability, 6 (248), pp.1-27 ISSN No. 2662-9984 (Open access) web of Science, ESCI, Scopus <https://doi.org/10.1007/s43621-025-01022-1> impact factor 2.4 (2023)

Divya Chauhan, Anubhav Pratap Singh, Anand Chauhan and ***Ritu Arora** (01 April 2025) “Sustainable supply chain: An optimization and resource efficiency in additive manufacturing for automotive spare part”, Sustainable futures ISSN No. 2666-1888 ESCI, impact factor (3.3).

Ritu Arora, Divya Chauhan, Anubhav Pratap Singh, Anu Sayal (16.01. 2025) “Smart manufacturing system with rework and partial outsourcing for battery industry”, Cleaner Engineering and Technology ISSN No. 2666-7908 Web of Science, ESCI, impact factor (5.3).

Ritu Arora, Anubhav Pratap Singh and Prajwal Panwar (23.01.2025), “Sustainable and resilient Seaweed derived Biofuel Production: A smart System”, Advances in Nonlinear Variational Inequalities vol. 28 (4) pp. 502-526, ISSN No. 1092-910X Scopus.

Narayan Sharma, Anand Chauhan, Anubhav Pratap Singh and ***Ritu Arora** (17.12.2024), Industry-Driven Optimization of Biomass-Based Fuel Production : Balancing Cost, Efficiency, and Sustainability, Biofuels ISSN No. 1759-7277 SCIE, impact factor (2.1) 2003 <https://doi.org/10.1080/17597269.2024.2435132>

Narayan Sharma, Anand Chauhan, Anubhav Pratap Singh and ***Ritu Arora** (11.11.2024), “Optimizing sustainable bio-fuel supply chain: a multi-objective model utilizing micro-algae resources”, Discover sustainability Vol. 5 ISSN No. 2662-9984 ESCI, impact factor (2.4) 2003 <https://doi.org/10.1007/s43621-024-00553-3>

2023-2024

Vaishali Tyagi, Mangey Ram, **Ritu Arora** (17 Feb 2024) “Coverage modelling of fault-tolerant system under copula and waiting repair policy”, Life Cycle Reliability and Safety Engineering, 13 (1), pp.1-14 ISSN No. 2520-1360 (Online) (Scopus).

Vaishali Tyagi, Mangey Ram, Monika Manglik, **Ritu Arora** (March 2024) “Vacation Policy for k-out-of-n Redundant System with Reboot Delay”, International Journal of Mathematical, Engineering and Management Sciences 9 (2), pp. 366-384 ISSN No. 2455-7749 (Open access) <https://doi.org/10.33889/IJMEMS.2024.9.2.020>. (Scopus and ESCI)

2022-2023

Sharma, R., Singh, A.P. ***Arora, R.**, Chauhan, A., (16 Nov 2022) “Effect of uncertainty in demand and production for manufacturing industries during COVID-19”, International Journal of Services and Operations Management, 43(3), 378-400. ISSN No. (Online) 1744-2370. <https://doi.org/10.1504/IJSOM.2020.10036954> (Scopus).

Arora, R., Chauhan, A. Sharma, R., & Singh, A. P., (2022). “Optimization of an EPQ model imprecise environment with defuzzification by the centroid method under inflation”, Operations Research and Decisions, 32(3), pp. 32-48. ISSN No. (Online) 1744-2289. <https://doi.org/10.37190/ord220303> (ESCI, Scopus, Web of Science)

2021-2022

Sharma R., Singh, A. P., **Arora, R.**, & Chauhan, A (May 2022) “Optimization of an inventory model for conclusive or inconclusive cost parameters using Triangular & Trapezoidal Fuzzy Numbers”, International Journal of Mathematics in operational research 21(4) pp.529-553 ISSN No. 1757-5869 <http://doi.org.10.1504/IJMOR.2022.122808> (Scopus).

Ritu Arora, Madhulika, Amit K. Singh, (17 Feb. 2022) “Numerical Method of Abel’s Type Integral Equations with Euler's Operational Matrix of Integration”, Palestine Journal of Mathematics, ISSN No. 2219-5688 <https://pjm.ppu.edu/> (Scopus).

Arora, R., Singh, A.P., Sharma, R. and Chauhan, A. (22 Oct. 21) “Remanufacturing inventory model to control the carbon emission using cap-and-trade regulation with hexagonal fuzzy

number” Benchmarking an international journal ISSN No. 1463-5771.
<https://doi.org/10.1108/BIJ-05-2021-0254> (Scopus & ESCI).

Mohit kumar, **Ritu Arora** & Ajay Kumar (March 2022) “Some Common Fixed Point Result of Multivalued Mapping on Fuzzy Metric Space” Int. J. Nonlinear Anal. Appl.13(1), pp. 653-662 ISSN No. 2008-6822 (electronic) <http://dx.doi.org/10.22075/ijnaa.2019.17938.1976>. (Scopus 2018-22)

2020-2021

Ritu Arora, A.K. Singh, M. Madhulika, (**May 2021**) “Numerical solution of integro-differential equations by using Euler's operational matrix of integration(Scopus)”, Journal of Mathematics in Engineering, Science and Aerospace (MESA), 12(2), pp. 373-382 ISSN No. 2041-3165 (Scopus).

Ritu Arora, A. P. Singh, R Sharma and A. Chauhan, (**24 March 2021**) “A fuzzy economic order quantity model with credibility induced demand and shortages,” Int. J. Services Operations and Informatics,” 11(1), pp.13-26, ISSN No. 1741-5403 (Scopus).

Ritu Arora, Pankaj Kumar Mishra and Sumit Bisht, (**July 2020**) “Fixed Point Theorem For Some Generalized Contraction in b-Metric Spaces (Scopus)”, 9 (7), pp. 4353-4361, ISSN No. 1857-8365 <https://doi.org/10.37418/amsj.9.7.5> (Scopus 2019-2021).

2019-2020

Ritu Arora, Vaishali Tyagi and Mangey Ram, (**February 2020**) “Multi-state system analysis with imperfect fault coverage, human error and standby strategies”, vol.41(2), pp. 214-231, ISSN No. 0257-4306 (Scopus).

Vaishali Tyagi, **Ritu Arora**, Mangey Ram and O. P. Yadav, (**27 August 2019**) “2-out-of 3: F system analysis under catastrophic failure”, Nonlinear studies, 26(3), pp. 557-574, ISSN No. 1359-8678 (Scopus).

Mohit Kumar, **Ritu Arora** and Ajay Kumar, (**24 Dec 2019**) “Hardy-Rogers Type Mappings for Fuzzy Metric Spaces”, Pure and Applied Mathematics Journal, 8(6), pp. 93-99. ISSN No. 2326-9760 (Print); ISSN No. 2326-9812 (online).

2018-2019

Ritu Arora, (**April 2019**) “Fixed Point Theorem for Hybrid Contractions”, JETIR 6(4), pp. 400-405 ISSN No. 2349-5162

Ritu Arora and N. S. Chauhan, (**July 2018**) “Bernoulli Wavelet Operational Matrix of Integration and its Application in Solving Differential Equations”, JETIR, 5(7). Pp.414-424 ISSN No. 2349-5162

Mohit Kumar and **Ritu Arora**, (**June 2018**) “Fixed Point Theorems for α - ψ -Contractive type Mappings in Fuzzy Metric Spaces”, Palestine Journal of Mathematics, 7 (1) pp. 329-336 ISSN No. 2219-5688 (Scopus).

2017-2018

Mohit Kumar and **Ritu Arora**, (**May 2017**), “Fixed Point of $\square\square\square\square$ Contractive Multifunction's in Fuzzy Metric Spaces” Journal of Applied Mathematics and Informatics, 35 (34), pp. 323-330 (ISSN 1598-5857).

2016-2017

Ritu Arora and N. S. Chauhan, (**Feb 2017**), “An Application of Legendre Wavelet in Fractional Electrical Circuits” Global Journal of Pure & Applied Mathematics, 13(2), pp. 183-202 ISSN No. 0973-1768 (Scopus).

2015-2016

Ritu Arora, (June 2016) “A Common Fixed Point Theorem for Weakly Compatible Mappings in 2-Metric Spaces, American Journal of Mathematics And Sciences, 5(1), pp.15-18, ISSN No. 2250-3102.

Ritu Arora and N. S. Chauhan, (**June 2016**) “An Efficient Decomposition Method for Solving Telegraph Equation through Quadratic Legendre Multiwavelets” International Journal of Applied and Computational Mathematics, 2(2), ISSN No. 2349-5103 <https://doi.org/10.1007/s40819-016-0178-3>

Ritu Arora, (2016) “A Common Fixed Point Theorem for Weakly Compatible Mappings in 2-Metric Spaces” American Journal of Mathematics and Sciences, 5(1) pp.15-18 ISSN No.2250-3102.

Ritu Arora and Mohit Kumar, (**May 2016**) “Extension of Matkowaski Contraction Principle in Fuzzy metric Space” Mathematical Sciences Letters An International Journal, 5(2) 175-178.

Ritu Arora and Mohit Kumar, (**April 2016**), “Unique Fixed Point theorems for $\square\square\square\square$ Contractive Type Mappings in Fuzzy Metric Space” Cogent Mathematics, 3 (1), pp. 1- 8 (web of science).

Ritu Arora and Mohit Kumar, (**Feb 2016**) “Relative asymptotic regularity and Fixed Points in Fuzzy 2-metric spaces” International Journal of Computer Applications,135(3).

2014-2015

Ritu Arora and Mohit Kumar, (**May 2015**), “Generalization of Matkowski Contraction principle in Fuzzy Metric Spaces, Global Journal of Pure and Applied Mathematics, 11(3), pp.1569-1576 ISSN No. 0973– 1768 (Scopus).

2013-2014

***Ritu Arora** and Mohit Kumar, (**2014**) “Fixed Point Theorems of System of Maps on Product of Fuzzy Metric Spaces”, International Journal of Mathematical Archive-5(6), pp. 50-56 ISSN No. 2229 – 5046.

2011-2012

***Ritu Arora,(2012)**, “Coincidence Theorem of System of Maps on Product Spaces”, International Journal of Mathematical Archive-3(7), pp. 2489-2494 ISSN No.2229-5046.

***Ritu Arora, (2011)** “A Fixed Point Theorem of Systems of Maps on Product Spaces”, Journal of Natural & Physical Sciences, 24(1), pp. 29-34 ISSN No. 097-3799.

2004

S. L. Singh and Ritu Arora, Coincidences and Fixed Point Theorem for Hybrid Contractions, Journal of Natural & Physical Sciences (**2004**).

Paper presentation in conferences/seminar:

1. Presented a paper entitled **“optimizing Generic Medicine Supply Chains using AI and RFID Technology”** in the International conference on Recent Trends & Innovations in Mathematics, Statistics and scientific Computing (IC-RTIMSSC-2025) 05-06 March 2025.
2. Presented a paper entitled **“Smart Manufacturing Inventory Model with Reworking of Imperfect Products and Partial Outsourcing”** in the 2nd International conference on computational and Mathematical Methods in applied Sciences (ICCMAS-2024) 29-30th March 2024.
3. Presented a paper entitled **“A Novel Scheme for the solution of differential equations through Muntz-Legendre Wavelets”** in the 13th International conference on SMART-2024(System Modelling & Advancement in Research Trends) 06-07 December 2024 organized by College of Computing Sciences & IT, Teerthanker Mahaveer University, Moradabad, UP, India.
4. Presented a paper entitled **“Optimization of smart production model with reworking and partial outsourcing”** in the 18th State Science and Technology Congress-2024, organized by Uttarakhand State Council for Science and Technology, Dehradun, 08-09 February, 2024 at Uttarakhand Open University, Haldwani.
5. Presented a paper entitled **“A Study on Smart Production Inventory Model with Reworking and Partial Outsourcing”** in the International conference on Mathematical Sciences and Its Applications to Artificial Intelligence (ICMSAAI-24), organized by Department of Mathematics, Faculty of Science & Humanities, SRM University Delhi-NCR, Sonapat Haryana, India, 17-19 January, 2024.
6. Presented a paper entitled **“Leveraging Additive Manufacturing for Cost Effective Automated Spare Part Supply Chains”** in the International conference on Recent Advances in Computational Mathematics and Sciences (RACMS), organized by Department of Mathematics and Statistics, Bhupal Nobels’ University, Udaipur (Raj.), India, October 17-18th, 2024.
7. Presented a paper entitled **“A Macro-Algae based sustainable Bio-Diesel Supply Chain Model”** in the International conference on International Conference on Veda Vijnana & Sanskriti MahaKumbh, organized by Gurukul Kangri (Deemed to be University), Haridwar, India, 23-25 December, 2023.
8. Presented a paper entitled **“Müntz-Legendre Wavelet Integral Operational Matrix of Fractional-Order and Its Applications for Solving the Fractional Electrical Circuits** in the International conference on Advances in materials for health, environment and circular economy (ICAMTHEC-2022), organized by School of Applied & Life Sciences (SALS), Uttranchal University, Dehradun, India, 25-26 November, 2022.
9. Presented a paper **“Müntz-Legendre Wavelet Integral Operational matrix of fractional-order and its applications for solving the Fractional Electrical Circuits”**, 5th International Conference on Mathematical Techniques in Engineering Applications” (ICMTEA 2021) December 3-4, 2021.
10. Presented a paper **“Optimization of a production inventory model of imperfect quality items for three layer supply chain in fuzzy environment”**, 4th International Conference on “Mathematical Modelling, Applied Analysis and computations-2021” (ICMMAA-21) August 5-7, 2021.
11. Presented a paper **“Numerical Solution of Integro-differential equations by using Euler Polynomial”**, “National Conference on Science & Technology for : Ruler Development

12. Presented a paper **“Existence of fixed point theorem for Matkowski type map on fuzzy metric spaces”**, International Conference on Mathematical Analysis and its applications (ICMAA-2019), held at Department of Mathematics, South Asian University, New Delhi, 14-16, December 2019.
13. Presented a paper **“Multi-State System Analysis with Imperfect Fault Coverage, Human Error and Stand by Strategies”**, 10th International Conference on Quality, Reliability, Infocom Technology & Business Operations, organized by Hillside College of Engineering SREQOM, held at Hotel Himalaya, Nepal, 18-21 June 2019.
14. Presented a paper **“Numerical Solutions of Singular Integral Equations of Abel Type by Using Normalized Euler Polynomials”**, 3rd International Conference on Mathematical Techniques in Engineering Applications (ICMTEA 2018 December 7-8, 2018).
15. Presented a paper **“Oral presentation (0506)”**, International Conference on “Science: Emerging Scenario and Future Challenges” (SESFC 2017), organized by Him Science Congress Association held at Atal Bihari Vajpayee Institute of Mountaineering and allied Sports, Manali, Himachal Pradesh, 01- 02 July 2017.
16. Presented a paper **“A New Approach for Solving Fractional Circuit Models through Quadratic Legendre Multi-wavelets”**, “National Conference on Science and Technology for National Development”, organized by ISCA, Haridwar Chapter and Department of Chemistry held at department of Chemistry, GKV, Haridwar, 20-22, November 2016.
17. Presented a paper **“Fixed Point Theorems on Fuzzy Metric Spaces”**, 19th Annual Conference of Vijnana Parishad of India on “Recent Advances in Mathematics and Mathematical Sciences and Their Applications” (RAMMSA 2016), organized by Department of Mathematics H.N.B. Garwal University (BGR Campus Pauri), 10-12 November 2016.
18. Presented a paper **“A Fixed Point Theorem for Weakly Compatible Mappings in 2-Metric Spaces”**, International Conference on “Science: Emerging Scenario and Future Challenges” (SESFC 2016), organized by Him Science Congress Association, Himachal Pradesh at Hotel Inclover, Dharamshala, 11-12, June 2016.
19. Presented a paper on **“Fuzzy set Theory and its Applications in Real World Problems”**, 4th International Conference on “Science, Technology and Management”, organized by International Research Publication held at India International Centre, New Delhi, 15 May 2016.
20. Presented a paper, **“A common Fixed Point Theorem for Weakly Compatible Mapping in 2metric Space”**, 1st International Conference on “Engineering and Technology” (ICET 2015), organized by Mind Reader Publications in association with International Journal of Mathematical Sciences and Applications, 29th - 30th December 2015.
21. Presented a paper **“Fixed Point Theorem on Hybrid Contraction”**, 3rd International Conference on “Mathematical Sciences and Applications”, organized by mind reader publications in association with International Journal of Mathematical sciences and applications, 20-21, December 2014.
22. Presented a paper “ ”, National conference on “Environmental Conservation and Clean India Programme”, organized by MANU-International Council for Man and Nature (Asia Chapter) in collaboration with UGC-Academic Staff College, Kumanu University, Nainital, 7 December, 2014.
23. Presented a paper **“MS-o-01”**, IInd Annual Conference on “Science: Emerging Scenario & Future Challenges-II” organized by Him Science association, held at Himalayan Forest Research Institute, Shimla, Himachal Pradesh, 17-18 May, 2014.
24. Presented a paper **“A coincidence theorem”**, National Conference on “Innovations in Science and technology for Inclusive Development”, organized by ISCA Hardwar Chapter and Department of Chemistry, Ch. Charan Singh University, Merrut (U.P), March 22-23, 2014.

25. Presented a paper entitled **“A Theorem on Product Spaces”**, National Symposium on “Innovations in Science & Technology for Inclusive Development” organized by Haridwar Chapter of ISCA, February 16, 2014.
26. Presented a paper **“A Coincidence Theorem of System of Maps on Product Spaces”**, in 7th Uttarakhand State Science & Technology Congress-2012, at Graphic Era University, Dehradun, November 21-23, 2012.
27. Presented a paper **“Coincidence and fixed point theorem of system of maps on product spaces”**, in **National Conference** on “Progress in Electronics & Allied Sciences (PEAS-2012)”, held at Faculty of Engineering & Technology, Gurukul Kangri University, Haridwar, November 3 - 4, 2012.
28. Presented a paper **“A study of some weaker forms of commuting maps in fuzzy metric spaces”**, International Conference on Green Technologies for Environmental Rehabilitation (GTER-2012), February 11-13, 2012.
29. Presented a paper **“A fixed point theorem on product spaces”**, National Seminar on Innovations and Applications in Engineering & Applied sciences November 9-10, 2011.
30. Presented a paper **“fixed point theorem of system of maps on product spaces”**, 13th international conference on Emerging Interfaces of Physical Sciences and Technology June 14 - 16, 2011.
31. Presented a paper **“Coincidences of systems of maps on product spaces”**, International Satellite seminar on “Role of Mathematics in Science and Engineering” May 13-14, 2011.
32. Presented a paper **“A coincidence theorem for hybrid contractions”**. National Seminar on “Recent Trends in Mathematical Techniques and Their Applications” April 11th, 2011.

Books Authored/ Chapter in Edited Book

1. Ritu Arora, A. P. Singh (2024), **“Linear Algebra”**, Pragati Prakashan, ISBN No. 978-93-5854-818-1.
2. Manila Kashni, Ritu Arora & Rajeev Jain (2024/2025), **“An expository note on notorious methyl parathion engendering risk evaluation and its redressal, Hazardous Chemicals**, Elsevier, pp.105-118 ISBN No.978-0-323-95235-4
3. **Ritu Arora**, Manila and Mitu Bhalla (2023), **“Awareness of women about their right regarding workplace safety”** Women at Work A Holistic Outlook, Global vision publishing house, pp. 128-137 ISBN No. 978-93-90423-18-7.
4. Hazardous Gases: Risk Assessment on the Environment and Human Health, Elsevier Academic Press, USA July 2021 ISBN No.987-0-323-89858-7.
5. Advances in Intelligent systems and computing 1287, Springer Nature 28 Feb 2021 ISBN 978-981-15-9952-1 ISBN 978-981-15-9953-8 (e-Book)
<https://doi.org/10.1007/978-981-15-9953-8>.

Conferences Attended

1. 2nd International Conference on Recent Advances in computational Mathematics & Engineering Department of Applied Sciences & Humanities, B K Birla Institute of engineering & Technology, Pilani rajasthan 30-31 May 2022.
2. 23rd Annual Conference of Vijnana parishad of India, Developments in Mathematics, Optimization and Computational Sciences (RDMOCS-2021).
3. 5th International conference on Mathematical Techniques in Engineering Applications (ICMTEA-2021) Department of Mathematics, Graphic Era Deemed to be University, Dehradun, India 3-4 December -2021.

4. International Conference on Applied Sciences & Engineering(ICIRASE-2021) in Some Fixed Point Theorems in metric space organised by Optimization of a production inventory model of imperfect quality items for three-layer supply chain in fuzzy environment (JECRC University, Jaipur) India 5-7 August 2021.
5. Some Fixed Point Theorems in G- metric space, International Conference on Applied Sciences & Engineering(ICIRASC-2021), RIT Roorkee INDIA , **Feb 2020-21**.
6. The 4th International conference on Mathematical modeling, Applied Analysis and Computation-2021(ICMMAAC-21).
7. National Conference on “Recent Advances in Statistical and Mathematical Sciences and their Applications, Almora, October 4-6, 2014.
8. राष्ट्रीय संगोष्ठी एवं कार्यशाला “मानवाधिकार संरक्षण” (महिला सशक्तिकरण एवं ग्राम विकास के विशेष संदर्भ में), गुरुकुल कांगड़ी विश्वविद्यालय, हरिद्वार में, दिनांक 15 से 17 फरवरी 2013 को को भाग लिया.
9. National Seminar on “Global warming and its effect on water resources”, GEU, Dec 3rd-4th 2010.
10. National Seminar on “Emerging Trends in industrial Automation and soft sensors”, GEU, Sep 4th -5th , 2010.
11. National Seminar on “Renewable energy Emerging Technologies and its challenges, GEU, Aug 9th-10th, 2010.
12. National Seminar on “software defined Radio/Cognitive Radio (SDR/CR)” July 17th 2010.

Orientation and Refresher Course Attended:

1. **University Grant Commission Sponsored Refresher Course:** Participated and Obtained grade “A” in the 21 days UGC Sponsored Refresher Course held from 01st December 2016 to 21th December 2016 organized by Academic Staff College, Punjabi University, Patiala.
2. **University Grant Commission Sponsored Refresher Course:** Participated and Obtained grade “A” in the 21 days UGC Sponsored Refresher Course held from 24th June 2013 to 17th July 2013 organized by Academic Staff College, Himachal Pradesh University Shimla.
3. **University Grant Commission Sponsored Orientation Course:** Participated and Obtained grade “A” in the 28 days UGC Sponsored orientation course held from 09th Jan 2012 to 04th Feb 2012 organized by Academic Staff College, Jaipur.

Workshop

1. Workshop on “Research Methodology, Publication Ethics (RMPE_2022) Gurukul Kangri (Deemed to be University), Haridwar Uttarakhand Science Education & Research Centre (USERC).
2. Workshop on Vedic Mathematics, Department of Mathematical Sciences and Computer Applications, Bundelkhand University, Jhansi (Uttar Pradesh), India 4-5 September, 2021.
3. e-Workshop on LaTeX Department of Mathematics, School of Science,GITAM, Bengaluru, India 5-9 July 2021.
4. Five days International Webinar on “Mathematics organized by the Department of Mathematics”, Shri Guru Ram Rai (PG) College, Pathri Bagh, Dehradun, Uttarakhand, India from 14th September to 18th September, 2020.
5. One day workshop on “Publishing Quality Research Papers and Books”, February 20, 2020.
6. National workshop on “Academic Writings: Article, Proposal & Patent Development”, January 8-9 2020.

7. International workshop on “Fixed Point Theory and its Applications”, March 15-17, 2019.
8. National Workshop on “Research Methodology” 14-24 December, 2018.
9. Three Day Workshop on “Introduction to R and Statistical Analysis using R-Studio”, 23-25 November, 2018.
10. Workshop (TEW) on “Group Theory Analysis and Topology”, 09-14 October 2017.
11. Workshop on “Software Technology”, 12-18 May 2015.
12. Participated in the workshop on “The Physics and Mathematics of the Universe”, held at Department of Physics and Department of Mathematics & Statistics, Gurukul Kangri Vishwavidyalaya, Haridwar, 11-12 March, 2013.
13. Participated in one-week workshop on “scientific Computing: Theory and Practice” (SCTP-2012), Department of Applied Mathematics, Faculty of Engineering & Technology, Gurukul Kangri University, Haridwar, 8-13 October, 2012.

Short Term Course

1. Online Short term course in “Fundamental Duties & Human Rights (Multidisciplinary)” 06.02.2025-12.02.2025, Malaviya Mission Teacher Training Centre, Guru Nanak Dev University, Amritsar.
2. Short term courses on “Mooc’s Online Courses and Open Educational Resources” 13.12.2022-20.12.2022, Human Resource Development Centre, Punjabi University Patiala.
3. Short term courses on “Research methodology,” 24 Feb 2021 to 02 march 2021.
4. Short term courses on “MOOCs and OER”, 08 June, 2018 to 14 June, 2018.
5. Short term courses on “Research Methodology”, 27.05.2017 to 02.06.2017.

Faculty Development Program

1. Five days International Faculty Development Programme on “Recent Advances In Mathematical Modelling & Optimization” on 08.01.2024 - 12.01.2024 (Hybrid Mode) at CSSR & SRRM Degree & PG College Kamalapuram, YSR, A.P., India.
2. Two days Faculty Development Programme on “Outcome based Education” on 21.4.2023-22.4.2023 at GKDU, Haridwar.
3. Faculty Development Program on “Mathematical Analysis” 4th Jan to 10th Jan 2022.
4. Five Days Faculty Development Program on “ICT Based Teaching and Learning Process” organized by RCP, Roorkee from 1st to 5th July 2020.
5. Faculty Development Program on “Teaching and Soft Skills” October 03-04, 2018.

Session Chair

1. Session Chair in **National** conference on “**Health and Hygiene Issue in Current Scenario**” at Gurukul Kangri (Deemed to be university), Haridwar, Uttarakhand, India organized by the Department of Botany & Microbiology.
2. Session Chair at 4th **International** Conference on Mathematical Techniques in Engineering Applications (ICMTEA 2020) held on December 4-5, 2020 at Graphic Era Deemed to be university, Dehradun, Uttarakhand, India.
3. Session Chair at 3rd **International** Conference on “Mathematical Techniques in Engineering Applications” (ICMTEA 2018) held on December 7-8, 2018 at Graphic Era Deemed to be university, Dehradun, Uttarakhand, India.

Dr. Ritu Arora

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