


Faculty Performa

Title	Dr	First Name	Shobha	Last Name	Bagai	Photograph
Designation	Professor					
Address	Cluster Innovation Centre Rugby Seven's Building (University Stadium) Third Floor G C Narang Road University of Delhi - 110007					
Email	shobhabagai@gmail.com					
Educational Qualifications						
Degree	Institution				Year	
Ph.D.	IIT, Delhi				1993	
PG (M.Sc Mathematics)	IIT, Delhi				1989	
UG	Panjab University (Gold medallist)				1987	
Career Profile						
Organisation/ Institution	Designation			Year	Role	
Cluster Innovation Centre, Delhi University	Professor			March 2015 – Till date	Teaching, Mentoring and Administration	
Cluster Innovation Centre, Delhi University	Associate Professor			Sept 2011 – March 2015	Teaching, Mentoring and Administration	
SPM College, Delhi University	Associate Professor			July 1995 – Sept 2011	Teaching & Research	

Institute of Lifelong Learning, Delhi University	Fellow in Mathematics	January 2008 – December 2009	Research & Administration
IIT Bombay	Visiting Assistant Professor	July 2002 – July 2004	Research & Teaching
Department of Mathematics, Delhi University (under cooperative teaching)	Associate Professor	August 2001 to March 2002, July 2004 till April 2011	Postgraduate Teaching
Jesus and Mary College	Lecturer	August 1993 to April 1995	Teaching

Administrative Assignments

- Director, Cluster Innovation Centre, University of Delhi (April 2022 – till date)
- Coordinator, Design Innovation Centre, University of Delhi (April 2022 – Till date)
- AC nominee for the Board of Studies for Bachelor's Program through Design Your Own Degree mode, Design Innovation Centre, Islamic University of Science and Technology (Nov 2023 – Till Date)
- External expert of the Interdisciplinary Board of Studies for Four Year Undergraduate Programme "Design Your own Degree", University of Jammu (Oct 2023 – Till Date)
- Member of the Advisory Board, Centre of Innovation, Incubation and Entrepreneurship, University of Kashmir (July 2023 – Till date)
- Core member of the formulation of interdisciplinary courses, University of Delhi (Oct 2021 – Jan 2022)
- Member of the NEP implementation committee, University of Delhi (2021 - 22)
- Member of the Admission Committee, University of Delhi (2021 – 2022)
- Dean, Admission, University of Delhi (2020 – 21)
- Convener, Institution's Innovation Council established under the aegis of MHRD's Innovation Cell at University of Delhi, 2018 – 2020.
- Programme coordinator of B.Tech (IT and Mathematical Innovations), Cluster Innovation Centre, University of Delhi (2015 – 2021)
- Member of the Board of Studies of Applied Mathematics, Delhi Technological University, Delhi (2018 – 20)
- Member of the Internal Quality Assurance Cell, Ramanujan College (2015 – 2020)
- Chairperson (Acting), Delhi University Social Centre Co-Ed School (2018 – 19)
- Member of the Community Development Cell Committee, University of Delhi
- Member of Unnat Bharat Abhiyan, University of Delhi (2015 – 2023)
- Co-opted member for the Annual Report of University of Delhi (2015)
- Coordinator of the eYantra (IIT, Bombay) Nodal Centre at Cluster Innovation Centre (CIC), University of Delhi (2013 – Till date)
- Invited to be subject expert in Board of Studies, Christ University, Bangalore
- Chaired the session on "Peer Learning" at the Academic Congress, hosted by University of Delhi from September 6, 2013 to September 7, 2013.
- Invited as a member of the delegation to ESPRC/ DST Scoping Meeting in Applied Mathematics (July 12 – July 13, 2012), University of Edinburgh.
- Member of the Empowered Committee of the Foundation Courses (a) Building Mathematical Ability (b) Information Technology at University of Delhi
- Convened and conducted orientation programmes for teachers for the foundation course "Building Mathematical Ability" at University of Delhi

- Member of Local Organizing Committee, International Conference “The Legacy of Srinivasa Ramanujan” organized by University of Delhi from 17-22 December 2012.
- Member of Jury committee of INSPIRE AWARD National Level Exhibition and Project Competition (NLEPC-2012) conducted by Department of Science and Technology (DST), Ministry of Science and Technology, Government of India held from October 21-23, 2012 at Pragati Maidan, New Delhi
- Member in a Committee constituted by the Vice Chancellor to organize “Antardhvani 2013: Cultural Festival of Delhi University”.
- Member of the Bachelor Degree Programme syllabus revision committee, IGNOU, Delhi.
- Member of the Expert Group to formulate Undergraduate Program Mathematics syllabus, Ambedkar University, Delhi.
- Member of Vice Chancellor constituted sub-committee of the BA Programme committee for the semesterisation of the BA Programme, Delhi University.
- Member of Vice Chancellor nominated Empowered Committee to formulate the syllabus of B.Sc (Hons) Mathematics, Delhi University.
- Organized workshops for the teachers of Mathematics, Delhi University.

Areas of Interest / Specialization

- Differential Equations and Modelling
- Fluid Dynamics (Porous Media)
- Mathematics Teaching Pedagogy at UG (with emphasis on NEP 2020)
- Project Based Learning

Subjects Taught

Core Mathematics papers

- Calculus (Undergraduate)
- Differential Equations (Undergraduate and Postgraduate)
- Mechanics (Undergraduate and Postgraduate)
- Fluid Dynamics (Postgraduate)
- Probability and Statistics (Undergraduate)
- Algebra (Undergraduate)
- Discrete Mathematics (Undergraduate)
- Numerical Analysis (Undergraduate)
- Linear Algebra (Undergraduate)
- Linear Programming (Undergraduate)
- Algebra and Complex Analysis (Undergraduate)
- Mathematical Visualization (Undergraduate and Postgraduate)

Teaching Pedagogies in Mathematics

- Calculus
- Differential Equations
- Probability
- Linear Algebra
- Discrete Mathematics

Business Innovation

- Business, Entrepreneurship and Innovation Management
- Business Processes and Strategic IT Alignment

IT & Electronics

- Signals and Systems (Undergraduate)
- Data Science: A Case Study Approach (Undergraduate)

Research Guidance

Supervision of Doctoral thesis (Degree Awarded – Three, Pursuing – One)
Supervised over 50 undergraduate projects

Publications Profile (For the complete list please visit
<https://scholar.google.com/citations?user=NkykS9kAAAAJ&hl=en>)

LIST OF PUBLICATIONS (Last 5 Years)

1. "A Numerical Study of Transient Free Convection from an Axisymmetric Body in a Porous Media Saturated by Nanofluid", Journal of Nanofluids, Vol 8, No. 6, pp 1345 – 1354, 2019.
2. "Numerical investigation of effect of variable viscosity on transient heat transfer over a non-isothermal axisymmetric body: nanoparticle volume fraction-dependent viscosity", SN Applied Sciences, Vol. 2, Issue 4, pp 1 – 13, 2020.
3. "Numerical Investigation of Effect of Temperature Dependent Viscosity on Transient Heat Transfer over a non-Isothermal Axisymmetric body", Furrages Journal, Vol. 241, No. 1, pp 15 – 35, 2020.
4. "Unsteady Heat Transfer from a Non-isothermal Axisymmetric Body Immersed in Porous Media Saturated by Nanofluid", Advances in Fluid mechanics and Solid Mechanics, Proceedings of the 63rd Congress of ISTAM, Springer Nature, pp 27 – 38, 2020.
5. "The four-sided lid driven square cavity using stream function-vorticity formulation", Journal of Applied Mathematics and Computational Mechanics, Vol. 19, No. 2, pp 17 – 30, 2020.
6. "Application of Complex Numbers and Matrix Transformations in Pentagonal Tiling", Resonance: Journal of Science Education, Volume 25, Issue 10, pp 1369-1384, 2020.
7. "A Study of Crime in India through Statistical Analysis", ICT for Competitive strategies, Proceedings of 4th International Conference on Information and Communication Technology for Competitive Strategies, CRC Press, pp 361 – 367, 2020.
8. "Mixed convection in four-sided lid-driven sinusoidally heated porous cavity using stream function-vorticity formulation", SN Applied Sciences, Vol. 2, Issue 12, pp 1 – 24, 2020.
9. "Mixed Convection in a two sided and four sided lid driven square porous cavity", International Journal of Heat Technology, Vol 39, Issue 3, 711 – 726, 2021.
10. "Heat and mass transfer in a two-sided lid-driven square cavity with non-uniform sinusoidal heating on horizontal walls" European Physical Journal Plus 136, 1034, 2021
<https://doi.org/10.1140/epjp/s13360-021-02040-4>, 2021.
11. "Scrutinizing string art through a mathematical lens", PRIMUS, DOI: 10.1080/10511970.2022.2068094, 2022.
12. "University based mentoring program for School going gifted students", Gifted and talented International, 39(1), 32 – 45, 2024.
13. "Heat and mass transfer under MHD mixed convection in a four-sided lid-driven square cavity", Heat Transfer, <https://doi.org/10.1002/htj.22993>, Jan 2024,

BOOK

1. *Foundation Course - Building Mathematical Ability*, S Chand and Co., 2013 – Author and Chief Editor
2. *A Bridge to Mathematics*, 1st Ed., New Delhi: Sage, 2017 – Co-Author
3. *Mathematics for Social Scientists: Learning Essential Foundational Skills*, 1st Ed., New York, Routledge, 2024 – Co-Author

Conference Organization/ Presentations/ Refresher Courses/ FDP/ Workshops/ Symposium (in the last five years).

1. “Metamorphosis of Senior Secondary School Mathematics to College Mathematics: Special Emphasis on Linear Algebra”, Inaugural Conference of the Mathematics Teachers Association, Homi Bhabha Centre for Science Education, Mumbai, 3rd – 5th Jan 2019.
2. “Mathematical Modelling in Physiology”, National Conference on Complex Systems in Interdisciplinary Sciences, Jamia Millia Islamia, Delhi, 11th – 12th March, 2019.
3. “Modeling Natural Convective Flow Across Axisymmetric Bodies immersed in Porous Media saturated by Nanofluids”, Conference on Algebra, Analysis and Applications, Ambedkar University Delhi, 10th May 2019.
4. “Innovative Teaching Pedagogy of Twenty First Century”, Faculty Induction Programme, Hansraj College, 19th June 2019.
5. “Mathematical Models in System Biology: Biochemical Kinetics”, Faculty Development Programme “**Understanding the Connection of Mathematics with the world around us: An Application Based Learning**”, Hansraj College, 21st June 2019.
6. “Analysis of Dynamical Mathematical Models in System Biology”, Faculty Development Programme “**Understanding the Connection of Mathematics with the world around us: An Application Based Learning**”, Hansraj College, 21st June 2019
7. Delivered a lecture on “Reinventing the wheel – The calculus way” at Ambedkar University of Delhi on 20th Sept 2019.
8. Conducted a workshop of 100+ students of Hansraj College on “Linear Algebra and its application” on 23rd Sept 2019.
9. “Mathematical Modelling at UG Level” Faculty Development Programme, **Recent Trends in Research Methodology, E-Content, Mathematical and Statistical Methods in Open Education World**, Kalindi College, 19th Dec 2019.
10. Expert panelist on the discussion: “Education in Today's Times for The World of Tomorrow”, Education Summit on “**Towards Meaningful Education: Redefining Goals and Pedagogies**”, K R Mangalam University, 23rd Dec 2019.
11. “Dynamical mathematical Models in System Biology and their Analysis”, Refresher Course in **Computational and Mathematical Sciences**, Jamia Millia Islamia, 12th Feb 2020.
12. “Innovative Teaching Pedagogy of Twenty First Century”, Refresher Course in **Computational and Mathematical Sciences**, Jamia Millia Islamia, 12th Feb 2020.
13. “Impact of COVID 19 Pandemic in reshaping Education”, Key Speaker – Webinar, Motilal Nehru College, 14th May 2020.
14. “An Insight into Online Teaching Learning”, Key Speaker – Webinar, Vivekanand College, 18th May 2020.
15. “Project Based Learning: A Different Way to Explore Engineering”, Key Speaker – Webinar, School of Engineering and Technology, Central University of Haryana, 28th May 2020
16. “Buoyancy induced unsteady flow across axisymmetric bodies immersed in a porous medium saturated with nanofluid”, International winter school on Fluid Dynamics, Heat Transfer and

- Application, 22nd Jan 2021.
17. "Teaching Pedagogies in Mathematics: Innovative Pedagogy", Faculty Development Programme, Ramanujan College, March , 2021
 18. "Teaching Pedagogies in Mathematics: Project Based Learning", Faculty Development Programme, Ramanujan College, March , 2021
 19. "Application of Mathematics in Business and Social Science", Inaugural Lecture – Interdisciplinary Faculty Development Programme, Miranda House, 18th March 2021
 20. "Application of Group Theory in Solution of Rubik's Cube", Symposium on Real Life Applications of Abstract Mathematical Concepts, St Stephen's College, 9th April 2021
 21. "New Education Policy 2020 and it's implications on Mathematics", Webinar on New Education Policy, JDM College, 16th April 2021
 22. "Reconstructing the University Admissions in the wake of Pandemic- Decoding NEP", key panelist Speaker, Amrita Vishwa Vidyapeetham, 19th June 2021
 23. "Application of Fourier Transform in Signal and System", Faculty Development Programme on Advances in Sensing, Information Flux and Security, Amity University, Patna, 2nd Aug 2021.
 24. "How not to lie with Statistics: Using Statistics honestly", Faculty Development Programme on MOOCs, E-Content Development, Research Methodology and Statistical tools in Open Education World, Kalindi College, University of Delhi, 7th Aug 2021
 25. "Decoding NEP: Redefining Goals and Pedagogies of Today's Education for the World of Tomorrow", Key speaker, Webinar organized by Daulat Ram College, University of Delhi, 24th Aug 2021.
 26. "Mathematics Education in the Context of NEP 2020", Refresher Course in Mathematics, Ramanujan College, 6th Sept 2021.
 27. "Project Based Learning: A Different Way to Explore Engineering", Key Speaker – Webinar, Christ University, Bangalore, 17th Sept 2021
 28. "Mathematical Models in Biochemical Kinetics and their Stability Analysis", Faculty Development Programme, Christ University, Bangalore, 28th Oct 2021
 29. "Statistical Tools", Faculty Development Programme on Designing and Development of MOOCs and Application of Research on Digital Platforms– Hansraj College, University of Delhi, 7th March 2022
 30. "Mathematical Teaching and Assessment using e-platform", Faculty Development Programme on Designing and Development of MOOCs and Application of Research on Digital Platforms– Hansraj College, University of Delhi, 7th March 2022
 31. "Introduction to Keller Box Method", Faculty Development Programme on Computational Methods in Boundary Layer Theory, M.S.Ramaiah Institute of Technology, Bengaluru, 11th March 2022.
 32. "Application of Keller Box Method to Nanofluid Flow", Faculty Development Programme on Computational Methods in Boundary Layer Theory, M.S.Ramaiah Institute of Technology, Bengaluru, 12th March 2022.
 33. " On Road Colouring Problem", Shivaji College, 11th April 2022.
 34. "Application of Keller Box Method to Fluid Flow and Heat Transfer", International Conference on Dynamical Systems and Numerical Methods, Jamia Millia Islamia, 21st May 2022.
 35. "Keller Box Method and its Application to Nanofluid Flow", 5th International Conference on Frontiers in Industrial and Financial Mathematics, Central University of Haryana, 23rd Dec 2022.
 36. "Data Analysis Using R Programming", 5th Refresher Course in Research Methodology, Jawaharlal Nehru University, 26th Dec 2022.
 37. "Application of Keller Box Method to Nanofluid Flow and Heat Transfer", Refresher Course on Math, Statistics and Computing, University of Lucknow, 10 – 23 January 2023

38. "ICT Based Assessment Methods", Faculty Development Programme, CPDHE, University of Delhi, 7th February 2023
39. "Working with MATHEMATICA: An Application Approach", FDP on Computer Algebra System, Ramjas College, 23rd March 2023
40. "Influence Of Viscous Dissipation And Radiation On Transient Heat And Mass Transfer Across A Permeable Flat Plate Embedded In Porous Media Saturated With Nanofluid", 17th International Heat transfer Conference, Cape Town, 14th – 18th August, 2023.
41. "Empowering Education: The Project Based Learning Revolution", Seminar on Project and Application Based Learning, Shyama Prasad Mukherjee College, 11th Oct 2023.
42. "Empowering Tomorrow: Mastering Start-up Skills in the New Education Paradigm", National Conference on National Education Policy 2020: Perspective, Challenges and Way Forward, Gargi College, 3rd Nov 2023
43. "Innovation Odyssey: Nurturing Curiosity and Creativity", Popular Science Lecture, National Science Centre, 2nd Feb 2024.
44. "Navigating the Future: Unveiling Innovative Pedagogies for College Mathematics Education", International Conference on Pure and Applied Mathematics, Janki Devi Mahila College, 22nd Feb 2024
45. "The University of Jammu Innovation: Create your own degree", 3-day workshop on capacity Building and Leadership Development for implementation of NEP-2020 with emphasis on internationalization of Higher Education, University of Jammu, 12th – 14th March 2024
46. "NEP 2020 at colleges vs school", eYantra Symposium, IIT Bombay, 6th April 2024
47. "Navigating Research Methodology for Undergraduate students", Workshop on Research Methodology for Undergraduate Students, Maitreyi College, 29th April 2024

Recorded Lectures on YouTube

- Testing of Hypothesis – I (<https://youtu.be/V2zjwMeae70>)
- Testing of Hypothesis – II (<https://youtu.be/9AT2--vE5Ns>)
- Testing of Hypothesis – III (https://youtu.be/mi_5glMaLmA)
- Testing of Hypothesis – IV (<https://youtu.be/4h6cOHx524M>)
- Point Estimation of Parameters (<https://youtu.be/pELvsdi2olc>)
- Methods of Point Estimation (<https://youtu.be/-MF8n5yjdkr>)
- Orthogonal Curvilinear Coordinate System (<https://youtu.be/5xYyq6R3YEM>)
- Basic Equation of Fluid dynamics – I (<https://youtu.be/mr95j4wwJJY>)
- Basic Equation of Fluid dynamics – II (<https://youtu.be/KCCkhhYw83U>)
- Finite Difference Methods (<https://youtu.be/vM8JdZQLZts>)
- Integral Formulations and Variational methods (<https://youtu.be/WOlczHsb6Vo>)
- Application of Mathematics to Business and Social Science (<https://youtu.be/JQ6VWL0KxME>)
- Teaching Pedagogies in Mathematics: Innovative Pedagogy (https://youtu.be/DtMMKL0ovml?list=PLcQbSImr-VBKHzhZjQ3rtMN_ex1XpehD5)
- Teaching Pedagogies in Mathematics: Project Based Learning (https://youtu.be/ibRq5MITM60?list=PLcQbSImr-VBKHzhZjQ3rtMN_ex1XpehD5)

Research Projects (Major Grants/Research Collaboration)

1. Creating a manuscript related to mathematics for liberal arts students funded by Ambedkar University, Delhi.
2. Identification and mentoring of potentially gifted children in India in Science and Mathematics funded by DST (Office of Principal Scientific Advisor to GOI)
3. Establishing process based identification and mentoring practices for potentially gifted children in Science and Mathematics funded by DST (Office of Principal Scientific Advisor to GOI)

4. 24 x 7 water supply in villages and small towns of India funded by University of Delhi
5. Solutions for road management from modeling and simulation of traffic flow on selected road of Delhi funded by University of Delhi
6. IT model for parking space management: optimal and efficient parking – retrieval of vehicles funded by University of Delhi
7. Impact of FDI in multi-brand retail on local kirana shops funded by University of Delhi
8. Weaving Dreams for Destitutes – Night Shelters funded by University of Delhi
9. Faculty Research Project 2020 – 21, Institute of Eminence, University of Delhi.
10. Faculty Research Project 2021 – 22, Institute of Eminence, University of Delhi.

Along with the above mentioned projects carried out number of projects with undergraduate and postgraduate students at Cluster Innovation Centre.

Awards and Distinctions

- Awarded winner in the category of "Top Digital Enablers in Institute of National Importance/ Institute of National Imminence/ Public University" by Dy Chief Minister of Delhi State – New Code of Education 2021.
- Awarded Certificate of Best Poster in Research Display at the Convocation Ceremony, University of Delhi, 19th Nov 2016
- Teaching excellence award for innovation by University of Delhi, 1st May 2015.
- Gold Medallist – Panjab University

Association With Professional Bodies

- Life member of Ramanujan Mathematical Society Membership no 1152
- Life member of ISTAM (Indian Society of Theoretical and Applied Mathematics) Membership no. L/1123
- Alumini – IIT Delhi

Other Activities

- Participated in the workshop “The intertwining strands in Physics and Mathematics”, IISER Pune, 19th – 23rd Feb 2018.
- Conducted a workshop at Shyam Lal College, University of Delhi on “Business Ideation Formulation during the Young Entrepreneurship Convection, April 29th, 2019

INVITED TALKS

- “Women in Maths: Initiatives and Challenges”, Laxmibai College, 10th April 2024
- “Innovation Odyssey: Nurturing Curiosity and Creativity”, Popular Science Lecture, National Science Centre, 2nd Feb 2024
- “Empowering Education: The Project Based Learning Revolution”, SPM College, 11th Oct 2023
- “Exploring Mathematics Through Project Based Learning”, Aryabhata College, 9th May 2023
- “From Tricks to Techniques in Mathematics”, Satyawati College
- “Reinventing the Wheel – The Calculus way”, Ambedkar University Delhi
- “Problem Based Learning in Mathematics at UG Level”, St Stephen’s College.
- “Problem Based Learning in Mathematics at UG Level”, MASTACOM 19, Mata Sundri College for Women
- “Mathematical Modeling in Medicine”, 3 week Refresher Course in Computational and Mathematical Studies, UGC Human Resource Development Centre, Jamia Millia Islamia, New Delhi.
- “Bio-Geography: Mathematical Analysis of Wildlife Reserves”, 3 week Refresher Course in Computational and Mathematical Studies, UGC Human Resource Development Centre, Jamia Millia Islamia, New Delhi.
- “Bio-Geography: Mathematical Analysis of Wildlife Reserves”, B R Ambedkar College
- “Geometrical Interpretation of Eigen Values and Eigen Vectors”, Daulat Ram College
- “Geometrical Interpretation of Eigen Values and Eigen Vectors”, Sri Venkateshwara College

- “Geometrical Interpretation of Eigen Values and Eigen Vectors”, Aryabhata College
- “Geometrical Interpretation of Eigen Values and Eigen Vectors”, Gargi College and Aryabhata College
- “Enhancing Mathematical Ability by PBL”, Christ University
- “Mathematical Modelling of Wildlife Reserves”, Kalindi College.
- “Thinking Mathematically”, *Omicron 17*, Kamla Nehru College.
- “Mathematical Modelling of Wildlife Reserves”, St Stephen’s College, Delhi.
- “On Road Colouring Problem”, National Conference on Recent Statistical Computing Techniques and their Applications, Ramanujan College
- “Project Based Learning: Through the lens of Linear Algebra”, Refresher Course, Bangalore University
- “Discrete Mathematical Modelling”, Refresher Course, Bangalore University
- “Mathematical Modelling in Computational Biology – I & II”, Refresher Course, Bangalore University
- “Modelling Pharmokinetics”, Acharya Narendra Dev College
- “Predicting future with Mathematics: Differential Equations”, Deshbandhu College
- “Games and Puzzles: Discovering the art of Mathematics”, Kalindi College
- “Discrete and Continuous Mathematical Modeling”, Ramanujan College.
- “Mathematical Modeling in Physiology”, Hansraj College.
- “Impact of the progress of science”, Delhi Public School, R K Puram, Delhi.
- “Conjugate natural convection across impermeable partition imbedded in porous medium”, IIT Bombay.
- “Similarity solutions of free convection problem of non-isothermal axi-symmetric body in porous medium with internal heat generation”, IIT, Bombay.
- “Buoyancy induced flow over axisymmetric bodies immersed in porous medium saturated by a nanofluid”, Christ Univesity, Bangalore
- “Exact Methods of Differential Equations” in three week Refresher Course conducted by CPDHE, University of Delhi.
- “Women in Mathematics”, St Stephen’s College, University of Delhi
- “Functions of Several Variables”, University of Delhi, South Campus.
- “Calculus via Graphs”, B R Ambedkar College, University of Delhi
- “Applications of Graph Theory”, Maitreyi College, University of Delhi
- “Population Models”, Lady Sri Ram College, University of Delhi
- “Predator-Prey Models and its Analysis”, Miranda House, University of Delhi
- “Mathematical Modeling”, Kirorimal College, University of Delhi
- “Popular Lecture Series – Building Mathematical Ability”, ARSD College, University of Delhi
- “Mathematical Fallacies”, Hindu College, University of Delhi
- “Foundation Courses in FYUP – Building Mathematical Ability”, Inaugural Lecture, Daulat Ram College, University of Delhi
- “Mathematical Modelling in School Curriculum”, S D Public School, Delhi

Undergraduate Summer Internship/ Semester Long Projects

2017 – 18

1. UNITY 3D Game Development
2. Statistical Learning
3. Solving Rosetta Code Problems in MATLAB
4. Solving Rosetta Code Problems in JAVA
5. Autonomously Indoor Mapping Quadcopter
6. Gesture Controlled Robotic Arm
7. Self balancing Skateboard
8. Optimizing and Automating Digital Marketing Campaigns
9. A statistical report on child sex abuse
10. Approximation algorithm for NP complete problems

2018 – 19

1. Movie Recommendation Engine
2. EPL Data Analysis using Machine Learning
3. IMBD Review System Analysis
4. Train a Robot to navigate using a single camera using reinforcement learning
5. Android Applications – Hopzy, Guess the Number and MyNotes App
6. Detection of Pneumonia using Machine Learning
7. A Social Networking Web Application
8. Visualising Science with Augmented Reality

2019 – 20

1. Analysis of the Orbital Motion with emphasis on Chandrayaan
2. Developing the Server side of the application Hopzy
3. Extending Lights Out game to Higher Dimension
4. AI powered application for the visually impaired to navigate
5. Content Based Video Retrieval System
6. Animation in Android Using Interpolation
7. Traffic Decongestion Analysis: A study of Traffic Simulation in DU and it's extension to Delhi NCR
8. Integrated Augmented reality into Yoga Experience

2020 – 21

1. SECRET Discord BOT
2. Digital Marketing
3. Application of Flutter
4. Keyword Extraction using Hyperbolic Embedding
5. Admission Guidance Website
6. Artificial Intelligence-Powered Tech For The Visually Impaired To Navigate –I
7. Application of Group Theory to Rubik Cube
8. Artificial Intelligence-Powered Tech For The Visually Impaired To Navigate – II

2021 – 22

1. Robolab Management System – Flutter App Development
2. JoyCoin ICO - (Cryptocurrency coded on the Ethereum blockchain)
3. Integrating skills of IT and management for business development
4. AI-based innovative 2-player board game
5. Making Mathematical kits for Visualisation of UG Mathematics
6. Fair Clustering
7. Stock Market Analysis
8. AgriBot

2022 – 23

1. Exploring Ethical hacking and Methods of Cyber Security
2. Curio: A platform for dubbing YouTube Videos
3. Violator: A mobile App for traffic violation
4. Dhamni: Application to connect blood donord with recepients
5. A community platform for school children: Market Exploration

6. Understanding Algorithms: Visualise them in action
7. Frieze Pattern: Generation and Recognition
8. Changing the shopping experience using WEBVR

2023 - 24

1. Dhamni: An application to connect blood donors with recipients
2. A community platform for school children: Market exploration
3. Frieze pattern: generation and recognition
4. Multistate lights out mobile game with integrated linear algebra solver
5. Web of lights: Exploring Maths with lights out

Signature of Faculty Member

(Updated in Sept 2024)