Faculty Details proforma for DU Web-site

Title	**Prof**	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**					
Phone No Office	**011 - 27666702**					
Residence						
Mobile	**9810909650**					
Email	**shobhabagai@gmail.com**					
Web-Page						

Educational Qualifications

Degree	Institution	Year
Ph.D.	**IIT, Delhi**	**1993**
M.Phil. / M.Tech.		
PG (M.Sc Mathematics)	**IIT, Delhi**	**1989**
UG	**Panjab University**	**1987**
Any other qualification		

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 (on deputation)**	**Teaching, Mentoring and Administration**
SPM College, Delhi University	**Associate Professor**	**July 1995 – March 2015**	**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

- Programme coordinator of B.Tech (IT and Mathematical Innovations), Cluster Innovation Centre, University of Delhi
- Coordinator of the eYantra (IIT, Bombay) Nodal Centre at Cluster Innovation Centre (CIC), University of Delhi
- 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.
- Member of the Empowered Committee of the Foundation Courses (a) Building Mathematical Ability (b) Information Technology at University of Delhi
- Convened and conducted six 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".
- Initiated the linkage between villages & Industry and CIC, university of Delhi
- Facilitated various internship for the students at DRDO, NBRC, FMS, IIM, NIF
- Convenor of the Programme Committee, Cluster Innovation Centre
- 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.
- Mentor for one month long Summer Internship Programme –Inviting All Young Minds (June 1 to June 29, 2010) organized by Mathematical Science Foundation.
- 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.
- Joint Co-ordinator of the question bank for B.Sc (Prog) and B.Sc (Hons) Mathematics, Delhi University.
- Conducted workshop for BBE students, Delhi University.
- Handled responsibility of Convenor of Time Table Committee, Workload Committee, Women

Development Cell, Annual Day, Dramatic Society, Fee Concession and Prospectus Committee in S.P.M. College.
- Conducted Mathematics Seminars for undergraduate students.

Areas of Interest / Specialization

- **Differential Equations and Modelling**
- **Fluid Dynamics (Porous Media)**

Subjects Taught

- **Calculus (Undergraduate)**
- **Differential Equations (Undergraduate and Postgraduate)**
- **Mechanics (Undergraduate and Postgraduate)**
- **Fluid Dynamics (Postgraduate)**
- **Probability and Statistics (Undergraduate)**
- **Algebra (Undergraduate)**
- **Signals and Systems (Undergraduate)**
- **Discrete Mathematics (Undergraduate)**
- **Numerical Analysis (Undergraduate)**
- **Mathematical Modeling (Undergraduate)**

Research Guidance

Supervision of Doctoral thesis under supervision - One

Publications Profile

1. "Effect of Temporal Variations in Permeability of a Porous Medium on Convective Heat Transfer Rate", Modeling, Simulation and Control, B, Vol. 42, No. 1, pp. 41 - 52, 1992.
2. "Transient Free Convection Flow with Temperature Dependent Viscosity in a Fluid Saturated Porous Medium", International Journal of Engineering Science, Vol. 30, No. 8, pp. 1083 - 1087, 1992.
3. "Transient Free Convective Flow About a Non-Isothermal Vertical Flat Plate Immersed in a Saturated Inhomogeneous Porous Medium," International Communications in Heat and Mass Transfer, Vol. 19, pp. 687 - 699, 1992.
4. "Effect of Discontinuities in Wall Temperature on Natural Convection Flow over a Vertical Flat Plate", Modeling, Simulation and Control, B, Vol. 47, No.1, pp. 1 - 11, 1993.
5. "Effect of Temperature Dependent Viscosity on Free Convection Flow across an Impermeable Partition", International Journal of Engineering Science, Vol. 31, No. 7, pp. 1093 - 1103, 1993.
6. "Free Convection About Axisymmetric Bodies Immersed in Inhomogeneous Porous Medium", International Journal of Engineering Science, Vol. 32, No 6, pp. 945 - 953, 1994.
7. "Convective Heat Transfer Across a Horizontal Impermeable Partition", International Journal of Engineering Science, Vol. 32, No. 9, pp. 1451 - 1458, 1994.
8. "Transient Non-Darcy Free Convection in Inhomogeneous Porous Medium", Proceedings of 14th IMAC's World Congress, Georgia Institute of Technology, Atlanta, GA 30332 USA, 1994.
9. "Transient Non-Darcy Free Convection with Temperature Dependent Viscosity", International Journal of Engineering Science, Vol. 33, No. 3, pp. 371 - 378, 1995.

10. "Similarity Solutions of Free Convection Boundary Layers Over a Body of Arbitrary Shape in a Porous Medium with Internal Heat Generation", International Communications in Heat and Mass Transfer, Vol. 30, No. 7, pp. 997 - 1003, 2003.
11. "Effect of Variable Viscosity on Free Convection over a Non-Isothermal Axisymmetric Body in a Porous Medium with Internal Heat Generation", Acta Mechanica, Vol. 169, No. 1-4, pp. 187 – 194, 2004
12. "Free convection in a non-Newtonian fluid along a horizontal plate embedded in porous media with internal heat generation", International Communications in Heat and Mass Transfer, Vol. 39, No. 4, pp. 537 – 540, 2012.
13. "Effect of Variable Viscosity on Free Convective Heat Transfer over a Non- isothermal Body of Arbitrary Shape in a Non-Newtonian Fluid Saturated Porous Medium with Internal Heat Generation", Transport in Porous Media, Vol. 94, Number 1,pp 277 – 288, 2012.
14. "Similarity Solution to Study the Effect of Variable Viscosity on Non-Newtonian Buoyancy Induced Flow Over an Axisymmetric Body Immersed in a Porous Medium Saturated By A Nanofluid" presented in International Conference on Electrical, Electronics, Computer Science and Mathematics Physical Education and Management, Delhi, 1st Dec 2013.
15. "Buoyancy induced flow past a non-isothermal arbitrary shaped axisymmetric body immersed in a non – Newtonian porous medium saturated with Nanofluid", Journal of Nanofluids, pp. 1 – 9, 2014.
16. "Effect Of Temperature Dependent Viscosity On Natural Convective Boundary Layer Flow Over A Horizontal Plate Embedded In A Nano-Fluid Saturated Porous Medium", Proceedings of Fifth International Conference on Porous Media and its Applications in Science, Engineering and Industry, Kona, Hawaii, USA, 2014.
17. "Effect of Variable Viscosity and Permeability on Natural Convective Heat Transfer Across a Vertical Cone Embedded in a Porous Medium Saturated with nanofluid", Journal of Nanofluids, pp. 91 – 99, 2015.
18. "A Graph Based Ranking Strategy for Automated Text Summarization", DU Journal of Undergraduate Research and Innovation, Vol. 1, February 2015.
19. "Analysis of transport system in a semiurban village: A case study of Jagatpur Village, Delhi, India", DU Journal of Undergraduate Research and Innovation, Vol. 1, February 2015.
20. "Fast & Dynamic Image Restoration using Laplace equation Based Image Inpainting", DU Journal of Undergraduate Research and Innovation, Vol. 1, Volume 1, Issue 3 pp 115 - 123, 2015
21. "Extension of the Josephus Problem with Varying Elimination Steps", DU Journal of Undergraduate Research and Innovation, Vol. 1, Volume 1, Issue 3 pp 211 - 218, 2015.

BOOK

Foundation Course - Building Mathematical Ability, S Chand and Co., 2013 – Author and Chief Editor

Conference Organization/ Presentations (in the last three years)

1. "Various possible permutations of some convex Tangram shapes" presented in International Conference on History and Development of Mathematics, Jaipur, 29th Nov 2013 – 1st Dec 2013.

2. "Reaching to Unreached: Popularizing Mathematics through Community Radio Series" presented in International Conference on Electrical, Electronics, Computer Science and Mathematics Physical Education and Management, Delhi, 1st Dec 2013

3. "Effect of Variable Permeability on Free Convection Boundary Layer over A Vertical Cone in Non-Newtonian Fluid Saturated Porous Medium with Internal Heat Generation", 8th International Congress on Industrial and Applied Mathematics which was held at Beijing China,10th August 2015 – 14th August 2015.

4. "Buoyancy Induced Flow over Axisymmetric Bodies Immersed in Porous Medium Saturated by a Nanofluid", National Conference on Mathematics and its Applications, AIT, Chikmagalur, 22nd December – 23rd December 2015.

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

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

Awards and Distinctions

Teaching Excellence Award for Innovation – University of Delhi
Gold Medallist – Panjab University

Association With Professional Bodies

Life member of Ramanujam Mathematical Society
Alumini – IIT Delhi

Other Activities

INVITED TALKS

- "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", Inaugral Lecture, Daulat Ram College, University of Delhi
- "Mathematical Modelling in School Curriculum", S D Public School, Delhi

COMPUTER PROFICIENCY

Languages: Fortran, Pascal, C, C++
Operating System: Windows, Macintosh, Linux
CAS: MATHEMATICA, MATLAB, R