Dr. Ram Autar
Professor
Contact: Department of Mathematics, H.B.T.U. Kanpur-208002
Email: rautar62@gmail.com
Mob.   +91-9956310515   (M)

_____

ACADEMIC QUALIFICATIONS

1. **D. Phil./Ph.D**. in Mathematics, 1990, Kanpur University, India
   Title: Fluid Dynamics of Eye and Cerebrospinal Fluid
   Supervisor: Prof. P.N.Tandon H.B.T.U. Kanpur

2. **M.Sc.** in Mathematics, (65.1%), 1984, Kanpur University, India**.**

3. **B.Sc**. in (Physics, Chemistry, Maths) (55.4%), 1982, Kanpur University,

   India.

4. **X+2th:** Intermediate Examination 1980, 65.2% From U.P. Board,
   Allahabad.

5. Xth: High School Examination 1977, 76.4% From U.P. Board, Allahabad.

TEACHING EXPERIENCE:

29 years experience in U.G. (B.Tech.), P.G. (MCA, M.Tech.) and Ph.D.

Classes.

SPECIALIZATION IN TEACHING:

1. Discrete Mathematical Structures
2. Probability
3. Statistics and Queueing Models
4. Stochastic Processes
5. Numerical Analysis
6. Combinatorics and Graph Theory

AREA OF INTEREST:

1. Applied Mathematics
2. Biomathematics

RESEARCH EXPERIENCE:

2 Years. As JRF (CSIR), 2 years as SRF (CSIR), 2 years as SRF (Direct CSIR award), 1 year and 3 months and 8 days as R.A. (Direct CSIR award)

RESEARCH FIELD:

Biomechanics (Mathematical Modelling of Transport Phenomena in the ocular and cerebrospinal Fluids systems)

RESEARCH SCHOLARSHIPS/PROJECTS AWARDED:

1. Fluid Dynamics of Eye and Cerebrospinal Fluid. (CSIR SRF)
2. Fluid Dynamics of the Ocular and Cerebrospinal Fluids (CSIR RA)

Ph. D. THESES SUPERVISED:

1. Rashmi Srivastava thesis entitled "Mathematical Modelling of Fluid Flow in the Eye" (Degree Awarded)
2. Deepti Tandon thesis entitled "Modelling and Analysis of Transport Phenomena in the eye" (Degree Awarded)
3. Swati Srivastava thesis entitled "Mathematical Modelling of Intraocular Flow Phenomena" (Degree Awarded)

RESEARCH PAPERS PUBLISHED:

1. P.N.Tandon, M. Purwar and R.Autar
   A mathematical model for aqueous drainage through the trabecular meshwork of the human eye. Kanpur University Res. J. Sci. VI 1985, 73-80.

2. P.N.Tandon, M. Purwar and R.Autar
   A study of Pressure-Distribution in the trabecular meshwork of the human eye. Proc. Workshop on Computer Applications in Continuum Mechanics. Roorkee, 1986, 83-87.

3. P.N.Tandon, M. Purwar and R.Autar
   Analysis of the distribution of tracer across blood –vitreous barrier coupled with extrusion mechanism. Proc. Second Int. Conf. on Physiological Fluid Dynamics IIT, Madras, 1987, 143-146.

4. P.N.Tandon, and R.Autar
   Flow and Diffusion in the eye. Proc. (Lecturer notes) ISTE Summer School on Modelling and Computational Techniques in Biosystems Dynamics. H.B.T.I. Kanpur, 1988, 50-71.

5. P.N.Tandon and R.Autar
   Intraocular Pressure Dynamics Proc. 16thNat.Conf.Fluid Mechanics and Fluid Power, H.B.T.I. Kanpur, 1988, 362-367

6. P.N.Tandon and R.Autar Flow of aqueous humor in the canal of Schlemm Math. Biosciences 93, 53-78, 1989.

7. P.N.Tandon, M. Purwar and R.Autar,
   A convective diffusion model of vitreous body in human eye. Indian Journal of Technology, Vol.27 1989, 325-329.

8. P.N.Tandon and R.Autar
   Coupled Transport of solute and water in secretion of cerebrospinal fluid in brain. Proc. 17th Nat. Conf Fluid Mechanics and Fluid Power, REC Waragal, 1990, G41-G45.

9. P.N.Tandon and R.Autar
   Biphasic model of the trabecular meshwork in the eye. Med. and Biol. Engg. and Comput. 29 1991, 281-290, 281-290,

10. Ram Avtar and Rashmi Srivastava
    Aqueous Outflow in Schlemm's Canal. Applied Mathematics and Computation, Vol.174; 2006, 316-328.

11. Ram Avtar and Rashmi Srivastava
    Modelling the Flow of Aqueous Humor in Anterior Chamber of the Eye. Applied Mathematics and Computation, Vol.181; 2006,1336-1348,

12. Ram Avtar and Rashmi Srivastava
Modelling Aqueous Humor Outflow through Trabecular Meshwork
Applied Mathematics and Computation, Vol.189; 2007, 734-745,

13. Ram Avtar and Deepti Tandon
Modelling the Transmural Transport of Oxygen to the Retina
Applied Mathematics and Computation, Vol. 186 (1), 2007, 540-547.

14. Ram Avtar, Rashmi Srivastava and Deependra Nigam
A Mathematical Model for the Solute Coupled Water Transport in the
production of Aqueous Humor. Applied Mathematics Modelling,
Vol.32; 2008, pp. 1350-1369.

15. Ram Avtar and Deepti Tandon
Modelling the Drug Transport of the anterior segment of the eye.
European Journal of Pharmaceutical science, Vol.32;2008, pp.175-
182.

16. Ram Avtar and Deepti Tandon
A Mathematical Analysis of Intravitreal Drug Transport. Tropical
Journal of Pharmaceutical Research, Vol. 7 (1); 2008, pp. 867-877.

17. Ram Avtar and Deepti Tandon
A Mathematical Modelling of Intravitreal Oxygen Partial pressure.
Tropical Journal of Pharmaceutical Research, Vol. 7 (4); 2008, pp.
1107-1116.

18. Ram Avtar and Rashmi Srivastava
Mathematical Model of Aqueous Humor Flow in Posterior chamber of
the Eye. International Journal of Theoretical and Applied Mechanics,
Vol.4;No. 3, 2009, pp. 305-319.

19. Ram Avtar, Swati Srivastava and Rashmi Srivastava
Modelling the Flow of Aqueous Humor in Schlemm's Canal in the
Eye. Applications and Applied Mathematics, Vol. 9; Issue 1, 2014, pp.
186-200.

20. Ram Avtar and Swati Srivastava

The Convection Flow of Aqueous Humor in the Anterior Chamber of Human Eye. Advances in Applied Science Research, Vol. 5; Issue 3, 2014, pp. 359-369.

21. Ram Avtar and Swati Srivastava
Modeling the Flow of Aqueous Humor in the Posterior Chamber of Eye. e-Journal of Science and Technology, Vol.10; Issue 4, 2015, pp. 41-52.

22. Ram Avtar and Swati Srivastava
A Two-phase Model for the Aqueous Outflow through the Trabecular Meshwork. International Journal of Applied Mathematical Research, Vol. 5; Issue 2, 2016, pp. 110-116.

23. Ram Avtar and Swati Srivastava
Mathematical Modeling of Exudative Retinal Detachment, Applied Mathematics, Vol. 8; Issue 1, 2017, pp. 44-56.

24. Aadesh Kumar,Dr.Ram Avtar,Dr.Dipti Seth
Mathematical Modelling of Drug Transport From Contact Lens to Anterior Segment of the Eye, International Journal of Scientific& Technology Research, Vol.8; Issue 10, March, 2019, pp. 2388-2392.

25. Aadesh kumar, Dr. Deepti Seth, Dr. Ram Avtar, Dr. Tarun Kumar
Mathematical Modeling & analysis of diabetic retinopathy, J Pur Appl Math, Vol.5; Issue 2, March, 2021, pp. 23-27.

26. Ram Autar and Anuj Kumar
Mathematical Modeling of Short Pulsed Laser Irradiation in the Cornea: A Dual Phase Lag Model, Journal of Applied Mathematics and Computational Mechanics, Vol.20; Issue 3, 2021, pp. 5-16.

27. Ram Autar and Anuj Kumar
Mathematical Modeling of Ultrashort Pulsed Laser Irradiation in the Cornea: International Journal of Health Sciences, Vol.6; Issue S2, 2022, pp. 12905–12917.

CHAPTER IN BOOKS
Dr. Ram Autar

A simple Mathematical Model of Exudative Retinal Detachment, Theory and Practice of Mathematics and Computer Science, Vol.8,2021

SUMMER SCHOOLS/ WINTER SCHOOLS/WORKSHOPS/ TRAINING PROGRAMS etc ATTENDED

1. ISTE- sponsored summer school on "Modeling and Computational Techniques in Biosystems Dynamics", June 15-July2, 1988, H.B.T.I.Kanpur
2. "Reliability and Safety in Process Industries", Sept. 28-Oct.10 1998 at H.B.T.I.Kanpur.
3. Sabolev Spaces and applications, Dec3-20,1998,IIT.Kanpur.
4. "Probability, Random Processes, and Elements of Information Theory", June 14-26, 1999 at IIT Kanpur
5. ISTE sponsored a 2 weeks short-term training programme on "Eco-Friendly Chemical Technologies". March 11-24.2002 at HBTI Kanpur.
6. A short-term training programme on "Intellectual Property, Rights and Patent Information". Sept. 27-Oct.1. 2004 at HBTI Kanpur.
7. Two weeks short term course on "Mathematical Methods in Engineering and Science". July 3-15.2006 at IIT Kanpur.
8. A workshop on "Modeling and Simulation of Chemical Processes". Feb. 24-28.2009 at HBTI under TEQUIP.
9. ISTE-AICTE sponsored a short-term training programme on "Optimization Techniques for Engineers". March 23-28.2009 at HBTI Kanpur.
10. A Lecture Series organized exclusively on Saturdays and Sundays "Mathematical Modelling and System Simulation" (Feb 20 to March 31, 2010) by the Department of Mathematics.
11. Prof. P.N. Tandon Memorial week-ends Lecture Series on "Modeling and Computing" (Feb. 18- March 18, 2012).
12. A Faculty Development Programme on "Curriculum Development and Evaluation Methods in Technical Education" (July 1-6, 2013, under TEQUIP-II, World Bank) organized by PL and ME depts., HBTI, Kanpur.
13. A Faculty Development Programme on "Engineering Education: Opportunities, Challenges & Future Directions" (March 7-12, 2014 under TEQUIP-II, World Bank) organized by ME deptt., HBTI, Kanpur.

LECTURES DELIVERED:

1. On "Role of Mathematics in Science and Technology".
   24 th Oct., 2007, a Workshop at H.B.T.I., Kanpur, under TEQUIP, World Bank Project.

2. On "Optimization Techniques for Engineers", March 23-28, 2009, in STTP sponsored by ISTE – AICTE, at HBTI, Kanpur.
3. Lectures delivered in "Mathematical Modelling and System Simulation" in a Lecture Series being organized exclusively on Saturdays and Sundays (Feb 20 to March 31, 2010) by the Department of Mathematics, HBTI, Kanpur on
   (i)   Probabilistic Modeling.
   (ii) Discrete Probability Models.
   (iii) Generation of Discrete Random Variates.
   (iv) Simulation Modeling.
   (v)   Generation of Random Numbers.
   (vi) Generation of Continuous Random Variates.
   (vii) Monte Carlo Simulation.
   (ix) Continuous System Simulation.
   (x)   Discrete System Simulation.

4. Lectures delivered in Prof. P.N. Tandon Memorial week-ends Lecture Series on "Modeling and Computing" (Feb. 18- March 18, 2012) on
   (i)   Elements of Stochastic Modeling.
   (ii) Birth Death Process Model.
   (iii) Discrete Systems Modeling-Graph Models.
   (iv) Probability Models in Computer Programming-I.
   (v)   Probability Models in Computer Programming-II.

SUMMER SCHOOLS/ WINTER SCHOOLS/WORKSHOPS/ TRAINING PRORAMS/ LECTURE SERIES etc ORGANISED:

1. Lecture Series on "Mathematical Modelling and System Simulation" exclusively on Saturdays and Sundays (Feb 20 to March 31, 2010) in HBTI, Kanpur as Coordinator.
2. Prof. P.N. Tandon Memorial week-ends Lecture Series on "Modeling and Computing" (Feb. 18- March 18, 2012) in HBTI, Kanpur as Convener.
3. One week Faculty Development Programme on "Modeling, Simulation and Analysis of Engineering Systems" (Oct. 25-30, 2013, under TEQUIP-II, World Bank) as a member of the organizing committee.

4. Faculty Development Programme on "Mathematical Modeling and Research Methodology" (Oct. 08-12, 2018, under TEQUIP-III, World Bank) as a Coordinator.
5. One week short term training programme on " Data Analysis and SPSS Software" (Oct. 21-25, 2019, under TEQUIP-III, World Bank) as Co Ordinator.

TECHNICAL SESSIONS-CHAIRED:

1. A session in Sir S. Ramanujan Memorial Five days workshop/Lecture Series in National Mathematical Year 2012 sponsored by CSIR, Dec. 18-22, 2012, by Department of Mathematics, DAV College, Kanpur.

RESEARCH PAPERS REVIEWED:

1. Peristaltic pumping of a particle-fluid suspension in a circular tube with an inserted catheter

   Journal: Int J Fluid Mechanics Research

   Publication: Begell House Pub.

2. Blood flow through a stenosed catheterized artery: effects of hematocrit and stenosis shape

   Journal: Computers and Mathematics with Applications

   Publication: Elsevier Pub.

(RAM AUTAR)