

Curriculum Vitae

Mukhtar Ahmad Khanday (Ph.D.)

Professor & Head

Department of Mathematics,
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Contact Details

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Research Specialization

- *Mathematical Modeling/ Modeling Biological Sciences.*
- Heat and Mass transfer in Biological tissues.
- Modeling Tumors, Hyperthermia/Hypothermia, Hypoxia and Thermal Injuries.
Transdermal drug delivery, Drug distribution in *in-vivo* tissues.

Education

- Ph.D. in Mathematics with Biomathematics specialization.
- M. Sc. Mathematics Kashmir University Srinagar
- B. Sc. with Electronics, Physics and Mathematics, KU, Srinagar

Experience

- Appointed as **HOD Mathematics**, University of Kashmir, Srinagar for a period of three years (Joined on May 24, 2023).
- Served as **Director, University of Kashmir-South Campus** from December 20, 2021 to May 23, 2023.
- Professor w. e. f. July 15, 2020 at Department of Mathematics University of Kashmir, Srinagar.
- Associate Professor from 15-07-2017 to 14-07-2020 at PG Department of Mathematics, University of Kashmir, Srinagar. (**Associate Professor appointed by the Central University of Kashmir on August 2016 (Not joined)!!!**)
- Selection Grade Assistant Professor from July 15, 2014 to July 14, 2017.
- Sr. Assistant Professor from July 15, 2009 to July 14, 2014.
- Assistant Professor from July 15, 2003 to July 14, 2009.
- Research Experience of since 2006.
- Approved as supervisor by the BORS for guiding M. Phil/Ph.D. students in 2011
- Served various Departments in the capacity of Guest Faculty.
- Teaches students enrolled for M. Sc. Programme in Mathematics through Directorate of Distance Education, University of Kashmir, Srinagar since last many years.

Research Guidance

Name of the Scholar	Title of the Thesis	Degree	Status
<i>Aasma Rafiq</i>	Modeling thermoregulation in human eye at extreme climatic conditions	M.Phil.	Awarded on 21.08. 2013
<i>Khalid Nazir</i>	Mathematical and Numerical study of hyperthermia and cancerous tumors	M. Phil	Awarded on 15.04.2015
<i>Aijaz Ahmad Mir- (JRF-CSIR)</i>	Mathematical estimation of thermal stress on human body	Ph.D.	Awarded on 15.09.2015
<i>Aijaz Ahmad Najar - (JRF-CSIR)</i>	Variational finite element approach to study heat and oxygen transfer in human body	Ph.D.	Awarded on 31.03.2016
<i>Aasma Rafiq- (DST INSPIRE FELLOW)</i>	Mathematical and Numerical Investigation of heat and drug diffusion in human subjects at extreme environmental conditions	Ph.D.	Awarded on 29.12.2016
<i>Khalid Nazir (Project Fellow under UGC Proj.) Co-guide: Prof. BA Ganie</i>	Heat and mass transfer in biological tissue with special reference to cancerous tumors	Ph.D.	Awarded on 15.02.2018
<i>Ahsan ul Haq Lone, NET (Project Fellow under SERB Proj.)</i>	Mathematical modeling of transport and exchange of oxygen and carbon-dioxide in human body	Ph.D.	Awarded on 12.10.2021
<i>Saqib Mubarak, SET (Project Fellow under NBHM Proj.)</i>	Mathematical and numerical study of drug and tracer kinetics in human body	Ph.D.	Awarded on 04.08.2021
<i>Ms. Roohi Jan Co-guide: Dr. Fouzia Rashid</i>	Mathematical Analysis of Enzyme-Substrate complex and its binding properties.	Ph.D.	Awarded on 31.03.2023
<i>Faizan Ahmad Zargar Co-guide: Dr. Mudasir Ashraf</i>	Mathematical modelling of kinetics of malignant tumors in Kashmir region	Ph.D.	Awarded on 30.10.2023
<i>Mr. Nayied Ahmad Naveed Co-guide: Dr. FA Shah</i>	A Wavelet-based numerical study of some epidemic models with special reference to SIR and SEIR models	Ph.D.	Registered since 2021
<i>Ms. Sumaira Anjum Co-guide: Dr. Tanveer Ali</i>	Enzymes and Inhibitors Course work	Ph.D.	Joined in April 2023
<i>Ms. Sabira Ali Co-guide: Dr. Aijaz A Mir</i>	Tumor kinetics Course work	Ph.D.	Joined in April 2023

Research Projects (Project Fellows/Junior Research Fellows)

Name of the Fellow	Title of the Project	Funding Agency & Amount (Rs.)	Duration
<i>Khalid Nazir- (Project Fellow-Major Research Project)</i>	Mathematical study of cold stress and related problems in human beings of Jammu & Kashmir during winter	UGC, New Delhi 9,25,400/= (Completed)	2013-2018
<i>Fida Hussain- (JRF-Major Research Project)</i>	Mathematical and Numerical analysis for thermal stress on human peripherals in our state	SERB-DST 12,24,000/= (Completed)	2013-2016

Mr. Saqib Mubarak (PhD/Junior Research Fellow)	Mathematical Analysis on the Diffusion and Absorption Rate in Biological Tissues; with special reference to the Transdermal Drug Delivery System	NBHM, DAE, Govt. of India 14,18,100/= (Completed)	2016-2019
Mr. Ahsan ul Haq Lone (PhD/Junior Research Fellow)	Modeling hypothermia and hypoxia associated problems to the people living at high altitudes of Himalayan regions	SERB-DST 15,57,600/= (Completed)	2018-2021
Recently sanctioned Project	Mathematical and Numerical Investigation of Cooperativity of enzymes and glucose synthesis in biological tissues	JK- DST (2,75,000) 1 st installment (Ongoing)	2024-2026

Placement of Students

S. No.	Name of the Scholar/Student	Organization	Year
1.	Dr. Aijaz Ah. Mir, PhD Scholar	Assistant Professor, Higher Education	2017
2.	Dr. Aijaz Ah. Najar, PhD Scholar	Assistant Professor, Higher Education	2016
3.	Dr. Aasma Rafiq, PhD Scholar	Lecturer Mathematics, School Education	2017
4.	Dr. Khalid Nazir, PhD Scholar	Lecturer Mathematics, School Education	2017
5.	Mr. Fida Hussain, Project Fellow	Lecturer Mathematics, School Education	2017
6.	Dr. Saqib Mubarak, PhD Scholar	Assistant Professor Lovely Professional University Punjab.	2023
7.	Dr. Ahsan ul Haq Lone, PhD Scholar	Assistant Professor (Contractual), GDC Women's Anantnag	2022
8.	Dr. Roohi Jan, PhD Scholar	Assistant Professor Lovely Professional University Punjab.	2023
9.	Dr. Faizan Ahmad Zargar, PhD Scholar	Statistical Assistant Jammu, Planning Department, J&K Govt.	2023

Achievements/Honors

- Received **Young Scientist Award in the year 2015** from the Department of Science and Technology, in the subjects Mathematics, Statistics and Computer Sciences, with citation and cash prize at the Award Ceremony of 10th JK Science Congress, held during March 14-16, 2015 at Jammu University.
- Mentor in the National Network for Mathematical and Computational Biology (NNMCB-Mohali Node) to guide research students/interns at National level.
- Awarded as **Junior Research Fellow by the Council for Scientific and Industrial Research, New Delhi** (December 2002) as a first candidate from Jammu and Kashmir State in Mathematical Sciences.

- Received University **Gold Medal** in the 16th Annual Convocation held in 2003.
- Received **paper presentation award** for the paper entitled “Modeling thermoregulation in Human brain exposed to cold environment” at **Centre for Mathematical Modeling, Banasthali University Rajasthan**: Dec. 14-19, 2009.
- Awarded **Excellent Teacher** grade by the DIQA, University of Kashmir in 2008.
- Organized a National event “**Programme on Mathematical Modeling of Biological Systems**” during April 2-4, 2015 in Collaboration with National Network for Mathematical and Computational Biology-Mohali Node.
- Organized one week workshop on “**Mathematics and Its Applications**” during October 5-11, 2015 sponsored by NBHM and University of Kashmir.
- Organized one day National Conference on “Recent Trends in Pure and Applied Mathematics”, December 19, 2017.
- Organized 2-Day workshop on “Geometrical Interpretation of Mathematical Objects”, during August 28-29, 2018.
- Organized “4-Day INMO training Camp for Olympiad” Students during December 17-20, 2018.
- Organized 4-Day INMO training Camp for Olympiad students and National Day of Mathematics Celebration during December 29, 2019 and January 1, 2020.
- Organized 2-Day National Conference on Emerging Trends in Mathematics-Its Applications and Celebration of Mathematics Day during December 15-16, 2020.
- Organized Teacher’s Enrichment Workshop on Functional Analysis funded by National Centre for Mathematics, TIFR Mumbai during Nov. 28-Dec. 12, 2021.
- Organized around seven programmes at different high/higher secondary schools and Colleges of Kashmir division during December 2022 as an outreach-cum-awareness programmes for popularization of mathematics. The programmes were funded by the JK Department of Science and Technology (Govt. HSS Srigufwars, Govt. Girls HSS Brakpora, Govt. HSS Rainawari, Govt. HSS Sopore, Govt. HSS Zainapora Shopian, Govt. HSS Hall Pulwama, South Campus Anantnag).
- Organized National Conference on Mathematics and its role in other disciplines together with Grand Alumni Meet 2023 & Felicitation function for Superannuated Faculty during October 5 and 18, 2023 at Department of Mathematics University of Kashmir in collaboration with JK Department of Science Technology and Innovation Council, Srinagar.
- Organized National Day of Mathematics-2023 on December 22, 2023 with participation of students from various Secondary Schools of Kashmir Division.

Publications (Research Papers)

- Roohi Bhat & **MA Khanday** (2024), Traveling wave solution and the stability of critical points of an enzyme-inhibitor system under diffusion effects: with special reference to dimer molecule, **Computer Methods in Biomechanics and Biomedical Engineering**, Feb., 2024, SCI, IF- 1.9
- F. A. Zargar, **M. A. Khanday**, Mudasir Ashraf and R. Bhat, (2024), Impact of radiation therapy on healthy and cancerous cell dynamics: a Mathematical

- analysis, **Computer Methods in Biomechanics and Biomedical Engineering**, DOI: 10.1080/10255842.2024.2308700, Jan. 2024, SCI, IF- 1.9
- - Roohi Bhat, MA Khanday and FA Zargar (2023), **Mathematical modeling of biomolecular interaction of enzyme-substrate-inhibitor system**, Journal of Mechanics in Medicine and Biology, <https://doi.org/10.1142/S0219519423500872>, SCI, IF- 0.8.
 - Naied A Nayied, Firdous A Shah, MA Khanday (2023) **Fibonacci Wavelet Method for the Numerical Solution of Nonlinear Reaction-Diffusion Equations of Fisher-Type**, Journal of Mathematics, Hindawi, Vol. 2023, Article ID 1705607, SCI, IF-1.4
 - Faizan Ahmad Zargar, Mukhtar Ahmad Khanday, Mudasir Ashraf (2023), **A mathematical study of nanoparticle aided hyperthermia treatment of hepatic cancer using magnetite nanoparticles under alternating and rotating magnetic fields**, International Journal of Nonlinear Analysis and Applications, 2301-2312
 - Naied Ahmad Nayied, Firdous Ahmad Shah, Kottakkaran Sooppy Nisar, Mukhtar Ahmad Khanday, Saima Habeeb (2023), **Numerical Assessment of the Brain Tumor Growth Model via Fibonacci and Haar Wavelets**, Fractals, World Scientific Publishing Company, 31(2), 2340017, SCI, IF. 4.7.
 - Roohi Jan and M. A. Khanday (2023), **A mathematical analysis of cooperativity and fractional saturation of oxygen in hemoglobin**, Commun.Fac.Sci.Univ.Ank.Ser. A1 Math. Stat. Volume 72, Number 1, Pages 118–128 (2023) DOI:10.31801/cfsuasmas.1029614 ISSN 1303-5991 E-ISSN 2618-6470
 - Saqib Mubarak and Khanday M.A. (2022), **A mathematical model to study thermoregulation and heat-transfer processes in hypothermic neonates under variable physiological parameters**, Computer Methods in Biomechanics and Biomedical Engineering, DOI: 10.1080/10255842.2022.2117550 , SCI, IF-1.9.
 - Khanday MA and Saqib Mubarak (2022), **Mathematical modeling of concentration/ time activity profiles of radiotracers in positron emission tomography**, Computer Methods in Biomechanics and Biomedical Engineering, Imaging & Visualization, Taylor and Francis, <https://doi.org/10.1080/21681163.2022.2064333>. (June 2022), SCI, IF 1.9.
 - Ahsan ul Haq Lone and Khanday MA, (2022), **Mathematical analysis of oxygen and carbon dioxide exchange in the human capillary and tissue system**, Computer Methods in Biomechanics and Biomedical Engineering, Taylor and Francis, <https://doi.org/10.1080/10255842.2022.2053115> (March 2022), SCI, IF 1.9.
 - Roohi Bhat and MA Khanday (2022), **An Algebraic Mathematical Model For Non-Competitive Enzyme Inhibitors With Slow And Fast Subsystems**, Applied Mathematics E-Notes, 22(2022), 362-370, ISSN 1607-2510 Available free at mirror sites of <http://www.math.nthu.edu.tw/~amen/>
 - Ahsan ul Haq Lone, Khanday MA, Saqib Mubarak and FA Reshi (2022), **Heat distribution and the condition of hypothermia in the multi-layered human head:**

- A mathematical model**, Computer Methods in Biomechanics and Biomedical Engineering, Taylor and Francis, <https://doi.org/10.1080/10255842.2022.2047953>, (March 2022), SCI, IF 1.9.
- Saqib Mubarak and **Khanday M.A.** (2021), **Mathematical modeling of drug-diffusion from multi-layered capsules/tablets and other drug-delivery devices**, Journal of “Computer Methods in Biomechanics and Biomedical Engineering” Taylor and Francis, <https://doi.org/10.1080/10255842.2021.1985477>, IF 1.76.
 - **Khanday** Khanday, Mukhtar Ahmad and Bhat, Roohi (2021). (R1488) **Transformation of Glucokinase under Variable Rate Constants and Thermal Conditions: A Mathematical Model**, Applications and Applied Mathematics: An International Journal (AAM), Vol. 16, Iss. 2, Article 10.
 - Ahsan ul Haq Lone, **Khanday M.A.** and Saqib Mubarak. (2021), ***A four-compartment model to estimate oxygen and carbon dioxide exchange concentrations via blood using eigenvalue approach***” South East Asian Journal of Mathematics and Mathematical Sciences, **17(2) 367-384, ISSN: 2582-0850.**
 - Saqib Mubarak and **Khanday M.A.** (2021), ***A mathematical model on the dynamics of radioactive tracer flow in PET scan***, Applied Mathematics E-Notes, 22(2022), 383-392, ISSN 1607-2510, <http://www.math.nthu.edu.tw/amen/>
 - **Khanday M.A.** et al. (2021), ***An analytical approach to study the drug diffusion through transdermal drug delivery system***, Applied Mathematics E-Notes, 21(2021), 198-208, ISSN 1607-2510, ESCI.
 - **Khanday M.A.** et al. (2021), ***Compartment modelling and eigenvalue expansion to study the drug concentration in capillary and tissue regions surrounding the malignant tumour***, Network Modeling Analysis in Health Informatics and Bioinformatics, Springer, DOI: 10.1007/s13721-020-00275-2, ESCI, 10(2), January 2021.
 - A.H. Lone, **M.A. Khanday** and Saqib Mubarak (2020), ***Explicit finite difference method to estimate oxygen concentration in biological tissues under variable oxygen tension in capillaries***, Computational and Mathematical Methods, Wiley Publishers, DOI: 10.1002/cmm4.1128, wileyonlinelibrary.com/journal/cmm4.
 - Faizan Ahmad Zargar and **Khanday, M. A.** (2020), ***Mathematical analysis on the dynamics of COVID-19 in India using SIR Epidemic Model***, Mapana Journal of Sciences, Vol. 19 (3), 1–9, doi.org/10.12723/mjs.54.1.
 - Saqib Mubarak, **Khanday, M.A.** and AH Lone (2020), ***Variational finite element approach to study heat Variational finite element approach to study heat transfer in the biological tissue of premature infants***, Journal of Thermal Biology, Elsevier, vol. 92, SCI, **Impact Factor-3.2.**
 - Saqib Mubarak, **Khanday, M.A.** and AH Lone (2020), ***Mathematical analysis based on eigenvalue approach to study liver-metastasis disease with applied drug therapy***, Network Modeling Analysis in Health Informatics and Bioinformatics,

- Saqib Mubarak, **Khanday, M.A.** and AH Lone (2019), *Pseudo analytic approach to estimate drug transport and release in the annular section of human limbs*, Italian Journal of Pure and Applied Mathematics, Volume 43 (2020), 878-889, ESCI.
- **Khanday M.A.** and Khalid Nazir and B.A. Ganai (2017), 2D model on heat regulation in human body with dermal tumor, **Electronic Journal of Differential Equations, Texas State University, USA.** Vol. 24(2017), URL: <http://ejde.math.txstate.edu> or <http://ejde.math.unt.edu>, SCI, **Impact Factor-0.96**
- **Khanday M.A.** and Khalid Nazir (2017), Mathematical and numerical analysis of cancerous tissues under the local heat therapy, **International Journal of Biomathematics, World Scientific Publishers,** 1750099[10 pages], <https://doi.org/10.1142/S1793524517500991>, SCI, **(Impact Factor-1.05)**.
- Aijaz Najar and **Khanday M. A.** (2016), Numerical study of heat exchange in human body through clothes and thermal stability of biological tissues, **Applied Mathematics and Information Sciences, An International Journal, Natural Sciences Publishers USA,** Vol. 10(6), 2217-2225, <http://dx.doi.org/10.18576/amis/100624>, ESCI, **(Impact Factor-1.23)**
- Aasma Rafiq and **Khanday M. A.** (2016), Thermal behavior of human eye in relation with change in blood perfusion, porosity, evaporation and ambient temperature. **Journal of Thermal Biology, Elsevier,** Volume 62, Part B, 138–142, SCI, **(Impact Factor-3.2)**
- **Khanday M.A.,** Aasma Rafiq and Khalid Nazir (2016), Mathematical models for drug diffusion through the compartments of blood and tissue medium, **Alexandria Journal of Medicine, Elsevier** , SCI, online July 26, 2016. **(Impact Factor-0.94)**
- **Khanday M.A.,** and Khalid Nazir (2016), Eigenvalue Expansion Approach to Study Bio-Heat Equation, **Journal of Multiscale Modeling** , Vol. 7(2), 1650002 (8 pages), World Scientific Publishing Company DOI: 10.1142/S1756973716500025, SCI.
- **Khanday M. A.** and Fida Hussain, (2016), Thermal Stability of Biological Tissues and their Behaviour in Cold Conditions: A Mathematical Model, **International Journal of Biomathematics,** DOI: 10.1142/S1793524516500662, Vol 9(5), 1650066 (12 pages), SCI, **(Impact Factor-1.05)**
- Mir Aijaz and **Khanday M.A.** (2016), Studying the effects of the heat stress on the various layers of human skin using damage function, **International Jour. of Comp. Mat. Sci. and Engineering, Imperial College, London Press,** Vol. 5(1), 2016, DOI: 10.1142/S2047684116500032, 1650003 (12 pages), ESCI, online March 25.
- Mir Aijaz and **Khanday M.A.** (2016), Temperature distribution and thermal damage of peripheral tissue in human limbs during the heat stress: A Mathematical Model, **Journal of Mechanics in Medicine and Biology,** World Scientific Publishing Company, Singapore, vol. 16(5), 16500064, SCI, **(Impact Factor-0.81)**

- **Khanday M. A. et al. (2016)**, A mathematical model for the estimation of thermal stress and development of cold injuries on the exposed organs of human body, **Journal of Mechanics in Medicine and Biology**, vol. 16(5), DOI: 10.1142/S0219519416500627, 1650062, SCI, **(Impact Factor-0.81)**
- **Khanday M. A. and Aasma Rafiq (2016)**, Numerical Estimation of Drug Diffusion at Dermal Regions of Human Body in Transdermal Drug Delivery System, **Journal of Mechanics in Medicine and Biology**, **World Scientific Publishing Company**, vol. 16(3), DOI: 10.1142/S0219519416500226, SCI, **(Impact Factor-0.81)**
- **Khanday M.A. et al. (2016)** Modeling human peripheral tissue temperature based on numerical computation of non-linear boundary value problem, **Journal of Nonlinear Analysis and Optimization, Theory & Applications**, Vol. 7(1), ESCI, 129-135.
- **Khanday M.A. (2016)**, A review paper entitled “ Modeling heat and oxygen regulation in human body: An overview”, GAMS Journal of Mathematics and Biosciences, A Special Issue of 2016.
- **Khanday M.A. and Fida Hussain (2015)**, Crank-Nicholson Scheme for the Estimation of Thermal Disturbance on the Peripheral Tissues of Human Body Subjected to Oscillatory Boundary Condition and Time Dependent Heat Source, **Journal of Multiscale Modeling**, Vol. 6, No. 1 1550001 (10 pages), ©**Imperial College London Press**, ESCI, DOI: 10.1142/S1756973715500018.
- **Khanday M.A. et al. (2015)**, Finite Element Approach to Study the Behaviour of Fluid Distribution in the Dermal Regions of Human Body due to Thermal Stress, **Journal of Egyptian Mathematical Society, Elsevier**, Vol. 23(3), 568-573, online February 23, 2015, ESCI, [doi:10.1016/j.joems.2014.12.009](https://doi.org/10.1016/j.joems.2014.12.009)
- **Khanday M.A. and Aijaz Najar (2015)**, Maclaurin's Series Approach for the Analytical Solution of Oxygen Transport to the Biological Tissues Through Capillary Bed, **Journal of Medical Imaging and Health Informatics, American Scientific Production**, Vol. 5(5), 959-963, DOI: <http://dx.doi.org/10.1166/jmihi.2015.1487>, SCI, **(Impact Factor-0.93)**
- **Khanday M. A., Fida Hussain and Khalid Nazir (2015)**, Tissue necrosis and passage of fluid due to cold stress from the thermally damaged human body peripherals: A mathematical model, **International Journal of Computational Materials Science and Engineering, World Scientific Publishing Company**, Available online, June 18, 2015, Vol. 4(2), 1550012 (14 pages), ©**Imperial College London Press**, DOI: 10.1142/S2047684115500128, ESCI.
- **Khanday M. A. and Khalid Nazir (2015)**, Temperature distribution in biological

- tissues under the influence of external heat source, **Bull. of Cal. Math. Soc.** 107(2), 145-152, ESCI.
- **Khanday M. A.** et al. (2014), Variational finite element approach to estimate the heat distribution in multi-layered human eye, **Bul. Cal. Math. Soc.** 106(2), 93-104, ESCI.
 - **Khanday M.A.** and Fida Hussain (2014), Explicit formula of finite difference method to estimate human peripheral tissue temperatures during exposure to severe cold stress, **Journal of Thermal Biology, Elsevier**, Vol. 48(February, 2015), 51-55, Available online from December 24, 2014, SCI, **(Impact Factor-3.2.)**
 - **Khanday M.A.** and Aijaz Najar (2015), Mathematical model for the transport of oxygen in the living tissue through capillary bed, **Journal of Mechanics in Medicine and Biology**, World Scientific Publishing Company, Vol. 15(4), 155055(12 pages), doi/abs/10.1142/S0219519415500554, SCI, **(Impact Factor-0.81)**
 - **Khanday M.A.** and Aijaz Najar (2014), Variational finite element approach to estimate the behavior of oxygen diffusion in the biological tissue via plasma and capillary layers, **International Journal of Modern Mathematical Sciences**, Vol. 12(1), 1-9, ISSN: 2166-286X.
 - **Khanday, M. A.** and Aasma Rafiq (2014), Variational finite element method to study the absorption rate of drug at various compartments through transdermal drug delivery system, **Alexandria Journal of Medicine, Elsevier**, Vol. 51(3). 219-223, (online Available from November 22, 2014), ESCI, **(Impact Factor-0.94)**
 - Mir Aijaz, **M.A. Khanday** and Aasma Rafiq (2014), Variational Finite Element Approach to Study the Thermal Stress in Multi-layered Human Head, **International Journal of Biomathematics**, World Scientific Company, Vol. 7(6), 1450073, available online from October 2, 2014, SCI, **(Impact Factor-1.05)**
 - **Khanday, M.A.**, Aasma Rafiq and Mir Aijaz (2014), Mathematical Study of Transient Heat Distribution in Human Eye Using Laplace Transform, **International Journal of Modern Mathematical Sciences**, Vol. 9(2), 118-127, ISSN: 2166-286X
 - **Khanday, M.A.**, Mir Aijaz and Aasma Rafiq (2014), Numerical estimation of the fluid distribution pattern in human dermal regions with heterogeneous metabolic fluid generation, **Journal of Mechanics in Medicine and Biology**, World Scientific, Vol. 15(1), Available online from August 22, 2014, doi/abs/10.1142/S0219519415500013, SCI, **(Impact Factor-0.81)**

- **Khanday, M.A.** (2014), Numerical study of partial differential equations to estimate thermoregulation in human dermal regions for temperature dependent thermal conductivity, **Egyptian Journal of Mathematics, Elsevier**, Vol. 22(1), 152-155. (Available online, July 17, 2013), ESCI, ISSN 1110-256X.
- **Khanday, M.A.,** Mir Aijaz and Aasma Rafiq (2013), Mathematical analysis on the treatment of cancerous tumors based on local hyperthermia, **Journal of energy, heat and mass transfer**, Vol. 35(2), ISSN 0970-9991.
- **Khanday, M.A** (2013), Mathematical and Numerical Estimation of Tissue Damage in Human peripherals due to Cold Injuries, **International Journal of Mechanical and Production Engineering Research and Development**, TJPRC, ISSN 2249-6890, Vol. 31, 53-60.
- **Khanday, M.A.** (2013), Theoretical approach to study the thermal behavior on human brain tissue in hypothermic conditions, **International Journal of Advanced Computer and Mathematical Sciences**, Vol. 42, 181-187. ISSN 2230-9624.
- **Khanday M. A.,** et al. (2012), Modeling Effect of slaughtering on the conservation and migration of animal species, *International Journal of Mathematical Archive*, Vol. 13(2), 466-470, ISSN No. 2229-5046.
- **Khanday M. A.,** et al. (2012), Theoretical analysis on the stability and persistence of interacting species during dispersion, *Research Journal of Pure Algebra*, Vol. 12(2), 71-76. ISSN No. 2248-9037.
- **Khanday, M. A. and Saxena, V. P.** (2010), Mathematical Study of Diffusive Fluid Transport and Distribution in Human Dermal Regions, **Journal of Analysis in Theory and Applications, Springer**. Vol. 26(4): 350-358. ESCI, ISSN NO. 1672-4070(Print) 1573-8175 (Electronic).
- **Khanday, M. A. and Saxena, V. P.** (2009), Finite element approach for the study of thermoregulation in human head exposed to cold environment. *Proceedings Journal of American Institute of Physics*, Vol. 1146, 375-385, ESCI, ISSN NO. 0094-243x.
- **Khanday, M. A. and Saxena, V. P.** (2009), Mathematical estimation of cold effect in human dermal regions. *International Journal of Applied Mathematics and Computation*, Vol. 11 (1): 17-29. ISSN NO. 0974-4665(P) 0974-4673 (E).
- **Khanday, M. A.** (2009), Theoretical Study of Response on Human Thermoregulation due to Sweat Evaporation, GAMS, **Journal of Mathematics and Mathematical Bio-Sciences, Taylor and Francis**, vol. 32, 76-83, ISSN NO. 0974-2689.

- **Khanday, M. A.** and Saxena, V. P. (2009), Finite element estimation of one-dimensional unsteady state heat regulation in human head exposed to cold environment, **Journal of Biological Systems, World Scientific**, Vol. 17(4): 853-863. ISSN NO. 0218-3390 (Print) 1793-6470 (Electronic), ESCI, (**Impact Factor-0.79**).
- **Khanday, M. A.** and Saxena, V. P. (2009), Mathematical estimation of human physiological disturbances in human dermal parts at extreme conditions: A one dimensional steady state case, **Journal of Analysis in Theory and Applications, Springer**, Vol. 25(4): 325-332. ISSN NO. 1672-4070(Print) 1573-8175, ESCI.

Scripts/Study Material

- **Introduction to Modeling and Biomathematics (2015)**, Ariana Book Publishers, New Delhi. ISBN 978-93-85497-25-4(HB), ISBN 978-93-85497-26-1(PB), Pp (248).
- **Theory of Ordinary Differential Equations-I** (2005), Published by Directorate of Distance Education, University of Kashmir, Srinagar, ISBN: 978-93-82097-14-3.
- **Complex Analysis-I** (2009), Published by Directorate of Distance Education, University of Kashmir, Srinagar, ISBN: 978-93-82097-14-3.
- **Lebesgue Integration Theory** (2010), Published by Directorate of Distance Education, University of Kashmir, Srinagar, ISBN: 978-93-82097-14-3.
- **Introduction to Mathematical Modeling** (2011), Published by Directorate of Distance Education, University of Kashmir, Srinagar, ISBN: 978-93-82097-14-3.
- **Canonical Forms in Linear Algebra** (2011), Published by Directorate of Distance Education, University of Kashmir, Srinagar (in press), ISBN: 978-93-82097-14-3.
- **Mathematical Biology** (2011), Published by Directorate of Distance Education, University of Kashmir, Srinagar, ISBN: 978-93-82097-14-3.

M.Sc. Projects Supervised:

- Basic mathematical model of cardiovascular system (Mr. Taloot Bhat & Ms. Gousia Kounser; Batch 2021)
- Basic mathematical modelling of heat and blood transport in human eye (Mr. Nadeem Maqbool, Ms. Rumaya Rasheed, Ms. Gousia Iqbal, Mr. Shahid M Kumar and Ms. Bisma Hanief - Batch 2021)
- Introduction to mathematical ecology with special reference to population dynamics (Mr. Hilal Ahmad Dar, Mr. Rayees Malik, Mr. Owais Ahad Ganie and Mr. Aadil Rasool- Batch 2021)

Seminars/Conferences

a) International Conferences

- Presented a paper entitled “**Variational finite element approach to study cold stress and tissue damage in human body peripherals**” at 10th International Congress on Thermal Stresses-2013 during May 31- June 04, 2013 at **Nanjing University of Aeronautics and Astronautics, Nanjing China**.
- Presented a Paper entitled “**Mathematical Study of Hyperthermic Approach to**

- Damage the Cancerous Tumors**", in an International Conference on Mathematics, Trends and Development-2012, Organized by Egyptian Mathematical Society, **Cairo, Egypt**, December 27-29, 2012.
- Attended an International Conference on **Mathematical Biology at IISc, Bangalore**; July 04-07, 2011.
 - Presented a paper in the **International conference on Modeling and its Applications in Engineering Problems at BMAS, Engineering College Agra**, January 14-16, 2009.
 - Attended "**EU-INDIA GRID Workshop on Applications in Computational Biology**" at **Maulana Azad National Institute of Technology, Bhopal**, India. May 5-9, 2008.
 - Delivered a contributed talk on "**Variational finite element approach to study the thermal stress in multi-layered human head**" at an International Conference on Mathematical and Computational Biology (ICMB-2015) at IIT Kanpur, February 28-March 3, 2015.
 - Delivered an Invited talk on "**Thermal behavior of human eye in relation with change in blood perfusion, porosity, evaporation and ambient temperature**" in an International Conference on Applications of Mathematics to Non-Linear Sciences (AMNS-2016), organized by the Association of Nepalese Mathematicians in America at **Kathmandu, Nepal** during May 26-29, 2016.
 - Delivered an invited talk entitled "**Modeling heat and oxygen regulation in human body: An overview**" at an International Symposium on Mathematical Biology during November 10-11, 2016 organized by GAMS in the honour of Prof. T. J. Pedley, University of Cambridge, UK.
 - Delivered a contributed talk entitled "Mathematical modeling and its applications in human physiology" at an **International Conference on Applied Analysis and Mathematical Modeling** organized by the **Gelisim University, Istanbul Turkey**, during July 3-7, 2017.
 - Delivered an Invited talk entitled "**Mathematical modeling of diffusion process in human physiological systems**" in an International Conference on Advances in Pure and Applied Mathematics during December 22-24, 2017 at Ganpat University, Gujarat.
 - Delivered an invited talk entitled "Mathematical modeling and human physiology: A transdermal drug transport in the annular section of human forearm in an International Conference on New Frontiers in Mathematics and Data Sciences at SOMAAS, Jiwaji University, Gwalior during December 13-15, 2018.
 - Delivered an Invited talk on "Mathematical modeling and its applications in human physiology" in "Indo-French Workshop on Theory and Simulation of Hyperbolic PDE's arising in Mathematical Biology and Fluid Flows" organized by the Department of Mathematics, BITS Pillani Rajasthan, during January 5-11, 2019.
 - Delivered an invited talk entitled "Mathematical modeling using VFEM to estimate temperature regulation in premature infants" in an International Conference on Mathematics and Its Applications-2020 held at Bangalore University, Bangalore

during February 28-29, 2020.

- Delivered an invited talk entitled “Mathematical modeling and its applications in biological processes” in *Recent Trends in Applied Sciences and Computing Engineering (RTASCE-2020)* held at VIT Bhopal in virtual model during December 18-20, 2020.

b) National Conferences

- Attended National Conference on **Applied Mathematics** at MAM College, Jammu in collaboration with Jammu University (2004).
- Attended five days training programme for **Mathematical Olympiad for J and K Region at Punjab University** Chandigarh (2005).
- Presented a paper in **Second J & K Science Congress organized by the University of Kashmir in Collaboration with DST** (July, 25 to 27, 2006).
- Attended a 3-day workshop on “**Self Learning support in Distance and Online Education Service**” organized by the Centre of Distance Education, **University of Kashmir**, Srinagar (Sept., 18th –20th, 2006).
- Presented a Paper at **ACVPI-2007**, October 25-27, 2007, **Jai Narayan Vyas University Jodhpur Rajasthan**.
- Presented a paper at **National Meet of Research Scholars in Mathematical Sciences-2007**, 30 October – 03 November, 2007, **IIT Kanpur**.
- Presented a paper at National Seminar on “**Applications of Mathematics in Engineering and Technology**” Organized by Department of Applied Mathematics, **MITS Gwalior** (Feb. 02-03, 2008)
- Delivered a lecture at **National Conference on Applied Engineering and Technology**, Organized by Sagar Institute of Research and Technology, Bhopal (Oct. 2008).
- Presented a paper at **National Symposium on Modern trends in Differential Geometry and Mathematical Modeling in Bio-Sciences**, organized by Department of Mathematics, Lucknow University (Dec. 24-25, 2008)
- Presented a paper in the National Conference on **Mathematical Modeling and Simulation** organized by Jiwaji University and **ABV IITM, Gwalior**, India in January 9-11, 2009.
- Received paper presentation award for the paper entitled “**Modeling thermoregulation in Human brain exposed to cold environment**” at Centre for Mathematical Modeling, Banasthali University Rajasthan: December 14-19, 2009.
- Presented a paper in **4th J & K Science Congress organized by the University of Kashmir in Collaboration with DST** (2010).
- Attended a workshop on “**Introduction to Mathematical techniques in Life Sciences**” at **Indian Institute of Sciences, Bangalore**: January 04-12, 2011.
- Attended a short-term training programme on Disaster Management at Academic Staff College, University of Kashmir, Srinagar, Oct. 19-20, 2011.
- Participated/Organized a 4-Day teachers training Camp for Mathematical Olympiad, Jointly organized by the Department of Mathematics, University of Kashmir and

Homi Bhabha Centre for Science Education, Department of Atomic Energy, GOI, September 12-15, 2012.

- Presented a paper entitled “**Mathematical Modeling and Real Life Problems**” in the One day Seminar, organized by the SP College, Srinagar, October 6, 2012.
- Presented a paper entitled “**Variational Method to study the Thermoregulation in Human Eye**”, in an International Conference on Frontiers of Mathematics and Applications, organized by Calcutta Mathematical, Society, Kolkata, December 6-9, 2012.
- Presented and paper entitled Mathematical applications to understand real life situations, 9th JK Science Congress, University of Kashmir, Srinagar, October 01-03, 2013.
- Attended 3-week Advanced Instructional School on “Naïve Set Theory and its Applications-2015” at the Department of Mathematics, University of Kashmir in collaboration with TIFR, Mumbai and IIT Bombay during April 13-May 2, 2015.
- Participated in the Research Promotion Workshop on Introduction to Graph and Geometric Algorithms, organized by the Department of Mathematics and Computer Sciences, University of Kashmir, Srinagar and TIFR Mumbai during May 18-20, 2015.
- Attended an “Instructional School for Teachers on Field Theory” conducted by the Department of Mathematics, University of Kashmir, Srinagar and National Centre for Mathematics, IIT Bombay during May 2-14, 2016.
- Participated in three days workshop on the syllabus preparation for 5 year Integrated course for B.Sc and M.Sc. Mathematics at Jammu and Kashmir Institute of Mathematical Sciences, Srinagar during April 27-29, 2017.
- Attended one day Symposium on “Networks in Biological Systems” at IIIT Delhi on October 28, 2017.
- Attended an Inaugural Conference of Mathematical Teachers Association MTA-India at Homi-Bhabha Centre for Science Education during January 2-5, 2019.
- Attended Two-Day National Workshop on Scientific and Technical Documentation using LaTeX during June 6-8, 2020 at NIT Srinagar.
- Attended Two days’ International Webinar on “Fluid Dynamics and Its Applications” organized by the Department of Mathematics, Govt. First Grade College, Vijayanagara, Bengalureu during May 28-29, 2020.

Invited Talks

- Delivered a lecture to the 10+2 teachers of Mathematics in 05-day **orientation cum training programme** organized by Jammu and Kashmir, State Board of School Education, Srinagar; August 02-06, 2005.
- *Delivered a talk on “Computational techniques for the estimation of severe cold exposure on Human being” at Sagar Institute of Research, Technology and Sciences, Bhopal, February 12, 2010.*
- Delivered Extension lectures to the students of Statistics at the Department of Statistics, University of Kashmir on Mathematical Sciences for NET and SET examinations in June, 2010.

- Delivered an Invited talk on “**Modeling thermoregulation in Human brain exposed to cold environment**” at Centre for Mathematical Modeling, Banasthali University Rajasthan: December 14-19, 2009.
- *Delivered an invited talk at 15th Annual Conference of GAMS organized by MERIT New Delhi near JNU on “**Mathematical Study of tissue damage and fluid loss due to hypothermic conditions in Human peripherals**”, December 12-14, 2010.*
- *Delivered an extension lecture at P.G. Department of Mathematics, Degree College Baramulla in 2010.*
- Guest faculty to teach B. Tech Students in the University.
- Associated with the teaching of contact programme to the M. Sc students of Mathematics enrolled through Distance Education.
- Delivered an Invited talk entitled “**Mathematics and Other Disciplines**” in a workshop on “Role of Mathematics in Science, Engineering and Technology” at Department of Mathematics, National Institute of Technology, Srinagar, March 26, 2012.
- Delivered an Invited talk entitled “**Applications of Mathematics in Real life Problem**” to the faculty of Science, Engineering, Management and Pharmacy, Sagar Institute of Research, Technology and Sciences, Bhopal, May 24, 2012.
- Delivered an Invited talk entitled “**Mathematics and Our Environment**” at a National Workshop on Mathematics and its Applications, Organized by the Department of Mathematics, PG College **Shedol, MP** and UGC on February 16-17, 2013.
- Delivered an invited talk entitled “**Mathematical estimation for the thermal stress in biological tissues at dynamical environmental conditions**” at a National Conference on Mathematical and Theoretical Biology, Department of Mathematics, Jadavpur University, Kolkata in Collaboration with Biological Society of India, February 20-21, 2014.
- Delivered a contributed talk on “**Variational finite element approach to study the thermal stress in multi-layered human head**” at an International Conference on Mathematical and Computational Biology (ICMB-2015) at IIT Kanpur, February 28-March 3, 2015.
- Delivered an Invited lecture on 12.05.2015 to the participants of **Refresher Course in Life Sciences** conducted from 27.04.2015 to 16.05.2015 on the topic “**Mathematics in real life situations with special reference to life science problems**”, organized by the UGC-Human Resource Development Centre, University of Kashmir, Srinagar.
- Delivered an Invited lecture on 27.08.2015 to the participants of **One Week Workshop on Research Methodology for Science Research Scholars/College and University Teachers** conducted from 25.08.2015 to 31.08.2015 on the topic “**Mathematics and its Applications in other sciences**”, organized by the UGC-Human Resource Development Centre, University of Kashmir, Srinagar.
- Delivered an Invited talk entitled “**Mathematics and Its Applications in day today life**”, **National level workshop on Mathematics and Its Applications**, during

October 5-11, 2015, Organized by the Department of Mathematics, University of Kashmir, Srinagar.

- Presented oral presentation entitled “**Heat and Mass transfer in Biological tissues; Model formulation**” in the 11th JK Science Congress held at University of Kashmir during October 12-14, 2015.
- Delivered an Invited talk entitled “Mathematical Modeling and Its challenges in drug kinetics” in the NNMCB National Meeting held at IISER Pune and NCL Pune during December 27-30, 2015.
- Delivered an invited talk entitled “**Mathematical Modeling and Real life problems with special reference to drug diffusion through blood and tissue medium in human body**” in the 21st Annual National Conference of GAMS, held at SOMAAS, Jiwaji University, Gwalior, MP during February 5-7, 2016.
- Delivered an invited talk entitled “**Efficient pedagogy in Mathematics through applications**” in the First Teachers Science Congress organized by the JKIMS in collaboration with Directorate of School Education and Department of Science and Technology during November 12-14, 2017.
- Chaired a technical session in the Symposium of Mathematical Biology during December 22-24, 2017 at Ganpat University Gujarat.
- Delivered a lecture entitled “Mathematics and its role in other disciplines” to the +2 teachers of Physics in a 5-day training programme at State Institute of Education Srinagar on January 10, 2018.
- Delivered an invited online talk on “Mathematical Applications in Engineering and Technology ” in a National Webinar organized by the Department of Mathematics and Physics, GDC Women’s College, Anantnag during September 10-11, 2020.
- Delivered an invited online talk entitled “Mathematics phobia and its remedial measures” organized by the Department of Mathematics, Nawakadal Women’s College, Srinagar on September 25, 2020.
- Delivered a lecture on the “*Life history and contributions of S. Ramanujan*” on the Celebration of Mathematics Day held at the Department of Mathematics, University of Kashmir, Srinagar during December 15-16, 2020.
- Delivered a lecture at 2nd International Conference on Recent Trends in Applied Sciences and Computing Engineering, held at VIT Bhopal during December 18-20, 2020.
- Delivered an Invited talk entitled “Partial Differential Equations and Its applications in Human Physiology” in one Week STTP on Solution of Differential Equations and It's Applications" during January 4-8, 2021.
- Delivered an invited talk in One week Research Methodology Workshop for Science Scholars conducted by HRDC, University of Kashmir, Srinagar during November 16-22, 2021.
- Delivered an invited talk in a Refresher Course in Information Technology (Interdisciplinary) held at HRDC, University of Kashmir, Srinagar during February 23- March 8, 2022.
- Delivered a special lecture entitled “Applications of mathematics in social science” to the research scholars of social science in a Research Methodology workshop conducted by HRDC, University of Kashmir, Srinagar during July 3- 7, 2022.

Orientation/Refresher/Training programmes attended

- Attended a three week **capacity Building programme on Multimedia and E-content Development** through **EDUSAT network** at **EMMRC Srinagar** in collaboration with CEC New Delhi, (Nov, 7-26, 2005).
- Attended 3-week training programme in the courses; **Operations Research, Biomathematics and Computational Mathematics** at Jiwaji University Gwalior (Dec. 17, 2005 to Jan 06, 2006).
- Attended three week **UGC sponsored Refresher Course in Mathematics and Statistics**, organized by the Academic Staff College and P.G. **Department of Mathematics, University of Kashmir**. (22nd May-10th June 2006).
- Attended four week **UGC sponsored General Orientation Programme**, organized by the Academic Staff College, **University of Kashmir**. (07 Nov.-07 Dec., 2009)
- Attended three week UGC sponsored Refresher course on Women's studies (Interdisciplinary) at Academic Staff College, **Aligarh Muslim University, Aligarh**, UP, January 31, 2012-February 21, 2012.

Administrative Assignments

- Worked as Director, University of Kashmir-South Campus, Anantnag during December 2021 to May 2023.
- Nodal Officer, Directorate of Internal Quality Assessment Cell (DIQA), University of Kashmir, Srinagar since 2009 till 2021.
- Active member of the Admission Committee in the Department.
- Acting as a member for the inspection of various undergraduate examinations.

Membership

- Membership of the Society for Mathematical Biology, Colorado USA.
- Life Member of Indian Mathematical Society, IMS Pune, Maharashtra
- Associate member of The Mathematical Consortium, AMS
- Life Member of Ramanujan Mathematical Society, India
- Life Member of Bio-mathematical Society of India (BMSI)
- Life Member/Executive member of the Gwalior Academy of Mathematical Bio-Sciences.
- Life Member of Calcutta Mathematical Society, Kolkata.
- Treasurer of Kashmir Mathematical Society
- Member of Departmental PG/UG Board of Studies.
- Member of Departmental Research Committee.

Other Skills

- Computer knowledge
- Knowledge of LaTeX and other Software in Mathematics
- MATLAB
- Maintenance of Departmental Website In charge.

Place: Srinagar

Dated: February 2024

