

**Dr. Ashwini M Rao**  
**Associate Professor**  
**Department of Mathematics**  
**Bapuji Institute Engineering and**  
**Technology, DAVANGERE -577004**  
**Mob: 8147808949, 9108182199**  
**Email: [arashwinirao@gmail.com](mailto:arashwinirao@gmail.com)**

### **RESEARCH INTEREST:**

Fluid Mechanics (Biofluid Mechanics), Numerical Methods, Differential Equations, Statistical methods.

**TEACHING EXPERIENCE:** Having 16 years of teaching experience and 13 years in Research work experience.

#### **Worked as**

1. Lecturer from Sep. 2007 to 2012.
2. Assistant Professor from 2012 to July 2022.
3. Associate Professor from September 2022 to till date.

### **EDUCATION**

1. Ph.D (Mathematics) from VTU, Belagavi, 2019.
2. M.Sc (Mathematics) from Kuvempu University, Shankarghatta, 2007 with firstclass.
3. B.Sc (Mathematics, Chemistry & Physics) from S.J.V.P college, Harihar, Kuvempu University, 2005 with Firstclass.

### **PROFESSIONAL MEMBERSHIP:**

Life Member of Indian Society for Technical Education (LM5978)

### **RESEARCH PAPER PUBLICATIONS**

1. V.K. Katiyar, K.S. Basavarajappa, Ashwini M Rao, "Mathematical Modeling of blood flow in the artery with a reference to rupture behavior of Stenosis", Vol.09 Issue-01, (January - June, 2017) ISSN: 2394-9309 (E) / 0975-7139 (P) Aryabhata Journal of Mathematics and Informatics (Impact Factor- 5.856), pp 831-840.
2. V.K. Katiyar, K.S. Basavarajappa, Ashwini M Rao, "Mathematical Modeling on the study of Spherical Tumor In Relation To Variation of Temperature in Dermal Layers", Vol.09 Issue-01, (January - June, 2017) ISSN: 2394-9309 (E) / 0975-7139 (P) Aryabhata Journal of Mathematics and Informatics (Impact Factor- 5.856), pp 841-852.
3. Sathisha A B, Ashwini M Rao, Basavarajappa K S, "Mathematical Investigation on the

Physiological Effects of Road Traffic Noise: A Reference to Varying Frequency”,*International Journal For Innovative Research In Multidisciplinary Field*, Volume - 6, Issue – 6, ISSN: 2455-0620, June 2020, pp 223-228

4. Ashwini M Rao, Sathisha A B, Basavarajappa K S, “A Mathematical Approach on the Study of Glucose-Insulin Model to Quantify the Various Levels of Glucose Uptake in Response to Insulin Behavior, *International Journal For Innovative Research In Multidisciplinary Field*, Volume - 6, Issue – 6, ISSN: 2455-0620, June 2020,pp 229-234
5. Sathisha A B, Ashwini M Rao, Basavarajappa K S, “Mathematical Model on the Function of Kidney in Reference to a Peristaltic Moment”, *International Journal of Mathematics Trends and Technology (IJMTT)* , Volume 66 Issue 6, ISSN: 2231-5373, June 2020,pp 43-50
6. Ashwini M Rao, Sathisha A B, Basavarajappa K S,“Mathematical Analysis on the Physiological effects of Noise”, *International Journal of Mathematics Trends and Technology (IJMTT)*, Volume 66, Issue 6, ISSN: 2231-5373, June 2020,pp 51-58
7. Sathisha A B, Ashwini M Rao, Basavarajappa K S “Mathematical Modeling on Peristaltic Transport of Two Layered Viscous Incompressible Fluid in Relation to Varying Wall Moment”, *International Journal of Engineering, Science and Mathematics*, Vol. 9,Issue 7, ISSN: 2320-0294, July2020,pp 48-57
8. Ashwini M Rao, Sathisha A B, Basavarajappa K S, “Mathematical Analysis of Peristaltic Transport with a Reference To Casson Fluid”, *International Journal of Engineering, Science and Mathematics*, Vol. 9, Issue 7, ISSN: 2320-0294, July2020,pp 58-67
9. Sathisha A B, Ashwini M Rao, Basavarajappa K S,“Mathematical Approach of the Tumor Growth Model - A Discussion on Glioma Tumor”, *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, Volume 8 Issue VII, ISSN: 2321-9653, July 2020, pp 936-939
10. Ashwini M Rao, Sathisha A B, Basavarajappa K S,“Mathematical Study on Spread of Infectious Diseases: S-I-R Model with a Reference to Industrial Pollution”, *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, Volume 8 Issue VII, ISSN: 2321-9653, July 2020,pp 940-943
11. Sathisha A B, Ashwini M Rao, Basavarajappa K S,“Mathematical Analysis on the Physiological Effects of Water Pollution”,*International Journal of Engineering Development and Research* Volume 8, Issue 3, ISSN: 2321-9939, Aug 2020,pp 231-236
12. Ashwini M Rao, Sathisha A B, Basavarajappa K S,“Mathematical Analysis of Pulsatile Flow of Blood in Bifurcation with Varying Frequency”, *International Journal of Engineering Development and Research*, Volume 8, Issue 3, ISSN: 2321-9939, Aug 2020,pp 237-242

13. Ashwini M Rao, Sathisha A B, Basavarajappa K S, “A Mathematical study on behavior of epinephrine in glucose tolerance test”, Juni Khyat, Volume 12, Issue 11 No. 2, ISSN: 2278-4632, November 2022, pp 136-141
14. Sathisha A B, Ashwini M Rao, Basavarajappa K S, “Mathematical Approach on effect of Discharge of industrial and Household organic pollutants into water bodies”, Juni Khyat, Volume 12, Issue 11 No. 2, ISSN: 2278-4632, November 2022, pp 155-160
15. Sathisha A B, Ashwini M Rao, Basavarajappa K S, “Mathematical study on effect of community diseases on human population”, International Journal o Research and Analytical Reviews(IJRAR), Volume 9, Issue 4, E-ISSN: 2348-1269, P-ISSN: 2349-5138, December 2022, pp 686-690
16. Ashwini M Rao, Sathisha A B, Basavarajappa K S, “Mathematical study of growth of tumor cells with reference to self immune system”, International Journal o Research and Analytical Reviews(IJRAR), Volume 9, Issue 4, E-ISSN: 2348-1269, P-ISSN: 2349-5138, December 2022, pp 691-695
17. Sathisha A B, Ashwini M Rao, Basavarajappa K S, “Mathematical Approach on temperature dependent sex determination: A review on hormonal dynamics with enzymatic reactions sensitive to environmental temperature”, Purakala, Volume 32, Issue 1, ISSN: 0971-2143, January 2023, pp 66-70

### **BOOKS PUBLISHED**

1. Sathisha A B, Ashwini M Rao, “A First Course in Real Analysis”, BlueRose Piblishers Private Limited, ISBN: 978-93-5628-658-0, November 10, 2022

### **SHORT TERM COURSES/WORSHOPS**

#### **Attended**

1. One day workshop on “Mathematical Applications in Engineering Systems” at Bapuji Institute of Engineering and Technology, Davangere on 27<sup>th</sup> October2007.
2. Short term training programme on “Industrial Pollution Control” at Bapuji Institute of Engineering and Technology, Davangere from 16<sup>th</sup> to 20<sup>th</sup> June,2008.
3. Twodaysworkshopon“ResearchMethodologiesandReportwriting”organizedbythe e-learning centre Mysore at KLS Gogte Institute of Technology, Belagavi on 25<sup>th</sup> and 26<sup>th</sup> May2009.
4. Three days International Conference on “Mathematical Modeling and Non linear equations”atBNMInstituteofTechnology,Bangaloreduring20<sup>th</sup>to22<sup>nd</sup>January2010.
5. One day workshop on “Mathematics and its Applications in Engineering” at Bapuji Institute of Engineering and Technology, Davangere on 18<sup>th</sup> February2010.
6. One day National workshop on “Emerging trends on Applied and Pure Mathematics” at S T J

Institute of Technology, Ranebennur on 12<sup>th</sup> March 2011.

7. Three days National Conference on “Applied and Engineering Mathematics” and presented a paper entitled “Mathematical Analysis of the Bio-heat distribution in the spherical layers – detection of tumor” at RNS Institute of Technology, Bangalore during 28<sup>th</sup> -30<sup>th</sup> July 2011.
8. Two days National Conference on “Frontiers in Applied Mathematics” and presented a paper entitled “Mathematical Modeling on the study of spherical tumor in relation to variation of temperature in skin layers” at MES College of Arts, Commerce and Science, Bangalore on 9<sup>th</sup> - 10<sup>th</sup> March 2012.
9. Two days National Conference on “Advances in Geometry, Analysis and Fluid Mechanics” and presented a paper entitled “Study of Mild stenosis with varying viscosity of blood in reference to increased hemoglobin” at Department of PG studies and Research in Mathematics, Kuvempu University, Shankarghatta, Shimoga during 26<sup>th</sup>-27<sup>th</sup> August 2014.
10. One day Orientation Programme on “Preparation for UGC- NET and SLET Examination” at Bapuji Institute of Engineering and Technology, Davangere on 19<sup>th</sup> April 2017.
11. Participated and presented a paper in two days programme on “14<sup>th</sup> State level ISTE Students Annual Convention and 5<sup>th</sup> National Conference on Emerging Trends in Engineering Research and Management” at GM Institute of Technology, Davangere on 8<sup>th</sup> and 9<sup>th</sup> September 2017.
12. Two days workshop on “Advanced Mathematical Techniques in Research and Engineering Applications” at GM Institute of Technology, Davangere on 29<sup>th</sup> and 30<sup>th</sup> January 2018.
13. Attended and presented a paper in One Day National Conference on Recent Trends on the Applications of Science in Engineering (NCRSE- 2018) held at Bapuji Institute of Engineering and Technology, Davanagere on 28<sup>th</sup> September 2018.
14. Attended and Presented a paper entitled “A Mathematical approach on the study of Glucose-Insulin model to quantify the various levels of Glucose uptake in response to insulin behavior” in National Conference, NCETERM-2018 held at GMIT, Davanagere on 26<sup>th</sup> & 27<sup>th</sup> October, 2018.
15. Attended Two Days “Workshop for Mathematics Teachers” conducted jointly by KSCST, Bangalore, Educational Department, Davangere, KRVP, Davangere, Rotary Club, Davangere Mid Town and BIET, Davangere at Department of Mathematics, BIET, Davangere on 18<sup>th</sup> and 19<sup>th</sup> January 2019.
16. Attended One Day National Seminar on “Recent Trends & Applications in Mathematics (RTAM - 2019)” and presented a paper entitled “Mathematical investigation on the physiological effects of Road Traffic noise – A reference to varying frequency” organized by Department of Mathematics, Government Science College, Chitradurga on 26<sup>th</sup> March 2019.

17. Attended Two Days “National Conference on Recent trends in Applied Sciences and Computing Engineering” and presented a paper entitled “A Mathematical approach on the study of Glucose Insulin Model to Quantify the various levels of Glucose uptake in response to Insulin behavior” organized by Department of Mathematics , JNNCE, Shivamogga on 26<sup>th</sup> and 27<sup>th</sup> July 2019.
18. Attended one day webinar on Yoga as Lifestyle and Preventive Medicine conducted by department of Computer Science and Engineering, Angadi Institute of Technology and Management on 20<sup>th</sup> June 2020.
19. Attended "Four days National Webinar on Fluid Mechanics and its Application in Engineering Science" conducted by Department of Mathematics, PESITM Shimoga from 24<sup>th</sup> June to 27<sup>th</sup> June 2020.
20. Participated in National webinar on GeoGebra : An Effective Tool For Mathematics Teaching” organized by Department of Mathematics on 03 July ,2020 at Manvi.
21. Online webinar on “Teaching & Learning Process, Course Outcomes and Program Outcomes” on 04/07/2020 at GMIT, Davangere.
22. Participated in Five days Online Faculty Development Programme (FDP) on “Current Trends and Research opportunities in information technology” organized by Department of Computer Science and Engineering, Tontadarya College of Engineering from 06-07-2020 to 10-07-2020.
23. Online Quiz on “Operations Research” conducted by Department of Mechanical Engineering, PESITM, Shivamogga on 7<sup>th</sup> July, 2020.
24. Webinar on “Machine learning with Python and Cloud Development” organized by Faculty of Engineering and Technology (Co-Ed) (APPA Institute of Engineering & Technology), Department of CSE on 09<sup>th</sup> July 2020 at Gulbarga.
25. webinar on "WOLFRAM MATHEMATICA: AN OVERVIEW" held on 10/07/2020 organized by the Department of Mathematics & Department of Industrial Engineering and Management at Dr. Ambedkar Institute of Technology, Bengaluru.
26. Attended Seminar on “Best Practices for New Education Policy (NEP)-2020 in Higher Education Institutions” sponsored by NAAC at Bapuji Institute of Engineering and Technology, Davangere on 21<sup>st</sup> February 2023.
27. Attended Two Days Workshop on “Interface of IPR in Academics and Entrepreneurship” by Karnataka State Council for Science and Technology, IISC Campus, Bengaluru, at Bapuji Institute of Engineering and Technology, Davangere on 2<sup>nd</sup> and 3<sup>rd</sup> March 2023.

### **Seminars/Workshops/Events Organized:**

1. One day work shop on “Mathematical application in Engg. system” on 27-10-2007, BIET, Davanagere.
2. One day Workshop on “ Mathematics& its Applications in Engineering” held on 18<sup>th</sup> Feb 2010 at Bapuji Institute of Engineering & Technology, Davangere.
3. Assistant coordinator of “Technology barrier reduction program” (TBRP) held at Bapuji Institute of Engineering and Technology, Davangere from 18-4-16 to 6-5-16.
4. Organizing committee member of “Technology barrier reduction program (TBRP) from 24<sup>th</sup> April to 12<sup>th</sup> May 2017” held at Bapuji Institute of engineering and technology, Davangere
5. Department of Mathematics has organized one day seminar on “Science in Engineering” on 15-12- 2017 at Srinivasa Ramanujan Hall, BIET Davangere. About 50(fifty) participants from various Institutions attended the seminar.
6. Participated in organizing “National science day” on 28-02-2018 under science forum
7. “One day National Conference on Recent Trends on the Applications of Science in Engineering” (NCRSE-2018) on 28<sup>th</sup> September 2018 at BIET, Davanagere.
8. Summer Internship conducted for Rural High School Students on “Technology Barrier Reduction program” between 16<sup>th</sup> April 2018 to 5<sup>th</sup> May 2018 at Bapuji Institute of Engineering & Technology, Davangere, Karnataka, Organized by Foundation for Advancement of Education and Research and sponsored by Zebra Technologies, Bangalore.
9. Summer Internship conducted for Rural High School Students on “Technology Barrier Reduction program” between 22<sup>nd</sup> April 2019 to 10<sup>th</sup> May 2019 at Bapuji Institute of Engineering & Technology, Davangere, Karnataka, Organized by Foundation for Advancement of Education and Research and sponsored by Zebra Technologies, Bangalore.
10. Organized Student Induction program for First Year students for the academic year 2018-19.
11. Organized Student Induction Program Phase I for First Year students from 01-08-2019 to 10-08-2019
12. Organized National Mathematics Day in the Department of Mathematics, BIET on 28.12.2019.
13. Organized Student Induction Program Phase II for First Year students from 10-02-2020 to 15-02-2020
14. Organized Two days National level Webinar on “Advances in Mathematical Sciences and its Applications in Engineering and Research (AMSAER)-2021” by Department of Mathematics, Bapuji Institute of Engineering & Technology, Davangere, Karnataka on 11<sup>th</sup> and 12<sup>th</sup> July

2021.

### **Papers Presented**

1. Presented a paper entitled “Mathematical Analysis of the Bio-heat distribution in the spherical layers – detection of tumor” in Three days National Conference on “Applied and Engineering Mathematics” at RNS Institute of Technology, Bangalore during 28<sup>th</sup>-30<sup>th</sup> July 2011.
2. Presented a paper entitled “Mathematical Modeling on the study of spherical tumor in relation to variation of temperature in skin layers” in Two days National Conference on “Frontiers in Applied Mathematics” at MES College of Arts, Commerce and Science, Bangalore on 9<sup>th</sup> - 10<sup>th</sup> March 2012.
3. Presented a paper entitled “Study of Mild stenosis with varying viscosity of blood in reference to increased hemoglobin” in Two days National Conference on “Advances in Geometry, Analysis and Fluid Mechanics” at Department of PG studies and Research in Mathematics, Kuvempu University, Shankarhatta, Shimoga during 26<sup>th</sup>-27<sup>th</sup> August 2014.
4. Presented a paper in two days programme on “14<sup>th</sup> State level ISTE Students Annual Convention and 5<sup>th</sup> National Conference on Emerging Trends in Engineering Research and Management” at GM Institute of Technology, Davangere on 8<sup>th</sup> and 9<sup>th</sup> September 2017.
5. Presented a paper entitled “A Mathematical approach on the study of Glucose-Insulin model to quantify the various levels of Glucose uptake in response to insulin behavior” in National Conference, NCETERM-2018 held at GMIT, Davanagere on 26<sup>th</sup>&27<sup>th</sup> October, 2018.
6. Presented a paper entitled “Mathematical investigation on the physiological effects of Road Traffic noise – A reference to varying frequency” in One Day National Seminar on “Recent Trends & Applications in Mathematics (RTAM - 2019)” organized by Department of Mathematics, Government Science College, Chitradurga on 26<sup>th</sup> March 2019.
7. Presented a paper entitled “A Mathematical approach on the study of Glucose Insulin Model to Quantify the various levels of Glucose uptake in response to Insulin behavior” in Two Days “National Conference on Recent trends in Applied Sciences and Computing Engineering” and organized by Department of Mathematics, JNNCE, Shivamogga on 26<sup>th</sup> and 27<sup>th</sup> July 2019.
8. Attended and presented a paper entitled “Mathematical Study on Palatable Diet Administration with a reference to Diabetes Mellitus on varying body frames-ANOVA Test with PFC Ratio” at International Conference on recent Advances in Fluid Mechanics (ICRAFM-2022) held at Manipal Institute of Technology, MAHE, Manipal from 4<sup>th</sup> to 6<sup>th</sup> October 2022.
9. Attended and presented a paper entitled “Mathematical Modeling Approach for

Administration of Palatable Diet to Quantify blood glucose level – A Reference to Systolic Blood Pressure” at International Conference on recent Advances in Fluid Mechanics (ICRAFM-2022) held at Manipal Institute of Technology, MAHE, Manipal from 4<sup>th</sup> to 6<sup>th</sup> October 2022.

### **RESPONSIBILITIES**

Worked as:

1. Coordinator for Department website Dept. of mathematics, Bapuji Institute of Engineering and Technology, Davanagere.
2. Member of anti ragging committee , Dept. of mathematics, Bapuji Institute of Engineering and Technology, Davanagere.
3. Assistant coordinator in Technology Barrier Reduction Programme (TBRP)-2017. Dept. of mathematics, Bapuji Institute of Engineering and Technology, Davanagere.
4. Internal squad for VTU examination June/July 2018 , Dept. of mathematics, Bapuji Institute of Engineering and Technology, Davanagere.
5. Organizing member, KSCST Seminar cum Project exhibition on 10<sup>th</sup> & 11<sup>th</sup> August 2018 at BIET, Davanagere.
6. Assistant coordinator in “Technology Barrier Reduction Program, Summer Internships for Rural School Students” held at BIET, Davanagere during 16<sup>th</sup> April to 4<sup>th</sup> May 2018.
7. Member in organizing Student Induction Program for First Year Students during August 2018.
8. Coordinator for “One day workshop on Recent Trends on the Applications of Science in Engineering (NCRSE-2018)” on 28<sup>th</sup> September, 2018 at BIET, Davanagere
9. Coordinator for NAAC and NBA (First Year Academics) and NAAC, Dept. of mathematics, Bapuji Institute of Engineering and Technology, Davanagere.
10. Coordinator for Two days National level Webinar on “Advances in Mathematical Sciences and its Applications in Engineering and Research (AMSAER)-2021” by Department of Mathematics, Bapuji Institute of Engineering & Technology, Davanagere, Karnataka on 11<sup>th</sup> and 12<sup>th</sup> July 2021.
11. DCS for VTU Examinations, June-July 2022 at GMIT, Davanagere from 11-05-2022 to 25-05-2022
12. Internal Squad for VTU Examinations June-July 2022 at BIET, Davanagere.



## **SUBJECTS TAUGHT**

Engineering Mathematics I , Engineering Mathematics II , Engineering Mathematics III , Engineering Mathematics IV, Advanced Mathematics I , Advanced Mathematics II , Applied Mathematics (M. Tech), Statistics & Probability, Biostatistics and Bio modeling, Calculus and Linear Algebra, Advanced Calculus and Numerical methods, Transform Calculus, Fourier Series And Numerical Techniques, Complex Analysis, Probability And Statistical Methods.

**Ph.D. Thesis:** “Developing Mathematical Models in Biological Systems with A Reference To Flow Behavior Of Blood For Variable Parameters”

## **Residential Address**

Dr. Ashwini M Rao  
# 1642/9,15<sup>th</sup>Cross,  
AnjaneyaBadavane,  
Davangere-577004, Karnataka, INDIA