

Dr. A.Elakkiya	<p style="text-align: center;"><b>Photo</b></p> 											
<b>Designation:</b>	<b>Assistant Professor</b>											
<b>Qualification:</b>	<b>M.SC., M.Phil., Ph.D</b>											
<b>Area of specialization:</b>	<b>Mathematics</b>											
<b>Experience:</b>	<b>Industrial Experience</b>											
	<b>Teaching Experience</b>											
		<b>3</b>										
<b>Number of workshops / FDP attended:</b>	<b>Number of Workshops</b>	<b>Number of FDPs</b>										
	<b>12</b>	<b>12</b>										
<b>Publications:</b>	<b>Conference</b>		<b>Journal</b>									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"><b>National</b></td><td style="width: 50%; padding: 5px;"><b>International</b></td></tr> <tr> <td style="padding: 5px; text-align: center;">13</td><td style="padding: 5px; text-align: center;">23</td></tr> </table>		<b>National</b>	<b>International</b>	13	23	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"><b>National</b></td><td style="width: 50%; padding: 5px;"><b>International</b></td></tr> <tr> <td style="padding: 5px; text-align: center;">13</td><td style="padding: 5px; text-align: center;">23</td></tr> </table>		<b>National</b>	<b>International</b>	13	23
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<b>Books / Book Chapters</b>	<b>Book :1, Book Chapters: 5</b>											
<b>Patents:</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"><b>National</b></td><td style="width: 50%; padding: 5px;"><b>International</b></td></tr> <tr> <td style="padding: 5px; text-align: center;"></td><td style="padding: 5px; text-align: center;"></td></tr> </table>		<b>National</b>	<b>International</b>			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"><b>National</b></td><td style="width: 50%; padding: 5px;"><b>International</b></td></tr> <tr> <td style="padding: 5px; text-align: center;"></td><td style="padding: 5px; text-align: center;"></td></tr> </table>		<b>National</b>	<b>International</b>		
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<b>National</b>	<b>International</b>											
<b>Professional Body Membership</b>												
<b>Staff Achievements</b>												

## **Educational Qualifications:**

Category	Name of the Degree	Specialization	Year of Passing	Name of the College	Name of the University	% of Marks / Grades obtained	Class obtained
	Ph.d	Graph Theory	2021	VIT	VIT	9.2	First
	M.Phil	Mathematics	2012	Auxilium college	Thiruvalluvar University	92%	First
	M.Sc	Mathematics	2010	Auxilium college	Thiruvalluvar University	8.41	First
	B.Sc	Mathematics	2007	AAA, Walaja	Thiruvalluvar University	76%	First

## **Academic Experience:**

Name of the College	Designation	Joining Date	Relieving Date	Experience		
				Years	Months	Days
Ranipet Engineering College, Ranipet	Assistant Professor	2/06/12	5/7/2013	1	1	3
Kings Engineering College, Sriperumbudur	Assistant Professor	12/07/2023	10/9/2024	1	2	27
Sri Sairam Engineering College, Chennai	Assistant Professor	11/9/24	Present			

## Patent

Filed a patent titled “**Multi – Factor Authentication system Based on Dynamic Prime Factor Decomposition**”, the application is presently under screening and Classification.

## Invited Talk

Given a talk as a Resource person for the Value Added Program on “Advanced Topics in Graph Theory”, organized by the Department of mathematics, VIT , Vellore, Sep 14, 2025.

## Editorial Activity

Served as a Reviewer for an International **Scopus indexed Elsevier Journal** ( Journal of King Saud University: Science ), Contributing expert evaluation of submitted manuscripts.

## List of Publication in Reputed Journals

1. V. Sankaran, M. Yamuna, A. Elakkiya, Development and Analysis of Fault Tolerant Algorithms for Spanning Trees of a Computer Network, International Journal of Advance Research In Science And Engineering, Vol. No.4, Special Issue (02), February 2015 ( 132 – 138 ).
2. M. Yamuna, A. Elakkiya, Planar Graph in Data Encryption, International Journal of Advance Research In Science And Engineering, Vol. No.3, Special Issue (01), March 2015 ( 1600 – 1606 ).
3. M. Yamuna, A. Elakkiya, Data Transfer Using Fundamental Circuits, International Journal of Computer and Modern Technology, Vol 2, Issue 1, 67 – 71.
4. M. Yamuna, A. Elakkiya, Position Matrix in DNA Sequence Alignment with Gaps, Der Pharmacia Lettre, 2015, 7 (7) 250 – 255 ( **Scopus** ).
5. M. Yamuna, A. Elakkiya, Periodic Table in Medical Molecular Formula Safe Transfer, Der PharmaciaLettre, 2015, 7 (8) 135 – 142 ( **Scopus** ).
6. M. Yamuna, A. Elakkiya, Unique  $\gamma$  - set in Data Encryption, Journal of Engineering and Interdisciplinary Research, 2015 2 ( 1 ), 16 – 21.
7. M. Yamuna, A. Elakkiya, Chemical Equation Representation as a Directed Graph, Der Pharma Chemica, 2015, 7 (9) 49 – 55 ( **Scopus** ).
8. M. Yamuna, A. Elakiya, Amino Acid Graph Representation for Efficient Safe Transfer of Multiple DNA Sequence as Pre Order Tree, International Journal of Bio Informatics and Bio Medical Engineering, Vol 1 No 3, 2015, 292 – 299.
9. M. Yamuna, A. Elakkiya, Codons in Data Safe Transfer, International Journal of Engineering Issues, Vol. No 2, 2015, 85 – 90.

10. M. Yamuna, A. Elakkiya, Substitution Mutation Identification Using Matrix, *Journal of Computer Science and Engineering*, 2015, 2 ( 2 ) 1 – 4.
11. M. Yamuna, A. Elakkiya, A Brief Survey – Relating Graph Domination, Planarity on Graph Bounds, *International Journal of Pharmacy and Technology*, March-2016 , Vol. 8 , Issue No.1 , 11151-11165 (**Scopus** ).
12. M. Yamuna, A. Elakkiya, Just Excellent Graphs in Data Transfer, *International Journal of Engineering Issues*, Vol 2016, no. 1, pp 71 – 76.
13. M. Yamuna, A. Elakkiya, Identifying Deletion Mutation Using Matrix, *International Journal of Progressive Sciences and Technologies*, Vol. 2 No. 2 April. 2016, pp. 43-47.
14. M. Yamuna, A. Elakkiya, Development of Fault Tolerant Minimum Weighted Spanning Tree Using Vertex, Edge Connectivity, *International Journal of Pharmacy and Technology*, Vol 8, Issue 2 , 11810 – 11819 June – 2016 (**Scopus** ).
15. M. Yamuna, A. Elakkiya, Non - Domination Subdivision Stable Graphs, *IOP Conference Series, Materials Science and Engineering*, 263, 2017, 1 – 13(**Scopus** ).
16. M. Yamuna, A. Elakkiya, Planar Graph Characterization of NDSS Graphs, *IOP Conference Series, Materials Science and Engineering* 263,2017, 1– 9 (**Scopus** ).
17. M. Yamuna, A. Elakkiya, Uniquely Colorable Graphs Containing a  $\gamma$  - Set, *IOP Conference Series, Materials Science and Engineering*, 263, 2017, (**Scopus** ).
18. M. Yamuna, A. Elakkiya, Planar Graph Characterization of  $\gamma$  - Uniquely Colorable Graphs, *IOP Conference Series, Materials Science and Engineering*, 263, 2017, 1– 7 (**Scopus** ).
19. M. Yamuna, A. Elakkiya, Mathematical Models in Drug Discovery, Development and Treatments of Various Diseases – A Case Study, *Research Journal of Pharmacy and Technology*, 10( 12 ) 2017 , 1994 – 98. (**Scopus** ).
20. M. Yamuna, A. Elakkiya, Planar characterization- Graph domination graphs, *International Journal of Engineering and Technology*,7(4.10),2018, 949- 55. (**Scopus**)
21. M. Yamuna, A. Elakkiya, G, complement of G properties - from complement of G, G, *International Journal of Engineering and Technology*, 7(4.10),2018, 1001 – 06 . (**Scopus**)
22. M. Yamuna, A. Elakkiya, Planar and non planar construction of gamma uniquely colorable graphs, *International Journal of Engineering and Technology*,7(4.10 ),2018, 998- 1000. (**Scopus**)
23. A. Elakkiya, M Yamuna, “ Chromatic Polynomial of Domination Subdivision Non Stable Graphs” , *IJITEE* , 8(12) , 2019. (**Scopus** ).
24. Communicated a research paper titled “**A Graph-Theoretic Approach with Centrality Measures for Predicting Water Partition Coefficient of Rice Blast Pesticides**” to the *Journal of Dalian University of Technology* (**Scopus** ).
25. Currently working on a Research Paper titled as “Just Excellent Graphs for Intelligent and Secure Hospital Network Architecture”.

26. Currently working on a Research Paper titled as “Verse Meet Vertex: A Discrete Mathematical Modelling of Rhyme, Meter, and Rhetoric in Shakespeare’s Sonnet 18.
27. Currently working on a Research Paper titled as “From Curriculum to Character: An LSDG – Based Approach to Sustainable Character Shaping.

## Book Published

My Mathematical Journey – A Theoretical Approach towards Applications, Lab Lambert Academic Publishers, 2016.

## Book Chapters

1. M. Yamuna, A. Elakkiya,  $\gamma$  - Chromatic Partition in Planar Graph Characterization, Trends in Mathematics, 461 – 468, 2019 (**Scopus, Springer**)
2. M Yamuna , A. Elakkiya and K.Karthika “Uniquely Colorable Graph in Data Transfer”, International Scientific Research and Innovation Congress, Istanbul, August 26, 27, 2022.
3. M Yamuna, K.Karthika and A.Elakkiya “ Data Encryption Using Rooted Graph”, International Scientific Research and Innovation Congress, Istanbul, August 26, 27, 2022.
4. M Yamuna, A. Elakkiya “ Decomposition of  $G = (V, E)$  into separable graphs”, International Scientific Research and Innovation Congress, Istanbul, August 10 – 12, 2024.
5. M Yamuna, M. Sivasankari, A. Elakkiya “ A Domination based approach to Graph Based Cryptography”, International Scientific Research and Innovation Congress, Istanbul, October 11 – 12, 2025.
6. Communicated a book Chapter Titled as “Art as a healing Feast” Proceedings IGEN Environthon 2025.( **Accepted**)

## Workshop / FDP

1. Participated in a One - day “**workshop on Application of Differential and Difference Equations** ”, conducted by Academic staff college of VIT University, Vellore on 9th of October 2015.
2. Participated in the Faculty development program “**Rubrics – J Component** ”, conducted by Academic staff college of VIT University, Vellore on 13th of October 2015.
3. Participated in a one-day Workshop on “**Solving Challenging Experiments in Statistics for Engineers using R - Software**”, Academic staff college of VIT University, Vellore on 30th of December 2015.

4. Participated in Faculty Development Programme on “**Writing Effective Funded Project Proposal**”, conducted by Academic staff college of VIT University, Vellore on 27th of January 2015.
5. Participated in a two-day Workshop on “**Mathematical Application ( WMA-2016 )**”, organized by School Of Advanced Sciences ( Department of Mathematics ), VIT University, on 3-4th October 2016.
6. Participated in a one day workshop on “**Writing a Good Paper for an International Journal**”, organized by VIT University, on 27th October 2016.
7. Participated in a half -day Workshop on “**Linearization Techniques for non – linear BVPs and VargaAlgorithm** ”, Academic staff college of VIT University, Vellore on 28th of March 2018.
8. Participated in a two-day “**Workshop on Mathematical Applications - 2018 (WMA-2018)**”, organized by the Dept. of Mathematics, School of Advanced Sciences, VIT, Vellore on 5th and 6th of March 2018.
9. Participated in the “**National workshop on Applications of Operations Research, Statistics and Graph Theory**”, organized by the Dept. of Mathematics, School of Advanced Sciences, VIT, Vellore on 27th July, 2018.
10. Participated in International Webinar on “ **Domination in Graphs and its Application**” Organized by Department of Basic Science, Sree Venkateshwara College of Engineering, Bengaluru on 12<sup>th</sup> of December 2020.
11. Participated in the online “**National Conference on Mathematical Analysis and Computing ( NCMAC-2021 )**”, Organized by Department of Mathematics, Sree Sevugan College, Devakottai, Sivagangai on 28<sup>th</sup> may 2021.
12. Participated in Virtual Workshop on “ **Scientific Documentation Through Latex**”, Organised by PG and Research Department of Physics, Government College for Women ( Autonomous ), Kumbakonam on 27<sup>th</sup> February 2021
13. Participated in a “**Two Day Faculty Development Program on the Current Scenario in Applied Mathematics**” Organized by the Department of Science and Humanities of Hindustan College of Engineering and Technology, Pollachi Highway, Valley Campus, Coimbatore on 23<sup>rd</sup> and 24<sup>th</sup> April, 2021.
14. Participated in a “**Five Day National Faculty Development Program on the Recent Advances in Mathematics**” Organized by the Department of school of Advanced sciences VIT Vellore on 8th to 12th August, 2022.
15. Participated in a “**One Day National level workshop on Perceiving Calculus via Digital mode**” Organized by the Department of school of Advanced sciences VIT Vellore on 29th September, 2022.
16. Participated in a “**Five Day Faculty Development Program of Applicability of Mathematical science in Emerging world**” Organized by the Department of Mathematics, Science and Humanities of Sathiyabama Institute of science and Technology, College of Engineering, Chennai on 7th to 12th<sup>th</sup> August 2023.

17. Participated in a “**One Day International workshop on Exploring Molecules via Graph Theory**” Organized by the Department of school of Advanced sciences VIT Vellore on 8th September, 2023.
18. Participated in a “**Five Day Faculty Development Program on Exploring New Horizon in Mathematical Research**” Organized by PG and Research Department of Mathematics, V.O. Chidambaram College, Thoothukudi from 19th to 24<sup>th</sup> August 2024.
19. Participated in a “**Five Day Faculty Development Program on Research Methodology Ethics And Publications**” Organized by PG and Research Department of Mathematics, Theivani Ammal College for Women, Villupuram on 22<sup>nd</sup> Jan to 26<sup>th</sup> Jan 2024.
20. Participated in a “**Five Day Faculty Development Program on Exploring Real World Applications in Mathematics**” Organized by the Department of Mathematics, School of Basic Sciences, Vels Institute of Science, Technology and Advanced Studies, Chennai on 22<sup>nd</sup> to 26<sup>th</sup> April 2024.
21. Participated in a “**Five Day Faculty Development Program on Latest Trends on Computational Mathematics - Theory, Methods & Applications**” Organized by the Department of Mathematics, JIS University, Chennai on 26<sup>th</sup> Feb to 1<sup>st</sup> March 2024.
22. Participated in a “**Five Day Faculty Development Program on Recent Frontiers in Pure and Applied Mathematics**” Organized by the Department of Mathematics, Kongunadu Arts and Science College, Coimbatore on 11<sup>th</sup> Nov to 15<sup>th</sup> Nov 2024.
23. Participated in a “**Five Day Faculty Development Program on Exploring New Frontiers in Teaching Tools, AI and Data Analytics**” Organized by the MEASI Institute of Information Technology, Royaettah, Chennai on 29<sup>th</sup> July to 2<sup>nd</sup> Aug 2024.
24. Participated in a “**Seven Day Faculty Development Program on Various Aspects of Computational Modelling**” Organized by PG and Research Department of Mathematics, Theivani Ammal College for Women, Villupuram on 3<sup>rd</sup> Jan to 9<sup>th</sup> Jan 2025.

### **List of Conference presented**

1. M Yamuna and A. Elakkiya, “Planar Graph in Data Encryption”, International Conference on Recent Trends in Engineering Science and Management, 15 March 2015.
2. M Yamuna and A. Elakkiya, “Development and Analysis of Fault Tolerant Algorithms for Spanning Trees of a Computer Network”, International Conference on Science, Technology and Management, 1 Feb 2015.
3. M Yamuna and A. Elakkiya , “G, G Properties from G , G, NCPAM, 12 March, 2015.
4. M Yamuna and A. Elakkiya , “Non - Domination Subdivision Stable Graphs”, International Conference on Science, Engineering and Technology, VIT University, 2<sup>nd</sup> May, 2017.
5. M Yamuna and A. Elakkiya , “Planar Graph Characterization of NDSS Graphs”, International Conference on Science, Engineering and Technology, VIT University, 2<sup>nd</sup> May, 2017.
6. M Yamuna and A. Elakkiya , “Uniquely Colorable Graphs Containing a  $\gamma$  - Set”, International

Conference on Science, Engineering and Technology, VIT University, 2<sup>nd</sup> May, 2017.

7. M Yamuna and A. Elakkiya , “Planar Graph Characterization of  $\gamma$  - Uniquely Colorable Graphs”, International Conference on Science, Engineering and Technology, VIT University, 2<sup>nd</sup> May, 2017.
8. M Yamuna and A. Elakkiya , “ $\gamma$  - Uniquely Colorable Graphs Planar Characterizations”, International Conference on Advances in Mathematical Sciences, VIT, Dec 1 – 3, 2017.
9. M Yamuna , A. Elakkiya and K.Karthika “Uniquely Colorable Graph in Data Transfer”, International Scientific Research and Innovation Congress, Istanbul, August 26, 27, 2022.
10. M Yamuna , A. Elakkiya and K.Karthika “ Data Encryption Using Rooted Graph”, International Scientific Research and Innovation Congress, Istanbul, August 26, 27, 2022.
11. M Yamuna , A. Elakkiya “ Decomposition of  $G = (V, E)$  into separable graphs”, International Scientific Research and Innovation Congress, Istanbul, August 10 – 12, 2024.
12. A. Elakkiya “ A Domination based approach to Graph Based Cryptography”, International Scientific Research and Innovation Congress, Istanbul, October 11 – 12, 2025.
13. A. Elakkiya “From Simple to secure: A Complex Substitution Cipher For Symmetric Encryption ”, International Scientific Research and Innovation Congress, Istanbul, October 11 – 12, 2025.

## Certification

### 1. Certificate courses in Panchayat Administration and Rural Development Schemes

State Institute of Rural Development and Panchayat Raj, Government of Tamil Nadu, **Grade A+**, September 2025

### 2. NPTEL Courses

- Graph Theory – 8 weeks, **Elite Silver**, 2025
- Technical Communication for Engineers – 4 weeks, **Elite Silver**, 2025
- Discrete Mathematics – 12 weeks, **Elite**, 2025
- Teaching and Learning in General Programs:TALG – 8 weeks, **Elite**, 2025
- Introduction to abstract Group Theory – 8 weeks, **Elite**, 2025