



Dr. Sudha Balagopalan

Professor, Electrical & Electronics Engineering

Administrative Responsibilities

- Professor in EEE
- Director (Outreach & Professional Development)
- IEEE Smart Village Student Centre (ISV-SARC), Mentor (CCE),
- ISV- SARC : Project Monitoring Team- Lead, Member
- Sankofa Club Mentor, International Sankofa: Curriculum Lead
- GATE classes: Lead & Coach
- NBA Criteria 9 member
- IIIC Chair, CCE
- Governing Body Member, CCE
- Was in the BoS (PG studies), KTU and nominated to BoS of Saintgits College of Engineering (Autonomous) by KTU
- Continues to be a question paper setter for B Tech programme KTU exams, was of MTech Power Electronics programme
- Question paper setter and Scrutiniser of entrance exam for PhD programme

Education Summary

- PhD in Electrical Engineering, (2004–2011), NIT, Calicut Thesis: “An Integrated Model of the Transmission Sector in an Electricity Market”.
- M.Tech (Honours) in Power Systems, GEC, Thrissur as a GATE 1992 scholar (1992–1995).
- B.Sc (Egg.)(Honours) in Electrical Engineering, Calicut University (1975–1980), REC, Calicut, Distinction; university rank

Employment History

- Professor, Department of EEE, (Director, Outreach & Professional Development) Christ College of Engineering, Irinjalakuda, Thrissur (July 2024- present)

- Dean, Academics, Principal, Professor & HoD, Asst. Professor, Senior Lecturer at Vidya Academy of Science & technology, Thrissur, (Aug. 2003- May 2024): Advisory, administrative, heading, teaching, research, teaching
- Assistant Engineer, KSEB (1998-2003): In the Distribution sector: section, circle, meter testing unit: administration, planning, reporting, development etc.
- Assistant Professor: MES College of Engineering (1994-95), Teaching
- Guest Faculty (Sept. 1991 – April 1998): On-off- Department of Electrical Engineering, Government Engineering College, Thrissur: Teaching
- Design & Estimation Engineer: 1985- 1991 Electrical Projects Company, Kuwait, Design of switchgear panel boards, MCCs, DBs, MSBs, special purpose panels with estimation etc.
- Trainee and Scientific Officer (C), (1980-1985) BARC, Design of panels for reactors in Reactor Control Division as a Bhabha awardee of 1981

Areas of Interest

- Power System
- Control Theory
- Circuits & Systems
- Machines
- Game Theory
- Graph Theory

Specialized Training

- ‘Management development programme in Communication’ sponsored by, KSEB , HRD Cell–27th to 28th Sept.1999
- ‘Management development programme ‘ sponsored by, KSEB , HRD Cell–2nd Aug. to 3rd Aug. 2001
- ‘Extended training programme on Computer Algebra Systems’, VAST-ISTE sponsored, VAST -17th June to 8th July-2008
- ‘Recent trends in Application Mathematics’ sponsored by Dept. of Maths, VAST, and Kerala Mathematical Association, VAST: 19th to 21st April, 2007
- ‘Application of Advanced Mathematics in Engineering and Research’ sponsored by ISTE Kerala, VAST- 21st to 22nd Jan. 2011
- Workshop on Scilab sponsored by VAST ISTE chapter on 11th Feb. 2011
- International Workshop on Simulation and modeling: sponsored by AMSE, France, Kolkata, on 2nd Dec. 2007
- International Workshop on Power system Automation and Automation without sensors sponsored by Sona college of Technology, Salem on 20th March 2008

- International workshops on ‘The role of Technologies, Tools and Techniques for Planning and Automation of future Distribution system, sponsored by IEEE New Delhi, 12th Oct. 2008
- International workshop on Computer aided Methods in Control Systems sponsored by International conference EPSCICON by EEED, VAST on 3rd Jan. 2010
- International workshop on Model Order Reduction and Controller Design.sponsored by International conference EPSCICON by EEED, VAST on 3rd Jan. 2010
- National workshop on Enhancement of Power System Stability using Adaptive & AI Control by Prof. OM Malik, Canada on 15th Dec 2010.
- International workshop on HVDC Light by ABB.sponsored by International conference EPSCICON by EEED, VAST on 2nd Jan. 2012
- Two workshops in EPSCICON 2014, 2018 each
- Resource person assignments
 - ISTE faculty development program sponsored by ISTE –Jan.-2011
 - “Sadhika’ for technological advancement in women’s life sponsored by the Women Scientist cell -KSCSTE-Trivandrum on 30th March 2011
 - Invited talk on ‘Energy efficiency’, for Resonance GEC Thrissur
 - Invited talk on Nanotechnology and MEMS in Prajothi Nikethan, Pudukkad
 - Invited talk on Game Theory in IESCoE, Chittilappily
 - IE (I) All India Seminar on Open Access and market Development of Power in India -May-2010- Invited talk
 - The Kerala State Council for Science Technology & Environment- Women Scientists Cell (KSCSTE-WSC) together with RDEC Cell, VAST in a 1- Day Awareness Programme -" PRAYUKTHI" – Invited talk- “ Understanding everyday electrical equipments” on March 26th 2012
 - Invited talk on Game Theory in ISTE programme on Application Maths in VAST
 - Invited talk on Women in Engineering, IEEE, GEC, Thrissur
 - Resource person for Game and Graph theory- 2 invited lectures in Vidya Academy on Applications in Game and Graph Theory- ISTE Programme on Application Maths
 - Resource person for 2 sessions in the first IEEE funded 5 day ECFDP held at VAST Thrissur in October 2013
 - Resource person in the second IEEE funded 5 day ECFDP held at TKM College of Engineering at Kollam in January 2014
 - Resource person in the third IEEE funded 5 day ECFDP held at MES College of Engineering at Kuttipuram in June 2014
 - Gave a series of lectures on fundamental concepts of electric circuits in inPods.com as a part of project GENTLE (IUCEE) www.inPods.com
 - Published a booklet on Researchgate on Fundamentals of Electric circuits.
 - Resource person in ISTE workshops on “Application of Advanced Mathematics in Engineering” on Laplace and Fourier Transforms

- Domain talks in VAST-ISTE on “ Game Theory applications in Power Systems” and on “ Game Theory applications in Production Engineering”
- Invited talk in CoE. Thrikkariapur, at IEEE conference INCETS '16. April 25th , 2016
- Invited session in FDP at Viswajyothi in Power Electronics in Power System
- Invited session in Applied Maths in Royal College of Engineering
- Invited session in Advances in engineering in IES CoE , Chittilappilly
- Invited Talk on “Artificial Intelligence: Need and Applications in Power Systems” in IEEE PES chapter CoE , Karunagappallay and VCAIR of VAST on 15-10-2018
- CERD funded FDP in Energy STORAGE TRENDS & OPTIMIZATION TECHNIQUES RECENT TRENDS IN RENEWABLE & SUSTAINABLE ENERGY CONVERSION SYSTEMS, June 2019
- Invited session in FDP at Viswajyothi in Power Electronics in Drives, Control systems July 2019
- Many workshops in Research paper writing, research ideas, project ideas, Understanding Covid 19 Pandemic: Projects of Social Relevance
- Invited talk in Powering the Energy, for AKPSC, at Nehru College of Engineering, on 28-9-'24.
- Invited online talk on SOME INTEGRAL TRANSFORMS & SERIES in an FDP on 'Application of Mathematics in Engineering Fields' at Dr. DY Patil Institute of Engineering Management & Research, Pune in 2021
- Invited talk to address talented school students on A“Global Science for Global Wellbeing' in 2023
- Invited Online Talk on “PQ issues in RE systems/ Mitigation” at Mangalam College of Engineering, 2026
- Tan Invited talk on “The Mathematics of Signals and Systems” in ICAMN' 24 in Vidya Academy of Science & Technology, on 25-1-'24.
- Invited talk on “Indigenous Technologies for Visit Bharath” in Vidya Academy of Science & Technology, on 28-2-'24
- Invited Talk on “Artificial Intelligence: Applications in the Energy Sector” in IEEE PES meeting on 15-10-'24.
- Invited talk on “ FDP- AI & ML for Next Generation Engineers: Maximising Performance: Applications of Optimisation in Machine Learning” in FDP in VAST in 2026.
- Invited Talk on SDGs & their GROWING RELEVANCE IN ENGINEERING EDUCATION : For a Sustainable Future” for several student teams (classes) and faculty members)
- Invited Talk on “AI in Power Systems” at SCMS College of Engineering in 2026
- Invited Talk on SDGs & their GROWING RELEVANCE IN ENGINEERING EDUCATION : For a Sustainable Future

- Invited talk on “E-WASTE MANAGEMENT SCHOOL FOR THE HOMELESS- An Ideal Concept” at IEEE Kerala section in 2021

Journal/Papers Published

- “Viewing Power flow in an Electricity as a confluence of Stable Multilateral Trades” Journal of Electrical Systems, ESR Group, 2009 <http://journal.esrgroups.org/jes/edition-2009.php> <http://journal.esrgroups.org/jes/papers/5.4.5.pdf>
- “Cooperative Game Theory and Coordination of Multilateral Trades” International Journal in Power Engineering, 2.2 (2010), Research Science Press
- “Coordination of Multilateral Trades via Power Vectors” European Transactions in Electric Power, John Wiley Publications, Vol 21, Issue 8, pp 2160-2171
- <http://authorservices.wiley.com/bauthor/onlineLibraryTPS.asp?DOI=10.1002/etep.561&ArticleID=794677>,
- “Socially Structured Transferable Utility Game Applied to Electricity Markets” IEJ, (Int’l Energy Journal), Volume 12, Issue 3, September 2011, <http://www.rericjournal.ait.ac.th/index.php/reric/article/view/735>
- “Design and Allocation of Transmission prices in Electricity Markets” International Journal of Electrical, Electronics and Computer Engineering” (IJECE ISSN: ONLINE 2277 2626). http://www.researchtrend.net/International_Journal_of_Electrical_Electronics_and_Computer_Engineering.php
- “E-waste Management School for the Homeless’ International Scientific Journal on Science Engineering & Technology ISSN: 2349-6657 Volume 17, No. 11, December 2014, | Impact Factor: 1.873,
- “A New Three-Stage Buck in Buck, Boost in Boost Grid-Tied Inverter” International Journal of Innovative Research in Science, Engineering and Technology, <https://www.ijirset.com/special-issue-incets-2016.html>
- Balagopalan, S. and S., R. (2020). Power System Optimization Problems: Game Theory Applications. In Proceedings of the 9th International Conference on Operations Research and Enterprise Systems - Volume 1: ICORES, ISBN 978-989-758-396-4, ISSN 2184-4372, pages 255-262. DOI: 10.5220/0009170302550262, As a book: Greg H. Parlier, Federico Liberatore, Marc Demange (Eds.), ISBN: 978-989-758-396-4, published by SCITEPRESS
- International Conferences
- “Socially Stable Least Loss Coordinated Multi-lateral Trades” Int. Conf. on Power Electronic Drives and Power Systems, Powercoin’08, Salem, India March 2008
- “Power Vector Coordination of Socially Stable Multilateral Trades” IEEE Int. Conf. Powercon’08 & 2008 IEEE Power India Conference on Power Systems New Delhi, India, Oct. 12-15, 2008 IEEEExplore . DIO.1109/ICPST-2008.4745208

- “Power Vector Coordinated Multilateral Trades,” Int. Conf. on Modeling and Simulation, MS’07 Calcutta, India, Dec. 2007
- “Cooperative game theory for a reliable and economic transmission sector in electricity markets”, IET International Conference- Reliability of Transmission and Distribution Networks Conference, 22-24 Nov. 2011 Dexter House, London, UK Digital Object Identifier: 10.1049/cp.2011.0535
- “Cooperative game theory for sharing transmission charges in electricity markets” IET International Conference- Reliability of Transmission and Distribution Networks Conference, 22-24 Nov. 2011 Dexter House, London, UK Digital Object Identifier: 10.1049/cp.2011.0536
- ” Power Vectors to Identify Coalition Partners in Game Theory controlled Electricity Markets” The Seventh International Conference on Industrial and Information Systems (ICIIS-2012) held at Indian Institute of Technology Madras (IITM), Chennai, India during 06 - 09 August 2012 Digital Object Identifier: 10.1109/ICIInfS.2012.6304806
- “Transmission Access Issues- Myths and Realities”, Proceedings of the national conference of KSEB PG Engineers Association, Trivandrum, May 2005
- “Power Vector Coordinated Multilateral Trades in Electricity Markets” All India Open Seminar on ‘Open Access and market Development of Power in India, (IEI)’, Thrissur, May 7-8, 2010
- “Integrated Model for Transmission Sector using Cooperative Game Theory”, National Power System Conference (NPSC 2010), Hyderabad, Dec. 15-17, 2010
- “Tie line modeling and cogeneration”, Proceedings of the national conference of KSEB PG Engineers Association, Trivandrum, May 1995
- “Design and Allocation of Transmission prices in Electricity Markets”, In Michael Faraday IET India Summit 2012, Kolkata, 2nd Best paper, Nov, 2012
- “Proactive detection of Sag in transmission lines”, POSICOM ’13, VAST, 15-16, March, 2013
- “Proactive detection and mitigation of Sag in transmission lines”, International conference and technology demonstration in GRIDTECH 13, April 3rd to 6th, 2013 Pragathi Maidan, Delhi
- Recent trends in Power System, National Conference on “Innovative Emerging Strategies in Power, Energy & Control”, (IESPEC’13), on 7- 8th of march 2013
- Protection of Power personnel despite procedural lapses, “ POSICOM ’13, VAST, 15-16, March, 2013
- Two papers in KETCON 2016 with best paper award for one and another in KETCON 2018
- Proceedings of the 9th International Conference on Operations Research and Enterprise Systems 2020, Greg H. Parlier, Federico Liberatore, Marc Demange (Eds.), ISBN: 978-989-758-396-4, published by SCITEPRESS

Projects guided

- B.Tech : Several projects: In association with Purdue University, GIT, Atlanta, ISRO, Port Trust, Total Energy Security Mission, OEN, KSEB, BPCL, TELK, etc.
- M.Tech: In about 15 thesis in Power Electronics
- Research Supervisor of 2 scholars at KTU.

Specific achievements and tasks

- Awarded THE PRESTIGIOUS ‘Bhabha award’ for coming first among the 24th batch of BARC Training school students, in the year long orientation course
- Was the guide of the project that won the student enterprise award of \$1500 from IEEE, USA.
- Was instrumental in designing the control circuits of ‘DHRUVA’ reactor in BARC.
- Was in charge of design and implementation of circuits and panels for several projects in Kuwait inclusive of for KOC, KNPC, MEW, Telecom tower, etc.
- Head of EEE department, MES college of Engineering, Valanchery, in 1995. initiated the process of setting up of labs.
- Head of EEE department, of Vidya Academy of Science and Technology, since 2003
- Was in charge of setting up all labs and procedures of EEED of Vidya
- Coordinator for various in-house faculty and student development programs at Vidya
- Coordinator for student level national level conferences and technofests at Vidya
- Conducted the International Conference on ‘Power ,Control, Signals & Computation’ EPSCICON 2010 organized by EEE dept, Vidya Academy of Science & Technology, Thrissur- 2010 January 3rd to 6th which attracted world wide acclaim and was dedicated to America Hitachi Padmabhooshan Prof. Thomas Kailath who delivered the key note address along with 19 other professors from all over the world and contributed papers from more than 12 countries and 6 workshops
- Conducted the International Conference on ‘Power ,Control, Signals & Computation’ EPSCICON 2012 organized by EEE dept, Vidya Academy of Science & Technology, Thrissur- 2012 January 2nd to 6th which attracted more acclaim and 16 professors from renowned universities all over the world and researchers from all over India including IITs and 3 workshops by reputed industries.
- Conducted the International Conference on ‘Power ,Control, Signals & Computation’ EPSICON 2014 organized by EEE dept, Vidya Academy of Science and Technology, Thrissur- 2014 January 6th to 10th which attracted more acclaim and 20 professors from renowned universities all over the world and

researchers from all over India including IITs and 9 workshops by reputed industries.

- Conducted the International Conference on ‘Power ,Control, Signals & Computation’ ‘EPSICON 2018’ organized by EEE dept, Vidya Academy of Science and Technology, Thrissur- 2014 January 6th to 10th which attracted more acclaim and 20 professors from renowned universities all over the world and researchers from all over India including IITs and 4 workshops by reputed industries.
- Hosted an INSA sponsored event wherein the conference chair event of EPSCICON series was conferred the PC Ray chair award with full funding by INSA.
- Initiated IEEE student Branch at Vidya and presently was the branch mentor. IEEE SB VAST has got a series of awards and continues to conduct a series of programs at campus level and hub level, including state level congress.
- Inaugurated the Electronics Association at Prajothi Nikethan and delivered a technical talk on ‘Nanotechnology and MEMS’ on 28/02/2011
- Had done collaborative research with Prof Pramod Khargonekar, University of Florida, and Prof. Ryan Loxton, Curtin University, Australia
- Delivered a keynote address in the association inauguration of Ernakulathappan CoE & M on ‘ Relevance of Electrical Engineering subjects”
- Published a book on Amazon “Navarasas of Game Theory’<https://www.amazon.com/NAVARASAS-GAME-THEORY-SUDHA-BALAGOPALAN-ebook/dp/B0F2ZRKTMY>
- Short listed for DST Project proposal submitted vide: Automated Reconfiguring of solar panels and battery cells for optimal charging and discharging and TIDE: ASSISTIVE TECHNOLOGY FOR STABILIZING HAND TREMORS WITH FOCUS ON THE ELDERLY in 2019
- Consistently on the evaluation panel of YIP for school and college students at different levels, IGNITE and IdeaRun by ISV, SARC,
- Reviewer for IEEE Transactions in Power systems and others, , PLOS One, Elsevier publications, John Wiley Publications, many journals, many conferences (also on Microsoft CMT),

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