

## **Dr. M. Vimala Rani**

Assistant Professor Grade I (Operations),  
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### **DETAILS OF ACADEMIC QUALIFICATION**

- ❖ **Ph.D** Operations Management, September 2017. Indian Institute of Science (IISc), Bangalore.

**Thesis Title:** Impact of Real Time Events on the Relative Efficiency of the Proposed Dynamic Scheduling Algorithms for Diffusion Furnace(s) in the Semiconductor Manufacturing.

**[Research Supervisor:** Dr. M. Mathirajan]

This thesis was adjudged as *The Indian Economic Association Medal (2017-2018)* for "**Best PhD Thesis**" in the Department of Management Studies, IISc Bangalore

- ❖ **M.E (Software Engineering)**, 2006, PMCT for Women, Anna University, Chennai.
- ❖ **B.E (CSE)**, 2004, PSNA CET, Madurai Kamaraj University, Madurai.

### **EXPERIENCE**

- ❖ **Teaching at VGSOM, IIT Kharagpur [April 2019-Till Date] as Assistant Professor (Grade I):** Production and Operations Management for MBA students
- ❖ **Teaching at Amrita School of Business, Amrita Vishwa Vidyapeetham, Bangalore [May 2018-April 2019] as Assistant Professor (Sr.Gr):** Supply Chain Management, Production and Operations Management for MBA-MS students.
- ❖ **Teaching at IISc, Bangalore [August 2012-March 2017] as Research Scholar:** Part of the core courses: (a) Applied Operations Research (3 times), and (b) Operation Management (3 times), along with research supervisor, for Master of Management and Research Students of Department of Management Studies at IISc.
- ❖ **Teaching at Sudharsan Engineering College of Anna University, Tamil Nadu [June 2005 – Dec. 2007] as Lecturer:** Artificial Intelligence; Network Protocols, Management and Security; Cryptography & Network Security; Multimedia Systems; Software Engineering; Software Testing; for under graduate students in Engineering of Anna University.
- ❖ **Research at IISc, Bangalore as Research Scholar [August 2012-March 2017] and Research Associate [April 2017 to Dec 2017] :** Both mathematical and heuristic optimization in dynamic and real time scheduling of batch processing machine(s) in general, particularly in batch processing machine in Semiconductor Manufacturing.

## SPECIALIZATION (TEACHING/ RESEARCH)

**Teaching:** Applied Operations Research, Operation Management, Supply Chain Management, Management Research Methodology.

**Research:** Both Mathematical and Heuristic Optimization for the problems related to Industrial Engineering and Management.

## AWARDS/RECOGNITIONS, IF ANY

- ❖ **Indian Economic Association Gold Medal** for “*Best PhD Thesis* in 2017-2018” by DoMs, IISc Bangalore [12 Sep. 2019].
- ❖ **Highly Commended Paper award** by *Emerald* for the paper “*Dynamic Scheduling of Diffusion Furnace in Semiconductor Manufacturing with Job Related Real Time Events*”, presented in the International Conference on Business Analytics and Intelligence, 2014 (ICBAI-2014), held at Indian Institute of Science, Bangalore [18-20, Dec. 2014].
- ❖ **Best Research Paper award** for the paper “*Dynamic Scheduling of Diffusion Furnace in Semiconductor Manufacturing with Resource Related Real Time Events*”, presented in the International Symposium in Honour of Dr Ravi Ravindran, held at Indian Institute of Science, Bangalore [12-13, March 2015].

## ACADEMIC SERVICES RENDERED

- ❖ Lecture had delivered on “IoT– Architectures, Opportunities and Challenges” in **CSIR Sponsored online three days FDP on IoT security challenges and opportunities in the 5G era** at PSNA CET on July 22, 2021
- ❖ Lecture had delivered on “**Meta heuristics for Dynamic Real Time Scheduling of Batch Processor in Semiconductor Manufacturing Industry**” in AICTE-ATAL-FDP on Human Centre Computing at CMRIT-Bengaluru on Feb 2021
- ❖ Lecture had delivered on “**Hypothesis Formulation and Testing -Measures of Association**” in AICTE Approved Short Term Course on “CONSUMER BEHAVIOR: ROLE OF MARKET RESEARCH on Nov 2020
- ❖ Lecture had delivered on “**Project Operations Management**” to the *officers of Rajasthan Accounts Services* on Feb 2020
- ❖ **Reviewed** articles in Current Science, IJPR, Journal of Advances in Management Research
- ❖ **Reviewed** sample chapters in Operations Management book, SAGE Publications, on July 2021
- ❖ Workshop conducted on “**Hands on Experience using R, Statistics Software, and Excel based Statistical Analysis**” at *Madurai School of Management, Madurai, Tamil Nadu*.
- ❖ Developed **conference website** for International Conference on Business Analytics and Intelligence, 2014 (ICBAI 2014), and ICBAI-2016 to communicate dynamic announcement of various activities of conference events.
- ❖ Volunteer and secretarial assistance of Consortium of Management Research (COSMAR) 2013, ICBAI-2014 and ICBAI-2016, held at DoMS IISc.

## **PARTICIPATION IN ORIENTATION COURSES**

- ❖ **Women in Data Science (WiDS) Conference** 2020 at Indian Institute of Management (IIM), Bangalore on 8<sup>th</sup> August 2020.
- ❖ **Faculty development program** on “*Machine Learning with Business Applications*” at Indian Institute of Management (IIM), Bangalore during 8-12 October 2018.
- ❖ **R workshop** on December 15-16, 2015 at Indian Institute of Management (IIM), Bangalore.
- ❖ **Faculty development program** on January 24-27, 2011 at Oxford College of Engineering, Bangalore.
- ❖ **Faculty training program** on “*Instructional Design and Delivery*” by National Institute for Technical Teacher Training Recruitment (*NITTTR*) during 25-30 September 2006 at Sudharsan Engineering College, Sathiyamangalam, Tamil Nadu.

## **ADMINISTRATIVE RESPONSIBILITIES**

- ❖ Advisor for MBA Admission, VGSoM, IIT-KGP:2021-2022
- ❖ Chairperson for MBA Admission, VGSoM, IIT-KGP: 2020-2021
- ❖ Co-Chairperson for MBA Admission, VGSoM, IIT-KGP: 2019-2020
- ❖ Team Member - AACSB Standard 1: Strategic Planning
- ❖ Coordinator for Operations area

## **MEMBERSHIP OF PROFESSIONAL BODY**

- ❖ Life Member in Operational Research Society of India (ORSI)-Since July 2021
- ❖ Life Member in Analytics Society of India (ASI)– Since Dec. 2017

## **SKILL SET:**

- ❖ Analysis Tools: R, SPSS, Microsoft Excel
- ❖ Modelling Tools: LINDO and LINGO
- ❖ Programming Languages: C, C++,VB, ASP.Net, Rational software (Rational rose, Rational requisite pro)
- ❖ Web Design Language: HTML
- ❖ Database: MySQL

## PUBLICATIONS

### Published in Referred Journals

1. Vimala Rani, M., and Mathirajan, M. (2021). Real Time Scheduling of Non-identical Multiple Batch Processors with Machine Eligibility Restriction, *International Journal of Mathematical, Engineering, and Management Sciences*, Vol: 6, No:6, pp. 1460-1486.
2. Mathirajan, M, Sujan Reddy, Vimala Rani, M. (2021). An Experimental Study of Newly Proposed Initial Basic Feasible Solution Methods for a Transportation Problem *OPSEARCH (Springer)*, [https://doi.org/10.1007/s12597-021-00533-5]
3. Mathirajan, M, Sujan Reddy, Vimala Rani, M, and Dhaval, P. (2021). A Machine Learning Algorithm for Scheduling a Burn\_in Oven Problem. *International Journal of Industrial and System Engineering (Inderscience)*, [https://doi.org/10.1504/IJISE.2021.10042607].
4. Vimala Rani, M., and Mathirajan, M. (2020). Performance Evaluation of Due-date based Dispatching Rules in Dynamic Scheduling of Diffusion Furnace, *OPSEARCH (Springer)*, 57, 462-512.
5. Vimala Rani, M., and Mathirajan, M. (2020). Meta-heuristic for Dynamic Real Time Scheduling of Diffusion Furnace in Semiconductor Manufacturing Industry, *International Journal of Industrial and System Engineering (Inderscience)*, Vol:34, No. 3, pp. 365-395
6. Vimala Rani, M., and Mathirajan, M. (2016). Performance Evaluation of ATC based Greedy Heuristic Algorithms in Scheduling Diffusion Furnace in Wafer Fabrication, *Journal of Information & Optimization Sciences (Taylor & Francis)*, Vol. 37, No. 5, pp. 717–762.
7. Vimala Rani, M., and Mathirajan, M. (2016). Multi Objective Dynamic Real-Time Scheduling of Batch Processing Machine, *International Journal of Operations and Quantitative Management*, Vol. 22, Issue. 1, pp. 53-73.

### Edited and Referred Book Chapters

8. Vimala Rani, M., and Mathirajan, M. (2021). Prescriptive Analytics for Dynamic Real Time Scheduling of Diffusion Furnaces, chapter in the edited book titled “*Supply Chain Management in Manufacturing and Service Systems: Advanced Analytics for Smarter Decisions*”, *Springer*, pp. 241-278 (DOI: 10.1007/978-3-030-69265-0)
9. Vimala Rani, M., and Mathirajan, M. (2016). Dynamic Scheduling of Diffusion Furnace in Semiconductor Manufacturing with Resource Related Real Time Events, *Edited Volume of Analytics in Operations/Supply Chain Management, I.K International Publishing House Pvt.Ltd*, New Delhi. pp. 367-381.

### Published in Peer-Reviewed Conference Proceedings

10. Mathirajan, M, and Vimala Rani, M. (2021). Observations on New Initial Basic Feasible Solution (IBFS) Methods Published in the Literature for Transportation Problem, The 11th Annual International Conference on Industrial Engineering and Operations Management (IEOM), Singapore, March 9-11, 2021 [http://ieomsociety.org/singapore2021/proceedings/, ISBN: 978-1-7923-6124-1, pp. 201-210]
11. Vimala Rani, M., and Mathirajan, M. (2020). Scheduling of Diffusion Furnace in Semiconductor Manufacturing - A Literature Review, Classification and Simple Meta-Analysis, *Proceedings of the International Conference on Industrial Engineering and Operations Management*, Dubai, UAE, March 10-12, 2020 [http://ieomsociety.org/ieom2020/proceedings/, ISBN: 978-1-5323-5952-1, pp.1231-1232]

12. Mathirajan, M., and Vimala Rani, M. (2017). Impact of Real Time Events on the ATC-based Heuristic Algorithms for Dynamic Scheduling of Burn-in Ovens with Non-Agreeable Release Time and Due-Dates, *Proceedings of the International Conference on Industrial Engineering and Technology Management (ICIETM)*, ISSN 2572-1887, pp. 101-125.
13. Vimala Rani, M., and Mathirajan, M. (2015). Dynamic Scheduling of Diffusion Furnace in Semiconductor Manufacturing with Real Time Events, *Proceedings of the 2015 IEEE IEEM (978-1-4673-8066-9/15/\$31.00 ©2015 IEEE pp. 104-108)*.
14. Mathirajan, M., and Vimala Rani, M. (2012). Scheduling a BPM with Incompatible Job-Families and Dynamic Job-Arrivals, *Proceedings of the 2012 IEEE IEEM (978-1-4673-2945-3/12/\$31.00 ©2012 IEEE pp. 622-626)*

#### **Presented at International Conferences**

15. Vimala Rani, M., and Mathirajan, M. (2016). A Meta Heuristic for Dynamic Real-Time Scheduling of Diffusion Furnace in Semiconductor Manufacturing, Presented in 2016 *International Conference on Business Analytics and Intelligence*, 19-21 December 2016, IISc, Bangalore.
16. Mathirajan, M., and Vimala Rani, M. (2015). Impact of Resource Related Real Time Events on Dynamic Scheduling of Burn-in Oven, Presented in *International Symposium on Semiconductor Manufacturing Intelligence*, 16-18 October 2015, KAIST, Daejeon, South Korea.
17. Vimala Rani, M., and Mathirajan, M. (2014). Dynamic Scheduling of Diffusion Furnace in Semiconductor Manufacturing with Job Related Real Time Events, Presented in 2014 *International Conference on Business Analytics and Intelligence*, 18-20 December 2014. IISc, Bangalore.
18. Vimala Rani, M., Mathirajan, M., and Sivakumar, A.I. (2014). A Dynamic Portal for Scheduling Batch Processing Machines Research, *Second International Conference on Advances in Industrial Engineering Applications*, 6-8 January 2014, Anna University Chennai.
19. Mathirajan, M., and Vimala Rani, M. (2013). Performance Evaluation of ATC based Dispatching Rules in Scheduling Diffusion Furnace, Presented in 2013 *International Conference on Business Analytics and Intelligence*, 11-13 December 2013, IIM, Bangalore.

#### **Presented at National Conference**

20. Vimala Rani, M., and Mathirajan, M. (2016). A Class of Mathematical Models for Dynamic Scheduling of Diffusion Furnace with Due-Date based Scheduling Objectives, Presented in *Sixth National Conference on Management Science and Practice*, 9-10 September 2016, IIT-Madras.