

## **CURRICULUM VITAE**

**Wasantha Bandara Daundasekera,**  
Department of Mathematics,  
University of Peradeniya, Sri Lanka  
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Email: [wbd@pdn.ac.lk](mailto:wbd@pdn.ac.lk)

### **Personal Data**

**Date of Birth:** 29<sup>th</sup> May 1962

**MARTIAL STATUS:** Married

**CITIZENSHIP:** Sri Lanka by Descent

**OCCUPATION:** Associate Professor

### **EDUCATIONAL QUALIFICATIONS**

#### **University Education**

University of Peradeniya, Sri Lanka (1981 – 1985)  
**Bachelor of Science (Special) Mathematics - 1985**

University of Alabama, U.S.A. (1989 – May 1992)  
**Master of Arts (Applied Mathematics) – 1992**

University of Alabama, U.S.A (August 1992 – 1995)  
**Doctor of Philosophy (Applied Mathematics) – 1995**

#### **School Education**

Trinity College Kandy (1970 - 1981)  
NCGE, GCE (A/L)

## **TEACHING EXPERIENCE**

### **Undergraduate Level**

Assistant Lecturer – Department of Mathematics, University of Peradeniya  
(January 1986 – July 1989)

Graduate Teaching Assistant – Department of Mathematics, University of Alabama, USA  
(August 1989 – December 1995)

Senior Lecturer Grade II – Department of Mathematics, University of Peradeniya  
(January 1996 – December 2001)

Senior Lecturer Grade I – Department of Mathematics, University of Peradeniya  
(January 2002 – September 2009)

Associate Professor - Department of Mathematics, University of Peradeniya  
(October 2009 – to date)

### **Visiting Lecturer**

Open University of Sri Lanka

Faculty of Applied Sciences, Rajarata University of Sri Lanka

Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka

Faculty of Applied Science, The Vavuniya Campus of the University of Jaffna

### **External Examiner**

Faculty of Applied Sciences, Rajarata University of Sri Lanka

Department of Mathematics, Eastern University, Sri Lanka

Department of Physical Sciences, Sabaragamuwa University of Sri Lanka

Department of Surveying and Geodesy, Sabaragamuwa University of Sri Lanka

Faculty of Applied Science, The Vavuniya Campus of the University of Jaffna

Faculty of Applied Sciences, University of Ruhuna

## **Postgraduate Level**

### **Visiting Lecturer**

Postgraduate Institute of Science (PGIS), University of Peradeniya

Postgraduate Institute of Agriculture (PGIA), University of Peradeniya

Faculty of Postgraduate Studies, University of Sri Jayewardenepura

## **RESEARCH EXPERIENCE**

### **Research Positions**

- 1991            Research Assistant, The University of Alabama, Alabama, U.S.A.
- 1993-1994    Graduate Research Assistant, Alabama Productivity Centre, Alabama, U.S.A.

### **Postgraduate Research**

- 1991            M.A. thesis on “Programming Under Uncertainty”, *The University of Alabama, USA*
- 1995            Ph.D dissertation on “Optimization Theory for n-Set Functions”, *The University of Alabama, USA*

## **Scholarly Contributions in Peer-Reviewed Journals**

### **Research Articles**

- 2005            Second Order Necessary Conditions for an Optimization Problem with n-Set Functions, *Ceylon Journal of Science (Physical Sciences)*, Volume 10 (2005)
- 2005            An Optimization Technique for Nurse Scheduling, *Ceylon Journal of Science (Physical Sciences)*, Volume 10 (2005)
- 2006            A Mathematical Model for Blending of Aggregate by Weight, *Ceylon Journal of Science (Physical Sciences)*, Volume 11 (2006)
- 2006            A Scientific Approach for University Course Timetabling, *Ceylon Journal of Science (Physical Sciences)*, Volume 11 (2006).
- 2009            First Order Necessary and Sufficient Conditions for Mathematical Programming With  $n$ -Set Functions, *Ceylon Journal of Science (Physical Sciences)*, Volume 15 (2009).

- 2009 Economic Design of Fraction Non-conforming Quality-control Chart, *Ceylon Journal of Science (Physical Sciences)*, Volume 15 (2009).
- 2012 Pattern Generation for Two Dimensional Cutting Stock Problem, *International Journal Mathematics Trends and Technology – Volume Issue – 2012*
- 2012 Pattern Generation For Two-Dimensional Cutting Stock Problem With Location, *Indian Journal of Computer Science and Engineering*, Vol. 3 No. 2, 2012.
- 2013 Nurse Scheduling on Branch – and – Bound Algorithm, *International Journal of Scientific and Research Publications*, Volume 3, Issue 7, July 2013
- 2013 A Method for Two-Dimensional Cutting Stock Problem with Triangular Shape Items, *British Journal of Mathematics & Computer Science*, 2013.
- 2013 An Optimization Model to Generate a Finite Sequence Subject to the Given Conditions, *International Journal of Scientific and Research Publications*, Volume 3, Issue 1, 2013.
- 2013 Use of Zimmermann Multi Objective Fuzzy Linear Programming model to identify best areas of rice growing in the Dry and Intermediate zones in Sri Lanka, *International Journal of Research in Information Technology*, Volume 1, Issue 1, 2013.
- 2014 A Binary Integer Linear Programming Approach For Nurse Scheduling, *European International Journal of Applied Science and Technology*, Vol. 1 No. 4; 2014.
- 2014 An Optimal Solution to the Linear Programming Problem using Lingo Solver: A Case Study of an Apparel Production Plant of Sri Lanka, *International Journal of Computer Science and Business Informatics*, Vol. 14 No. 2, 2014
- 2015 Effectiveness of the Fuzzy Multi Objective Programming With Linear Membership Function and Non Linear Membership Functions, *International Journal of Research in Information Technology*, Volume 3, Issue 8, 2015
- 2015 Effectiveness of the Multi Objective Linear Programming Model under Two Fuzzy Environments, *International Journal of Research in Information Technology*, Volume 3, Issue 5, 2015
- 2015 Modified Method for One – Dimensional Cutting Stock Problem, *Science Publishing Group*, 2015

- 2015 Weak and Strong Duality Theory on Optimization Problems with  $n$  – set Functions, *International Journal of Engineering Issues*, Vol. 2015, no. 2, 2015
- 2015 Determining the Optimal Order Quantity Using a Simulation Model, *International Journal of Applied Sciences and Innovation*, Vol. 2015, no. 2, pp 61-65, 2015

### **Research Communications Presented at Conferences**

#### **Full Papers/Abstracts**

- 1995 Mathematical Programming with  $n$ -Set Functions, *The Eighth Annual Meeting of the University of Alabama System* (Alabama, USA). 1995
- 1998 First Order Necessary and Sufficient Conditions for Mathematical Programming with  $n$ -Set Functions, *Annual Research Sessions, University of Peradeniya, Sri Lanka*.
- 2003 Second Order Necessary Conditions for an Optimization Problem with  $n$ -Set Functions, *Annual Research Sessions, University of Peradeniya, Sri Lanka*
- 2003 A Production Cost Minimization Problem, *Annual Research Sessions, University of Peradeniya, Sri Lanka*
- 2003 The optimal Path of the Road-Network of Sri Lanka, *Annual Research Sessions, University of Peradeniya, Sri Lanka*
- 2004 An Optimization Technique for Nurse Scheduling, *Annual Research Sessions, University of Peradeniya, Sri Lanka*.
- 2004 A Mathematical Model for Blending of Aggregate by Weight, *Annual Research Sessions, University of Peradeniya, Sri Lanka*
- 2005 An Application of Traveling Salesman Problem, *Annual Research Sessions, University of Peradeniya, Sri Lanka*.
- 2005 A Scientific Approach for University Course Timetabling, *Annual Research Sessions, University of Peradeniya, Sri Lanka*.
- 2005 An Optimization Technique for Nurse Scheduling, *Annual Research Sessions, University of Peradeniya, Sri Lanka*.
- 2005 Duality on Mathematical Programming with  $n$ -set Functions, *Annual Research Sessions, University of Peradeniya, Sri Lanka*.
- 2005 The Primal Affine Scaling Algorithm, *Annual Research Sessions, University of Peradeniya, Sri Lanka*.

- 2007 Determine the Optimal Order Quantity Using a Simulation Model, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2007 An Application of Statistical Process Control in the Garment Industry, *University of Rajarata, Sri Lanka.*
- 2008 An Application of Minimum Cost Minimization Network Flow Problem, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2008 A Minimum Cost Network Flow Problem, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2008 Critical Path Analysis Using Linear Programming, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2008 A Scientific Approach to Assign Intern Medical Officers to the Government Hospitals, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2008 Optimizing the Production Schedule and Cost Under Uncertain Demand, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2008 An Application of Stochastic Linear Programming to Textile Industry, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2008 A Mathematical Model to Minimize The Production Cost in an Apparel Plant, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2009 Optimizing the Pump Operations in a Potable Water Distribution System Using Linear Programming, *Proceedings of the National Symposium on Natural Resources (NRM 2009), Sabaragamuwa University of Sri Lanka*
- 2009 A Linear Integer Programming Approach to Find an Optimum Schedule, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2009 An Application of the Replacement Problem, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2009 Optimum Pump Scheduling in a Water Distribution System Using Branch-and-Cut Algorithm, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2009 A Study to Improve the Quality of Cement Manufacturing Process by using Statistical Quality Control, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
- 2010 Optimizing the Pump Operations in a Water Distribution System by Minimizing the Energy and Maintenance Cost, *Annual Research Sessions,*

*University of Peradeniya, Sri Lanka.*

- 2010      An Optimization Technique for Economical Diet Meeting Nutritional Requirements, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
  
- 2010      An application of Programme Evaluation and Review Technique in the Construction of a Water Supply Project, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
  
- 2011      Optimization Model for Cutting Stock Problem with Pattern Generation, *Proceedings of the Peradeniya University Research Sessions, Sri Lanka, Vol. 16, 2011*
  
- 2011      Analysis of Technical Efficiency in the Banking Sector with Respect to Inputs and Outputs, *Proceedings of the Peradeniya University Research Sessions, Sri Lanka, Vol. 16, 2011*
  
- 2011      Applicability of Zimmermann Multi Objective Fuzzy Linear Programming Model under Large Vagueness, *Annual Research Sessions, University of Peradeniya, Sri Lanka.*
  
- 2011      Optimization Model for Cutting Stock Problem with Pattern Generation, *Proceedings of the Peradeniya University Research Sessions, Sri Lanka, Vol. 16, 2011*
  
- 2013      An Optimization Technique to Prepare Nurse Schedule for a Monthly Time Horizon, *The Second International Conference Multidisciplinary Research, Darussalam – Banda Aceh, Indonesia, 2013*
  
- 2014      Effectiveness of the Multi Objective Linear Programming Model under Two Fuzzy Environments, *Proceedings of the Peradeniya University International Research Sessions, Sri Lanka, Vol. 18, 2014*
  
- 2014      Optimum Arrangement in Two Dimensional Cutting Stock of Circular Item, *Proceedings of the Postgraduate Institute of Science Research Congress, Sri Lanka, 2014*
  
- 2014      A Goal Programming Approach to Immature Phase Rubber plantations, *Proceedings of the Postgraduate Institute of Science Research Congress, Sri Lanka, 2014*
  
- 2014      Applicability of Zimmermann Multi Objective Fuzzy Linear Programming (MOFLP) Model under a Condition of Large Vagueness, *Conference Proceedings – International Forum for Mathematical Modelling*

- 2015 Designing Energy Tax Rate to Optimize Energy Usage in Garment Factory using Game Theory, *2<sup>nd</sup> Ruhuna International Science & Technology Conference, University Ruhuna, 2015*
- 2015 Optimal Design of Water Distribution Network Case Study – Lunugamwehera Integrated Water Supply Project, *International Conference for OR and Development, ICORD 2015*
- 2015 Implementing the Concept of Overall Equipment Effectiveness in a Loss Time Analysis System, *Proceedings of the Peradeniya University International Research Sessions, Sri Lanka, Vol. 19, 2015*

### **Outstanding Performances in Research**

- 1994 Awarded a scholarship for excellent performance in the research project by the Alabama Productivity Center, Alabama, USA.
- 2003 A research paper titled “A Production Cost Minimization Problem” was adjudged a commendable presentation at the Peradeniya University Research Sessions, 2003.
- 2003 A research paper titled “The Optimal Path of the Road-Network in Sri Lanka” was adjudged a commendable presentation at the Peradeniya University Research Sessions, 2003.
- 2003 A research paper titled “Second Order Necessary Conditions for an Optimization Problem with n-Set Functions” was adjudged a commendable presentation at the Peradeniya University Research Sessions, 2003.

### **Postgraduate Research Supervision**

#### **M.Phil. Completed**

<b>Year</b>	<b>Name of the Student</b>	<b>Title of the thesis</b>
2012	T.D.A.Gomesz	A Binary-Integer Programming Method for Optimal Control of water Distribution Systems
2014	W.N.P.Rodrigo	Pattern Generation for Two-Dimensional Cutting Stock Problem
2014	Pramacutty Paramadevan	A Mathematical Programming Approach to Nurse Scheduling



**M.Sc. Completed**

<b>Year</b>	<b>Name of the Student</b>	<b>Title of the Project</b>
2000	S. S. K. Haputhantri	Parametric Uncertainties in Dynamic Pool Models and their Effects on the Determination of the Optimal Fishing Strategy. A Case Study of Artisanal Fishers in Sri Lanka.
2000	N.P.P. Sandanayake	Allocation of a Media Budget to Optimize Exposure
2001	W.R. De Mel	Automobile Spare Parts Distribution System Design
2001	M.M. Gamini	Application of Branch and Bound Algorithm to Minimize the Production Cost
2001	W.D.D.C. Abeyakoon	A Statistical Analysis on Teachers' Awareness of the School Based Assessment Program
2001	M.K.D.W. Mallawachchi	Upgrading the Sampling Procedure of Surgical Gloves
2002	A. Welagedara	Quality Improvement of Fertilizers by Using Control Charts for Variables
2005	A.S. Athapattu	A Mathematical Model for Blending of Aggregate by Weight
2005	P. Paramadevan	A Scientific Approach for University Course Timetabling
2005	J. Wijesinghe	An Application of the Shortest Path Problem to the Road Network in Sri Lanka.
2005	K.A.D.N.N. Bandara	An Application for Traveling Salesman Problem
2005	J. Wijesinghe	An Application of the Shortest Path Problem to the Road Network in Sri Lanka
2008	S.S.J.M. Iqbal	Critical Analysis on Numerals
2011	L.R.Thilakarathne	Economic Design of Fraction Non-Conforming Quality Control Chart
2011	H.G.K.Dinesharathna	Improving the Production Efficiency in Hirdaramani (Industries) Limited at Kahathuduwa using Statistical Process Control
2011	A.M.S.W. Abeysinghe	A Study to Investigate the Reasons for Low Interest in the Area of Probability and Statistics in G.C.E.(A/L) Combined Mathematics Students in Kurunegala District
2011	H.A.J.R.Hetti Arachchi	Improving the Quality of Cement Manufacturing Process by Using Statistical Techniques
2011	S.Mayuiran	Optimizing the Inventory Cost of Carbon Dust
2012	S.Suthan	Application to Optimization Under Uncertainty

**Postgraduate Diploma Completed**

<b>Year</b>	<b>Name</b>	<b>Title of Project</b>
2005	J. Wijesinghe	An Application of the Shortest Path Problem to the Road Network in Sri Lanka
2005	K.A.D.N.N. Bandara	An Application for Traveling Salesman Problem
2005	J. Wijesinghe	An Application of the Shortest Path Problem to the Road Network in Sri Lanka

**Undergraduate Research Supervision****Sixty (60) undergraduate supervisions****MONOGRAPHS AND BOOKS****Publications****Books**

1. Title: Introduction to Linear Programming.  
ISBN: 978-955-51414-2-0  
Published: 2008
2. Title: Introduction to Ordinary Differential Equations.  
ISBN: 978-955-51414-3-7  
Published: 2008
3. Title: Linear Programming  
Recommended book for Bachelor of Science, Faculty of Natural Sciences, Open University of Sri Lanka.  
Published: 2008
4. Title: Operations Research  
Recommended book for Bachelor of Science, Faculty of Natural Sciences, Open University of Sri Lanka.  
Published: 2008

**Monographs**

1. A Monograph on Mathematics: Optimization Theory with Set Functions.  
ISBN: 978-955-51414-0-6  
Published: 2008

2. A Monograph on Mathematics: Optimization Theory with  $n$ -Set Functions.  
ISBN: 978-955-51414-1-3  
Published: 2008

### **Books and Monographs Edited**

1. Title: Trigonometry for G.C.E A/L Combined Mathematics  
Author: Prof.A.A.I.Perera  
ISBN: 978-955-98922-8-1  
Published: 2008
2. A Monograph on Mathematics: Hadamard Matrices  
Author: Prof.A.A.I.Perera  
ISBN: 978-955-98922-9-8  
Published: 2008
3. A Monograph on Mathematics: Steiner Systems  
Author: Prof.A.A.I.Perera  
ISBN: 978-955-51413-1-4  
Published: 2008
4. A Monograph on Mathematics: Graph Coloring  
Author: Prof.A.A.I.Perera  
Published: 2008
5. A Monograph of Mathematics: Continued Fractions  
Author: Prof.A.A.I.Perera  
ISBN: 978-955-51413-2-1  
Published: 2008

### **CONTRIBUTION TO ACADEMIC DEVELOPMENT**

#### **Workshops and Training Programmes**

##### **Resource Person**

- |      |                                                                                                                                  |
|------|----------------------------------------------------------------------------------------------------------------------------------|
| 2001 | Workshop on setting up an Institute of Management, University of Peradeniya.                                                     |
| 2003 | Workshop on “Computational Mathematics”, University of Peradeniya.                                                               |
| 2005 | Workshop on “Combined Mathematics Teachers” organized by National Institute of Education (NIE).                                  |
| 2005 | One day Workshop on “Revision of Existing B.Sc. Degree Curricula, Faculty of Applied Sciences, Rajarata University of Sri Lanka. |

- 2006 First Short Course on “Computational Mathematics”, PGIS, University of Peradeniya.
- 2007 Second Short Course on “Computational Mathematics”, PGIS, University of Peradeniya.
- 2007 Four-day Workshop on Combined Mathematics for G.C.E.(A/L) Teachers.
- 2007 Five-day Workshop on Mathematics for G.C.E.(A/L) Teachers.
- 2007 An international workshop on Seasonal Climate Forecasting using Climate Predictability TOOL (CPT) organized by Department of Meteorology, Sri Lanka.
- 2007 Curriculum revision (Mathematics) workshop organized by the Faculty of Science, University of Jaffna.
- 2009 Workshop on “Faculty of Science Curriculum Revision 2009”, Faculty of Science, University of Peradeniya.
- 2009 A workshop on “Career Guidance for Mathematics Students”, Faculty of Applied Sciences, Rajarata University of Sri Lanka.
- 2014 Training Workshop for G.C.E.(A/L) Teachers (Technology Stream) of the Uva Province, Faculty of Science, University of Peradeniya.
- 2014 Training Workshop for G.C.E.(A/L – Science Stream) Teachers of the Central Province, Faculty of Science, University of Peradeniya.

### **Coordinator**

- 2006 Workshop on “Curriculum Development”, Faculty of Science, University of Peradeniya
- 2007 Four-day Workshop on Combined Mathematics for G.C.E.(A/L) Teachers, University of Peradeniya.
- 2007 Five-day Workshop on Mathematics for G.C.E.(A/L) Teachers, University of Peradeniya.
- 2009 Workshop on “Faculty of Science Curriculum Revision 2009”, Faculty of Science, University of Peradeniya.
- 2009 Workshop on “Faculty of Science Curriculum Revision 2009”, Faculty of Science, University of Peradeniya.

- 2014 Training Workshop for G.C.E.(A/L) Teachers (Technology Stream) of the Uva Province, Faculty of Science, University of Peradeniya.
- 2014 Training Workshop for G.C.E.(A/L – Science Stream) Teachers of the Central Province, Faculty of Science, University of Peradeniya.

### **CONTRIBUTION TO UNIVERSITY DEVELOPMENT ACTIVITIES**

#### **University of Peradeniya**

##### **Course/Programme Coordinator**

1. M.Sc. Programme in Industrial Mathematics, PGIS
2. Management Studies supplementary courses, Faculty of Science
3. Economics supplementary courses, Faculty of Science
4. Industrial Training Coordinator of Statistics and Operations Research Degree Programme (2012 – 2013)
5. Academic Coordinator of Statistics and Operations Research Degree Programme (2006 – to date)

##### **Responsibilities**

1. Head of the Department of Mathematics (2007 - 2010 & 2014)
2. Senior Student Counselor (1998 & 2003 - 2004)
3. Proctor (2012)
4. Deputy Proctor, Faculty of Science (2011)
5. Warden, Marrs Hall (2007 - 2009)
6. Senior Treasurer in Computer, Mathematical and Operations Research societies
7. Member of the Science Faculty Standing Committee on English
8. Member of the Course Unit Committee
9. Coordinator of the Curriculum Development, IRQUE project
10. Member of the Board of Management of the CDCE, University of Peradeniya

### **Positions held at the Postgraduate Institute of Science**

1. Member of the Board of Management (2008 – 2010)
2. Chairman of the Board of Study in Mathematics (2008 – 2010)
3. Coordinator of the M.Sc. Programme in Industrial Mathematics (1999 – 2002 & 2002 – 2014)
4. Secretary of the Board of Study in Mathematics (1999 – 2002)
5. Member of the Board of Study in Mathematics (1996 – 2002 & 2005 – to date)

### **Other Institutes**

1. Consultant to formulate the Course of Study for the B.Sc. Degree Programme, Faculty of Applied Sciences, Rajarata University of Sri Lanka (1997).
2. Consultant to develop the Curriculum for the Four Year B.Sc. Degree Programme in Industrial Mathematics, Faculty of Applied Sciences, Rajarata University of Sri Lanka (2005).
3. Consultant to develop a detailed Syllabus for the B.Sc. Degree Programme, Faculty of Applied Sciences, Rajarata University of Sri Lanka (2005).
4. Consultant to the Four Year B.Sc. Degree Programme in Industrial Mathematics Faculty of Applied Sciences, Rajarata University of Sri Lanka (2007).
5. Member of the Faculty Board, Faculty of Applied Sciences, Rajarata University of Sri Lanka (1996-2001 and 2008-2012).
6. Member of the Selection Panel, Faculty of Applied Sciences, Rajarata University of Sri Lanka (2006-2014).
7. A committee member of Sri Lanka Association for the Advancement of Science

### **CONTRIBUTION TO SECONDARY EDUCATION**

1. Co-controller of G.C.E. (A.L.) Examinations
2. Chief Examiner of G.C.E. (A.L.) Examinations
3. Member of the Panel of Setters of G.C.E. (A.L.) Examinations
4. Member of the Re-scrutiny Board of G.C.E. (A.L.) Examinations

5. Coordinator/Resource Person in School Workshops for Teachers/Students:  
More than Thirty (30) workshops

**NON-RELATED REFEREES**

Prof.H.M.D.Namal Priyantha,  
Department of Chemistry,  
University of Peradeniya,  
Sri Lanka

Prof.A.A.I. Perera,  
Department of Mathematics,  
University of Peradeniya,  
Sri Lanka

I hereby certify that the information given is true and correct.

Date: 28<sup>th</sup> December 2015

Signature: