

# CURRICULUM VITAE

**Fantahun M. Defersha, Ph.D., P.Eng.**

**Associate Professor**

in the

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JESUS ANSWERED, "I AM THE WAY AND THE TRUTH AND THE LIFE. NO ONE COMES TO THE FATHER EXCEPT THROUGH ME". (John 14:6)

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## OBJECTIVE

- ◇ To contribute analytical and computational skills and experience in modeling, meta-heuristics, parallel computing, computer simulation in the areas of manufacturing systems design, production planning and scheduling, computer integrated manufacturing systems, logistics, and quality management to the academia and practitioners and deliver the state-of-the-art knowledge to students at various levels in mechanical and industrial engineering.

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## PERSONAL PROFILE

- ◇ 2006 PhD graduate from Concordat University, Montreal, Quebec, CANADA;
- ◇ Computer literate in: (i) multiple programming languages (C++/C#/Visual Basic, and Microsoft Transact-SQL), (ii) applications softwares (Minitab, L<sup>A</sup>T<sub>E</sub>X, Excel, PowerPoint, Ms-Word), (iii) simulation package (ARENA), (iv) optimizations packages (LINGO and CPLEX), (v) CadCam Packages (AutoCAD, SolidWorks, MasterCam), and (vi) Parallel Computing using MPI;
- ◇ A professional industrial engineer with experience in mathematical modeling, meta-heuristics, industrial systems simulation, and parallel computing;
- ◇ Author and co-author for over 50 peer-reviewed journals articles, 22 refereed proceedings, refereed book chapters, and many conference presentations and invited talks in manufacturing systems design & operations, life cycle analysis of bio-materials, and statistical design of materials & processes;
- ◇ More than five years experience in university teaching in Ethiopia as a lecturer with high scores in students' evaluations (1995-2002); Seven years academic experience as a PhD Student, Research Assistant, Research Associate, and Part-time Faculty at Concordia University, Montreal Quebec, Canada (2002-2009); and research and teaching experience as an Assistant Professor (2010 to 2015) and then as a Tenured Associate Professor (2015 to date) at University of Guelph, Ontario, Canada;
- ◇ Research Interest: Manufacturing system analysis, flexible and cellular manufacturing systems, advanced planning and scheduling, quantitative techniques in inventory management, statistical design of materials & processes, supply chain modeling & simulation, reverse logistics & remanufacturing systems, artificial intelligence, meta-heuristics, and parallel computing;
- ◇ A Registered Professional Engineer of Ontario (P.Eng); Senior Member of the Institute of Industrial and Systems Engineering (IISE) from 2014 to 2022; Member of the Canadian Operations Research Society since 2004 (CORS).

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## EDUCATION

- Sep. 2002 – **Concordia University**, Montreal Quebec, CANADA  
May 2006  
PhD in Mechanical Engineering (Under the industrial engineering program). Thesis title: An Integrated Approach in the Design of Cellular Manufacturing Systems for Dynamic Production Requirements.
- Sep. 1998 – **Roorkee University (Indian Institute of Technology – IIT Roorkee)**, Utar Pradesh , INDIA.  
Jan. 2000  
Master of Engineering (**First Division with Honors**) in Mechanical Engineering with specialization in Production and Industrial Systems Engineering. Medium of instruction: English;
- Sep. 1990 – **Addis Ababa University**, Addis Ababa, ETHIOPIA  
Jul. 1995  
Bachelor of Science (**Distinction**) in Mechanical Engineering. Medium of instruction: English
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## HONORS WHILE I WAS A PHD STUDENT

- I. **Campaign for a New Millennium Graduate Scholarship (in Recognition of Superior Academic Achievement) - School of Graduate Studies, Concordia University**  
For a period of tenure of 2 terms starting from September 1, 2004 and ending April 30, 2005; Tenable in Ph. D. Mechanical Engineering
  - II. **Concordia University International Tuition Fees Remission Award**  
For a period of tenure of 4 terms starting from May 1, 2004 and ending August 31, 2005; Tenable in Ph. D. Mechanical Engineering
  - III. **Concordia University Graduate Fellowship**  
For a period of tenure of 3 terms starting from September 1, 2004 and ending August 31, 2005; Tenable in Ph. D. Mechanical Engineering
  - IV. **Concordia University Partial Tuition for International Students**  
For a period of tenure of 1 term starting from September 1, 2005; Tenable in Ph. D. Mechanical Engineering
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## EMPLOYMENT

- Jul. 2015 – Associate Professor, University of Guelph, Guelph, Ontario, CANADA  
to date
- Jan. 2010 – Assistant Professor, University of Guelph, Guelph, Ontario, CANADA  
Jun. 2015
- May 2006 – Research Associate in Concordia University, Montreal, Quebec, CANADA  
Dec. 2009
- Sep. 2002 – Research Assistant (while I was a PhD student) in Concordia University, Montreal, Quebec, CANADA  
Apr. 2006
- Jan. 2000 – Lecturer, Addis Ababa University, ETHIOPIA  
Aug. 2002
- Sep. 1996 – Assistant Lecturer, Addis Ababa University, ETHIOPIA  
Aug. 1998
- Sep. 1995 – Graduate Assistant, Addis Ababa University, ETHIOPIA  
Aug. 1996

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## INDUSTRIAL PROJECTS

- Sep. 2016 – **Integrated Production and Manpower Scheduling:** The research problem identified in a local industry involves the scheduling of very large number of orders in one of their Toronto manufacturing facilities. The system consists of a large number of stations that process many batches of products. Some stations have identical parallel machines that share limited number of tools. There are also limited number of cross trained operators. In some processing stations, an operator can be assigned to tend more than one machine at a time. The products need assembly operations where the components and subassemblies including the final assemblies need to pass through sequences of processing stations. Some processing and assembly operations (semi-finished products) are also required to be sent to an outside manufacturer where the products are returned after a specified lead time for further in-house processing. The jobs have to be scheduled to meet due dates and at the same time the load across the parallel machines and among the operators need to be balanced. The work-in-process inventory has to be maintained at the lowest possible. This scheduling problem is different from standard problems that are well documented in literature. To solve this new scheduling problem, we applied the event-scheduling/time-advance algorithm from the theory of discrete event systems simulation.
- Nov. 2013 – **Scheduling Mold Stations:** This research project is in collaboration with University of Guelph and a local industry specialized in Auto part manufacturing and painting. I was involved in a research project to develop an algorithm for scheduling many plastic injection mold stations that feed parts to automated paint lines. The scheduling problem encountered is extremely different from classical scheduling problems that are commonly addressed in literature.
- May 2011 – **Scheduling in a local food Processing Industry:** The vast majority of algorithms appeared in literature are of limited use to companies with specific problems. Real-world scheduling problems are extremely different from research problems and quite often they are very complicated. A research project I encountered in a local industry is a typical example of these types of scheduling problem. A highly paced upstream continues process of a constant speed is feeding hundreds of intermittent downstream operations interconnected by network of conveyors. The scheduling of the downstream operations calls for a balance of material flow at all processing stations and a timely demand satisfaction of products.
- Jan. 2009 – **Cost Estimation:** This project is in collaboration with Concordia University and Bombardier Aerospace, a global leader in the manufacturing and assembling of regional and business jets. I was developing cost estimation tools for major aircraft sub-assemblies and components. The tools are based on artificial intelligence techniques such as neural networks, fuzzy rule base systems and genetic algorithm. I was also developing new parametric cost estimation models which are different from the conventional linear or non-linear regression based approaches. The application of Data Envelopment Analysis has been investigated for cost estimation.
- Jun. 2008 – **Supply Chain Planning:** During summer 2008, I worked on industrial project from Pratt & Whitney Canada (an aerospace company) in collaboration with Concordat University. I developed a decision support system that takes bottleneck data of producer/supplier lines versus engine families and highlights the opportunity of trade-offs among engine families with the objective to minimize the number of engines that would be overdue by the end of the planning period under consideration.

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## RESEARCH GRANTS: (Total 1,025,565.00 CAD)

- Jan. 2010            40,000.00 - University Startup Fund.

Mar. 2024 – Feb. 2025	93,700.00 - Integrated master production planning and operation scheduling for a resource constrained multi-product project based manufacturing. A sum of 75,000.00 cash contribution from (1) NSERC, (2) Ontario Center for Innovation and (3) AVL-Manufacturing Inc. and 18,700.00 in-kind contribution from the same industrial collaborator (AVL).
May 2023 – April. 2028	210,000.00 - Digital-twin driven integrated production scheduling, rescheduling and supervisory control for Industry 4.0, NSERC Discovery.
Sep. 2018 – July. 2019	30,000.00 - Data Driven Supplier Evaluation, Selection and Management System: Phase-1. A total of 30,000.00 cash contribution from TRIGO Global Quality Solution
Sep. 2017 – Mar. 2018	35,865.00 - Production and Manpower Scheduling, 23,865.00 cash contribution from NSERC-Engage and 12,000.00 in-kind contribution from ETBO Tools & Die Inc.
May 2017 – Aug. 2022	129,360.00 - A Comprehensive Framework and Solution Procedure for Dynamic Scheduling and Supervisory Control in Manufacturing Systems, NSERC Discovery (including one year funded extension and COVID Supplement).
May 2017 – Oct. 2017	42,058.00 - An Integrated Production and Manpower Scheduling - Second Phase. A sum of 12,498.00 cash contribution from NSERC-Engage-Plus, 12,500.00 cash contribution from MERSEN Canada Trononto Inc., and 17,060.00 in-kind contribution from the same industrial collaborator.
Sep. 2016 – Feb. 2017	39,612.00 - An Integrated Production and Manpower Scheduling, 24,612.00 cash contribution from NSERC-Engage and 15,200.00 in-kind contribution from MERSEN Canada Trononto Inc.
Nov. 2013 – Apr. 2014	31,890.00 - Solving non-conventional scheduling problem in a complex automated paint line, 21,000.00 cash contribution from NSERC-Engage and 10,890.00 in-kind contribution from Polycon Industries of Magna International.
May. 2011 – Aug. 2016	120,000.00 - An integrated approach in modeling, optimization, and simulation of non-conventional manufacturing systems, NSERC Discovery.
Sep. 2018 – Aug. 2021	21,000.00 - Green Graphene from Biomass for Sustainable Advanced Manufacturing, Recieved 21,000.00 as a Co-PI in a research project headed by Prof. Manju Misra. My role is to scale-up testing and investigate application opportunities.
Sep. 2015 – Aug. 2019	110,000.00 - Life cycle analysis/costing of bio-materials, as a Co-PI in 3.2 million research project headed by Prof. Amar K. Mohanty and titled Innovation and Commercialization of Bio-Carbon from Advanced Biorefinery for Green Composites Applications, Ontario Research Fund ORF-RE Round 7.
Mar. 2012 – Mar. 2013	40,220.00 - Virtual Prototyping of Reconfigurable Manufacturing Systems, NSERC-Research Tool and Instruments.
May 2016 – Apr. 2019	28,500.00 - Growth Fund from the School of Engineering in the College of Physical and Engineering Sciences at the University of Guelph, Guelph
Sep. 2016 – Apr. 2018	9,200.00 - Growth Fund from the School of Engineering in the College of Physical and Engineering Sciences at the University of Guelph, Guelph.
Sep. 2011 – Aug. 2014	45,000.00 - Growth Fund from the School of Engineering in the College of Physical and Engineering Sciences at the University of Guelph, Guelph
May 2010 – Aug. 2010	6,000.00 - Simulation in Cellular Manufacturing Systems, Funding for Summer Undergraduate Research Assistantship (URA).
May 2016 – Aug. 2016	4,500.00 - Simulation modelling and Analysis of AGV Served Distributed Layout Manufacturing Systems, Funding from NSERC for Undergraduate Student Research Award (USRA)

May 2015 – Aug. 2015	4,500.00 - Simulation modelling and Analysis of Distributed Layout based Manufacturing Systems, Funding from NSERC for Undergraduate Student Research Award (USRA)
May 2014 – Aug. 2014	4,500.00 - Virtual Modelling and Simulation of Machine Tools using CAD System, Funding from NSERC for Undergraduate Student Research Award (USRA)
May 2012 – Aug. 2012	4,500.00 - Parametric and Intelligent Design of Metal Forming Dies, Funding from NSERC for Undergraduate Student Research Award (USRA)
Apr. 2011 – Mar. 2012	5,000.00 - NSERC Additional Funding for Early Career Researchers.
Jul. 2012 – Sep. 2012	2,050.00 - Development of Integrated Quality Management Systems, NSERC-Interaction

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## REFEREED JOURNAL PAPERS (Total of 51)

1. Al-Wajidi, W., Eltaggaz, A., Defersha, F. and Deiab, I. (2024). Effect of MQL on the microstructure and strength of friction stir welded 6061 Al alloy, *Journal of Process Mechanical Engineering Part E*, **Accepted**.
2. Naser, A.Z., Defersha, F., and Yang, S. (2023), Feature selection and framework design toward data-driven predictive sustainability assessment and optimization for additive manufacturing. *Transactions of the Canadian Society for Mechanical Engineering*. **Accepted**
3. Touhid, M.T.B., Marne, M., Oskroba, T., Mirahmadi, S. A., Zhu, E., Mehrabian, A., Defersha, F., Yang, S., (2023). Building a cloud-based digital twin for remote monitoring and control of a robotic assembly system. *International Journal of Advanced Manufacturing Technology*. Vol. **129**, 4045-4047
4. Naser, A.Z., Defersha, F., Xu, X., and Yang, S. (2023), Automating life cycle assessment for additive manufacturing with machine learning: framework design, dataset buildup, and a case study. *Journal of Manufacturing Systems*. Vol. **71**, 504-526
5. Naser, A.Z., Defersha, F., Pei, E., Zhao, Y.F., and Yang, S. (2023), Toward automated life cycle assessment for additive manufacturing: A systematic review of influential parameters and framework design. *Sustainable Production and Consumption* Vol. **41**, 253–274.
6. Defersha, F.M., Obimuyiwa, D., and Yimer, A. D. (2022), Mathematical Model and Simulated Annealing Algorithm for Setup Operator Constrained Flexible Job Shop Scheduling Problem. *Computers and Industrial Engineering* Vol. **171**, 108487.
7. Tahsien, S. M., and Defersha, F.M. (2022). Discriminating and Clustering Ordered Permutations using Artificial Neural Network: A Potential Application in ANN-Guided Genetic Algorithm. *Applied Sciences* Vol. **12**, 7784.
8. Rooyani, D., and Defersha, F., (2022). A Two-Stage Multi-Objective Genetic Algorithm for a Flexible Job Shop Scheduling Problem with Lot Streaming. *Algorithms*, Vol. **15**, 246.
9. Patel P., Defersha, F., and Yang, S. (2022). Resilience analysis of additive manufacturing-enabled supply chains: an exploratory study. *Frontiers in Manufacturing Technology*, Vol. **2**, 884164.
10. Naser, A. Z., Deiab, I., Defersha, F., and Yang, S. (2021). Expanding Poly(lactic acid) (PLA) and Polyhydroxyalkanoates(PHAs) Applications: A Review on Modifications and Effects. *Polymers*, Vol. **13**, 4271.
11. Defersha, F., and Rooyani, D. (2020). An Efficient Two-Stage Genetic Algorithm for a Flexible Job-shop Scheduling Problem with Sequence Dependent Attached/Detached Setup, Machine Release Date and Lag-Time. *Computers & Industrial Engineering* , Vol. **147**, 106605.
12. Roy, P., Defersha, F., Rodriguez-Urbe, A., Misra, M., and Mohanty, K.(2020). Evaluation of the life cycle of an automotive component produced from biocomposite. *Journal of Cleaner Production*, Vol. **273**, 123051.

13. Gowman, A., Rodriguez-Uribe, A., Defersha, F., Misra, M., and Mohanty, A. K., (2020). Statistical design of sustainable composites from poly(lactic acid) and grape pomace. *Journal of Applied Polymer Science*, Vol. **137**, 49061.
14. Tadele, D., Roy, P., Defersha, F., Misra, M., and Mohanty, K. (2020). A comparative life cycle assessment of talc and biochar reinforced composites for light-weight automotive parts, *Clean Technology and Environmental Policy*, Vol. **22**, 639-649.
15. Tadele, D., Roy, P., Defersha, F., Misra, M., and Mohanty, K. (2019). Life Cycle Assessment of renewable filler material (biochar) produced from perennial grass (*Miscanthus*), *AIMS Energy*, Vol. **7**, 430-440.
16. Roy, P., Tadele, D., Defersha, F., Misra, M., and Mohanty, K.(2019). Environmental and economic prospects of biomaterials in the automotive industry, *Clean Technology and Environmental Policy*, Vol. **21**, 1535-1548
17. Paul, S., Dutta, A., Thimmanagarib, M., and Defersha, F.(2019). Techno-economic assessment of corn stover for hybrid bioenergy production: A sustainable approach. *Case Studies in Thermal Engineering*, Vol. **13**, 100408
18. Al-Wajidi, W., Deiab, I., Defersha, F. and Elsayed, A. (2019). Effect of MQL on the microstructure and strength of friction stir welded 6061 Al alloy, *International Journal of Advanced Manufacturing Technology*, Vol. **101**, 901-912.
19. Paul, S., Dutta, A., and Defersha, F.(2018). Biocarbon, biomethane and biofertilizer from corn residue: A hybrid thermo-chemical and biochemical approach. *Energy*, Vol. **165**, 370-384
20. Defersha, F. M., and Mohebalizadehgashti, F. (2018). Simultaneous Balancing, Sequencing, and Workstation Planning for a Mixed Model Manual Assembly Line using Hybrid Genetic Algorithm, *Computers & Industrial Engineering*, Vol. **119**, 370-387.
21. Defersha, F. M., and Bayat Movahed, S. (2018). Linear programming assisted (not embedded) genetic algorithm for flexible jobshop scheduling with lot streaming, *Computers & Industrial Engineering*, Vol. **117**, 319-335.
22. Paul, S., Dutta, A., and Defersha, F.(2018). Mechanical and Alkaline Hydrothermal Treated Corn Residue Conversion in to Bioenergy and Biofertilizer: A Resource Recovery Concept. *Energies*, Vol. **11**, 516
23. Paul, S., Dutta, A., Defersha, F., and Dubey, B. (2018). Municipal Food Waste to Biomethane and Biofertilizer: A Circular Economy Concept. *Waste and Biomass Valorization*, Vol. **9**, 601-611
24. Defersha, F. M, and Hodiya, A. (2017). A Mathematical Model and a Parallel Multiple Search Path Simulated Annealing for an Integrated Distributed Layout Design and Machine Cell Formation, *Journal of Manufacturing Systems*, Vol. **43**, 195-212.
25. Shafigh, F., Defersha, F. M., and Moussa, S.E., (2017). A Linear Programming Embedded Simulated Annealing in the Design of Distributed Layout with Production Planning and Systems Reconfiguration. *International Journal of Advanced Manufacturing Technology*, Vol. **88**, 1119-1140
26. Muthuraj, R., Misra, M., Defersha, F., and Mohanty, A. K., (2016). Influence of processing parameters on the impact strength of biocomposites: A statistical approach. *Composites: Part A: Applied Science and Manufacturing*, Vol. **83**, 120-129.
27. Defersha, F. M., (2015) A Simulated Annealing with Multiple Search Paths and Parallel Computation for a Comprehensive Flowshop Scheduling Problem. *International Transactions in Operational Research*, Vol. **22**, 669-691
28. Liu, Y., Chang, S., Defersha, F. M., Guo, Q., and Chen, R., (2015). Characterization of Proton Binding Properties of Extracellular Polymeric Substances in an Expanded Granular Sludge Bed Using Linear Programming Analysis. Accepted and published online in the *Journal of Advances in Biology & Biotechnology*, ISSN: 2394-1081.
29. Liu, Y., Chang, S., and Defersha, F. M., (2015). Characterization of the proton binding sites of extracellular polymeric substances in an anaerobic membrane bioreactor. *Water Research*, Vol. **78**, 133-143.

30. Shafigh, F., Defersha, F. M., and Moussa, S.E., (2015). A mathematical model for the design of distributed layout by considering production planning and system reconfiguration over multiple time periods. *Journal of Industrial Engineering International*, Vol. **11**. 283-295
31. Zarrinbakhsh, N., Defersha, F. M., Mohanty, A. K., and Misra, M. (2014) A Statistical Approach to Engineer a Biocomposite Formulation from Biofuel Coproduct with Balanced Properties. *Journal of Applied Polymer Science*, Vol. **131** (Issue 13).
32. Defersha, F. M., and Chen, M., (2012). Job shop lot streaming with routing flexibility, sequence-dependent setups, machine release dates and lag time. *International Journal of Production Research*, Vol. **50**, 2331-2352.
33. Defersha, F. M., and Chen, M., (2012) A Mathematical Model and Parallel Genetic Algorithm for Solving Hybrid Flexible Flowshop Lot Streaming Problem. *International Journal of Advanced Manufacturing Technology* Vol. **62**, 246 - 265
34. Salam, A., Defersha, F. M., and Bhuiyan, N., (2012) A case study to estimate costs using neural networks and regression based models. *Decision Science Letters*, Vol. 1, 1-10.
35. Defersha, F. M., Salam, A., and Bhuiyan, N., (2012) A new approach for cost estimation using data envelopment analysis. *International Journal of Industrial Engineering Computations*, Vol. 3, 817-828.
36. Salam, A., Defersha, F. M., Bhuiyan, N. F., and Chen, M., (2012) A Case Study on Target Cost Estimation using Genetic Algorithm Trained and Back-Propagation Trained Neural Networks. *Journal of Cost Analysis and Parametrics* , Vol. 5, 87-97.
37. Salam, A. M., Bandaly, D. and Defersha, F. M., (2011). Optimizing the Design of a Supply Chain Network with Economies of Scale using Mixed Integer Programming. *International Journal of Operations Research* Vol. 10, No. 4, 398 - 415.
38. Defersha, F.M., and Chen, M., (2011). A Genetic Algorithm for One-Job M-Machine Flowshop Lot Streaming with Variable Sublots. *International Journal of Operations Research* Vol. 10, No. 4, 458 - 468.
39. Herrán A., Defersha, F. M., Chen, M., and Jesús M.de la Cruz J. M., 2011. An integrated multi-period planning of the production and transportation of multiple petroleum products in a single pipeline system. *International Journal of Industrial Engineering Computations*, Vol. 2 No. 1, 19-44.
40. Defersha, F. M., (2011). A Comprehensive Mathematical Model for Hybrid Flexible Flowshop Lot Streaming Problem. *International Journal of Industrial Engineering Computations* Vol. 2 No. 2, 283-294.
41. Defersha, F. M., and Chen, M., (2010). A Parallel Genetic Algorithm for a Flexible Job Shop Scheduling with Sequence Dependent Setups. *International Journal of Advanced Manufacturing Technology*, Vol. **49**, 263-279.
42. Defersha, F. M., and Chen, M.Y., (2010). A Hybrid Genetic Algorithm for Flowshop Lot Streaming with Setups and Variable Sublots. *International Journal Production Research*, Vol. **48**, No. 6, 1705 - 1726.
43. Khataie, A., Defersha, F. M., and Bulgak, A. A.,(2010) A multi-objective optimization approach for order management: Incorporating Activity-Based Costing in supply chains. *International Journal of Production Research* Vol. **48**, 5007 ? 5020.
44. Defersha, F. M., and Chen, M., (2009) A Simulated Annealing Algorithm for Dynamic System Reconfiguration and Production Planning in Cellular Manufacturing. *A special issue in Reconfigurable Manufacturing Systems: Concepts, Technologies and Applications in the International Journal of Manufacturing Technology and Management* Vol. **17**, 103?-124
45. Cao, D., Defersha, F. M., and Chen M.,(2009) Grouping Operations in Cellular Manufacturing Considering Alternative Routings and the Impact of Run Length Product Quality. *International Journal of Production Research* on Vol. **47**, No. 4, 989-1013.
46. Defersha, F. M., and Chen, M., (2008) A Parallel Multiple Markov Chain Simulated Annealing for Multi-Period Manufacturing Cell Formation Problems. *International Journal of Advanced Manufacturing Technology* Vol. **37**, No. 1-2, 140-156

47. Defersha, F. M., and Chen, M., (2008) A Linear Programming Embedded Genetic Algorithm for an Integrated Dynamic Cell Formation and Lot Sizing Considering Product Quality. *European Journal of Operational Research* Vol. **187**, 46?-69
48. Defersha, F. M., and Chen, M., (2008) A Parallel Genetic Algorithm for Dynamic Cell Formation in Cellular Manufacturing Systems. *International Journal of Production Research* Vol. **46**, 6389–6413
49. Hu, B., Chen, M., and Defersha, F. M., (2007). An Integrated Method for Multi-Objective Cell Formation in Cellular Manufacturing Systems. *International Journal of Manufacturing Technology Management*. Vol. **11**, No. 3/4, 355–372
50. Defersha, F. M., and Chen, M., (2006). Machine Cell Formation Using a Mathematical Model and a Genetic Algorithm Based Heuristic. *International Journal of Production Research*. Vol. **44**, No. 12, 2421–2444
51. Defersha, F. M., and Chen, M., (2006). A Comprehensive Mathematical Model for the Design of Cellular Manufacturing System. *International Journal of Production Economics*. Vol. **103**, No. 2, 767?-783

### BOOK (Total of 1)

52. Salam, A., and Bhuiyan, N., Defersha, F. M., (2014) Measuring Target Costs using Lean Accounting. Scholars' Press, Saarbrücken, Germany, ISBN 978-3-639-71681-8

Aerospace is very important to the Canadian economy, with over 80,000 employees; generating over \$20 billion dollars in revenue. However, with the economic downturn, sales have been decreasing. Competition is growing with emerging countries entering the market, companies are struggling to stay competitive, and they are adopting various practices to deliver value to their customers. The principles of lean manufacturing strive to do just that, and while enjoying much success in production environments, lean principles have been found to be applicable in other areas of the enterprise, including accounting. This study presents the notion of target costing for new products. In comparison to traditional costing of products, where the desired profit is added to the cost required to develop the product, target costing is 'lean' in the sense that it puts the focus on creating value for the customer by setting the price of the product based on the cost. In this book, various types of target cost models are developed. The models are then applied to predict the cost of commodities at a major Canadian aerospace company.

### BOOK CHAPTERS (Total of 2)

53. Obimuyiwa, D., and Defersha, F.M., (2021), A Genetic Algorithm for Flexible Job Shop Scheduling Problem with Scarce Cross Trained Setup Operators. A chapter in *Production Research*, Editors: Rossit, D.A., Tohmé, F., and Majia Delgadillo, G. (*Springer International Publishing*), ISBN: 978-3-030-76310-7, pp.142–155
54. Defersha, F.M., and Chen, M., (2004), Designing Cellular Manufacturing Systems: A Genetic Algorithm Approach. A chapter in *Advances in Dynamics, Instrumentation and Control*, Editors: C-Y. Su, S. Rakheja, E. Wang and R. Bhat (*World Scientific Publishing Co.*), ISBN: 978-981-256-086-5, pp.387–396

### REFEREED PROCEEDINGS (Total of 23)

55. Touhid, M.T.B., Marne, M., Oskroba, T., Mirahmadi, S. A., Zhu, E., Mehrabian, A., Defersha, F., Yang, S., (2023). Building a cloud-based digital twin for a robotic assembly system, in the proceedings of the ASME Design Engineering Technical Conference. IDETC-CIE2023, August 20-23, Boston, Massachusetts.
56. Naser, A.Z., Defersha, F., and Yang, S. (2023), Feature selection for constructing data-sets toward automated lifecycle assessment for additive manufacturing, in the Proceedings of the Canadian Society for Mechanical Engineering International Congress. May 26-31, Sherbooke, QC, Canada. ([pdf-download](#))



57. Obimuyiwa, D., and Defersha, F.M., (2020), A Genetic Algorithm for Flexible Job Shop Scheduling Problem with Scarce Cross Trained Setup Operators, in the Proceeding of ICPR-Americas 2020, the International Conference of Production Research Americas 2020. December 9-11, 2020 Bahía Blanca, Argentina; ([ISSN 2619-1865](#)) pp. 2717–2731.
58. Defersha, F. M. (2020). A Research Direction in Manufacturing Systems Scheduling: A proposal, in the Proceeding of ICPR-Americas 2020, the International Conference of Production Research Americas 2020. December 9-11, 2020 Bahía Blanca, Argentina; ([ISSN 2619-1865](#)) pp. 2809–2818.
59. Tahsien S. M., and Defersha, F. M. (2020). Discriminating and Clustering Ordered Permutations using Neural Network and Potential Applications in Neural Network-Guided Metaheuristics. The 7th IEEE International Conference on Soft Computing and Machine Intelligence (ISCMi 2020). November 14-15, 2020 Stockholm, Sweden, ([IEEE Xplore](#)).
60. Defersha, F. M., Obimuyiwa, D., and Yimer A. D. (2020). Multiple-Trial/Best-Move Simulated Annealing for Flexible Job Shop Scheduling with Scarce Setup-Operators. The 7th IEEE International Conference on Soft Computing and Machine Intelligence (ISCMi 2020). November 14-15, 2020 Stockholm, Sweden ([IEEE Xplore](#)).
61. Jalalian, M., and Defersha, F. M., (2019). A Genetic Algorithm for Scheduling a Semi-Continuous Process Industry: A Case Study. The 9th IFAC Conference on Manufacturing Modeling, Management, and Control, August 28-30, 2019, Berlin, Germany, IFAC Papers Online, **Vol. 52**, No. 13, 1849-1853 ([ScienceDirect](#)).
62. Rooyani, D., and Defersha, F. M., (2019). An Efficient Two-Stage Genetic Algorithm for Flexible Job-Shop Scheduling. The 9th IFAC Conference on Manufacturing Modeling, Management, and Control, August 28-30, 2019, Berlin, Germany, IFAC Papers Online, **Vol. 52**, No. 13, 2519-2524 ([ScienceDirect](#)).
63. Wisam Al-Wajidi, Deiab, I., and Defersha, F. M., (2018). The effect of Minimum Quantity Lubrication on the FSW Process, CSME International Congress 2018, May 27-30, 2018, Toronto, CANADA ([YORK SPACE Repository](#)).
64. Wisam Al-Wajidi, Deiab, I., and Defersha, F. M., (2017). Modeling and Optimization of Submerged Friction Stir Welding of AA 2219-T6 Alloy, ICMAE, Sept 28, 2017, Toronto, CANADA.
65. Shafiq, F., Defersha, F. M., and Moussa, S.E., (2014). A Comprehensive model for the design of distributed layouts in manufacturing systems. IIE Conference and Expo 2014, Industrial and Systems Engineering Research Sessions, May 31 to June 03, Montreal, QC. CANADA.
66. Zarrinbakhsh, N., Defersha, F.M., Mohanty, A.K., and Misra. M., (2013). A Factorial Design of Distillers' Grains Based Biocomposites: A path to sustainability of corn ethanol. In the proceeding of the 19<sup>th</sup> International Conference on Composite Materials, July 28 - August 2, 2013, Montreal, QC. CANADA.
67. Defersha, F.M., Salam, A., and Bhuiyan, N., (2011). Product Cost Estimation Using Super Efficiency Data Envelopment Analysis. In the IEEE 2011 International Conference on Uncertainty Reasoning and Knowledge Engineering, Bali, 4-7 Aug. 2011. (DOI: 10.1109/URKE.2011.6007797)
68. Salam, A., Defersha, F.M., Bhuiyan, N., and Chen, M., 2010. A Case Study on Target Cost Estimation using a Genetic Algorithm and a Back-Propagation Based Neural Network in the proceeding of the International conference on engineering systems, March 30 - April 1, 2010, American University of Sharjah, United Arab Emirates.
69. Defersha, F.M., and Chen, M., (2009). A Coarse-Grain Parallel Genetic Algorithm for Flexible Job-Shop Scheduling with Lot Streaming. In the 12th IEEE International Conference on Computational Science and Engineering (CSE-09) August 29-31, Vancouver, Canada
70. Defersha F.M., Chen, M., and Bulgak, A.A., 2009, A Production Planning Model for a Hybrid Manufacturing-Remanufacturing System in Reverse Logistics, Proceedings of the International Conference on Management Technology and Applications (ICMTA 2009), Beijing, China.
71. Salam, A., Defersha, F. M., Muia, T. and Bhuiyan, N., (2009) Estimating Target Costs: A Case Study at Bombardier Aerospace. In the proceeding of the IIE Annual Conference and Expo 2009, May 30 - June 3, Miami, Florida, USA.

72. Defersha, F. M., Gonzalez, H.A., Chen, M.Y., and Garcia, J.M., (2008). A Mathematical Model for an Integrated Multi-period Planning of the Production and Transportation of Multiple Petroleum Products in a Pipeline System. In the proceeding of the sixth annual international symposium on Supply Chain Management, October 15-17, 2008, Alberta, Calgary, Canada.
  73. Khatie, A.H., Defersha, F.M., Bulgak, A.A., (2008), 2008, Maximizing Supply Chain Profits through Integration of the Residual Capacity, Proceedings of the Sixth Annual International Symposium on Supply Chain Management, Calgary, Alberta, Canada, October 15-17, 2008.
  74. Khatie, A.H., Defersha, F.M., Bulgak, A.A., (2008), Maximizing Supply Chain Profits With Effective Order Management, In the proceeding of the 28th National Operations Research and Industrial Engineering Congress (YAEM 2008 Conference), Istanbul Turkey, June 30-July 2, 2008.
  75. Koganti, R., Zaluzec, M. J., Chen, M., and Defersha, F.M., (2007), Design for Dis-Assembly: An AHP Approach for Automotive Front End Component Design and Evaluation. In the proceeding of SAE 2007 World Congress, Detroit, Michigan, USA, April 16-19, 2007
  76. Koganti, R., Zaluzec, M. J., Chen, M., and Defersha, F.M., (2006), Design for Integrated Assembly and Disassembly of Automotive Products, In the proceedings of SAE 2006 World Congress, Detroit, Michigan, USA, April 3-6, 2006.
  77. Cao, D., Chen, M., and Defersha, F.M., (2005), Lot streaming and operation regrouping considering alternative process routes and production quality. In the proceeding of the International Conference on Production Research (ICPR) Salerno, Italy, July 31 - August 4, 2005.
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#### INVITED TALKS (**Total of 3**)

78. Defersha, F. M. (2017) Research directions in manufacturing systems scheduling, an invited seminar talk at **Dalhousie University**, Department of Industrial Engineering, June 12, 2017, Halifax, NS, Canada.  
  
Manufacturing systems scheduling is one of the very difficult optimization problems known to the research community and has been an active field of research for many decades. Countless number of articles are published in the area. However, very little has been written on how to bring theoretical research into practice. Perhaps the research community has over emphasized the mathematical rigor at the cost of under-emphasizing real implementations. Based on my research and industrial experience, I delivered an invited seminar talk to a group of faculties and students on how to make scheduling research relevant to real industrial applications.
  79. Defersha, F. M. (2018) Research directions in manufacturing systems scheduling, an invited seminar talk at **Concordia University**, Department of Mechanical and Industrial Engineering, Oct 15, 2018, Montreal, ON, Canada.
  80. Defersha, F. M. (2019) Research directions in manufacturing systems scheduling, an invited seminar talk at **Bahir Dar Institute Technology**, Industrial Engineering Seminar, July 26, 2019, Bahir Dar, Ethiopia.
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#### CONFERENCE PRESENTATIONS AND NON-REFEREED CONTRIBUTIONS (**Total of 14**)

81. Tadele, D., Roy, P., Defersha, F.M., Misra, M., and Mohanty, A. (2018). A comparative life cycle assessment between talc and biochar filled reinforced polymer composite for lightweight automotive parts. International Symposium on Bioplastics, Biocomposites and Biorefining, Guelph, Canada, July 24-27, 2018.
82. Defersha, F.M., and Majed Alzahrani, (2011). Pure flowshop vs hybrid flowshop scheduling with lot streaming. Abstract and presentation in the Annual Conference of the Canadian Operations Research Society. St. John's, NL, Canada.
83. Defersha, F.M., and Chen, M., (2008), Hybrid Flexible Flowshop Lot Streaming: A Mathematical Model and a Genetic Algorithm. CORS/Optimization Days Joint Conference, Quebec City, QC, CANADA, May 12 - 14, 2008

84. Defersha, F.M., and Chen, M., (2008), A Parallel Genetic Algorithm: A Computational Experience in Solving Manufacturing Cell Formation Problem. CORS/Optimization Days Joint Conference, Quebec City, QC, CANADA, May 12 - 14, 2008
85. Defersha, F.M., Ghasemi, M., and Chen, M., (2007), Multi-product lot streaming in a flow shop by considering buffered size and material handling equipment capacity constraints. Optimization Days 2007, Montreal, CANADA, May 7 - 9, 2007
86. Chen, M., and Defersha, F.M., (2006), A Multi-level Multi-item Capacitated Lot Sizing by considering the Impact of Run Length on Product Quality. CORS/Optimization Days Joint Conference, Montreal, CANADA, May 8 - 10, 2006
87. Chen, M., and Defersha, F.M., (2006), An Integrated Approach in the Design of Cellular Manufacturing and Production Planning for Dynamic Production Requirements. CORS/Optimization Days Joint Conference, Montreal, CANADA, May 8 - 10, 2006
88. Gonz?z, A. H., Garc? J. M., Defersha, F.M., and Chen, M., (2006), Planning of Petroleum Derivatives in Pipeline Transportation Systems using Genetic Algorithm. CORS/Optimization Days Joint Conference, Montreal, CANADA, May 8 - 10, 2006
89. Defersha, F.M., and Chen, M., (2005), A Coarse-Grained Parallel Genetic Algorithm for Cellular Manufacturing System Design. Optimization Days 2005, Montreal, CANADA, May 9 - 11, 2005
90. Defersha, F.M., and Chen, M., (2005), A Parallel Simulated Annealing Algorithm for Cellular Manufacturing System Design. 47th Annual Conference of the Canadian Operational Research Society, Halifax, CANADA, May 16 - 18, 2005
91. Hu, B., Chen, M., and Defersha, F.M., (2005), An Integrated Method for Cellular Manufacturing Systems Design and Operation. 17th Triennial Conference of the International Federation of Operational Research Societies, Honolulu, Hawaii, United States, July 11 - 15, 2005
92. Defersha, F.M., (2001), STATISTICAL QUALITY CONTROL: Usefulness and Implementation Strategies . (Presented in the Quality and Productivity Workshop organized by the Ethiopian Society of Mechanical Engineers)
93. Defersha, F.M., (2001), Machine Cell Formation in the Design of Cellular Manufacturing Systems. (Published in the Journal of Ethiopian Society of Mechanical Engineers, Vol. III, No. 2, September 2001)
94. Defersha, F.M., (2000), GROUP TECHNOLOGY: An Introduction and Applicability to Developing Nations. (Published in the Journal of Ethiopian Society of Mechanical Engineers, Vol. III, No. 1, September, 2000)

## THESIS WRITTEN

95. Defersha, F.M., (2006) An Integrated Approach to the Design of Cellular Manufacturing for Dynamic Production Requirements (PhD Thesis, Concordia University, Montreal, CANADA, Library Call No. LE 3 C66M43P 2006 D44)
96. Defersha, F.M., (1999) Machine Cell Formation through Neural Network Models (Master Thesis, Roorkee University (IIT-Roorkee), Utar Prudish, INDIA)

## STUDENTS SUPERVISION

### PhD Thesis Supervision

- |                          |  |
|--------------------------|--|
| Sept. 2023 –<br>to Date  | Mohammad Kaviyani-Charati (In Progress); Thesis Title: <i>Digital-Twin Driven Integrated Production Scheduling and Production Execution for Discreet Manufacturing Systems - Title may change.</i> |
| Jan. 2017 –<br>Apr. 2023 | Danial Rooyani (Completed); Thesis Title: <i>Efficient Two-Stage Genetic Algorithms for Solving Comprehensive Flexible Job Shop Scheduling Problems</i>  |

- Sep. 2011 – Seyedfarhad Shafigh (Completed); Thesis Title: *Comprehensive Models and Solution Procedures in the Design and Scheduling of Manufacturing Systems with Distributed Layouts*  
Apr. 2015
- Sep. 2010 – Majed Alzahrani (Withdrawn); Thesis Title: *Multi-objective meta-scheduling model and algorithm for discrete manufacturing systems*  
Apr. 2012

#### PhD Thesis Co-Supervision

- Jan. 2021 – Ahmad Naser (Completed); Thesis Title: *Data-driven Predictive Sustainability Assessment and Optimization for Additive Manufacturing*.  
Dec. 2023
- May 2014 – Wisam Al-Wajidi (Completed); Thesis Title: *Optimizing Friction Welding between dissimilar materials*. (My role is to guide the student in the areas of statistical analysis and design of experiments)  
Dec. 2019
- Sep. 2013 – Subhash Paul (Completed); Thesis Title: *Anaerobic Co-digestion of Food Waste with Lignocellulosic Biomass* (My role is to guide the student in the areas of statistical analysis and design of experiments)  
Aug. 2017

#### MSc Thesis Supervision

- May. 2022 – Amin Amouzadeh (Completed); Thesis Title: *A genetic algorithm for a setup operator constrained flexible flow shop lot streaming with detached and sequence dependent setups*  
Apr. 2023
- May. 2021 – Ammar Sulaimani (Completed); Thesis Title: *Multi-Objective Genetic Algorithm for an Integrated Inspection Allocation and Flow Shop Scheduling with Sequence Dependent Setup Time*  
Dec. 2022
- Sept. 2019 – Syeda Manjia Tahsien (Completed); Thesis Title: *Unsupervised Artificial Neural Network Guided Genetic Algorithm for Job Shop Scheduling*  
Dec. 2020
- Jan. 2019 – Dolapo Obimuyiwa (Completed); Thesis Title: *Flexible Job Shop Scheduling in the Presence of Limited Number of Cross-trained Skilled Setup Operators*  
Aug. 2020
- Sep. 2018 – Dhruv Pater (Completed); Thesis Title: *A Genetic Algorithm with Monte-Carlo Simulation for an Optimal Inspection Allocation in a Multistage Batch Assembly Operation with Dimensional Tolerance Stack-up*  
Dec. 2019
- Sep. 2017 – Debela Tadele (Completed); Thesis Title: *Environmental life cycle assessment of lightweight solution for automotive components: A comparison between talc-filled and biocarbon reinforced composite*  
Dec. 2019
- Jan. 2017 – Mohammad Jalalian (Completed); Thesis Title: *Application of metaheuristics in scheduling continuous/semi-continuous process industries and a case study*  
Aug. 2018
- Sep. 2016 – Hayson Ko (Completed); Thesis Title: *Permutation based Genetic Algorithm for a Flexible Job-shop Scheduling Problem*  
Dec. 2017
- Sep. 2014 – Fatemeh Mohebalizadehgashti (Completed); Thesis Title: *Balancing, Sequencing and Determining the Number and Length of Workstations in a Mixed Model Assembly Line*  
Apr. 2016
- Sep. 2013 – Abenet Hodiya (Completed); Thesis Title: *A Mathematical Model and a Simulated Annealing Algorithm for an Integrated Facility Layout and Cell Formation*  
Apr. 2015
- Sep. 2012 – Saber Bayat-Movahed (Completed); Thesis Title: *Linear Programming Assisted Genetic Algorithm for Solving a Comprehensive Job shop Lot Streaming Problem*  
Apr. 2014

#### MEng Non-Thesis Supervision

- Jan. 2018 – Ananya Prajapti (Completed); Project Title: *Simulation of Push/Pull Production System in Lean Manufacturing Environment*  
Jun. 2019

- May. 2018 – Kaushal Pandya (Completed); Project Title: *Metaheuristics for inspection allocation in an assembly line with tolerance stack-up: A comparative study*  
 Dec. 2019
- Jan. 2018 – Krunal Prajapati (Completed); Project Title: *Performance modelling and analysis of AGV-served job shop using discrete event simulation.*  
 Jun. 2019
- Mar. 2017 – Narinderpal Singh (Completed); Project Title: *Study of genetic algorithm and simulation for optimal quality inspection allocation in multi-stage manufacturing systems*  
 Aug. 2018
- Mar. 2017 – Aakash Miya (Completed); Project Title: *Study of genetic algorithm and simulated annealing in facility layout with irregularly shaped departments*  
 Aug. 2018
- Jan. 2013 – Nishima Mehindru (Completed); Project Title: *Part-Machine Incidence Matrix Clustering using Artificial Intelligence and Heuristic Methods in Group Technology*  
 Apr. 2014

#### Research Associate Supervision

- Feb. 2018 – Poritosh Roy (part-time), Project Title: *Life cycle analysis and life cycle costing of to date biomaterials in engineering applications*
- Dec. 2018 – Mohammad Jalalian (part-time), Project Title: *Data Driven Supplier Evaluation, Selection and Management System*  
 July 2019
- May. 2015 – Abenet Hodiya (part-time), Project Title: *Model and algorithm for an integrated distributed layout and cellular manufacturing system design*  
 Aug. 2015

#### Summer Undergraduate Research Supervision

- May 2016 – Hayson Ko; Project Title: *Simulation Modelling and Analysis of AGV served Distributed Layout Manufacturing Systems*  
 Aug. 2016
- May 2015 – Storm Thiesin; Project Title: *Simulation Modelling and Analysis of Distributed Layout Manufacturing Systems*  
 Aug. 2015
- May 2014 – Nicholas Machenzie; Project Title: *Virtual Modelling and Simulation of Machine Tools Using CAD System*  
 Aug. 2014
- May 2013 – Sutikshan Vasishth; Project Title: *Die Design*  
 Aug. 2013
- May 2012 – Jonathan Walsh; Project Title: *Parametric and Intelligent Design of Metal Forming Dies*  
 Aug. 2012
- May 2010 – Julia Veerman; Project Title: *Simulation Modelling and Analysis of Cellular Manufacturing System*  
 Aug. 2010

#### 4th Year Capstone Project Supervision (37 students in 10 projects)

- Jan. 2022 – Nasiba Alchach, Lina Shaabo, Aarthi Christina Aruliah and Osama Imran Arshad; Project Title: *Exoskeleton Support Systems for Surgeons*  
 Apr. 2022
- Jan. 2022 – Mazen Rayes, Brendan Allcroft and Bhaskor Rudra; Project Title: *Automated Package Retrieval Systems*  
 Apr. 2022
- Jan. 2016 – Brad Holder, Fancisco Espino Valenzuela, Linden Noble and Mohammed Ibrahim; Project Title: *Automated Packaging Machine - A Prototype*  
 Apr. 2016
- Jan. 2016 – Nic Flanagan, Riley Knox, Jonny Anstett and Michael Dobranowski; Project Title: *Optimizing Automotive Tire Mounting System*  
 Apr. 2016
- Jan. 2016 – Srivikram Ashokkumar, Scott Clumpus, Evan Milliken and Hayson Ko; Project Title: *Facility Layout of Engine Assembly Line*  
 Apr. 2016
- Jan. 2016 – Bhavin Mistry, James Parr, Max Sarnacki and Storm Thiessen; Project Title: *Design of a Simulation Model for an Automated Manufacturing Facility*  
 Apr. 2016

Jan. 2015 – Apr. 2015	Jonathan Zagazeta, Carlos Farias and Kellan King; Project Title: <i>Posture Monitoring and Lumbar Support System</i>
Jan. 2015 – Apr. 2015	Sunil Kunwar, Dave Whitfield and Homayon Yousufi; Project Title: <i>Automated and Integrated Gantry System for Moving a Robot Arm that Tends a Manufacturing Cell</i>
Sep. 2014 – Dec. 2014	Eli Stewart, Tyler Bowman, Matthew Armster and Nicholas Mackenzie; Project Title: <i>Educational Small-Scale Automated Assembly Cell</i>
Sep. 2014 – Dec. 2014	Marie Beltrao, Tushar Obhrai, Jasdeep Tiwana and Desmond Sanfilippo; Project Title: <i>Design and Simulation of an Automated Manufacturing Process</i>

## TEACHING EXPERIENCE

1. I had served as Graduate Assistant (Sep. 1995 - Aug. 1996), as Assistant Lecturer (Sep. 1996 - Aug. 1998) and as Lecturer (Jan. 2000 - Aug. 2002) in the Department of Mechanical Engineering, Addis Ababa University (Ethiopia). In those years I had been also serving other two universities in Ethiopia on part-time bases.

Courses lectured include:

- (a) Industrial Management and Engineering Economy
  - (b) Production Engineering
  - (c) Statistical Quality Control
  - (d) Tool and Die Design
  - (e) Introduction to Probability and Statistics
  - (f) Descriptive Geometry and Technical Drawing
  - (g) Machine Drawing
  - (h) Strength of Material
  - (i) Engineering Mechanics (Dynamics)
  - (j) Engineering Mechanics (Vibration)
  - (k) List of project works for which I advised final year undergraduate students include:
    - Plant Layout Design: A heuristic approach
    - Software Development for Statistical Quality Control
    - Computer Support in Maintenance Planning
    - Machine Cell Formation in Cellular Manufacturing Systems
    - Piercing and Blanking Die Design
2. I taught several industrial engineering courses at Concordia University, Montreal CANADA on part-time bases (while I was research associate). These course are
    - (a) Production System and Inventory Control (Graduate level, Winter 2006/7 and Winter 2007/8)
    - (b) Operations Research I (Undergraduate, Winter 2007/8 and Winter 2008/9)
    - (c) Operations Research II (Undergraduate, Fall 2009/10)
    - (d) Simulation of Industrial Systems (Undergraduate, Fall 2009/10)
    - (e) Advanced Operations Research (Graduate, Fall 2009/10)
  3. Since my appointment at University of Guelph, School of Engineering, I have been teaching the following courses multiple times.
    - (a) Engineering Mechanics (Undergraduate)
    - (b) Kinematics and Dynamics (Undergraduate)
    - (c) Computer Aided Design and Manufacturing (Undergraduate)
    - (d) Integrated Manufacturing Systems (Undergraduate)
    - (e) Optimization for Engineers (Undergraduate)
    - (f) Optimization Techniques (Graduate)
    - (g) Simulation Analysis of Discrete Even Systems (Graduate)
    - (h) Design of Experiments (Graduate)
    - (i) Production Planning and Control (Graduate)

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## AFFILIATIONS AND OTHER PROFESSIONAL ACTIVITY

- Fully licensed member of Professional Engineers of Ontario (PEO) - <http://www.peo.on.ca/>
- Senior Member of the Institute of Industrial and Systems Engineering (IISE) from **3/15/2014** to **5/15/2022** - <http://www.iise.org>
- Member of the Canadian Operations Research Society (CORS) - <http://www.cors.ca>
- Reviewer for various international journals.