



## Engineering Leadership Graduate Programs

October 28, 2020

## Engineering Leadership Portfolio

- **MPD: Product Development leadership**
  - Engineering, R&D, advanced manufacturing
- **MML: Operations leadership**
  - Manufacturing, supply chain, process excellence
- **Certificates: Systems Engineering, SCM, PM**
- Emphasis on leadership & decision making
- Engineering & business courses – systems orientation
- For experienced practitioners
- Online (or hybrid) and part-time



## **MPD** Master of Science in Product Development

- **Product innovation** – program theme and highest business priority
- Leadership program for engineers, scientists, mgrs.
- Systems orientation
- Elective and Capstone project tailor program to individual and business needs
- Started 1999: ~13/yr., 285 grads, 40+ companies
- 30 credits (10 courses, 3 cr. each), online or hybrid
- Admission: 2 yrs experience, 3.0 GPA, technical degree preferred, no entrance exam required

## Curriculum

- Core* {
- Excellence in Product Development
    - NPD leadership (teams, organizations), process excellence, lean PD
  - Systems & Project Management
    - PMBOK, people and process mgt.
  - Engineering of Systems I & II
    - Integrated product/process/SC design, lean PD
    - Innovation techniques, outsourced PD, rqmts engr mgt, CPM, robust design, etc.
  - Decision & Risk Benefit Analysis
    - Decision-making, probabilistic and non-prob. methods (scenarios, cost/benefit, portfolio mgt)



## Curriculum

- Operations & Supply Chain Management
  - Manuf. & services, SC design & strategy, lean ops, global ops, quality
- Accounting for Decision Makers
  - Use of financial reports, special purpose financial info for managers (planning, control)
- Marketing Concepts & Commercialization
  - Marketing planning/strategy for commercializing products & services, mktg mix, customer value
- Product Development Capstone
  - Business problem (ROI) & scholarship
- Elective: breadth or depth



## Sample Electives

- Lean Six Sigma Fundamentals
  - Problem solving and statistical tools to drive process improvement
  - Yellow Belt issued, Green Belt “trained”
- Design Thinking & Creativity
  - Use of creative problem solving to discover new alternatives in the design of products and services
- Agile Project Management
  - Iterative & incremental framework to deliver high-risk solutions in a rapid response timeframe
- Data Analytics & Business Intelligence
  - Includes descriptive and inferential statistical techniques



## Sample Capstone Projects

- The Role of Architecture in Defining NPD Strategy
- Methods for Improving the Technology Readiness Assessment Process in New Product Development
- Radical Innovation: An Analysis of Strategy and Capabilities of Corporations in Upstate NY
- Practical Guide to Assessing Organizational Readiness for Capitalizing on Virtual Teams
- Selecting Winning Product Ideas in Mature Companies
- World-Class VOC – Critical Success Factors
- Overcoming Barriers to Implementing and Sustaining Lean Product Development Efforts
- Methods and Challenges in Project Portfolio Prioritization
- Reducing Time to Market in High Mix, Low Volume Applications



## Targeted Competencies

- Leadership through structured systems thinking, design, and management
- Leadership expertise of the PD process & high-performing teams
- Strategic, enterprise-wide & global perspective
- Innovative mindset, receptive to change
- Decision-making in uncertainty
- A market-oriented product development focus
- Application of sound business principles to effective management



## Targeted Competencies

- Project management – business & technical planning, relationship management, program control, structured decision making & risk management, agile PM
- Enhanced ability to recognize barriers to success early, when corrective actions less costly
- In-depth understanding/application of state-of-the-art tools for design, analysis, and management in the PD domain



## Sponsors

- Alstom
- ATMI
- Bausch & Lomb
- Biogen
- Borg-Warner
- Branson Ultrasonics
- Carestream Health
- Corning
- Delphi
- Eaton
- Fisher Price
- Ginzler Graphics
- Gleason
- Greatbatch
- Gunlocke
- GW Lisk
- Harris
- Honeywell
- ITT Fluids, ITT Space
- Inficon
- Infimed
- John Deere
- Ortho-Clinical Diagnostics (J&J)
- Kodak
- Moog
- Parker Hannifin
- PPC
- Raymond Corp.
- Reflexite
- Safe Passage
- Saab-Sensis
- Spirit Aerosystems
- SRC
- Ultra Electronics
- Vanlab
- Veeco
- Welch-Allyn
- Xerox



## Master of Science in Manufacturing Leadership

- Focus on **operational excellence** – lean orientation
- For experienced practitioners moving to management positions in operations (manufacturing, SCM, process engineering) – from engr., business, or science
- Capstone project significant ROI
- Started 1996: ~15 /yr; 300+ grads, 50+ companies
- 30 credits (10 courses, 3 cr. each), online or hybrid
- Admission: 2 yrs experience, 3.0 GPA, no exam

## Curriculum

- Leading Teams in Organizations
  - Power & influence, leadership & management, culture, change, ethics, leading teams & organization
- Supply Chain Management
  - Logistics mgt., transportation, location strategy, SC integration, strategic alliances, global issues
- Manufacturing Systems
  - Design & analysis of production systems, lean mfg., improving & redesigning mfg. systems
- Global Facilities Planning
  - Location strategy & decision making, facilities design, layout, storage & handling, warehouse design, process tech. transfer



## Curriculum

- Lean Six Sigma Fundamentals
  - Quality strategies & tools to drive process improvements linked to business objectives, LSS & DMAIC, lean tools, benchmarking, VOC
  - Yellow Belt issued, Green Belt “trained”
- Systems & Project Management (see MPD)
- Engineering of Systems I (see MPD)
- Accounting for Decision Makers (see MPD)
- MML Capstone Project
  - Client problem, lean orientation, significant ROI (\$300K+)
- Elective: breadth or depth



## Sample Capstone Projects

- Tool Room Inventory Reduction
- Supply Chain Process Improvement
- Optimizing Material Handling
- Improving On-Time Delivery
- Continuous Improvement in Process and Cell Design
- Integrated Production Management System
- Process Flow Reengineering
- Lean Improvements in Inventory, Logistics, Material Handling
- Design for the Supply Chain
- Develop Demand Profile for Effective Production Planning
- Failure Analysis and Warranty Returns
- Securing Toyota Business



## Targeted Competencies

- **Ability to make sound business decisions in a complex global economy:** business planning and implications of outsourcing and offshoring; financial management; agile decision-making
- **Ability to manage global, multi-site production and operations:** manage distributed teams; process technology transfer; service operations, enterprise and manufacturing strategies; lean operations; location strategy and facility design; state-of-the-art tools; regulatory issues
- **Comprehensive understanding of quality and continuous improvement principles**



## Targeted Competencies

- **Global supply chain management:** supply chain strategy; logistics management (quality and delivery assurance); systems needs for SCM; optimizing supply chains
- **Strong leadership and management skills applied to global high technology manufacturing:** systems thinking, planning, and management; applications orientation; project management expertise; creative leadership; enhanced ability to recognize barriers to success early





## Sponsors

Acro Industries, AJL Mfg., Alliance Machine, Alstom, Ametek Power, Atofina, B&L, Badge Machine, Bloch Industries, Branson Ultrasonics, Caldwell Mfg., CAR Engr., Concentrix, Corning, Danisco, Delphi, Dresser-Rand, EDS, Ferro, Garlock Sealing, Genessee Group, Getinge, Gleason, GM, Goodrich, Gorbelt, Greatbatch Medical, GW Lisk, Gunlocke, Harris, Hover-Davis, IBM Global Svcs., ITT Fluids, ITT Space Systems, J&J, Janssen Pharma, Kodak, Lapp Insulator, LMCO, Mathers Construction, Melles-Griot, Mindex Technologies, Moog, Morton, Motts, Nalge Nunc, Optical Gaging, Optimax, Parker Hannifin, Peko Precision, Primhall, Qualitrol, Raymond, RES Exhibition Svcs., Rexam, RIT, Rotadyne, Rotork, Sentry Safe, Schott, Sikorsky, Southco, Stone Construction, Sun Products, Tabtronics, Tenneco, Terry Precision Cycling, Thomson, Ultralife, U of R, Valeo, Welch-Allyn, Xerox, Zotos Intl.



## Professional Certificates\*

- Graduate credit, 100% transferable to degree, “Certificate of Accomplishment”
- Online (or onsite/blended for groups)
- 3 courses each:
  - *Systems Engineering*: Engr. of Systems I&II, + elective
  - *Supply Chain Management*: SCM (or Ops & SCM), Mfg. Systems (or Facil. Planning or Acct.) + elective
  - *Project Management*: PM, Decision & Risk Benefit Analysis (or Acct.), + elective
- Admission: 2 yrs, 3.0 GPA (same as MS)

\*Certificate name does not appear on transcript



## Format

- Fully online (or online + on-campus)
- Flexible to your schedule, your bandwidth, your company's level of tuition support
- Online format – as good as (or better than) on-campus
  - 24/7 access: anytime, anywhere
  - High quality discussions and increased engagement: discussion boards, live chats/web-conferences
  - Reduced lecture content – emphasis on interaction
- Innovative Learning Institute: state-of-the-art support



## Logistics

- RIT tuition 2020-21 (\$2089/credit): 1 course = \$6267; 3 courses = \$18,801; MML or MPD = \$62,270
- Need-based scholarships up to 30%: goal to reduce out-of-pocket tuition to 1/3 of RIT's full tuition
- Typical workload/course: material (2 hr), optional office hour (1 hr), homework (3-6 hr) => 6-9 hr/wk
- Program duration – flexible to your needs
  - 16 months: full-time student
  - 20 months: 2 courses/term (max for full-time employee)
  - 40 months: 1 course/term



## Admissions

- Semesters – 3 entry points annually:
  - Fall (16 wks): late August – late December
  - Spring (16 wks): late January – late May
  - Summer (10 wks): June – mid August
- Rolling admissions but submit application within 6 weeks of semester start
- Online application, transcripts, 1 recommendation letter, \$60 fee (waived for RIT alumni)



## Questions?

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- *Do I have to take the GRE or GMAT?* **No**
- *Can I transfer courses from another institution?* **Yes, up to 6 credits (2 courses), <5 years old and matches program course.**
- *What if I didn't have a 3.0 GPA?* **You may still be admitted – we will discuss your academic record and other qualifications.**
- *Do you count internships or co-ops in the 2 year minimum requirements?* **Yes, but only up to 1 year of the 2 year requirement.**
- *Do I have to take a course every semester?* **No, you can stop and start or adjust course load, but each course expires after 7 years.**



## Next Steps

- We will follow-up:
  - Email slides and inquire further about your interest
- Visit websites for more info:
  - <https://www.rit.edu/engineering/engineering-leadership> (Engineering Leadership)
  - <https://www.rit.edu/admissions/graduate#applying-for-admission> (Apply for Admission)
  - <https://www.rit.edu/admissions/aid> (Aid)
- Contact us with any questions



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