

Graduate Certificate – Project Management

Overview:

- 3 courses (3 credits each): 2 required courses, 1 elective.
- Required courses:
 - Systems and Project Management (ISEE-750) or Project Management (BUSI-710)
 - Decision and Risk-Benefit Analysis (ISEE-751)
- Sample electives: (see attachment)
- Course credit is fully transferable to the Product Development (MPD) program, Manufacturing Leadership (MML) program, or other appropriate graduate programs at RIT. Contact specific department for details.
- Timing:
 - See <http://sis.rit.edu> for RIT course schedule.
- Format:
 - On-line or on-campus – see RIT course schedule.
 - On-site delivery is possible for groups – contact program office.
- Cost:
 - Courses charged at the standard RIT part-time tuition rate, but discounts are available for groups.

Eligibility:

- Non-degree students or students enrolled in the MS in Product Development (MPD) or MS in Manufacturing Leadership (MML).

Admission requirements:

- Bachelor's degree from an accredited university, with a 3.0 cumulative GPA.
- At least two years of experience in a business environment.
- Prerequisite knowledge: probability and statistics at the introductory level.
- Exceptions to these criteria will be considered on a case-by-case basis. (No entrance exam).
- No transfer credit is permitted.

Application process:

- Complete a non-degree registration form – contact program office. (A full graduate application is required for students seeking to enter a master’s degree program).
- Copy of academic transcript showing cumulative GPA.
- Copy of current resume.
- Gain approval from your manager or HR department.
- Send materials to: *Chris Fisher, RIT, 111 Lomb Memorial Drive, Rochester, NY 14623-5608, Fax: 475-4080, Email: cxfpd21@rit.edu.*
- Contacts: Chris Fisher (475-7971, cxfpd21@rit.edu) or Mark Smith (475-7102, mark.smith@rit.edu).

Graduation requirement:

- Receipt of the Certificate requires a minimum cumulative GPA of 3.0 (“B” or better). A course grade below a “C” requires the course to be retaken.

Take-aways:

- Certificate of Completion from the Kate Gleason College of Engineering at RIT, issued upon request.
- Graduate credits (three/course), fully transferable to applicable graduate programs.
- Official transcript at RIT will show courses taken and grades received. The certificate name will **not** appear on the official RIT transcript.

Systems and Project Management

(ISEE-750)

Description:

Systems and Project Management ensures progress toward objectives, proper deployment and conservation of human and financial resources, and achievement of cost and schedule targets. The focus of this course is on the utilization of a diverse set of project management methods and tools. Topics include strategic project management, project and organizational learning, cost, schedule planning and control, structuring of performance measures and metrics, technical teams and project management, information technology support of teams, risk management, and process control. Course delivery consists of lectures, speakers, case studies, and experience sharing, and reinforces collaborative project-based learning and continuous improvement.

Learning objectives:

- Understand project leadership – organizational skills, influence, relationship management, change management, performance management, risk management, decision making.
- Learn to apply tools and techniques associated with planning, scheduling, and estimating (i.e. project control).
- Learn basic business skills for project management.
- Understand risk management and effective decision making.
- Understand the phases of the product development business process, including relationship to the systems engineering process.
- Prepare the student to become a certified PMP (Project Management Professional), if desired.
- Develop an approach to understand, examine and utilize lessons learned in subsequent projects.
- Learn tools to manage distributed teams.

Topics:

- Project and product life cycles, performance measures and key success factors
- Project selection, structural alternatives
- The project manager: traits & behaviors, selection criteria; contingency theory; power and influence; team building and managing conflict; performance evaluation
- Project planning: goals and objectives, charters; project management software; WBS; roles and responsibilities, resource loading and resource leveling; critical path; network diagramming (AOA, AON); critical chain and theory of constraints; schedules and Gantt charts; cost estimating: approaches, procurement issues, contracts, make vs. buy
- Tracking & control: tools and techniques; control centers and the control process; variance analysis; managing tradeoffs: cost, quality, schedule; fast-tracking and crashing activities on the critical path
- Risk management tools and techniques: DOE; failure mode analysis; process capability studies; finite element analysis; Design Structure Matrix; contingency planning
- Lessons learned and phase-out: key success factors and failure modes; communications; canceling projects
- Professional certification

Decision and Risk-Benefit Analysis (ISEE-751)

Description:

This course addresses decision making in the face of risk and uncertainty. Various methodologies will be introduced that are useful in describing and making decisions about risks, with particular emphasis on those associated with the design of products. Students will be exposed to issues related to balancing risks and benefits in situations involving human safety, product liability, environmental impact, and financial uncertainty. Presentations will be made of risk assessment studies, public decision processes, and methods for describing and making decisions about the societal risks associated with engineering projects. Topics include probabilistic risk assessment, cost-benefit analysis, reliability and hazard analysis, decision analysis, portfolio analysis, and project risk management.

Learning objectives:

- Understand the nature of risk and how it relates to “unknowns” that affect our ability to make decisions.
- Understand risk management: identification of sources of risk, assessment of risk, tradeoffs, and decision making in the face of risk. Learn not to avoid risk but to manage it for competitive advantage.
- Understand the probabilistic aspect of risk as it relates to decision making in product development.
- Review/learn concepts in engineering economics: cash flow diagrams, time value of money, and spreadsheet applications for risk-benefit analysis.
- Learn to model and simulate (Monte Carlo) the effects of uncertainty in the decision making process.
- Learn to perform sensitivity analysis on a decision scenario.

Topics:

- Deciding how to decide
- Probability rules and probability distribution review
- Engineering economics
- Structuring decisions
- The decision tree and expected value decision making
- Utility theory
- Value of information
- Product liability
- Foundations of simulation, simulation and risk analysis
- Simulation of decision scenarios using Crystal Ball
- The scalable decision analysis process

Sample Elective Courses

MGMT-740 Organizational Behavior and Leadership

This course examines why people behave as they do in organizations and what managers can do to improve organizational performance by influencing people's behavior. Students will learn a number of frameworks for diagnosing and dealing with managerial challenges dynamics at the individual, group and organizational level. Topics include leadership, motivation, team building, conflict, organizational change, cultures, decision making and ethical leadership.

ISEE-771 Engineering of Systems I

This course covers the principles of product, manufacturing process and supply chain development in an integrated fashion. It will examine the methodologies and tools to systematically define, develop and produce world-class products. Students will work on a project to put these methodologies and tools into practice. Major topics include: product planning and definition, characterization of user value, lean product development, product requirements and benchmarking, concept generation, design for "X" (manufacturing/ assembly/ service/ environment, etc.), sustainable design, design for lean six sigma.

ISEE-703 Supply Chain Management

Supply chain management is unique in that it is one of the oldest business activities and yet has been recently discovered as a potentially powerful source of competitive advantage. Supply chain system activities planning production levels, forecasting demand, managing inventory, warehousing, transportation, and locating facilities have been performed since the start of commercial activity. It is difficult to visualize any product that could reach a customer without a consciously designed supply chain. Yet it is only recently that many firms have started focusing on supply chain management. There is a realization that no company can do any better than its supply chain and logistics systems. This becomes even more important given that product life cycles are shrinking and competition is intense. Logistics and supply chain management today represents a great challenge as well as a tremendous opportunity for most firms. (Background in operations management or production systems).

ACCT-603 Accounting for Decision Makers

A graduate-level introduction to the use of accounting information by decision makers. The focus of the course is on two subject areas: (1) financial reporting concepts/issues and the use of general-purpose financial statements by internal and external decision makers and (2) the development and use of special-purpose financial information intended to assist managers in planning and controlling an organization's activities. Generally accepted accounting principles and issues related to International Financial Reporting Standards are considered while studying the first subject area and ethical issues impacting accounting are considered throughout.

MKTG-761 Marketing Concepts & Commercialization

This course examines the processes involved in the creation, distribution and sale of products and services. The objectives of the course are to introduce students to the tasks and decisions facing marketing managers and to the elements of marketing analysis including customer analysis, competitor analysis, and company analysis. The course is structured around the managerially controllable elements of product, price, promotion & distribution, plus the interrelationships of these elements, within the context of a changing business environment.

BUSI-711 Advanced Project Management

Course covers the advanced project management topics necessary for implementation of and excellence in project management. It deals with turning the principles and theory of project management into practice. Addresses the best practices for project management in the world; project portfolio management and ROI; the project office and Six Sigma; project risk management and integrated projects; corporate cultures, behavior, and cultural failures; informal, adaptive, and extreme project management; and critical chain project management. Integrates aspects of A Guide to the Project Management Body of Knowledge (PMBOK® Guide). Prerequisite: introductory PM course or experience.

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