The Wesley J. Howe School of Technology Management - IV

PH.D. PROGRAM

The School of Technology Management offers a Ph.D. with concentrations in Information Management, Technology Management, and Telecommunications Management. The Howe School also participates in an interdisciplinary Ph.D. program in Telecommunications Management. Within these concentrations, students may focus their research on a number of more specialized areas in which the faculty has strength including project management, innovation management and systems integration. The Ph.D. program is primarily designed for full-time students; however, outstanding part-time students may be admitted.

Admission and Graduation Requirements for Doctoral Program

Students may be admitted upon completion of the master's degree or its equivalent. All applicants to the Ph.D. program must submit either a GMAT or GRE score. International students whose native language is not English must also take the TOEFL test. Additional admission criteria for each specific concentration are detailed below.

To obtain a Ph.D., a student needs to complete at least 90 credits (beyond the BS level). A maximum of 30 credits is awarded for a master's degree from another school. As part of their coursework, students are required to attend research colloquia (lectures) given at the Howe School by prominent visiting researchers.

When certified for candidacy following completion of the written exams and all coursework, students are required to write and defend a dissertation in a selected area of concentration. It is expected that doctoral dissertations will make significant contributions to the creation of knowledge and the development of theory and practice in a selected area. Please refer to the Graduate Student Handbook for specific requirements.

Information Management Ph.D. Concentration

The Information Management Ph.D. is designed for highly-qualified students interested in careers in teaching and research in the management of information. Graduates are equipped to pursue careers in either academia or industry.

The program is based on the premise that information systems always exist within the context of a specific organization. Their effectiveness is greatly dependent upon the attitudes towards such systems of the individuals using them. With this in mind, students are required to take courses and seminars in Information Management and Organizational Behavior and Theory. After completion of their course work, students are examined in design and development of information systems, information management and organizational theory and behavior, networks and distributed information management, strategic management of information systems and the management of the information technology organization. Appropriate preparation for this program is a Master of Science degree in Information Systems or its equivalent, Computer Science, and Telecommunications Management, or an MBA. Students with insufficient background in database management systems and organization theory may be asked to take introductory master's level courses for no credit toward the Ph.D. degree. In addition to the GRE or GMAT score, applicants are asked to submit with their application a sample of writing such as a published paper, a master's thesis, a semester project paper or an extensive case study for which they were the principal or sole author.

Typical Schedule for Information Management Ph.D. Students

The schedule below is an example of a schedule for a student with a Master's degree in Information Management or a related field. Core courses are shown in bold.

Year	*Fall Semester*	*Spring Semester*
First	**Mgt 718 Multivariate Analysis** Mgt 704 Research Seminar: Information Management and Organizational Structure and Behavior I MIS 750 Management of Information Technology in Organizations	**Mgt 719 Research Methods** Mgt 705 Research Seminar: Information Management and Organizational Structure and Behavior II MIS 760 Information Technology Strategy
End of 1st Year	The student's status in the program is reviewed by the Information Management Ph.D. Committee.	

Second	**Mgt 730 Design and Analysis of Experiments** Mgt 778 Principles of Information Management I Elective	**Mgt 790 Innovation Management and Technogenesis** Mgt 779 Principles in Information Management II Elective
End of 2nd year	Students are qualified to take Qualifying Examinations in Information Management and Organizational Theory during the third year in program.	
Third	Mgt. 960 Research in Management One additional class selected from the list below	Mgt. 960 Research in Management One additional class selected from the list below. Dissertation research
End of 3rd year	Successful Completion of Qualifying Examinations Oral Defense of Dissertation Proposal*	
Fourth	Mgt. 960 Research in Management Completion and defense of doctoral dissertation	

Note: * Students must complete these requirements before a dissertation proposal can be approved. Doctoral preliminary examinations may be written or oral at the discretion of the committee chair. Courses in bold represent the common core. Guidance on electives should be obtained from the advisor.

Students in the Information Management program select two additional courses or seminars from among the following:

Mgt 716/726/736 Seminars: Advanced Topics in Information Management and Technology Management
Mgt 777 Information Management Applications of Artificial Intelligence
MIS 710 (formerly Mgt 783) Enterprise Systems Management
MIS 730 (formerly Mgt 784) Integrating Information System Technologies
Mgt 801 Special Problems in Management

Qualifying Examinations

In the third year of the program, after the completion of the first eight courses, students are required to sit for two qualifying examinations, one in Information Management topics and the other in Organizational Theory and Management topics. These examinations are prepared and scored by the faculty involved in teaching the courses during the first two years of the program.

Technology Management Ph.D. Concentration

The Ph.D. program in Technology Management is designed for highly-qualified students interested in careers in teaching and research. Graduates are equipped to pursue careers in either academia or industry. A candidate for the Ph.D. program in Technology Management is expected to have demonstrated research competency in order to be admitted to the program. Applicants are asked to submit with their application a sample of their research, such as a published paper or a master's thesis or other research paper for which they were the principal or sole author.

Typical Schedule for Technology Management Ph.D. Students

The schedule below is an example of a schedule for a student with a Master's degree. Core courses are shown in bold.

Year	***Fall Semester***	***Spring Semester***
First	**Mgt 718 Multivariate Analysis** Mgt 716 Research Seminar elective	**Mgt 719 Research Methods** Mgt 801A Special Problems
End of 1st Year	Successful completion of Qualifying Exam for TM Ph.D.*	
Second	**Mgt 730 Design and Analysis of Experiments** Mgt 801B Special Problems in Management	**Mgt 790 Innovation Management and Technogenesis** Mgt 736 Research Seminar Elective

	Elective	
End of 2nd year	Completion of independent research - for students who did not complete a Master's Thesis* Successful completion of Qualifying exam in Research Methods	
Third	Mgt. 960 Research in Management	Mgt. 960 Research in Management
End of 3rd year	Successful Completion of Doctoral Preliminary Examinations Oral Defense of Dissertation Proposal*	
End of 3rd or start of 4th year	Completion and defense of doctoral dissertation	

Note: * Students must complete these requirements before a dissertation proposal can be approved. Doctoral preliminary examinations may be written or oral at the discretion of the committee chair. Courses in bold represent the common core. Guidance on electives should be obtained from the advisor.

Qualifying Examination

This is a comprehensive examination on Technology Management subjects. Students entering the program with a Master's degree are expected to take this examination after completing one year in the program. This examination will be prepared and scored by the Technology Management doctoral committee. The qualifying examination in Technology Management is designed to demonstrate understanding and competence in areas relevant to Technology Management. This examination should be taken at the end of the first year of coursework in the Ph.D. program. This is a one-day exam that covers theory and content in Technology Management Research.

Comprehensive Examination in Research Methods

A second one-day examination in research methods can be taken at any time but it is suggested that students take this exam after completing Mgt 718, Mgt 719 and Mgt 730. This examination covers basic and advanced research methods and basic and multivariate statistics. This examination must be passed before students can begin their dissertation.

Telecommunications Management Ph.D. Concentration

The Ph.D. program in Telecommunications Management is designed for highly qualified students interested in careers in teaching and research. Graduates are equipped to pursue careers in either academia or industry. A candidate for the Ph.D. program in Telecommunications Management is expected to have demonstrated research competency in order to be admitted to the program. Applicants are asked to submit with their application a sample of their research, such as a published paper or a master's thesis or other research paper for which they were the principal or sole author.

Typical Schedule for Telecommunications Management Ph.D. Students

The schedule below is an example of a schedule for a student with a Master's degree in Telecommunications Management or a related field. Core courses are shown in bold. Mgt 960 must be taken to satisfy the remaining 24 points of the dissertation requirement.

Year	***Fall Semester***	***Spring Semester***
First	**Mgt 718 Multivariate Analysis** (or alternative research methods course) Mgt 716/726/736 or other electives	**Mgt 719 Research Methods** TM 765 Selected Topics in Telecom Management Mgt 736 Research Seminar in Telecom or Electives
End of 1st Year	The student's status in the program is reviewed by the Telecommunications Management Ph.D. Committee.	
Second	**Mgt 730 Design and Analysis of Experiments** TM/Mgt 801A Special Problems Elective	**Mgt 790 Innovation Management and Technogenesis** TM/Mgt 801B Special Problems Mgt 736 Research Seminar Elective

End of 2nd year	Students are qualified to take Qualifying Examinations in Telecommunications Management.
Third	Mgt. 960 Research in Management Mgt. 960 Research in Management
End of 3rd year	Successful Completion of Qualifying Examination Oral Defense of Dissertation Proposal*
End of 3rd, or start of 4th year	Mgt. 960 Research in Management Completion and defense of doctoral dissertation

Notes: * Students must complete these requirements before a dissertation proposal can be approved.
Doctoral preliminary examinations may be written or oral at the discretion of the committee chair.
Courses in bold represent the common core. Guidance on electives should be obtained from advisor.

Students in the Telecommunications Management program select two additional courses or seminars from among the following:

Mgt 716/726/736 Seminars: Advanced Topics in Information/Technology Management/Telecommunications management
TM 765: Selected Topics in Telecommunications Management
Mgt 710 Risk Management
TM 615 Wireless Network Mobile Computing
TM 617 Next Generation Wireless Networks
TM 618 Performance Management of Wireless Networks

Qualifying Examination

This is a comprehensive examination on Telecommunications Management subjects. Students entering the program with a Master's are expected to take this examination no later than the end of the second year in the program. This examination will be prepared and scored by the Telecommunications Management doctoral committee. The qualifying examination in Telecommunications Management is designed to demonstrate your understanding and competence in areas relevant to Telecommunications Management: fundamentals of telecommunications and quantitative methods for telecommunications; and two areas from the following topics: engineering economics, policy and regulation, wireless, performance analysis.

Comprehensive Examination in Research Methods

A second one-day examination in research methods can be taken at any time but it is suggested that students take this exam after completing Mgt 718, Mgt 719 and Mgt 730. This examination covers basic and advanced research methods and basic and multivariate statistics. This examination must be passed before students can begin their dissertation.

Graduate Certificate Programs

The School of Technology Management offers the following programs leading to a Graduate Certificate of Special Study. Students are required to meet regular admission requirements for the master's program and complete the courses listed below. Each Graduate Certificate program is self-contained and highly focused, carrying 12 graduate credits. All of the courses may also be used toward the master's degree as well as for the graduate certificate.

Entrepreneurial IT (Trimester)

Mgt 679 Management Information Systems (Semester I)
Mgt 661 Marketing Online (Semester II)
Mgt 662 Legal Issues for the IT Professional (Semester II)
Mgt 663 Entrepreneurship in IT (Semester III)

Global Innovation Management

Mgt 650 International Business Management
Mgt 630 Global Business and Markets
Mgt 671 Technology and Innovation Management
Mgt 673 Global Innovation Management

Human Resource Management

Mgt 647 Legal and Social Environment of Human Resources
Mgt 680 Organizational Behavior and Theory
Mgt 646 Human Resource Processes: Techniques and Applications

Mgt 654 Organizational Change and Development

Information Management
MIS 630 (formerly Mgt 773) Data and Knowledge Management
MIS 620 (formerly Mgt 772) Analysis and Development of Information Systems
MIS 750 (formerly Mgt 781) Management of Information Technology Organizations
MIS 760 (formerly MIS 780) Information Technology Strategy
For students with little or no information systems professional experience, MIS 501 is a prerequisite for all MSIS courses.

Information Security
MIS 645 (formerly Mgt 644) CyberSecurity Principles for Managers
MIS 646 (formerly Mgt 645) Enterprise Architecture for Information Security
CS 573 Fundamentals of Computer Security
CS 694 E-Business Security & Information Assurance

IT in Financial Services
MIS 681 (formerly Mgt 761) Financial Services Industry Trends & Directions
MIS 682 (formerly Mgt 762) Capital Markets
MIS 683 (formerly Mgt 763) Financial Services Industry Back Office
MIS 684 (formerly Mgt 764) Financial Services Industry Marketing & Sales

IT in Pharmaceutical
MIS 671 (formerly Mgt 721) Pharmaceutical Industry Trends & Directions
MIS 672 (formerly Mgt 722) Pharmaceutical Industry New Drug Development
MIS 674 (formerly Mgt 723) Pharmaceutical Industry Marketing & Sales
MIS 673 (formerly Mgt 724) Pharmaceutical Supply Chain

Management of Wireless Networks
TM 615 Wireless Communication and Mobile Computing
TM 616 Global Wireless Industry
TM 617 Next Generation Networks
TM 618 Performance of Emerging Mobile Wireless Networks

Project Management
Mgt 609 Introduction to Project Management
Mgt 610 Project Management Theory and Practice
Mgt 612 The Human Side of Project Leadership
Mgt 614 Advanced Project Management

Technology Management
Mgt 609 Introduction to Project Management
Mgt 671 Technology Management
Mgt 656 Total Quality Management
Mgt 657 Operations Management or Mgt 641 Marketing Management

Telecommunications Management
TM 601 Principles of Applied Telecommunications Technology
TM 605 Probability for Telecommunications Managers
TM 610 Business Information Networks
TM 612 Regulation and Policy in the Telecommunications Industry

TECHNOLOGY APPLICATIONS IN SCIENCE EDUCATION

This Graduate Certificate program focuses on applications of technology to enhance teaching and learning in pre-college science and mathematics. The program deals with software, the Internet and computer-based probes that can be used as tools by teachers at middle-school and high-school levels. The courses provide teachers with the cognitive insight and learning theory bases for utilization of technology in these subject areas. Both subject matter and strategy are discussed to enable effective classroom implementation.

This program has evolved from more than a decade of experience at Stevens Institute of Technology's Center for Innovation Engineering and Science Education (CIESE).

The program addresses topics in science and mathematics, issues of classroom management, the relationship of technology to newly emerging standards and current developments in school reform.

Courses are offered online at www.WebCampus.Stevens.edu

Mgt 785 Introduction to the Development of Computer-Based Instructional Systems
Mgt 651 Internet Applications for Use in Science Education
Mgt 627 Mathematical Tools for Data Analysis

STEVENS-FORDHAM EXCHANGE PROGRAM

Stevens has arranged an exchange program for Stevens' graduate students with the Office of Graduate Studies of Business Administration at Fordham University, located at Lincoln Center in New York City.

This program enables graduate students at Stevens to enroll in advanced courses in accounting, finance and marketing at the Graduate School of Business Administration at Fordham, Lincoln Center, in New York. In turn, Fordham MBA students can enroll in selected computer science and engineering courses at Stevens. Students register and pay for exchange courses at their home schools, and grades are sent directly to the Registrar of the home school. The School of Technology Management coordinates the program for Stevens.

RESEARCH

Center for Technology Management Research (CTMR)

Profs. R. Reilly and E. Stohr
http://howe.stevens.edu/CTMR
CTMR conducts research on issues related to innovation and the management of technologies in a global context. Our mission is to develop concepts and frameworks to help executives address the challenges of a rapidly changing technology-based world. Research results are disseminated through publications, books, working papers, an annual conference, and sponsor forums.

CTMR supports the Stevens Institute of Technology theme of Technogenesis-the educational frontier wherein faculty, students and colleagues in industry jointly nurture the process of conception, design, and marketplace realization of new technologies.

Center for Global Technology Management (CGTM)

H. Fallah, T. Lechler and L. Stevens
The Center for Global Technology Management (CGTM) is the Howe School's focal point for research and educational programs in global studies. In research, the center focuses on issues related to global innovation practices and theory. The center's educational program includes a range of courses leading to a "global concentration" in several Howe School graduate programs. The center also plans a series of executive courses as well as student exchange programs at the undergraduate and graduate level with global corporations and international business schools.

Consortium for Corporate Entrepreneurship

Prof. Peter Koen
http://www.ceconsortium.org/
The Consortium for Corporate Entrepreneurship (**http://www.ceconsortium.org**) continues to focus its research in three areas: optimizing the front end of innovation, approaches and organizational structures for getting to breakthroughs and knowledge creation, and knowledge flow at the front end.

Through its mission statement-to better understand the Front End of Innovation in order to increase the number, speed and success probability of highly profitable products entering development-the Consortium offers a collaborative environment, where academia and industry are dedicated to the discovery portion of the front end leading to breakthrough innovation.

Although these are topics of growing interest within the corporate creative community, little has previously been established. In a world of rapidly evolving technologies, the success of interdependent relationships spawned between creator-innovators and their corporate environments is based on an increasingly synchronized set of events. The Consortium and its industry sponsors seek to recognize behaviors and activities that can be applied as powerful tools in enhancing creativity, productivity and profitability. Industry sponsors include: ExxonMobil; Ethicon, a J&J Franchise; and Aventis.

Stevens Alliance for Technology Management

L. Gastwirt

http://howe.stevens.edu/SATM

Mission: The Alliance is an industry-university partnership under the auspices of the Wesley J. Howe School of Technology Management at Stevens Institute of Technology. It was founded in 1991 to identify, disseminate and facilitate the deployment of more effective practices for the development and utilization of technology. Current Alliance Sponsors, in addition to Stevens Institute, are AT&T, Bestfoods, ExxonMobil Research and Engineering, ISO, Lucent Technologies, Pershing, Teknor Apex and the US Army Research, Development, and Engineering Center. Past Sponsors have included AlliedSignal, Bellcore, Engelhard Industries, GTech, IBM, Merck, and SIAC.

Center for Innovation in Engineering and Science Education (CIESE)

Beth McGrath

www.ciese.org

The Center for Innovation in Engineering and Science Education (CIESE), www.ciese.org, part of the Schaefer School of Engineering, was founded in 1988 to lend Stevens' expertise in integrating computers into its own curriculum to improve K-12 science, mathematics, engineering, and technology education. CIESE's mission is to increase the pool and improve the capabilities of all students to pursue higher education and careers in technical fields and to support the Stevens education by catalyzing and fostering innovation in the teaching and learning of engineering, science, and mathematics. CIESE's outreach efforts impact pre-college and university educators and students in order to improve the quality of students and advance the practices of engineering, applied science, and technology management.

In pursuing its mission, CIESE's work has encompassed both precollege and post-secondary educators. The Center assists K-12 educators exploit the power of technology to improve teaching and learning in engineering, science, mathematics and other disciplines. These activities complement Stevens' objectives by helping students acquire the foundations necessary to excel in science, mathematics and other subjects. Achievement in these "gateway" subjects enables students to go on to the advanced study required in engineering and other technologically-rich fields.

CIESE works collaboratively with teachers, school system administrators, as well as university faculty to provide intensive, hands-on training, support and counsel to infuse technology in meaningful ways into the curriculum. Technology is seen as both a tool for teachers and a new mode for bringing exciting content to students. In the past, students might have read in a textbook about earthquakes that happened several years ago; today it is possible for them to log onto a web site and see the location and intensity of earthquakes that have occurred within the past 24 hours. Bringing these real-world phenomena into the classroom both motivates and engages students to learn in ways not possible with more traditional tools.

Through partnerships with school districts, as well as colleges, universities and other organizations in New Jersey and four other states, CIESE has trained more than 20,000 teachers and impacted more than a half-million students. CIESE's Internet-based curriculum materials have been recognized by organizations such as the White House Office of Science & Technology Policy, the U.S. Department of Education, the American Association for the Advancement of Science, the National Council of Teachers of Mathematics, and other organizations. More than 100,000 students participate in CIESE's real time data and global telecollaborative projects each year. CIESE is currently implementing a $1.5 million U.S. Department of Education grant to transform teaching and learning in science and mathematics education for preservice teachers through partnerships with 33 community colleges. CIESE has also implemented large-scale technology training programs including a five-year, $9.28 million U.S. Department of Education Technology Innovation Challenge Grant; a three-year, $750,000 AT&T Foundation grant; a three-year, $600,000 New Jersey Department of Education grant; a three-year, $1 million program to strengthen science education for New Jersey's neediest schools; as well as several specific teacher-training programs with New Jersey and New York schools and districts.

Central to CIESE activities are unique and compelling Internet-based curriculum materials for K-12 science and mathematics education. The Savvy Cyber Teacher® (SCT) workshop series is a 10-part, 30-hour teacher-training program providing educators with hands-on experience using web-based applications in order to engage students in authentic science investigations and problem-solving activities using real time data and global telecollaboration. SCT materials and other training programs are available to schools and teachers through grant-funded programs or fee-for-services arrangements with CIESE.