

Department of Information Technology and Decision Sciences

2074 Constant Hall
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Ling Li, Chair

Master of Science - Maritime Trade and Supply Chain Management

Wayne Talley, Graduate Program Director
Ling Li, Co-Graduate Program Director

The Master of Maritime Trade and Supply Chain Management is a graduate program that provides managers and supply chain professionals the opportunity to expand their knowledge, update their skill sets, and enhance their work with supply chain partners, transportation carriers, shippers, sourcing agents, warehouse managers, as well as third parties and governments directly or indirectly involved in the movement of cargo and material flow. The **30-credit hour** program requires critical thinking and investigation in maritime and supply chain industries, including analyses of worldwide port networks and supply chains that contribute to enhanced productivity.

Admission Requirements

Prospective students may apply for admission to the program for the fall, spring, and summer semesters. We welcome applicants who have earned bachelor's degrees from accredited institutions. Admission to the program is competitive and is granted only to those who show high ability and likely success in graduate study. Successful applicants will stand well above the average in most of the criteria used to measure graduate student promise.

To be considered for admission, students must submit the following:

- A bachelor's degree from a regionally-accredited university in the U.S. or an equivalent foreign institution;
- Official copies of transcripts of all colleges and universities attended;
- Two letters of recommendation from individuals familiar with the applicant's professional and/or academic background;
- A current resume;
- A statement of professional goals;
- Completion of GRE or GMAT; a waiver may be available for those who already have a graduate degree; and,
- English language requirements: TOEFL (IBT): 79, TOEFL (paper-based): 550, IELTS: 6.5 for those whose native language is not English (waived if an applicant has earned a college degree from an institution in an English-speaking country).

Students may be considered for conditional admission. Contact the Graduate Program Director for more information.

Application Deadlines

Fall Semester

Domestic Students - June 1st
International Students - April 15th

Spring Semester

Domestic Students - November 1st
International Students - October 1st

Program of Study

The program has been designed to address the advanced educational needs of students and employers in the area of maritime trade and supply chain studies. This proposed program consists of 30 credit hours: five core courses

(15 credit hours), four electives (12 credit hours), and one capstone course (3 credit hours).

The five core courses focus on the analysis of international shipping, port planning and competition, and maritime-related organizations. They also cover ports and ocean container shipping, port operator costing and pricing, port carriers and shippers, supply chain management, and forward and reverse logistics. Finally, the curriculum includes global sourcing, and procurement practices, buyer-supplier relationships, cost/price considerations for the purchase of goods and services, international trade theory and commercial policy.

The four electives provide students with opportunities to learn about advanced information technology tools that are important components of global supply chain, as well as financial and analytical skills. Other options in this category include admiralty law, supply chain and maritime security, and risk management.

The capstone course addresses strategic management of maritime trade and supply chain management. The course brings together students in their final semester of study to synthesize knowledge from their previous coursework in order to better understand the relationships among the various areas of maritime trade and supply chain management and impacts on the maritime industry.

The list of courses—all existing—include the following:

Core Courses

| | | |
|----------|--|---|
| PORT 611 | International Maritime Transport | 3 |
| PORT 614 | Port Planning and Economics | 3 |
| PORT 616 | Reverse Logistics and Sustainable Operations | 3 |
| MSCM 641 | Supply Chain Management and Logistics | 3 |
| ECON 650 | International Economics | 3 |

Approved Electives

Electives must be approved in advance by the Graduate Program Director

Select four courses from the following list:

| | | |
|----------|--|--|
| BNAL 721 | Simulation Modeling for Business Systems | |
| ECON 502 | Transportation Economics | |
| IT 650 | Database Management Systems | |
| IT 660 | Enterprise Information Systems | |
| MSCM 530 | Strategic Sourcing and Purchasing Management | |
| MSCM 568 | Distribution Center and Material Handling Management | |
| PORT 612 | Port Operations and Management | |
| PORT 613 | International Maritime and Admiralty Law | |
| PORT 615 | Maritime Security and Risk Analysis | |
| PORT 617 | Transportation Management | |
| PORT 619 | Marine Insurance | |
| PORT 668 | Directed Research/Port Internship | |
| PORT 695 | Selected Topics in Maritime and Port Management | |
| PORT 697 | Independent Study | |

Capstone Course

| | | |
|----------|--|---|
| PORT 610 | International Shipping and Supply Chain Management | 3 |
|----------|--|---|

Total Hours 30

Continuance

To remain in good standing after admission to the program, students must maintain a minimum, cumulative grade point average of 3.0 in all graduate course work attempted at the University. Students who fall below this minimum standard will have 12 credit hours to remedy this deficiency.

Additionally, students may earn no more than 2 courses with the grade of C or lower. Further, any student receiving a failing grade (F) in a course will be dismissed from the program.

Financial Assistance

Financial aid is available to graduate students at Old Dominion University. Financial aid may be available in the form of University fellowships, tuition grants, and research assistantships. The MPA program offers graduate research assistantships each semester. In addition to the financial aid offered by the University, graduate students may be eligible for aid and student loans administered by other agencies. For information about part-time employment, scholarships, and student loans, contact the Office of Student Financial Aid.

For information and forms concerning application, contact:
 Admissions Office
 Old Dominion University
 Norfolk, VA 23529
 Phone: (757) 683-3685

For information concerning financial aid, contact:
 Office of Student Financial Aid
 Old Dominion University
 Norfolk, VA 23529
 Phone: (757) 683-3683

Maritime, Ports, and Logistics Management Certificate

ManWo Ng, Certificate Coordinator

This certificate program is designed to help working maritime and port professionals develop and sharpen their maritime and port management skills. The program consists of four graduate courses that expose students to international shipping, port management, maritime law, port operations and planning and port economics.

Admission Requirements

Admission to the certificate program will require a bachelor's degree (or equivalent).

Program Requirements

The certificate is awarded based upon the student's successful completion of 12 credit hours of graduate level courses in Ports and Maritime Management:

| For On-Campus Students | | 12 |
|--------------------------------|--|----|
| PORT 611 | International Maritime Transport | |
| PORT 612 | Port Operations and Management | |
| PORT 613 | International Maritime and Admiralty Law | |
| PORT 614 | Port Planning and Economics | |
| For Distance Learning Students | | 12 |
| PORT 610 | International Shipping and Supply Chain Management | |
| PORT 614 | Port Planning and Economics | |
| PORT 615 | Maritime Security and Risk Analysis | |
| PORT 697 | Independent Study | |

International Maritime Ports and Logistics Management Institute

Wayne Talley, Executive Director

The mission of the institute is to provide world quality maritime, ports and logistics management education, training, and research to meet regional, national and international needs. The Maritime Institute serves as a positive catalyst for the delivery of education, training, research, and service programs, thus supporting the economic growth and international competitiveness of greater Hampton Roads and Virginia. Courses are

available at both the undergraduate and graduate levels. Professional and executive-level seminars, workshops, and short courses will also be offered.

Master of Science–Computer Science - Information & Communication Technology

Li Xu, Graduate Program Director

The Department of Information Technology and Decision Sciences offers this degree program jointly with the Department of Computer Science; please see the entry under the Department of Computer Science (<http://catalog.odu.edu/graduate/collegeofsciences/computerscience>) for degree requirements.

Graduate Certificate in Modeling and Simulation (M&S) for Business and Public Administration

Dean Chatfield, Graduate Certificate Coordinator

Business applications constitute some of the earliest used simulation modeling, with some dating back over 50 years, and the literature of many businesses and social science disciplines is rich with both practical and theoretical usage of simulation. Recent developments in simulation, such as agent-based simulation and virtual worlds, open even avenues for M&S applicability. This certificate gives Strome College of Business graduate students an opportunity to develop competency in Modeling and Simulation.

Admission Requirements:

Admission to the certificate program requires a bachelor's degree (or equivalent).

Program Requirements:

The Certificate requires four (4) three-hour courses for a total of twelve (12) credits. A basic simulation core of three credits is required, plus six credits of discipline-specific work, and three credit hours of elective. A 3.00 GPA for the four-course sequence is required for successful completion.

| Strome College of Business M&S Certificate | | |
|--|--|----|
| MSIM 601 | Introduction to Modeling and Simulation | 3 |
| BNAL 721/821 | Simulation Modeling for Business Systems | 3 |
| BNAL 722/822 | Agent-Based Simulation and Modeling | 3 |
| Select one of the following: * | | 3 |
| BNAL 507 | Prescriptive Analytics of Management Science | |
| BNAL 712 | Advanced Statistical Models in Business Research | |
| ECON 625 | Mathematical Economics | |
| ECON 706/806 | Econometrics I | |
| ECON 707/807 | Econometrics II | |
| ECON 708/808 | Econometrics III | |
| IT 612 | Knowledge Management | |
| IT 651 | Business Intelligence | |
| IT 652 | Information and Communications Technology for Big Data | |
| FIN 735/835 | Portfolio Analysis | |
| FIN 740 | Futures and Options | |
| MSCM 641 | Supply Chain Management and Logistics | |
| MKTG 625 | Marketing Research Methods and Analysis | |
| OPMT 624 | Managing Services | |
| Total Hours | | 12 |

* Other classes may count as an M&S elective with permission of the certificate administrator.

Graduate Certificate in Business Analytics and Big Data

The graduate certificate in Business Analytics and Big Data is designed to give the students a background in some of the basic statistical and modeling/optimization tools used in business analytics. In addition the certificate provides a working knowledge of data bases and an introduction to the analysis of "big data." This certificate program is designed for students to satisfy their elective requirements as part of the MBA program or it can be taken as a stand alone certificate program.

Admission Requirements

An appropriate undergraduate degree is required to be admitted to the Business Analytics and Big Data Certificate program.

Program Requirements

The award of this certificate is based upon the student's successful completion of 15 credit hours as follows:

| | | |
|-------------|---|----|
| MBA 600 | Introduction to Statistics | 1 |
| BNAL 606 | Statistics for Managers | 2 |
| BNAL 711 | Multivariate Statistical Methods for Business | 3 |
| BNAL 515 | Advanced Business Analytics/Big Data Applications | 3 |
| IT 650 | Database Management Systems | 3 |
| BNAL 507 | Prescriptive Analytics of Management Science | 3 |
| or BNAL 621 | Simulation Modeling for Business Systems | |
| Total Hours | | 15 |

Graduate Certificate in Supply Chain Management

Erika Marsillac, Certificate Coordinator

This certificate program is designed to help working supply chain professionals develop and enhance their supply chain management and leadership/planning skills. The program consists of four graduate courses that expose students to supply chain management and logistics, transportation management, distribution center management, and strategic sourcing and supply management.

Admission Requirements

All applicants admitted to the certificate program must meet Old Dominion University requirements for graduate admission: an earned baccalaureate degree from a regionally-accredited institution or an equivalent degree from a foreign institution. Those whose native language is not English must satisfy any one of the following: a minimum score of 550 on the paper-based TOEFL, a 79 on the TOEFL IBT, an overall 6.5 or higher on the IELTS, a 150 on the GRE's verbal reasoning, a 480 on the GRE's verbal, a 480 on the SAT's critical reading, a 26 on the SAT's reading test, an O level pass in English for the GCSE or GCE, or a C or higher on the CPE.

Program Requirements

The certificate is awarded based upon the student's successful completion of 12 credit hours of graduate level courses in Supply Chain Management.

For On-Campus Students & Distance Learning Students

| | | |
|-------------|--|----|
| MSCM 617 | Transportation Management | 3 |
| MSCM 630 | Strategic Sourcing and Supply Management | 3 |
| MSCM 641 | Supply Chain Management and Logistics | 3 |
| MSCM 648 | Distribution Center Management | 3 |
| Total Hours | | 12 |

BUSINESS ANALYTICS Courses

BNAL 503. Data Visualization and Exploration. 3 Credits.

This course introduces students to concepts and processes, technologies, and methodologies that are commonly used in data visualization that an organization may use to enhance its descriptive, predictive, and prescriptive methods for making fact-based decisions. Prerequisite: A grade of C or better in BNAL 306 or an equivalent course or instructor's permission.

BNAL 507. Prescriptive Analytics of Management Science. 3 Credits.

Students are introduced to prescriptive analytics through formulation and solution of mathematical models, with a particular focus on optimization models. The business use of the models, as well as their limitations, is emphasized. Topics include linear, integer, non-linear programming, network models, genetic algorithms, decision analysis, and project management models. Prerequisite: A grade of C or better in BNAL 306 or an equivalent course or permission of the instructor.

BNAL 515. Advanced Business Analytics/Big Data Applications. 3 Credits.

This course addresses advanced business analytics techniques and the application of such techniques to large data sets. Some alternative business analytics strategies are introduced. Descriptive, predictive, and prescriptive models are included. Topics covered in this course include data visualization and exploration, cluster analysis, and developing and calibrating predictive models for big data. Applications of multivariate, logistic, and probit regression to business analytics are discussed. Software packages such as SAS/JMP/SPSS may be used. Prerequisite: A grade of C or better in BNAL 306 or BNAL 606 or an equivalent course or instructor's permission.

BNAL 532. Predictive Analytics for Business. 3 Credits.

Predictive analytics techniques for business. Applications include both shorter term forecasting for sales and operations management as well as forecasting for long term planning. Emphasis is on statistical methods to obtain and evaluate forecasts. Statistical models are implemented using standard software such as MINITAB, EXCEL, R, and/or Python. Prerequisites: BNAL 306 or an equivalent course or permission of the instructor.

BNAL 576. Simulation Modeling and Analysis for Business Systems. 3 Credits.

Simulation modeling is an integral part of the analytics revolution, enabling the creation of models that can represent the variability that exists in many real business systems. This course covers the theory and application of simulation modeling, with an emphasis on how simulation provides predictive and prescriptive analytics to support business decision-making. Topics include simulation fundamentals, the project life-cycle, model development, input and output analysis, verification and validation, and the presentation of a simulation study. We utilize a major commercial simulation software package for assignments and class projects.

BNAL 606. Statistics for Managers. 2 Credits.

Statistical tools for solving business problems. Topics include: sampling distributions, confidence intervals, hypothesis testing, simple and multiple regressions, and time series forecasting. Emphasis is placed on the application of the tools to business problems. The Minitab Software is used to do most of the analysis. Prerequisites: Admission to the MBA Program, MBA 600, MBA 601, MBA 602, MBA 603, and MBA 604.

BNAL 610. Fundamentals of Business Analytics. 2 Credits.

This course provides students with some common tools and techniques that are deployed in business analytics. Topics include big data and related terminology, data management, working with data, and statistical and quantitative methods used in descriptive, predictive, and prescriptive analytics. Prerequisites: Admission to the MBA Program, MBA 600, MBA 601, MBA 602, MBA 603, and MBA 604. Pre- or corequisite: BNAL 606.

BNAL 621. Simulation Modeling for Business Systems. 3 Credits.

This course covers both the theory and application of simulation modeling and analysis to business systems. Both discrete-event and continuous simulation modeling approaches are covered, using a major commercial simulation package. Emphasis will be on the use of simulation as a tool to support business decision making. Prerequisites: MBA 600 or instructor approval.

BNAL 667. Cooperative Education. 1-3 Credits.

Approval for enrollment and allowable credits are determined by the department and Career Development Services in the semester prior to enrollment.

BNAL 668. Internship in Business Analytics. 1-3 Credits.

Approval for enrollment and allowable credits are determined by the department and Career Development Services in the semester prior to enrollment.

BNAL 695. Selected Topics in Business Analytics. 3 Credits.

Advanced topics in business analytics offered periodically. Prerequisites: Permission of the department chair and graduate program director.

BNAL 697. Independent Study. 3 Credits.

Affords students the opportunity to undertake independent study under the direction of a faculty member. Prerequisite: Permission of the instructor.

BNAL 700. Linear Methods for Business Decisions. 1 Credit.

An introduction to matrix algebra and optimization with emphasis on those techniques necessary for mathematical analysis of advanced statistical models used in business research. Applications of use of matrix algebra for analyzing statistical models are discussed throughout the course.

BNAL 711. Multivariate Statistical Methods for Business. 3 Credits.

An applied study of statistical methods including analysis of variance, ANCOVA, multiple regression, discriminant analysis, time series regression, and exploratory factor analysis. Data analyzed using a computerized statistical package. Emphasizes development of the student's ability to use statistics for independent research. Prerequisites: BNAL 606 or equivalent.

BNAL 712. Advanced Statistical Models in Business Research. 3 Credits.

Advanced statistical models that are commonly encountered in business research. Topics include confirmatory factor analysis as well as structural equation modeling. Emphasis is on model development as well as use of statistical software in analyzing realistic business-oriented data sets. Prerequisites: BNAL 711.

BNAL 715. Multilevel Modeling in Business Research. 1 Credit.

This course introduces the fundamentals of multilevel modeling. Alternative methods of analysis are discussed and critiqued. Use of specialized multilevel modeling software is demonstrated. Topics include a detailed discussion of the issues associated with variable centering. Applications to business research investigations are emphasized. Prerequisites: BNAL 711 or permission of the instructor.

BNAL 721. Simulation Modeling for Business Systems. 3 Credits.

This course covers both the theory and application of simulation modeling and analysis to business systems. Both discrete-event and continuous simulation modeling approaches are covered, using a major commercial simulation package. Emphasis will be on the use of simulation as a tool to support business decision making. Prerequisites: BNAL 606 or STAT 330 or MSIM 601 or BNAL 476 or BNAL 576 or BNAL 722 or BNAL 822.

BNAL 722. Agent-Based Simulation and Modeling. 3 Credits.

This course will explore both the conceptual and technical aspects of agent-based simulation, particularly as utilized for modeling of business systems. Students will explore the roots and literature of agent-based modeling and related fields. Students will also learn to develop agent-based simulation models using a major commercial simulation package. Prerequisites: MBA 600 or BNAL 606 or MSIM 601 or BNAL 476 or BNAL 576 or BNAL 721 or BNAL 821.

BNAL 796. Selected Topics in Business Analytics. 1-3 Credits.

The advanced study of selected topics not offered on a regular basis.

BNAL 821. Simulation Modeling for Business Systems. 3 Credits.

This course covers both the theory and application of simulation modeling and analysis to business systems. Both discrete-event and continuous simulation modeling approaches are covered, using a major commercial simulation package. Emphasis will be on the use of simulation as a tool to support business decision making. Prerequisites: BNAL 606 or STAT 330 or MSIM 601 or BNAL 476 or BNAL 576 or BNAL 722 or BNAL 822.

BNAL 822. Agent-Based Simulation and Modeling. 3 Credits.

This course will explore both the conceptual and technical aspects of agent-based simulation, particularly as utilized for modeling of business systems. Students will explore the roots and literature of agent-based modeling and related fields. Students will also learn to develop agent-based simulation models using a major commercial simulation package. Prerequisites: MBA 600 or BNAL 606 or MSIM 601 or BNAL 476 or BNAL 576 or BNAL 721 or BNAL 821.

INFORMATION TECHNOLOGY Courses

IT 530. Object-Oriented Application Development with JAVA. 3 Credits.

Using JAVA as an object-oriented language to write business applications that solve complex problems in a secure and robust manner. Business examples incorporating multimedia, multithreading, networking, and advanced graphical interfaces are used to reinforce the object-oriented concepts of abstraction, encapsulation, inheritance, polymorphism, persistence, and dynamic binding.

IT 595. Topics. 1-3 Credits.**IT 610. Information Technology Management. 3 Credits.**

Information is a critical resource for today's organizations. This course prepares students for the managerial, organizational and technological challenges involved in managing information and information technology resources.

IT 612. Knowledge Management. 3 Credits.

Knowledge processes including knowledge creation, acquisition, transfer and application are studied. Students are introduced to real-world technologies and systems.

IT 614. Information and Knowledge Management. 2 Credits.

Information and knowledge are critical resources for today's organizations. This course prepares students for the managerial, organizational, and technological challenges involved in managing information and knowledge. Prerequisites: Admission to the MBA Program, MBA 600, MBA 601, MBA 602, MBA 603, and MBA 604.

IT 620. Systems Analysis and Design. 3 Credits.

Introduction to the Systems Development Life Cycle (SDLC) from an information systems project perspective. Emphasis is placed on the planning and analysis functions performed during information systems project work. Tools and techniques include: data flow diagrams, entity relationship diagrams, computer-aided systems engineering (CASE), and the project repository. These tools will be employed to create process and data-driven versions of these models.

IT 624. Information Technology Assurance Services. 3 Credits.

Standards, ethics, and practice of information technology assurance services particularly as it concerns the governance and control of information systems. (cross listed with ACCT 624) Prerequisite: ACCT 601 or equivalent.

IT 625. Information Systems for International Business. 3 Credits.

Examines the role of information in the global environment and the global organization. Issues related to information infrastructures for the organization, nation and the world will be covered, as well as how global information systems departments support the organization.

IT 634. Cloud Computing and Security. 3 Credits.

An introduction to key concepts and techniques of cloud computing and security. Topics include: cloud computing systems, virtualization and container technologies, cloud architecture and service platform design, cloud programming models, big data analytics, cloud performance and security.

IT 635. Telecommunication and E-Commerce. 3 Credits.

Examines the impact of electronic commerce and telecommunications in the global business environment. A comprehensive introduction to the use of the Internet to effectively exploit the Internet's resources for business applications. Prerequisite: IT 620 or equivalent; or permission of the department.

IT 649. Information Systems and Network Security. 3 Credits.

Introduces the fundamental issues and concepts of information security, emphasizing security policy, risk management, cryptography and network security. Prerequisite: IT 635 or permission of the department.

IT 650. Database Management Systems. 3 Credits.

Introduction to database management systems. The topics addressed include system architecture, data models, database analysis, design and implementation, query processing, business transaction processing, and database security. Prerequisites: IT 620 or equivalent; or permission of the department.

IT 651. Business Intelligence. 3 Credits.

Introduction to business intelligence and its three components: data warehouse, data mining, and OLAP. Examines traditional techniques as well as emerging technologies. Prerequisite: IT 650 or permission of the instructor or department.

IT 652. Information and Communications Technology for Big Data. 3 Credits.

Introduction to emerging ICT techniques for big data analytics and big data science. Topics cover WSN, cloud computing and IoT. Prerequisite: IT 650 or permission of the instructor or department.

IT 653. Database Administration Fundamentals. 3 Credits.

Overview of database administration of major database platforms such as Oracle and DB2. Topics include database installation and configuration, performance monitoring and tuning, storage management, database security, user management, database connectivity, and backup/recovery techniques. Prerequisite: IT 650.

IT 654. Advanced Database Administration. 3 Credits.

Overview of advanced database administration techniques of state-of-the-art database platforms. Topics include grid infrastructure, database clouds, RAC. Prerequisite: IT 650.

IT 655. Database Programming for the Web. 3 Credits.

In-depth exploration of web-based database administration and implementation. Hands-on experience with a variety of web-based database technologies. Topics include: MySQL, PHP, XML database technologies such as XQuery, XPath, and XML schemas, web log analysis, and text mining. Prerequisite: IT 650.

IT 660. Enterprise Information Systems. 3 Credits.

This course introduces enterprise systems as large-scale software systems for the seamless integration of material and information flows within an organization. Topics include enterprise integration, engineering integration, customer integration, and enterprise systems applications in various industrial sectors. Prerequisites: IT 650 or permission of the instructor or department.

IT 661. Implementing Internet Applications. 3 Credits.

Advanced design and implementation strategies are utilized to create dynamic e-commerce applications. Key concepts include: Internet architecture, structured data languages, scripting languages, programming languages, database connectivity, and Internet security.

IT 664. Project Management in Information Technology. 3 Credits.

This course provides basic knowledge of project management including tools to manage scope, time, cost, quality, risk, team, communications and procurement. Special issues in the IT context are emphasized. Prerequisite: IT 620 or equivalent, or permission of the department.

IT 665. Network Systems Administration. 3 Credits.

Covers the essential knowledge and skills required to administer networks. Hands-on experience with commercial software. Topics include architecture, planning, installation, configuration, resource sharing, and network optimization. Prerequisite: IT 635 or permission of the department.

IT 667. Cooperative Education. 1-3 Credits.

Approval for enrollment and allowable credits are determined by the department and Career Development Services in the semester prior to enrollment. Prerequisites: IT 620 or equivalent.

IT 668. Information Systems Internship. 1-3 Credits.

Approval for enrollment and allowable credits are determined by the department and Career Development Services in the semester prior to enrollment. Available for pass/fail grading only. Prerequisites: IT 620 or equivalent.

IT 672. Enterprise Architectures. 3 Credits.

Introduction to enterprise architectures for business organizations as well as related information architectures. Examines traditional techniques as well as emerging techniques including industrial information integration engineering. Prerequisite: IT 650 or permission of the instructor or department.

IT 674. Managing IT Strategically. 3 Credits.

Focuses on improving business use of existing IT and managing for competitive advantage. Prepares IT students for executive positions in IT including CIO. Non-IT students benefit by gaining a strategic perspective on an important organizational resource - information. Prerequisite: IT 620 or equivalent, or permission of the department.

IT 680. Computing Aspects of Medical Informatics. 3 Credits.

Overview of computing aspects of medical informatics. Computational methods in scientific computing of medical informatics are covered. The basic thrust is to demonstrate the usefulness and power of computational methods in solving real-life problems in perspectives of medical informatics.

IT 685. Introduction to Information Security. 3 Credits.

Introduction to technical and administrative aspects of information security. Topics include identification and authentication, access control, security models, computer intrusion detection, trust management, cryptography, PKI, fire walls, network security, web security, and secure e-commerce and e-business.

IT 695. Selected Topics in Information. 1-3 Credits.

3 credits. Prerequisite: permission of the department chair and the graduate program director.

IT 697. Independent Study in Information Systems. 1-3 Credits.

Affords students the opportunity to undertake independent study under the direction of a faculty member. Prerequisite: IT 650 or permission of the department.

IT 698. Master's Project in Information. 3 Credits.

3 credits. Prerequisites: IT 650 and permission of the department.

IT 699. Master's Thesis in Information Systems. 1-6 Credits.

1-6 credits. Prerequisites: IT 650 and permission of the department.

IT 795. Selected Topics in Management Information Systems. 1-3 Credits.

3 credits. Prerequisite: permission of the department chair and the graduate program director.

IT 800. Theoretical Foundations in ISR. 3 Credits.

A survey of research methodology in business information technology research including empirical, behavioral and computational approaches in different types of problem domains. The approach will be interdisciplinary.

IT 850. Enterprise Architecture. 3 Credits.

This course examines the latest advances in enterprise architecture and computing. Topics include enterprise architecture design and modeling, service-oriented architecture (SOA), and integration of enterprise information and applications. Prerequisite: IT 800.

IT 890. Seminar in Business Process and Enterprise Systems. 3 Credits.

This course discusses how firms achieve business excellence through business process management (BPM), business process improvement (BPI), and business process reengineering (BPR) supported by IT. Topics include business process and workflow modeling, analysis, integration, monitoring and management. Prerequisite: IT 800.

IT 891. Seminar in Business Intelligence. 3 Credits.

The objective of this course is to provide an overview of managerial and technical issues associated with business intelligence. Topics covered include the state-of-the art data warehousing, data mining and OLAP technologies. Prerequisites: IT 800.

IT 892. Seminar in Knowledge Management. 3 Credits.

The course examines the latest advances in knowledge management (KM) including identifying, capturing, sharing and evaluating an enterprise's knowledge assets. The course reviews and discusses existing technologies in KM and new emerging KM technologies and practices. Prerequisites: IT 800.

IT 893. Supply Chain Management for E-Commerce. 3 Credits.

This course examines how supply chain management and information technology integrate to support global e-commerce opportunities. Topics include the theories and practices of material flow management, omnichannel distribution and retailing, maritime, logistics, procurement, and inventory management. Prerequisites: IT 800.

IT 895. Selected Topics in Management Information Systems. 1-3 Credits.

3 credits. Prerequisite: permission of the department chair and the graduate program director.

IT 899. Dissertation. 1-12 Credits.

Ph.D. level research and writing of dissertation. Prerequisite: IT 893; departmental approval required.

IT 998. Master's Graduate Credit. 1 Credit.

This course is a pass/fail course for master's students in their final semester. It may be taken to fulfill the registration requirement necessary for graduation. All master's students are required to be registered for at least one graduate credit hour in the semester of their graduation.

MARITIME AND SUPPLY CHAIN MANAGEMENT Courses

MSCM 530. Strategic Sourcing and Purchasing Management. 3 Credits.

An overview of the strategic sourcing of materials and services in the organization and its role in the supply chain. Topics include sourcing decisions, price/cost analysis, quality issues, purchasing, supplier selection, legal and ethical issues, third party logistics, freight forwarding, and acquisition of services and capital assets.

MSCM 568. Distribution Center and Material Handling Management. 3 Credits.

This course is designed to investigate the strategic role of distribution center and material management in the supply chain. Course content includes the analysis of distribution center operations through the study of design, system selection, and layout configuration as well as the evaluation of material handling and inventory management options. Prerequisites: OPMT 303.

MSCM 595. Topics in Maritime and Supply Chain Management. 3 Credits.

A study of selected topics within maritime and supply chain management designed to provide an in-depth exploration of current issues. Prerequisite: Permission of the instructor.

MSCM 610. International Shipping and Supply Chain Management. 3 Credits.

Examines international freight transportation and terms for movement of international trade; focuses on improving supply chain relationships in the movement of international trade/directing the flow of information, materials and products. (cross-listed with PORT 610).

MSCM 615. Maritime Security and Risk Analysis. 3 Credits.

An overview of international and U.S initiatives to ensure the security of vessels, cargo, people, and infrastructure within the maritime domain. In addition to the impacts of regulatory requirements on maritime commerce, the course also addresses maritime threats to the international economy (including maritime piracy and maritime terrorism), maritime coalitions, and state-of-the-art techniques and tools for safeguarding oceanborne commerce. (cross-listed with PORT 615).

MSCM 616. Reverse Logistics and Sustainable Operations. 3 Credits.

This course explores the theoretical foundations of global supply chain partnerships and reverse logistics systems, and examines the practices, risks, and opportunities found in today's systems. Fundamental tools and techniques are used to provide insights and solutions on how to best organize, manage, and optimize such systems to achieve sustainable performance. (cross-listed with PORT 616).

MSCM 617. Transportation Management. 3 Credits.

The course includes a review of the key elements of transportation such as: modes of transportation, transportation economics, and transportation technology and regulations. The relationships between intermediaries, carriers and shippers are discussed, as well as company roles and operations within the transportation field, transportation sourcing and management, and transportation risk management.

MSCM 630. Strategic Sourcing and Supply Management. 3 Credits.

An overview of the strategic sourcing of materials and services in the organization and its role in the supply chain. Emphasis is placed on effectively managing the supply management process. Topics include the analysis of sourcing decisions, price/cost analysis, purchasing, supplier selection and relationship management, legal and ethical issues, third party logistics, freight forwarding, and acquisition of services and capital assets.

MSCM 641. Supply Chain Management and Logistics. 3 Credits.

Supply chain management integrates all activities associated with the flows of materials, information, and funds. Examples include strategic sourcing, order processing, warehousing, inventory management, transportation and logistics, and the costs and information systems supporting these activities.

MSCM 648. Distribution Center Management. 3 Credits.

This course investigates the strategic role of distribution centers in the supply chain. Course content includes the analysis of distribution center operations through the study of design, system selection, and layout configuration as well as the evaluation of material handling and inventory management alternatives. Tactical, operational and strategic planning options are also discussed.

MSCM 893. Supply Chain Management for E-Commerce. 3 Credits.

This course examines how supply chain management and information technology integrate to support global e-commerce opportunities. Topics include the theories and practices of material flow management, omnichannel distribution and retailing, maritime, logistics, procurement, and inventory management. Prerequisites: IT 800.

MARITIME PORTS LOGISTICS MGMT Courses

PORT 610. International Shipping and Supply Chain Management. 3 Credits.

Examines international freight transportation and terms for movement of international trade; focuses on improving supply chain relationships in the movement of international trade/directing the flow of information, materials and products. (cross-listed with MSCM 610).

PORT 611. International Maritime Transport. 3 Credits.

Examines the international business of shipping, commercial processes, maritime-related organizations, shipbuilding and repair, ship types and fleets, and commodity movement. Prerequisites: an undergraduate course in the international field such as MGMT 361, MGMT 462, or a similar graduate course.

PORT 612. Port Operations and Management. 3 Credits.

Covers role, functions, and types of international terminals and ports, including design and operation of general and specialized cargo handling facilities and offshore systems, port authorities, operational structures, and labor. Prerequisites: a graduate course in management such as MGMT 602 and a course in operations management.

PORT 613. International Maritime and Admiralty Law. 3 Credits.

International law of the sea, maritime jurisdiction, regulation of shipping, carriage of goods, marine insurance, salvage, marine environmental law, safety at sea, and the Oil Pollution Act of 1990 are covered, along with other maritime laws. Prerequisites: a basic law course.

PORT 614. Port Planning and Economics. 3 Credits.

Port planning and competition, ports and ocean container shipping, port impacts, port users in theory, port operator costing and pricing, port carriers and shippers, government and maritime institutions, dockworkers, port environment and port performance evaluation. Prerequisites: a course in microeconomics such as ECON 604.

PORT 615. Maritime Security and Risk Analysis. 3 Credits.

An overview of international and U.S initiatives to ensure the security of vessels, cargo, people, and infrastructure within the maritime domain. In addition to the impacts of regulatory requirements on maritime commerce, the course also addresses maritime threats to the international economy (including maritime piracy and maritime terrorism), maritime coalitions , and state-of-the-art techniques and tools for safeguarding oceanborne commerce. (cross-listed with MSCM 615).

PORT 616. Reverse Logistics and Sustainable Operations. 3 Credits.

This course explores the theoretical foundations of global supply chain partnerships and reverse logistics systems, and examines the practices, risks, and opportunities found in today's systems. Fundamental tools and techniques are used to provide insights and solutions on how to best organize, manage, and optimize such systems to achieve sustainable performance. (cross-listed with MSCM 616) Pre- or corequisite: MSCM 641 or PORT 611 or PORT 612 or instructor's permission.

PORT 617. Transportation Management. 3 Credits.

The course includes a review of the key elements of transportation such as: modes of transportation, transportation economics, and transportation technology and regulations. The relationships between intermediaries, carriers and shippers are discussed, as well as company roles and operations within the transportation field, transportation sourcing and management, and transportation risk management.

PORT 618. Shipbuilding and Ship Repair Business Management. 3 Credits.

Examines the shipbuilding and ship repair industry from the perspective of industry economics, industry financial management and repair operations and acquisition processes. Provides industry professionals with business management practices that shape the industry.

PORT 619. Marine Insurance. 3 Credits.

Examines the rise of Lloyd's and the London Insurance Market, the current maritime insurance market, principles of insurance and law, Hull Insurance Law, cargo insurance, general average and salvage insurance.

PORT 641. Supply Chain Management and Logistics. 3 Credits.

This course examines supply chain management, the integration of all activities associated with the flow of materials and information from product start to customers' receipt. Examples include order processing, warehousing, inventory management, transportation and logistics, and the costs and information systems supporting these activities. Particular attention will be paid to global logistics systems supporting port and maritime activities. Supply chain relationships can be improved through effective integration of management and via such technologies as the World Wide Web, electronic data exchange, and enterprise resource planning (ERP). (cross-listed with MSCM 641).

PORT 668. Directed Research/Port Internship. 1-3 Credits.

Practical field experience in international maritime, ports and logistics related challenges through supervised investigation and analysis of a problem or a working internship within the port-related arena. Prerequisites: PORT 611, PORT 612, PORT 613, and PORT 614.

PORT 695. Selected Topics in Maritime and Port Management. 3 Credits.

The advanced study of selected topics not offered on a regular basis. Prerequisites: PORT 611 or PORT 612.

PORT 697. Independent Study. 3 Credits.

Designed to provide the opportunity for independent study under the guidance of a member of the faculty.