

Systems and Operations Management

Chair: Richard E. Gunther

COLLEGE OF BUSINESS AND ECONOMICS

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EMERITUS FACULTY: Albert J. Kinderman, John R. Miller, Ernest M. Scheuer, Richard Trueman, Fadil H. Zuwaylif

DEPARTMENT ADVISORY COUNCIL: Svetlana Averbukh (Project Management Institute), Scott Barrella (Nestlé USA), William J. Bellows (Rocketdyne Propulsion and Power), Carole Elm (Rocketdyne Propulsion and Power), Harvey Ganz (H.R. Textron), Edward Garnett (Amgen), Bob Jacalone (Sierracin/Sylmar), Janice Kakazu (Teradyne), Michael Klapinsky (Lucich Farms), John Kozma (APICS - The Educational Society for Resource Management), Diane Kulisek (Spectrum Laboratories), David Steinberg (Pennant Foods Corporation), and Paula Stern (Harman Electronics).

DEGREE PROGRAMS:

Undergraduate Degrees Offered:

B.S., Business Administration

Option: Systems and Operations Management

Minor in Quality Management and Assurance

ACADEMIC ADVISEMENT: All department faculty will be available during their scheduled office hours to advise students during the semester as well as during registration periods.

THE MAJOR: In cooperation with other departments in the College of Business and Economics, the Systems and Operations Management Department offers a course of study leading to a Bachelor of Science Degree in Business Administration with an option in Systems and Operations Management. This option develops the skills required to manage the operations of business that produce goods or provide services.

The program focuses on developing skills for problem-solving, critical thinking, communication and the use of constantly changing technology. These skills are needed to deal with a variety of decisions made by managers in manufacturing, service, and government organizations. These encompass strategic long-range decisions (such as product, service and process design, facility location and layout, and job design) as well as operational decisions (such as project management, operations planning and scheduling, quality assurance, purchasing and inventory).

CAREERS: The option in Systems and Operations Management prepares students for careers in a variety of industries such as aerospace, electronics, automotive, health care, airlines, transportation, process industries, manufacturing, insurance, banking, government, education, and recreation. The range of positions includes quality management, project management, operations planning and scheduling, inventory and materials management, systems analysis and design, decision support systems and supply chain management.

REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE IN BUSINESS ADMINISTRATION

Check course descriptions for prerequisite courses. Prerequisites must be completed prior to enrolling in the course.

SPECIAL GRADE REQUIREMENTS: Transfer students should be aware that no grade lower than a "C" will be accepted on transfer from another institution to satisfy Department or College of Business and Economics requirements.

LOWER-DIVISION BUSINESS CORE (27 UNITS)

COMP	100	Computers: Their Impact and Use	3
BUS	105	Business Communications	3
ECON	160	Microeconomics Principles	3
ECON	161	Macroeconomics Principles	3
MATH	103 ¹	Mathematical Methods for Business	3
SOM	120 ²	Basic Business Statistics	3
ACCT	220	Introduction to Financial Accounting	3
ACCT	230	Introduction to Managerial Accounting	3
BLAW	280	Business Law I	3

¹ MATH 103 must be completed with a grade of "C" or better. Also satisfied by a "C" or better in MATH 150A or 255A.

² The 4-unit MATH 140 course also satisfies this requirement.

COMMON BSBA UPPER-DIVISION REQUIRED COURSES (16 UNITS)

BUS	302	Gateway Experience	3
BUS	302L	Gateway Experience Laboratory	1
FIN	303	Financial Management	3
MGT	360	Management and Organizational Behavior	3
MKT	304	Introduction to Marketing Management	3
BUS	497	Capstone	3

UPPER-DIVISION REQUIRED COURSES FOR THE OPTION IN SYSTEMS AND OPERATIONS MANAGEMENT (27 UNITS)

SOM	306	Operations Management	3
SOM	307	Data Analysis and Modeling for Business	3
IS	312	Information Systems for Business	3
SOM	464	Manufacturing Resource Planning	3
SOM	467	Quality Management and Control	3
SOM	485	Decision Support Systems	3
Communication Courses, select three units from the following:..... 3			
BLAW	308	Business Law II	3
ENGL	407	Composition and the Professions	3
PHIL	305	Business Ethics and Public Policy	3
COMS	443	Rhetoric of Business	3
Complete 6 additional units from the following:			
SOM	416	Global Operations Management	3
SOM	465	Computer-Based Models for Systems Analysis	3
SOM	466	Project Management	3
SOM	468	Managing for Service Excellence	3
SOM	498	Field Assignments and Reports Systems and Operations Management	3
SCM	447	Transportation and Logistics Management	3

GENERAL EDUCATION (36-39 UNITS)

Of the 48 units of the General Education requirement, 13 units are satisfied by the following courses: MATH 103 satisfies 3 units of the Mathematics requirement; ECON 160 and ECON 161 satisfy 6 units of Social Sciences; BLAW 280 satisfies 3 units of Lifelong Learning; and COMP 100 satisfies one additional unit.

ADDITIONAL UNITS: 15

These are unrestricted elective units.

TOTAL UNITS REQUIRED FOR THE DEGREE IN BUSINESS ADMINISTRATION: 120

MINOR IN QUALITY MANAGEMENT AND ASSURANCE

The Quality Management and Assurance minor allows non-Bachelor of Science in Business (BSBA) majors the opportunity to pursue secondary interests in Quality Management and Assurance. This minor is appropriate for both service and manufacturing organizations. The minor can be useful for careers in a variety of industries such as aerospace, electronics, automotive, health care, airlines, transportation, process industries, manufacturing, insurance, banking, government, education, and recreation.

REQUIRED COURSES (18 UNITS)

MKT	100	Conceptual Foundations of American Enterprise	3
SOM	120	Basic Business Statistics.....	3
or			
MATH	140	Introductory Statistics	4
SOM	306	Operations Management.....	3
SOM	467	Quality Management and Control	3
Each student must successfully complete any two of the following courses:			
PSY	150	Principles of Human Behavior	3
SOM	391	Statistical Analysis for Managers	3
SOM	416	Global Operations Management	3
SOM	466	Project Management	3
SOM	468	Managing for Service Excellence	3
MKT	304	Introduction to Marketing Management	3

GENERAL EDUCATION

MKT 100 satisfies three units of Lifelong Learning.

TOTAL UNITS IN THE MINOR: 18

**COURSE LIST-
SYSTEMS AND OPERATIONS MANAGEMENT****LOWER-DIVISION****SOM 120. BASIC BUSINESS STATISTICS (3)**

Prerequisite: MATH 103, or 105, or 150A, or 255A. Basic elements of statistics for students in business and economics. Descriptive statistics, elements of probability, probability distributions (including normal), sampling distributions, statistical inference for means and proportions (including estimation and hypothesis testing), simple linear regression and correlation. Applications of these topics in business and economics are emphasized. The course requires assignments in which students are required to explain the results of statistical computations using personal computer software.

UPPER-DIVISION**SOM 306. OPERATIONS MANAGEMENT (3)**

Prerequisite: SOM 120 or MATH 140 or SOM 391. Recommended Corequisite or Preparatory: BUS 302/L. Discusses operational issues facing organizations and introduces operations management concepts and techniques. Students develop skills necessary to improve productivity and quality of operations in both manufacturing and service organizations. Topics include international competitiveness, quality assurance, forecasting, design and control of operations systems, creating value for the customer, project management, and supply chain and inventory management.

SOM 307. DATA ANALYSIS AND MODELING FOR BUSINESS (3)

Prerequisite: SOM 120 or MATH 140 or SOM 391. Recommended Corequisite or Preparatory: BUS 302/L. Statistical methods and stochastic models to support decision making by managers. Topics include: exploratory data analysis, probability distributions and assessment, expected value, variation, estimation of means and proportions, hypothesis testing for one and several populations, F test, chi-square test, simple and multiple regression and correlation, decision trees, waiting lines, and simulation. Applications to business are emphasized. Written assignments based on computer software required.

SOM 391. STATISTICAL ANALYSIS FOR MANAGERS (3)

Prerequisite: MATH 150A or equivalent. Emphasizes the application of statistical methods to problems in business and information systems. Students learn how to obtain useful information from data, how to present this information to management in a meaningful way, and how to draw statistically valid conclusions. Topics include descriptive statistics, probability, discrete and continuous distributions, sampling theory, statistical inference (estimation and hypothesis testing), regression and correlation, statistical process control, data mining and data warehouses. Statistical software is used throughout the course to analyze business problems. Calculus will be used to derive major results. May be substituted for SOM 120.

SOM 416. GLOBAL OPERATIONS MANAGEMENT (3)

Prerequisite: SOM 306. Passing score on the Upper-Division Writing Proficiency Exam (WPE). BUS 302 and BUS 302L are prerequisites for BSBA majors. Operations management techniques to improve productivity of global operations. Topics include materials management, supply chain performance, global transportation and warehousing, facility location decision, international quality standards, operations automation, and application of optimization techniques in international operations. Involves case studies as well as software applications.

SOM 464. MANUFACTURING RESOURCE PLANNING (3)

Prerequisite: SOM 306 or MSE 304; Passing score on the Upper-Division Writing Proficiency Exam (WPE). BUS 302 and BUS 302L are prerequisites for BSBA majors. Planning and control systems for the management of production and operations. Topics include demand management and forecasting, Enterprise Resource Planning (ERP), supply chain management, inventory management, master production scheduling, Material Requirements Planning (MRP), capacity planning, just-in-time (JIT) production, activity sequencing, and other current topics. Includes a term project as well as an in-depth case study using integrated manufacturing planning and control software such as Manufacturing Resource Planning (MRP II) or Enterprise Resource Planning. (Crosslisted with MSE 464)

SOM 465. COMPUTER-BASED MODELS FOR SYSTEMS ANALYSIS (3)

Prerequisites: SOM 306, and SOM 307 or Math 340; Passing score on the Upper-Division Writing Proficiency Exam (WPE). BUS 302 and BUS 302L are prerequisites for BSBA majors. Emphasizes the application of computer-based models to systems analysis, including applications to business operations, resource allocation, distribution planning, and waiting line management. Topics to be covered include simulation, linear programming, and other optimization models. Students learn how to implement the entire computer modeling process, including data collection, model development, analysis of outputs, and how to improve existing system configurations and/or decision rules. The focus is on real-world applications, spanning different functional areas of business. Involves case studies and culminates with a team project.

SOM 466. PROJECT MANAGEMENT (3)

Prerequisite: SOM 120 or Math 140 or SOM 391. Passing score on the Upper-Division Writing Proficiency Exam (WPE). BUS 302 and BUS 302L are prerequisites for BSBA majors. Introduction to the operations management of small, intermediate, and large projects. The course surveys project organization, staffing, planning and scheduling (PERT/CPM), control, budgeting, and quality. The project environments, including international issues, are explored. Various project management software packages are utilized.

SOM 467. QUALITY MANAGEMENT AND CONTROL (3)

Prerequisite: SOM 306 or MSE 304. Passing score on the Upper-Division Writing Proficiency Exam (WPE). BUS 302 and BUS 302L are prerequisites for BSBA majors. Application of total quality control for improvement of products and services, including both statistical techniques and managerial approaches. Control charts, quality costs, responsibility for quality, quality at the source, ethical issues, ISO 9000. International differences in philosophy of quality.

SOM 468. MANAGING FOR SERVICE EXCELLENCE (3)

Prerequisite: SOM 306. Passing score on the Upper-Division Writing Proficiency Exam (WPE). BUS 302 and BUS 302L are prerequisites for BSBA majors. Techniques learned will benefit service managers and entrepreneurs by improving skills in managing efficiency and quality. Students will learn concepts and tools useful for service management. Topics include service assessment, improvement and innovation, yield management, service technologies (including management of Internet businesses), quality and productivity, and new service development. The course involves case studies as well as software applications.

SOM 485. DECISION SUPPORT SYSTEMS (3)

Prerequisites: IS 211 or both SOM 306 and IS 312. Passing score on the Upper-Division Writing Proficiency Exam (WPE). BUS 302 and BUS 302L are prerequisites for BSBA majors. Concepts, development and application of Decision Support Systems (DSS) and related management support systems (Executive Information Systems and Expert Systems). Design framework and Management Science models for DSS. DSS development process and tools, user interface, evaluation, and implementation. Study of recent development in model-based DSS applications with knowledge base enhancement. Class project designing prototype management support systems will be required.

SOM 496A-Z. EXPERIMENTAL COURSES SYSTEMS AND OPERATIONS MANAGEMENT (3)

Passing score on the Upper-Division Writing Proficiency Exam (WPE). BUS 302 and BUS 302L are prerequisites for BSBA majors. Course content to be determined. (See Schedule of Classes and Enrollment Guide.)

SOM 498. FIELD ASSIGNMENTS AND REPORTS SYSTEMS AND OPERATIONS MANAGEMENT (1-6)

Passing score on the Upper-Division Writing Proficiency Exam (WPE). Individual study pertaining to present or future career. Student must obtain approved employment. Consultation with employer and instructor determines program. A maximum of 12 units may be earned by combining Field Assignments and Reports (SOM 498), and Independent Study (SOM 499). An Academic Internship course.

SOM 499. INDEPENDENT STUDY SYSTEMS AND OPERATIONS MANAGEMENT (1-3)

Prerequisites: Consent of department chair and consent of an instructor to act as sponsor. Passing score on the Upper-Division Writing Proficiency Exam (WPE). BUS 302 and BUS 302L are prerequisites for BSBA majors. In order to do an Independent Study assignment in the College of Business and Economics, a student must have at least a 3.0 overall grade point average, a 2.0 grade point average in all major courses, and a 2.0 grade point average in his/her option courses. A student who does not meet these grade point requirements will not receive credit for any SOM 499 that he/she may take. Admission is based on evidence of ability to pursue independent study in-depth and on approval of a project submitted at the time of registration. Regular progress meetings and reports are required throughout the semester. Completion of the project is required before credit may be received. Enrollment in Independent Study is not allowed for the purpose of substitution for an existing course.

GRADUATE COURSES

Graduate courses are open only to selected classified and conditionally classified graduate students who have attained an acceptable score on the GMAT. To determine their eligibility for enrollment, students majoring in areas other than business must consult with the Director of Graduate Programs of the College of Business and Economics.

SOM 591. STATISTICS AND STOCHASTIC MODELS FOR MANAGERS (3)

Prerequisite: Permission of the Director of Graduate Programs. Statistical methods and stochastic models to support decision making by managers. Topics include: exploratory data analysis, probability distributions and assessment, expected value, variation, estimation of means and proportions, hypothesis testing for one and several populations, F test, chisquare test, simple and multiple regression and correlation, time series and forecasting, decision trees, waiting lines, and simulation. Applications in service organizations and small businesses are provided along with applications for production organizations and large businesses. A key element is a group project involving the application of one or more course topics to a current business problem.

SOM 666. PROJECT PLANNING AND POLICY (3)

Prerequisite: SOM 591 or MSE 404 or 602. The application of project planning methodology and modeling to problems in business. Extensive use will be made of the case method. Topics include project planning, scheduling, PERT/CPM, budgeting, Activity-Based Costing (ABC), and project management software. International issues will be explored.

SOM 667. TOTAL QUALITY MANAGEMENT (3)

Prerequisite: SOM 591 or MSE 404 or 602. Covers the meaning and the application of Total Quality Management (TQM) in production and service organizations. The underlying quality philosophies of Deming, Taguchi, and others that have inspired the development of TQM are also covered. Application of these philosophies to current quality issues, namely responsibility for quality, role of inspection, supplier certification programs, ISO 9000, the Baldrige Award, just-in-time programs, and ethical issues. Use of quality improvement tools such as control charts, Pareto charts, cause and effect diagrams, process capability, and design of experiments. International differences in quality. Actual business examples are introduced throughout the course.

SOM 685. DECISION SUPPORT AND APPLIED EXPERT SYSTEMS (3)

Prerequisite: SOM 591 or MSE 404 or 602. Survey of applications, scope and recent development of Decision Support Systems (DSS) and related management support systems (Executive Information Systems and Expert Systems). Conceptual framework, design process, and managing the initiation, evolution and implementation of management support systems. User involvement, evaluation, and organizational integration. Decision-oriented DSS with knowledge base enhancement addressing real-world application will be required as a class project.

SOM 686. SEMINAR IN INTERNATIONALLY COMPETITIVE OPERATIONS MANAGEMENT (3)

Prerequisites: SOM 591, or both 306 and 307. Subjects include: productivity and global competitiveness of modern enterprises, diagnostic studies of production strategies, managerial implications of advanced operations technologies of world-class organizations (Flexible Manufacturing Systems, Computer Integrated Manufacturing, Statistical Process Control, and Total Quality Management). Also covered are in-depth case analyses of progressive U.S. and International firms addressing these issues. A team case project is a key course requirement.

SOM 699. INDEPENDENT STUDY SYSTEMS AND OPERATIONS MANAGEMENT (3)

Prerequisites: Permission of graduate advisor and department chair. No more than 6 units of Independent Study may be taken in any 1 department, and no more than 6 units may be taken in the College of Business without prior approval of the Dean. Only those graduate students who have a current 3.0 grade point-average may register in a 600-level independent study course.

Note: See Graduate Business Interdepartmental Courses for GBUS 696D, 697D, and 698D