# Management

## 6.00-6.99

### Faculty

Professors: R. Carter, Karger, Loux, H. Martin, Merrill, Van Winkle  
Associate Professors: Beach, Deming, Jack  
Assistant Professors: Kirk, R. Smith  
Instructor: Wallace  
Lecturers: Barrow, Donsbach, Frament, Koplovitz, Pattison, Schaefer

### First Year

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<tr>
<th>First Term</th>
<th>Second Term</th>
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<tr>
<td>11.01 Calculus I</td>
<td>11.02 Calculus II</td>
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<tr>
<td>4.01 Chemistry I</td>
<td>4.02 Chemistry II</td>
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<td>16.11 Physics I (2)</td>
<td>16.12 Physics II (2)</td>
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<tr>
<td>9.11 Uses of Language</td>
<td>9.12 Introduction to Literature</td>
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<tr>
<td>Course specified</td>
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<tr>
<td>by School or Department (1)</td>
<td>by School or Department (1)</td>
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<tr>
<td>15.10 Physical Education I</td>
<td>15.15 Physical Education II</td>
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<tr>
<td>Professional Orientation</td>
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<tr>
<td>or ROTC 2 or 3-4 or 5</td>
<td>or ROTC 2 or 3-4 or 5</td>
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### Second Year

<table>
<thead>
<tr>
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<tbody>
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<td>11.04 Calculus IIIa</td>
<td>6.43 Marketing Principles</td>
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<td>16.21 Physics III (2)</td>
<td>16.22 Physics IV (2)</td>
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<tr>
<td>6.20 Accounting and Cost Control</td>
<td>6.32 Work Methods and Standards</td>
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<tr>
<td>6.25 Statistical Analysis</td>
<td>66.05 Economic Analysis II</td>
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<td>66.04 Economic Analysis I</td>
<td>Social Science Elective (4)</td>
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<tr>
<td>15.20 Physical Education III</td>
<td>15.25 Physical Education IV</td>
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<td>OR ROTC</td>
<td>OR ROTC</td>
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### Third Year

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<th>First Term</th>
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<tbody>
<tr>
<td>63.22 General Psychology</td>
<td>T6.26 Law in Management and</td>
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<tr>
<td>6.22 Business Organization and</td>
<td>Engineering</td>
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<tr>
<td>Financial Management</td>
<td>6.48 Marketing Management</td>
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<tr>
<td>——— Mathematics and Information Elective (3)</td>
<td>6.52 Personnel Management</td>
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<tr>
<td>6.37 Production Planning and</td>
<td>6.11.53 Data Processing</td>
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<tr>
<td>Control I</td>
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<tr>
<td>——— Social Science Elective (4)</td>
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Fourth Year

First Term

6.57 Labor and Industrial Relations 3-4

Management Elective 3-3

Humanities Sequence 3-3

Individual Development Elective (5) 3-3

Individual Development Elective (5) 3-3

Social Science Elective (4) 3-3

Second Term

T6.61 Management Seminar 3-4

Management Elective or Thesis 3-3

Humanities Sequence 3-3

Individual Development Elective (5) 3-3

Individual Development Elective (5) 3-3

Elective (5) 3-3

1 All Bachelor of Science in Management students will take 66.00, History, in the first term, and 66.02, Economics, in the second term.

2 In place of Physics I, II, III, IV, students may substitute General Physics (16.13, 16.14) plus a sequence of two courses in the Natural Science area (e.g., Chemistry, Biology, Geology).

3 To be chosen from the following: T6.29, T6.30, T6.24, T11.81.

4 To be chosen from the fields on Anthropology, Political Science, Psychology, Sociology.

5 Toward the end of the Junior year the student must prepare for his advisor’s approval a “plan of study” indicating courses planned and reasons for choice; these courses to be elected from one or more of the following areas: Natural Science and Engineering; Mathematics; Information and Control Systems; or Administration and Management.

Management Electives

T6.24 Accounting for Management Control 3-3

T6.29 Advanced Statistics 3-3

T6.30 Analytical Methods in Management 3-3

T6.31 Management Problems Under Regulation and Taxation 3-3

T6.33 Work Measurement 3-3

T6.35 Production Planning and Control II 3-3

T6.36 Work Methods Planning 3-3

T6.48 Marketing Management 3-3

T6.49 Market Research 3-3

T6.53 Personnel Relations 3-4

T6.55 Personnel Management and Industrial Relations 4-4

T6.56 Labor Relations 3-3

T6.66 Capital Investment Decision Making 3-3

T6.72 Investment Analysis 3-3

T6.73 New Product Problems 3-3

T11.81 Introduction to Mathematical Models of Operations Research I 3-3

T11.82 Introduction to Mathematical Models of Operations Research II 3-3

Courses for Undergraduates

(For the explanation of course designations, see page 52.)

6.20 Accounting and Cost Control—Financial and cost accounting theory and practice needed by management for the planning and controlling of operations. System design for the accumulation of accounting data to facilitate utilization by management. Distinction between capital and revenue expenditures. Design and interpretation of financial reports. The theory of cost accounting with emphasis upon the control of costs through standards and budgets. Analysis of cost-price-volume relationship. Special cost studies for particular purposes. 3 credit hours

6.22 Business Organization and Financial Management—Legal and financial principles, techniques and problems of organizing and financing the long and short term requirements of business concerns. Financial management: financial planning and budgeting on the basis of forecasts of capital needs, operating revenues and expenditures. Budgets as control devices. 4 credit hours

6.24 Accounting for Management Control—Principles of accounting systems designed to provide management with data for optimizing earnings within the framework of the company and its economic environment. Standard costs, their design, determination and application. The interpretation and implementation of cost variances. Profit volume and product mix relationships. Application of differential costs. Capital equipment and operating budgets. Lease or buy decisions. Evaluation of performance by areas of responsibility. Design of accounting reports. Prerequisite: 6.20 or 6.28. 3 credit hours

6.25 Statistical Analysis—Statistical theory and its application to the problems of economics, business and industry. Theory and technique: analysis of frequency distributions, sampling and the determination of significant differences in correlation. Applications: index numbers, time series and the analysis of economic conditions; inspection and quality control; interpretation of the results of laboratory, factory and market investigation. 3 credit hours

6.26 Law in Management and Engineering—The law of contracts, with special attention to the writing of engineering specifications; the law of agency and also of partnership; the law governing liabilities to the public or to employees; the law of conveyance and of mortgages; property and of transferring title to goods; a study of the law and procedure involved in civil suits, including the law of torts. 3 credit hours

6.27 Statistical Methods—Development of methods of determining valuations and earnings. Methods applicable to the manufacturing enterprise for the determination of the incidence of various elements of cost upon activities and units of product. The control of costs through the establishment of standards and the interpretation of variances. The dynamic aspects of industrial costs through the analysis of volume-cost-profit relationships. Factors and methods in the evaluation of alternatives associated with decisions relative to the acquisition of buildings and equipment. 3 credit hours

6.29 Advanced Statistics—A continuation of 6.27, emphasizing the assumptions and limitations involved in the application of statistical techniques. Prerequisite: 6.27. 3 credit hours

6.30 Analytical Methods in Management—The construction of mathematical models as the representation of management problems. Statistical inventory control and the determination of economic lot size in production. Mathematical programming applied to scheduling and allocation problems. Waiting line theory applied to the planning of facilities. Prerequisite: 6.23 or 6.27. 3 credit hours
T6.31 Management Problems Under Regulation and Taxation—Legal aspects of corporate mergers and acquisitions, appraisal, financing, integration of operations, patents, copyrights, trademarks: nature and purpose, procedure, policy. Regulation of trade practices and prices. Taxation: types and characterizations of principal business taxes, their incidence, their influence upon business decisions. 3 credit hours

6.32 Work Methods and Standards—Methods: principles of analysis for improving work and data flow; coordination of men and machines or small work groups; simplification and standardization of individual work methods, design of work places, machine controls and displays for maximum human effectiveness and productivity. Standards: work measurement principles; stopwatch and predetermined time data practices; work sampling. Construction and application of standard time data. Evaluation of assumptions underlying current techniques. Social and individual reactions to work improvement; planning for introduction of changes. Prerequisite: T6.27. 3 credit hours

T6.33 Work Measurement—This course provides the opportunity to obtain a much fuller understanding of the managerial problem of determining standards for every kind of job or operation involved, and for development of some degree of skill in using measurement methods and techniques. By means of wide reading of the literature the student is required to evaluate critically various theories and systems of work standards and measurement. With the cooperation of local industrial plants he is given a project upon which to work, in the course of which various methods of measurement are used and discussed. Study of principles of standard data for work elements completes the course. Prerequisite: 6.32. 3 credit hours

T6.35 Production Planning and Control II—This course is designed to give opportunity for intensive and, to some degree, advanced study of both production planning and production control. Again with the cooperation of industrial plants in the area students are given an actual problem in planning — process flow, facilities, layout. Principles of organization developed elsewhere are applied to the function of production. Principles of managerial control are studied and various systems of control are evaluated critically as to applicability not only to different types of production but also to maintenance activities, to engineering and to research and development. Prerequisite: 6.37. 3 credit hours

6.37 Production Planning and Control I—Production Planning: simplification and standardization in product design; product cost analysis; process and systems analysis, simplification and development; plant and work area layout; flow process layout, simulation and automation. Production Control: control concepts, standards and feedback, programming and scheduling, inventory, control and economic ordering, production scheduling and control criteria and systems recommended: 6.32 (for management engineering students.) 4 credit hours

6.43 Marketing Principles—Consumer demand analysis; development of static demand relations; demand, attitudes and motivation; the purchase decision, innovation, fashion and social organization and communication as factors in demand; consumer demand derived from production functions; input-output analysis derived from capital flows and investment decisions. Application to market; analysis of the sales forecasting; elementary study of market structure; adaptive behavior of the firm; pricing, product development, and promotion decision. Case analysis is employed for illustrative examples of theory discussed. Prerequisite: 6.25 or equivalent. 3 credit hours

6.47 Market Research—Development of information on industrial and final consumer behavior through studies of various data series and surveys. Examination of non-normal distributions and design of samples; use of regression and co-variance analysis and non-parametric statistics in data analysis and design of experiments; design of survey instruments including panel operations and employment of thematic and projective techniques. Application of these in a practical field project and report is an important portion of the course. Prerequisites: 6.25 or equivalent, 6.43. 3 credit hours

6.48 Marketing Management—Theories of market behavior and nature of marketing organization. Application of game theory to competitive position and structure. Development of public relations, product, advertising, and trade channel policies. Market planning, integration and economy in selling activities, testing of market plans: the marketing function in the enterprise and society. Prerequisite: 6.43. 3 credit hours

6.52 Personnel Management—Organization and management of people in industry, business or government to achieve the highest levels of the organization and to motivate and provide for individual and group satisfactions. Organization planning and development; job analysis; development of wage and incentive systems; selection of employees; employee appraisal programs; training and development of employees and managers. Industrial safety. Employee services and benefits. 3 credit hours

6.53 Personnel Relations—Advanced study in organization, management, and utilization of manpower. Bases of sound personnel management: human motivations; organization of work; analysis and evaluation of jobs and positions; appraisal of individual performance and abilities. Use of basic principles and methods to develop job satisfaction, morale, and productivity; their use in placement and training, in improving security and status, in handling problems of discipline and grievances, in leadership. Incentives, both monetary and non-monetary; pensions, health insurance. Prerequisite: 6.52 or equivalent. Fall term. 3 credit hours

6.55 Personnel Management and Industrial Relations—A special course comprising certain topics selected from these fields: job evaluation and service rating, principles and general applications, personnel placement, promotion; training personnel, especially foremen. Labor relations, both with individuals and organized groups: principles and general applications with some attention to collective bargaining, contracts, collective bargaining, contracts. 3 credit hours

6.56 Labor Relations—Advanced study of major problems in labor-management relations in companies where a substantial percentage of the employees is organized. Labor law: study of important principles in federal and in state statutes and in cases and decisions of courts and administrative agencies. Collective bargaining: study of various types of clauses in labor contracts; contract negotiation—principles, strategy and techniques. Problems in operating under a contract. Dispute settlement. Current issues and problems in labor relations. Prerequisite: 6.57 or equivalent. Spring term. 3 credit hours

6.57 Labor and Industrial Relations—Human relations in group relationships, leadership. Federal and state laws pertaining to employment relationships: wages and hours, workmen's compensation, insurance. Relations among employees, management, and unions in industry and in business. Labor unions, their development, organization, management, and policies. The law affecting labor-management relations: development of the law; principles: interpretation and applications of the law. Collective bargaining: negotiation and administration of the agreement; the issues of collective bargaining. 3 credit hours

6.61 Management Seminar—Application of principles and techniques of management in an actual business or industrial concern. Under the guidance of an instructor there is organized and departmentalized for management. Each major functional division (production, marketing, personnel, etc.) with its departments is studied. The student is required to analyze and understand how a given concern applies specific principles of management in its own particular way. Plant visits and lectures by persons in charge of the various departments and divisions provide the basic information. Prerequisite: All required courses in management. 3 credit hours
T6.66 Capital Investment Decision-Making—Techniques for decision-making for capital investment alternatives; time-value of money and the concept of equivalence; multiple alternatives, replacement and retirement criteria; incremental and sunk costs; capital budgeting; cost of capital; problems of uncertainty in forecasts and planning; income tax and depreciation effects. 3 credit hours

T6.72 Investment Analysis—Analysis of private and public securities from the point of view of corporate financial administrators and individual investors. Among material studied will be: sources of investment information, methods of appraising industries and companies, characteristics of the various types of securities, the function of investment banks and securities markets, taxation and investments, problems of portfolio management, as well as appraisal and valuing of companies in connection with mergers and acquisitions. 3 credit hours

T6.73 New Product Problems—Major problems of management in developing new products. Product planning. Organization of the new product development function. Sources of ideas for new products. Costing and pricing. Organization and management of research and engineering functions, patent law, sales, market research and advertising. 3 credit hours

6.99 Thesis 3 credit hours

Note: Attention is directed to the following courses offered by the Department of Mathematics: T11.81 Introduction to Mathematical Models of Operations Research I, and T11.82 Introduction to Mathematical Models of Operations Research II.

Description of G-courses will be found in the Graduate Catalog.