

BUS 150, BUS 154, BUS 155, BUS 156,  
BUS 157, BUS 159, BUS 163, BUS 173

### Marketing:

- a) Required: BUS 103
- b) Three additional upper-division Business Administration marketing courses selected from the following: BUS 111, BUS 112, BUS 113, BUS 114, BUS 115, BUS 116, BUS 117, BUS 118, BUS 119, BUS 124, BUS 126, BUS 151, BUS 152, BUS 159, BUS 164

### Operations and Supply Chain Management:

- a) Required: BUS 104, BUS 105
- b) Two additional upper-division Business Administration operations and supply chain management courses selected from the following: BUS 122, BUS 123, BUS 124 (highly recommended), BUS 125, BUS 126, BUS 127/STAT 127, BUS 128, BUS 129 (highly recommended), BUS 130, BUS 173

## Lower-Division Courses

**BUS 001 Personal Finance** (4) Lecture, 3 hours; workshop, 1 hour. Prerequisite(s): none. Provides students with tools necessary to analyze the decision to finance their UCR education with student loans. Topics include personal budgets, student loans, interest rates, career planning, auto and health insurance, and other issues related to financing higher education. Credit is awarded for only one of BUS 001 or BUS 001H.

**BUS 001H Personal Finance** (4) Lecture, 3 hours; workshop, 1 hour. Prerequisite(s): admission to the University Honors Program or consent of instructor. Honors course corresponding to BUS 001. Provides students with tools necessary to analyze the decision to finance their UCR education with student loans. Topics include personal budgets, student loans, interest rates, career planning, auto and health insurance, and other issues related to financing higher education. Satisfactory (S) or No Credit (NC) grading is not available. Credit is awarded for only one of BUS 001 or BUS 001H.

**BUS 010 Introduction to Business** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. Provides an overview of the field of business administration. Explores business goals and strategies, functional areas of business and their integration in policy and decision making, social responsibility, computers in business, and business trends and challenges including the international dimension.

**BUS 020 Financial Accounting and Reporting** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): none. A study of the concepts and techniques for measurement and communication of financial information. Includes interpretation of financial statements.

**BUS 021 Generation of Financial Accounting Information** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BUS 020 with a grade of "C-" or better. A detailed study of the process of measuring, recording, and communicating financial accounting information.

## Upper-Division Courses

**BUS 100 Management Communication** (4) Lecture, 3 hours; discussion, 1 hour.

Prerequisite(s): upper-division standing. Covers the theory and practice of communication in a business environment. Topics include written and oral presentations, interpersonal skills, teamwork in a multicultural setting, and effective use of communication technologies.

**BUS 100W Management Writing and Communication** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ENGL 001B with a grade of "C" or better; upper-division standing or consent of instructor. Focuses on writing and communication methods in a business environment. Topics include written and oral presentations, interpersonal skills, teamwork in a multicultural setting, and effective use of communication technologies. Fulfills the third-quarter writing requirement for students who earn a grade of "C" or better for courses that the Academic Senate designates, and that the student's college permits as alternatives to English 001C.

**BUS 101 Information Technology Management** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 008 or equivalent; upper-division standing. Topics include computer hardware and software, business data processing, databases, telecommunications, systems analysis and design, cost-benefit analysis, and systems applications in business. Includes database and spreadsheet projects.

**BUS 102 Ethics and Law in Business and Society** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing. Analyzes the legal, ethical, political, and social aspects of the business environment. Topics include ethics and social responsibility, government regulation, corporate governance, and global management issues.

**BUS 103 Marketing and Distribution Management** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. An introduction to the role of marketing in society with emphasis on concepts, marketing methods, and institutions.

**BUS 104 Decision Analysis and Management Science** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CS 008 or equivalent; STAT 048 or STAT 100A or equivalent; upper-division standing. A survey of deterministic and probabilistic models for decision making. Topics include linear programming and extensions, networks, dynamic programming, decision trees, queuing models, and simulation. Explores the application of these models in decision making. Emphasizes use of the computer. Cross-listed with STAT 104.

**BUS 105 Production and Operations Management** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BUS 104/STAT 104 or equivalent. Deals with the issues of design and control of production systems in manufacturing and service organizations. Covers product and process selection, capacity planning, location and layout design, project and job scheduling, inventory control, material planning, and quality control.

**BUS 106 Introduction to Financial Management** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BUS 020; ECON 002 or ECON 002H; ECON 003 or ECON 003H; ECON

101 or STAT 048; upper-division standing. An introduction to financial management and financial institutions. Includes time value of money, stock and bond valuation, risk and return, portfolio theory, capital budgeting, capital structure, dividend policy, and financial databases. Cross-listed with ECON 134.

**BUS 107 Organizational Behavior** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): upper-division standing. Studies organizations from the behavioral science perspective. Topics include motivation, leadership, communication, groups, organization structure and culture, and control in complex organizations.

**BUS 108 Financial Evaluation and Managerial Analysis** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BUS 020 or equivalent; upper-division standing. Study of accounting data used for managerial planning and controlling of business operations. Provides an introduction to manufacturing operations and cost accounting systems, cost-volume-profit analysis, relevant costing, standard costing and variance analysis, as well as budgeting.

**BUS 109 Competitive and Strategic Analysis** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): senior standing in Business Administration. An integrative course which provides an understanding of strategic decision-making processes in organizations, the interrelationships among functional areas, and how decision making is affected by internal and external environments. Teamwork and case studies are emphasized.

**BUS 110 Introduction to Data Mining and Visual Analytics** (4) Lecture, 2 hours; laboratory, 1 hour; extra reading, 2 hours; written work, 3 hours. Prerequisite(s): BUS 101. Covers the processes, methodologies and practices used to transform data into useful information to support business decision-making. Offers an opportunity to gain insights and hands-on-experience with basic functionality of industry standard data mining and visualization software tools such as Tableau, JMP and IBM's Watson Analytic.

**BUS 111 Services Marketing** (4) Lecture, 3 hours; outside project, 3 hours. Prerequisite(s): BUS 103. Covers the marketing of services and ideas. Focuses on marketing for service organizations such as hotels, hospitals, and banks. Provides understanding of the broader role of service provision for both service firms and goods firms.

**BUS 112 Consumer Behavior** (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 103. Provides a basic understanding of the general models of choice behavior as it relates to marketing decision making. Emphasis is on motivation, perceptions, learning, and social forces as they impact on the choice process.

**BUS 113 Marketing Institutions** (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 103. Covers the concepts and strategies relating to the delivery of consumer goods and services, the main topic being the management of marketing activities within the channels of distribution, especially in retail and wholesale institutions.

**BUS 114 Marketing in a Global Environment** (4) Lecture, 3 hours; outside research, 2 hours; term paper, 1 hour. Prerequisite(s): BUS 103. Covers the theory and practice of marketing across national borders. Provides an understanding of global marketing environments and examines the development of marketing strategies to maximize growth of global companies.

**BUS 115 Marketing Research** (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): BUS 103. Covers types and sources of marketing information, the marketing research process, and techniques of data collection and analysis, including consumer and customer surveys and test marketing. Examines both quantitative and qualitative research with analysis of the values and limitations of data. Emphasis is placed on evaluation and interpretation of results.

**BUS 116 Pricing Strategy and Management** (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): BUS 103 or consent of instructor. Integrates theory and practice into a framework for making pricing decisions. Prepares for addressing strategic and tactical pricing issues. Topics include customer demand and price sensitivity, psychological reaction to price, segmented pricing, price promotions, bundling, online pricing, dynamic pricing, competitive reaction, profitability analysis, and pricing strategy development.

**BUS 117 Advertising and Integrated Marketing Communications** (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 103. Covers the basic concepts and functions of advertising, with emphasis on media selection, message design, and effectiveness measurement.

**BUS 118 Digital Marketing** (4) Lecture, 3 hours; outside project, 3 hours. Prerequisite(s): BUS 103. An introduction to the role of electronic commerce in business-to-consumer and business-to-business marketing. Covers the application of traditional marketing principles to an electronic commerce environment and new marketing techniques made possible by this environment.

**BUS 119 Data-Driven Marketing** (4) Lecture, 3 hours; individual study, 2 hours; extra reading, 1 hour. Prerequisite(s): BUS 103. Examines marketing cases and develops data analytical skills for managerial decision making. Utilizes statistical software to manage, display, and analyze marketing information, including consumer survey, relationship management, scanner, and socioeconomic data. Topics include attitude measurement, market segmentation and targeting, competition analysis, market performance analysis, and store location choice.

**BUS 120 Global Strategy** (4) Lecture, 3 hours; extra reading, 1 hour; term paper, 2 hours. Prerequisite(s): BUS 109 or equivalents. Introduces global strategic management and how to win the global marketplace. Covers topics including the challenges of creating the right kind of organization, motivating a global workforce, entering new markets, creating global competitive advantage, and building a global mindset.

**BUS 121 Employee Benefits** (4) Lecture, 3 hours; outside research, 1 hour; individual study, 1 hour; written work, 1 hour. Prerequisite(s): BUS 010 or equivalent. Provides students with a foundation of knowledge regarding employee benefits and the design and management of employee benefit plans. Current issues and recent developments in the ever-changing field regarding employee benefits-related topics.

**BUS 122 Linear Programming with Applications** (4) Lecture, 3 hours; homework problems and projects, 3 hours. Prerequisite(s): BUS 104/STAT 104 or equivalent. Investigates many real-life decision problems that give rise to linear programs with special structures, network flow problems, integer programs, and large-scale programs. Presents theory and algorithms of these models applied to various decision problems in management with use of computer packages.

**BUS 123 Spreadsheet Modeling for Decision-Making** (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): BUS 104/STAT 104 or consent of instructor. Introduces the fundamental techniques of using data to make informed management decisions in the presence of uncertainty of advanced Microsoft Excel functionality. Uses spreadsheet modeling for decision analysis and optimization applications. Enhances and reinforces analytical skills and the ability to intelligently use information for making decisions under uncertainty.

**BUS 124 Business Analytics** (4) Lecture, 3 hours; term paper, 1 hour; written work, 2 hours. Prerequisite(s): STAT 048 or consent of instructor. Provides fundamental concepts and tools needed to understand the emerging role of business analytics in organizations. Applies basic business analytics tools in a spreadsheet environment. Introduces market-leading techniques that help identify and manage key data from business processes. Provides the essential tools required for data mining and business process re-engineering.

**BUS 125 Simulation for Business** (4) Lecture, 3 hours; extra reading, 1.5 hours; outside projects, 1.5 hours. Prerequisite(s): BUS 104/STAT 104, STAT 048, or equivalents. Introduces simulation as a tool for analyzing complex systems. Analyzes and discusses the theory and practice of modeling through simulation. Topics include modeling uncertainty and collecting input data, Monte Carlo simulation techniques, model verification and validation, and sensitivity analysis. Examines applications in finance, marketing, operations, and supply chain management.

**BUS 126 Practical Business Forecasting** (4) Lecture, 3 hours; assigned problems, 3 hours. Prerequisite(s): STAT 048 or STAT 100A or equivalent; upper-division standing. Teaches how forecasts are developed and utilized. Emphasizes common forecasting methods used in business and uses specific cases to illustrate these methods. Applications to business include forecasting sales, production, inventory, macroeconomic factors such as interest and exchange rates, and other aspects of both short- and long-term business planning.

**BUS 127 Introduction to Quality**

**Improvements** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): STAT 048 or STAT 100A or consent of instructor. Explores Deming's 14 points for management, graphical methods, fishbone diagram, Pareto analysis, control charts for attributes and variables, cusum and moving average charts, process-capability, economic design, acceptance sampling, Taguchi method, parameter design, tolerance design, reliability, hazard rate, censoring, and accelerated life testing. Cross-listed with STAT 127.

**BUS 128 Project Planning and Control** (4) Lecture, 3 hours; assigned problems and field project, 3 hours. Prerequisite(s): BUS 104/STAT 104 or consent of instructor. Covers issues related to planning and control. Explores the differences between projects and production systems; breakdown structures of project organization and work; sequencing and budgeting; resource management; project evaluation and control; and use of current project management software. Includes application of methodology to a real-world project.

**BUS 129 Supply Chain Management** (4) Lecture, 3 hours; assigned problems, 3 hours. Prerequisite(s): BUS 105. Focuses on management of the distribution of goods and services from plants, ports, and vendors to customers. Key topics include transportation, inventories, warehousing, materials handling, order processing, packaging, pricing, customer service standards, and warehouse and retail location.

**BUS 130 Supply Chain Modeling** (4) Lecture, 3 hours; homework problems and preparation for presentations, 3 hours. Prerequisite(s): BUS 104/STAT 104 or BUS 105. Covers the modeling and analysis of decision problems in supply chain management. Includes logistics network design, integration of supply chain operations, and supply and sourcing decisions. Utilizes the electronic spreadsheet as the principal device for building models, as well as addresses the concepts of effective spreadsheet design and use.

**BUS 131 Fixed-Income Securities** (4) Lecture, 3 hours; outside research, 1 hour; extra reading, 2 hours. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Covers fixed-income securities and basic analytical tools in fixed-income markets. Topics include relative pricing of fixed-income securities, yield-curve estimation, securities with embedded options, and trading strategies. Utilizes instruments such as interest rate swaps, mortgage-backed securities, and credit derivatives.

**BUS 132 Foundations of Finance** (4) Lecture, 3 hours; written work, 3 hours. Prerequisite(s): BUS 020; ECON 101 or STAT 048; one of the following: ECON 102, ECON 103, ECON 104A or ECON 105A; upper-division standing. Covers the mathematical and economic foundations of finance. Topics include intertemporal production and consumption, fisher separation, risk and return, two-fund separation, standard asset-pricing models, arbitrage, derivatives concepts and parity relationships, and international finance parity relationships.

**BUS 134 Corporate Finance** (4) Lecture, 3 hours; term paper, 2 hours; extra reading, 1

hour. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Explores capital budgeting under uncertainty, cost of capital, capital structure, and basics of corporate governance. May cover other related topics. Provides an understanding of the theoretical issues related to these topics. Emphasizes formulating optimal financial decisions. May include case-method teaching and data analysis.

**BUS 135 Corporate Financial Policy** (4) Lecture, 3 hours; term paper, 2 hours; extra reading, 1 hour. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Covers application of option pricing in corporate finance, financial planning, working capital management, mergers and acquisitions, and risk management. May cover other related topics. Emphasizes formulating optimal financial decisions. May include case-method teaching and data analysis.

**BUS 136 Investments: Security Analysis and Portfolio Management** (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Provides a thorough study of the investment process. Topics include portfolio selection, asset-pricing models, term structure, and portfolio performance valuation. Discusses empirical uses of securities data and empirical issues in testing asset pricing models.

**BUS 137 Investments: Derivatives Markets** (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Covers option market characteristics, option pricing theories, and speculative strategies used in local, national, and international markets. Analyzes other derivatives instruments including futures, forwards, and swaps. Discusses empirical uses of securities data related to derivatives markets.

**BUS 138 International Finance** (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 106/ECON 134 with grade of "C-" or better or equivalent; upper-division standing. A survey of international financial institutions and the financial factors that affect the modern multinational corporation. Covers trade and international investment theories and empirical analysis. Topics include the international financial systems, balance of payments, foreign exchange markets, measurement of foreign exchange risk, hedging, international asset pricing, and trade financing.

**BUS 139 Real Estate Investments** (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 106/ECON 134 with grade of "C-" or better. Analysis of real estate development including consideration of site selection, market analysis, financing, design and construction, loan contracts, mortgage risks, and investment analysis.

**BUS 140 (E-Z) Current Topics in Finance** (4) Seminar, 3 hours; outside research, 3 hours. Prerequisite(s): BUS 106/ECON 134 with grade of "C-" or better. Addresses contemporary issues in finance. Includes financial markets, private equity, asset pricing, performance evaluation, derivative securities, market micro structure, corporate finance, corporate control and governance, and the global economy.

Explores recent developments in theoretical, empirical, and applied finance. Also addresses the regulatory and ethical environment of finance. Each segment is repeatable as its topics change to a maximum of 8 units.

**BUS 141 Trading Strategies** (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 106; BUS 132; BUS 136; STAT 048 or equivalent; or consent of instructor. Introduces stock market anomalies. Includes ways to predict market strength, to profit, and to understanding the risk and trading costs of performing such trading strategies. Considers the most well-known empirical deviations from the capital asset pricing model (CAPM) and trading strategies.

**BUS 143 Judgment and Decision Making** (4) Lecture, 3 hours; written work and group presentation, 3 hours. Prerequisite(s): senior standing. Covers decision making, including thinking and judgments; information selection and evaluation; learning and memory; the social side of judgment and decision making; fairness, moral obligations, and social dilemmas; and decision making in organizations.

**BUS 144 Negotiation Fundamentals** (4) Lecture, 3 hours; outside projects, 3 hours. Prerequisite(s): senior standing. Develops an understanding of the theory and processes underlying a broad spectrum of negotiation problems. Students attain competency in negotiations by applying analytic and interpersonal skills covered in readings and lecture to regular exercises and debriefings.

**BUS 145 Conflict and Cooperation in Groups** (4) Lecture, 3 hours; assigned problems, 3 hours. Prerequisite(s): STAT 048 or STAT 100A; senior standing. A general survey of the major concepts and techniques of game theory. Illustrates the basic concepts of games in extensive and strategic form. Also addresses the solution concept of the Nash equilibrium for non-cooperative games with major findings of experimental research. Reviews selected applications in business and economics.

**BUS 146 Introduction to Entrepreneurship** (4) Lecture, 30 hours per quarter; outside research, 30 hours per quarter. Prerequisite(s): BUS 106/ECON 134 with grade of "C-" or better; upper-division standing. Discusses the nature of entrepreneurship and its role in the economy. Topics include identifying and evaluating business opportunities, creating a team, and acquiring financial and other necessary resources.

**BUS 147 Entrepreneurial Finance** (4) Lecture, 30 hours per quarter; outside research, 30 hours per quarter. Prerequisite(s): BUS 106/ECON 134 and BUS 132 with grades of "C-" or better. Focuses on the financing of entrepreneurial ventures. Provides an understanding of opportunity recognition skills, funding techniques, and institutions involved in the financing of new ventures. Includes financial modeling, cash needs assessment, valuation, deal structure, financing alternatives, simulation, and harvesting.

**BUS 148 Business Plan Development** (4) Lecture, 30 hours per quarter; outside research, 30 hours per quarter. Prerequisite(s): BUS 146.

Covers the process of developing a business plan. Provides students with skills necessary to assess new venture opportunities and convert them into businesses.

**BUS 149 Advanced Topics in Management and Decision-Making** (4) Lecture, 3 hours; extra reading, 1.5 hours; written work, 1.5 hours. Prerequisite(s): upper-division standing or consent of instructor. Covers advanced topics in management and decision-making. Includes incentives and motivation, social labor, the psychology of money, competition and markets, grey marketing and revenge, dishonesty and cheating, decision-making in groups, other-regarding preferences, and welfare inferences and well-being.

**BUS 150 Corporate Strategic Analysis in Multi-Business Firms** (4) Lecture, 3 hours; written work, 2 hours; extra reading, 1 hour. Prerequisite(s): upper-division standing or consent of instructor. Explores the distinct challenges multi-business organizations face when creating and reviewing their corporate-level strategies. Topics include mergers and acquisitions, alliances, outsourcing, reorganizations, diversification, and change implementation. Emphasizes how top management can identify opportunities, define the corporate headquarter's role, and create value for the businesses it holds.

**BUS 151 Brand Management** (4) Lecture, 3 hours; outside research, 1 hour; written work, 2 hours. Prerequisite(s): BUS 103 or consent of instructor. Provides an understanding of how to manage a brand or a branded product. Topics include brand development and equity, brand architecture and brand leveraging, and managing a brand over the product life cycle.

**BUS 152 Sales Forecasting and Management** (4) Lecture, 3 hours; outside research, 1 hour; written work, 2 hours. Prerequisite(s): BUS 103 or consent of instructor. Discusses strategic and tactical aspects of sales force management including sales force planning, deployment, compensation and control as well as selling strategies and managing of customer relationships.

**BUS 153 Labor Economics** (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 104A. An analysis of labor demand, labor supply, and the structure of wages. Emphasizes neoclassical, institutional, and radical perspectives. Cross-listed with ECON 153.

**BUS 154 Business Law** (4) Lecture, 3 hours; extra reading, 1.5 hours; term paper, 1.5 hours. Prerequisite(s): upper-division standing. Studies law as an integral part of the business environment, a process derived from and changing with the larger society. Areas covered include contracts, torts, agency, partnerships, corporations, and bankruptcy.

**BUS 155 Managing Human Resources** (4) Lecture, 3 hours; extra reading and project, 3 hours. Prerequisite(s): BUS 107; upper-division standing. Applies a strategic planning approach to managing relations between an organization and its human resources. Topics include processes of forecasting and job analysis, environmental scanning, recruitment and

selection, evaluation and compensation, and dispute resolution.

**BUS 156 Leadership Development** (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): BUS 107; upper-division standing. Analyzes leadership theory and practice through lectures, self-analysis instruments, and discussions of independent field experiences. Surveys areas pertaining to leadership, such as leadership theory, leadership style, oral and written communication, ethical leadership, interpersonal conflict management, and the dynamics of culture, and gender in organization leadership.

**BUS 157 Managing Work Force Diversity** (4) Lecture, 3 hours; term paper, 3 hours. Prerequisite(s): upper-division standing. BUS 155 or PSYC 142 is recommended. Covers management issues triggered by the increasing participation of women and minorities in the work force. Topics include work role stereotyping, workplace representation and segregation, culturally based leadership and communication styles, work-family conflicts, and related legislative initiatives.

**BUS 158 Organizations as Cultural Systems** (4) Lecture, 6 hours; extra reading and written exercises, 6 hours. Prerequisite(s): upper-division standing or consent of instructor. Examines the role of culture in the formation and management of complex bureaucratic organizations. Covers types of organizations and organizational cultures, the impact of the cultural environment, and problems posed by rapid cultural change. Offered in summer only. Cross-listed with ANTH 105.

**BUS 159 New Product Development** (4) Lecture, 3 hours; outside research, 1 hour; written work, 2 hours. Prerequisite(s): BUS 103 or consent of instructor. Examines the strategies that lead to successful development of new products. Discusses the tools and techniques used in different stages of a successful new product development process from opportunity identification to market testing and commercialization of the new product.

**BUS 160 Industrial Organization** (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 104B. A study of the organization and structure of the American industrial system. Emphasizes production and pricing behavior and policies. Also addresses market structure and public policies regulating or influencing market behavior. Cross-listed with ECON 160.

**BUS 161 Forensic and Fraud Auditing** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): BUS 165B. An introduction to forensic accounting and fraud examination and how they pertain to both civil and criminal matters. Covers the characteristics of fraud, fraud prevention and detection, investigative techniques, asset recovery, and the use of information technology.

**BUS 162 Managerial Economics** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): ECON 102 or ECON 104A. Examines applications of economic analysis to problems of management, especially of capital. Emphasis is on production economics and cost analysis. Cross-listed with ECON 162.

**BUS 163 Technology Entrepreneurship** (4) Lecture, 3 hours; extra reading, 1 hour; outside research, 1 hour; term paper, 1 hour. Prerequisite(s): BUS 101. Provides a process of starting a new technology-based venture from the original idea to commercialization. Introduces a set of cross-functional concepts in technology management, intellectual property laws, marketing, operations and strategy. Concepts apply to a class project focused on the development of a business plan for a technology-based startup.

**BUS 164 Marketing Strategy** (4) Lecture, 3 hours; outside research, 1 hour; written work, 2 hours. Prerequisite(s): BUS 103 or consent of instructor. Focuses on planning and development of marketing and product portfolio strategies for long-term success. Emphasizes marketing analysis and decision-making through the use of case studies and/or a computer-based marketing simulation.

**BUS 165A Intermediate Financial Accounting** (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 021 or equivalent. In-depth study of financial accounting theory and practice. Develops an understanding of accounting concepts and generally accepted accounting principles and the ability to apply this technical knowledge to solve accounting problems. Topics include principal financial statements and accounting and valuation of various assets.

**BUS 165B Intermediate Financial Accounting** (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 165A or equivalent. Continuation of study of financial accounting theory and practice. Topics include current liabilities and contingencies, long-term liabilities, contributed capital, retained earnings, and temporary and long-term investments.

**BUS 165C Intermediate Financial Accounting** (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 165B or equivalent. Continuation of study of financial accounting theory and practice. Covers the conceptual discussion and procedural presentation of financial accounting topics as well as recent developments in accounting valuation and reporting practices promulgated by practitioners in industry and public accountants.

**BUS 166 Accounting Information Systems** (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 101, BUS 108, or equivalents. Study of the concepts and techniques in the design and implementation of accounting information systems within companies' operating environments. Emphasis is on the effects of the computer on these systems.

**BUS 167 Advanced Financial Accounting** (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 165C (may be taken concurrently). Covers advanced accounting topics such as consolidated financial statements, accounting for multinational corporations, partnership accounting, and accounting for nonprofit organizations.

**BUS 168A Individual Taxation** (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 108 or equivalent.

Concentrates primarily on the basic provisions of the federal income taxes imposed on individuals and the accounting for those taxes. While the major emphasis is on current tax provisions and tax planning, consideration is also given to the legislative and judicial development of these provisions.

**BUS 168B Federal Taxation for Corporations, Partnerships, Estates, and Trusts** (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 168A. Covers tax research, corporate taxation, partnership taxation, the wealth transfer taxes, income taxation of estates and trusts, international taxation, and tax administration.

**BUS 169A Auditing** (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): BUS 165B. Covers the auditing environment, the auditor's legal liability, audit responsibilities and objectives, audit evidence, audit planning and documentation, the auditor's report, and management letters.

**BUS 169B Quality Assurance in Auditing** (4) Lecture, 3 hours; case analyses, 3 hours. Prerequisite(s): BUS 169A. Covers the audit process (internal control, compliance tests, sampling, substantive evidence gathering, electronic data processing auditing) and the audit procedures for various types of accounts such as sales, cash, accounts receivable, payroll, inventory, and capital acquisitions.

**BUS 170 Financial Statement Valuation** (4) Lecture, 3 hours; research, 1 hour; individual study, 2 hours. Prerequisite(s): BUS 165B. Explains weighted average cost of capital as used in operating income based, revenue based, and market based valuation methods. Requires research to determine valuation of an existing publicly held company under all three methods. Also considers off balance sheet financing, credit risk analysis, and minority interests. Letter grade only.

**BUS 171 Systems Analysis and Design** (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 101 or equivalent. Involves detailed analysis, specification, design, and implementation of computer-based information systems. Includes economic analyses, evaluation of alternatives, analysis or design tools, and systems project management and planning. Case studies are used.

**BUS 172 Information Economics** (4) Lecture, 3 hours; assigned cases and project, 3 hours. Prerequisite(s): BUS 103, ECON 003 or ECON 003H. Discusses economic concepts and strategies related to the network economy. Topics include economic issues surrounding information goods, competition in electronic business, pricing strategies, and intellectual property protections. Examines business strategies for the information (software) and infrastructure (hardware) elements of electronic business.

**BUS 173 Introduction to Databases for Management** (4) Lecture, 3 hours; extra reading, 2 hours; projects, 1 hour. Prerequisite(s): BUS 101 or equivalent. Covers physical and conceptual aspects of database management systems, including familiarity with the variety of database systems based on different data

models. Examines the role of database systems in management information systems (MIS) and issues in database design for effective support of MIS. Requires the use of a database package.

**BUS 174 Electronic Commerce** (4) Lecture, 3 hours; extra reading, 2 hours; project, 1 hour. Prerequisite(s): BUS 101. Reviews the technological evolution of electronic commerce (EC). Investigates how EC can be used to interact with customers, other organizations, and those within the organization. Studies technical innovations, provides a critical evaluation of strategies, and examines current applications and their impact on the business environment.

**BUS 175 Business Data Communications** (4) Lecture, 3 hours; extra reading, 3 hours. Prerequisite(s): BUS 101. Surveys components of telecommunication systems; examines major design and analysis issues in the development and implementation of computer communication systems. Studies both voice and data communication systems including local area networks, wireless systems, satellite systems, and distributed computer and database systems. Emphasizes evaluation of these systems for business purposes.

**BUS 176 The Sociology of Work in Organizations** (4) Lecture, 3 hours; outside research, 3 hours. Prerequisite(s): SOC 001 or SOC 001H or consent of instructor. Emphasizes the roles of individuals in organizations. Topics include the effects of jobs on workers, long-term trends in the nature of work, and differences in work among major segments of the labor force. Cross-listed with SOC 176.

**BUS 178 International Trade** (4) Lecture, 3 hours; individual study, 3 hours. Prerequisite(s): ECON 102 or ECON 104A. A study of the pure theory of trade, trade policy, and international factor movements. Includes illustrative applications to current issues and problems. Cross-listed with ECON 178.

**BUS 179 Business Application of Geographic Information Systems (GIS)** (4) Lecture, 2 hours; laboratory, 1 hour; extra reading, 2 hours; written work, 3 hours. Prerequisite(s): BUS 101. Topics include introduction and use of geographic information system (GIS) for business applications. Provides basic understanding on how location information is used in business processes for decisions. Offers an opportunity to gain hands-on experience with basic functionality of industry standard business mapping software tools including ArcGIS and Business Analyst Online.

**BUS 190 Special Studies** (1 to 5) Individual study, 3 to 15 hours. Prerequisite(s): upper-division standing; consent of instructor and program chair. A project to be undertaken under faculty supervision. Course is repeatable to a maximum of 12 units.

**BUS 198I Individual Internship in Business Administration** (1 to 12) Seminar, 1 hour; internship, 3 to 36 hours; term paper, 1 to 11 hours. Prerequisite(s): upper-division standing in Business Administration; consent of instructor. Active participation in the work of a business concern or a public or quasi-public agency combining academic instruction and supervised field experience. A maximum of 4 quarter units may be counted toward the degree requirements

for Business Administration. Course is repeatable to a maximum of 16 units.

**BUS 199H Senior Honors Research** (1 to 5) Seminar, 1 hour; extra reading, 2 to 12 hours; term paper, 2 to 12 hours. Prerequisite(s): senior standing with a major in Business Administration; admission to the University Honors Program or consent of instructor. Involves research in business administration under faculty supervision. Students submit a written report. Graded In Progress (IP) until the last quarter is completed, at which time a final grade is awarded. Course is repeatable to a maximum of 12 units.

## CELL BIOLOGY AND NEUROSCIENCE

**Subject abbreviation: CBNS**  
**College of Natural and Agricultural Sciences**

Manuela Martins-Green, Ph.D., Chair  
Dmitri Maslov, Ph.D., Vice Chair  
Department Office, 2710 Life Sciences,  
Psychology Bldg.  
(951) 827-5903; [mcsb.ucr.edu](http://mcsb.ucr.edu)

### Professors

Michael E. Adams, Ph.D. (Molecular, Cell, Systems Biology and Neuroscience/Entomology)  
David A. Eastmond, Ph.D.  
Sarjeet S. Gill, Ph.D.  
Karine G. Le Roch, Ph.D.  
Morris Maduro, Ph.D.  
Manuela Martins-Green, Ph.D.  
Dmitri Maslov, Ph.D.  
Anandasankar Ray, Ph.D.  
Frances M. Sladek, Ph.D.  
B. Glenn Stanley, Ph.D. (Molecular, Cell, Systems Biology and Neuroscience/Psychology)  
Prudence Talbot, Ph.D.  
Raphael Zidovetzki, Ph.D.

### Associate Professors

Jeffrey B. Bachant, Ph.D.  
Margarita C. Currás-Collazo, Ph.D.  
Scott N. Currie, Ph.D.  
Anupama Dahanukar, Ph.D.  
Todd Fiacco, Ph.D.  
Constance I. Nugent, Ph.D.  
Viji Santhakumar, Ph.D.  
Nicole zur Nieden, Ph.D.

### Assistant Professors

Garret R. Anderson, Ph.D.  
Jun-Hyeong Cho, M.D., Ph.D.  
Weifeng Gu, Ph.D.  
Sachiko Haga-Yamanaka, Ph.D.  
Fedor V. Karginov, Ph.D.  
Martin Riccomagno, Ph.D.  
Hongdin Yang, Ph.D.

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### Adjunct Associate Professor

André Obenaus, Ph.D.

### Adjunct Assistant Professor

Shu-Wei Sun, Ph.D.

Research in the Department of Molecular, Cell and Systems Biology uses multidisciplinary approaches to understanding basic cellular processes in various tissues, including the nervous system, as well as more integrative

levels of analysis, including behavior. Areas of research represented in the department include the following:

- Biophysical properties of excitable membranes
- DNA repair
- Transcriptional regulation
- Mechanisms of toxicity
- Insect development
- Membrane transport
- Mechanisms of mitotic chromosome transmission
- Telomere maintenance
- Synaptic structure and function
- Changes in nervous system with experience
- Interactions of nervous and endocrine systems
- Reproductive biology and fertilization
- Chemokine function in wound healing and tumor development
- Glia-neuron signaling and sensory and motor integrative processes
- RNA Biology

## Undergraduate Curriculum

Students interested in Cell Biology and Neuroscience with Molecular, Cell, and Systems Biology can obtain training through the interdepartmental major in Cell, Molecular, and Developmental Biology leading to the B.S. degree. Students interested in neuroscience can obtain training in behavioral neuroscience, neurobiology, and neurochemistry through the Neuroscience major leading to the B.A. or B.S. degree. The Neuroscience major is an intercollege major offered by the College of Humanities, Arts, and Social Sciences and the College of Natural and Agricultural Sciences. See Cell, Molecular, and Developmental Biology section and Neuroscience Undergraduate Major section, respectively.

## Graduate Curriculum

Courses and research opportunities are offered by the interdepartmental graduate programs in Cell, Molecular, and Developmental Biology; Environmental Toxicology; and Neuroscience. See the respective graduate program section.

## Lower-Division Course

**CBNS 004 Concepts in Medical Cell Biology** (3) Lecture, 1 hour; workshop, 4 hours. Prerequisite(s): CHEM 001A or CHEM 01HA (may be taken concurrently). Introduces fundamental concepts in molecular cell biology, with emphasis on human health and disease. Modules involve lectures and interactive, problem-oriented discussions with faculty. Through classical and contemporary examples, modules acquaint students with the scientific process and how it leads to insights into human biology. Credit is not awarded for CBNS 004 if it has already been awarded for BIOL 005A.

## Upper-Division Courses

**CBNS 101 Fundamentals of Cell Biology** (4) Lecture, 3 hours; discussion, 1 hour. Prerequisite(s): CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 08HLC and BCH 100 or BCH 110A (BCH 100 or BCH 110A may be