Accounting

Accounting, ACCT = 0310

5020. Accumulation and Analysis of Accounting Data. 1.5 hours. Provides an understanding of accounting procedures and concepts utilized by management in making decisions. Basic concepts and techniques of accounting; the role of an accounting system in business operations and management; preparation and interpretation of financial reports. This course meets the deficiency requirement in accounting for MBA candidates and may be counted as part of a graduate program in a field other than business administration.

5110. Accounting Analysis and Reports I. 3 hours. Measurement and reporting issues as they affect revenue and expense recognition, equity measurements, working capital, plant and equipment, and intangibles. Includes study of managerial accounting issues as they affect both financial statement presentation and enterprise planning and control. Prerequisite(s): ACCT 5020 (2020, 2030); MATH 1190 or 1400. All prerequisites (other than ACCT 5020) may be taken concurrently. Accounting leveling course.

5120. Accounting Analysis and Reports II. 3 hours. Measurement and reporting issues as they affect revenue and expense recognition, equity measurements, long-term investments, foreign currency translation, business combinations, consolidated financial statements and alternative accounting models. Prerequisite(s): ACCT 5110 (3110, 3270). Accounting leveling course.

5130. Accounting for Management. 3 hours. Designed to provide an understanding of managerial accounting data in making business decisions. Cases, readings and projects are used to examine a wide variety of managerial topics. Prerequisite(s): ACCT 5020; ECON 5000; MATH 1190 or 1400; BCIS 5090 (2610, 3610); MSCI 5010 (3700, 3710). For students not seeking a BS or MS with a major in accounting.

5140. Advanced Accounting Analysis. 3 hours. Advanced topics in financial accounting and reporting, including business combinations and consolidations, international accounting and monetary translation, governmental accounting and fiduciary accounting. Prerequisite(s): ACCT 5110 and 5120 (3110, 3120, 3270); MATH 1190 or 1400; MSCI 5010 (3700, 3710).

5150. The Development of Accounting Theory. 3 hours. The theory of accounting as it has developed in the economy of the United States. Particular emphasis on concepts, income measurement, valuation of assets, and valuation and measurement of equities. Application of accounting theory to contemporary problems is analyzed by cases and research papers on selected areas. Prerequisite(s): ACCT 5120 (3120, 3270); ECON 5000; BCIS 5090 or consent of department.

5160. Issues in Financial Accounting and Standard Setting. 3 hours. Advanced accounting concepts and standards with emphasis on income determination, including legal, economic and accounting views of the income concept. Development of criteria for evaluating and applying theoretical concepts, particularly as they apply to current controversial questions in accounting. Prerequisite(s): ACCT 5120 (3120, 3270); ECON 5000; MATH 1190; BCIS 5090 (2610, 3610).

5180. Topics in Financial Accounting. 3 hours. A seminar in new topics and areas of current interest to students of financial accounting. Prerequisite(s): ACCT 5120 (3120, 3270) and 5150; ECON 5000; MATH 1190; BCIS 5090; or consent of department. May be repeated for credit.

5250. Strategic Cost Management. 3 hours. The role and scope of the strategic cost management function (management accounting) within organizations is changing rapidly. New cost management tools provide organizations with information for decision making and control in an international marketplace. These tools directly incorporate organization strategy and focus on process understanding. The course typically includes readings, cases, and discussion of planning and budgeting, activity based concepts, target costing, performance measurement, quality, and environmental cost management. Specific topics will vary. Prerequisite(s): ACCT 3270 or 5130.

5270. Managerial Cost Accounting. 3 hours. Accumulation, analysis and interpretation of accounting data relevant to purposes of managerial decision making; profit planning and control, and application of mathematics and statistics to accounting analysis. Prerequisite(s): ACCT 3270 or 5130.

5300. Federal Taxation of Income. 3 hours. Introduction, problems of tax bases and rates; history of federal income tax; determination of federal income tax base and application of rates; the basic compliance requirement. The impact and effect of tax laws on the social and economic environment. Prerequisite(s): ACCT 5020 (2020, 2030). Accounting leveling course.

5310. Tax Research and Administrative Procedure. 3 hours. Objectives are to develop the technical skill to identify tax situations, isolate the tax issue, and develop the documentary support and arguments for acceptable solutions to complex tax problems. Upon completion of the course, the student will be able to use the major tax services and prepare a tax memorandum that communicates as completely as possible the tax problems of a practical situation. Also included are the procedural processes for representing a taxpayer before the Internal Revenue Service and the requirements for filing a tax return. Prerequisite(s): ACCT 5300 (4300).

5320. Taxation of Corporations, Partnerships and Fiduciaries. 3 hours. An overview of federal tax laws governing C corporations, S corporations, fiduciaries and partnerships. Explanations of how these entities are used in tax planning. A case method course for MS candidates not planning to specialize in taxation. Prerequisite(s): ACCT 5300 (4300).
5330. Taxation of Corporations and Shareholders. 3 hours. A comprehensive study of rules governing the taxation of corporations and the related problems of corporate shareholders. Emphasis is on the use of corporate tax planning. Some important topics covered are formation of corporations; planning the capital structure to minimize taxes; distributions to shareholders, particularly distributions that receive capital-gains treatment; and corporate reorganizations. Numerous cases are used in the course to improve research skills and the preparation of written reports. Prerequisite(s): ACCT 5300 (4300) and 5310. ACCT 5310 may be taken concurrently.

5360. Advanced Topics in Federal Taxation. 3 hours. This course, through varying subtitles, is offered in the MS with a major in accounting program. Provides the opportunity for thorough coverage of selected topics that will vary depending on the needs of students, changes in tax policy and practice, and faculty resources. Subtitles may include Partnerships and S Corporations, Advanced Corporate Taxation, and Tax Reform. Prerequisite(s): 5300 (4300) and 5310. Also ACCT 5330 when taught as Advanced Corporate Taxation. ACCT 5310 may be taken concurrently.

5370. Family Tax Planning and Contemporary Topics. 3 hours. Federal estate and gift taxes are analyzed in the first half of the course. Special attention is given to techniques for disposing of wealth to minimize taxes. Estate planning and return preparation cases are assigned. In the second half of the course, international and state and local taxes, compensation planning, exempt organizations, fiduciary income taxation, and passive activity losses are analyzed. Prerequisite(s): ACCT 5300 (4300) and 5310. ACCT 5310 may be taken concurrently.

5410. Audit — Investigative Process. 3 hours. The complete cycle of the investigative process known as auditing is covered from evaluation of the business, through study and evaluation of internal control, to corroborative evidence on the details of account balances. Topics include flow-charting, testing planning, use of statistical sampling, computer controls and management audits. Actual experience is gained through an extended case where an audit is performed by student teams. Prerequisite(s): ACCT 4100 and 4400; BCIS 5090 (2610, 3610); BLAW 5050; MSCI 5010.

5430. Auditing — Special Problems. 3 hours. A course reserved for in-depth study of particular problems in auditing. The topics change to cope with the dynamic nature of the profession. Specific topics can be offered on a part-semester or semester basis. Prerequisite(s): ACCT 5410.

5440. EDP Control and Auditing. 3 hours. The use of the computer to process transactions imposes a new environment and a new set of problems for the auditors, independent and internal. Controls and audit techniques to evaluate these controls are emphasized. The use of the computer as an audit tool is introduced through actual operation of Generalized Audit Software such as is currently used in practice. Additional topics covered include computer fraud, security measures and controls in advanced on-line, teleprocessing systems. Prerequisite(s): ACCT 4100 and 4400; or consent of department.

5450. Seminar in Internal Auditing. 3 hours. A study of the theory and practice of internal auditing. The course examines the difference between internal and external auditing, focusing on such issues as independence, audit scope, reporting and human relations. Specific internal audit topics include operational auditing, audit administration, planning and supervision, and internal audit reporting. Prerequisite(s): ACCT 4100 and 4400; or consent of department.

5470. Auditing — Advanced Theory. 3 hours. A conceptual approach to the auditing process, stressing the interrelations of objectives, standards, techniques and procedures. Current topics, including significant legal cases, are included. Prerequisite(s): ACCT 5410; ACCT 5800 is recommended.

5520. Government and Other Non-Profit Accounting. 3 hours. Critically examines current issues in financial accounting, management control and auditing for government and other non-profit organizations. Prerequisite(s): ACCT 5120 (3110 and 3120) or 5130.

5630. Accounting Systems and Controls. 3 hours. A comprehensive study of computerized managerial accounting systems. Major topics include: role of accounting systems in managerial planning and control (decision making), application of computers in accounting systems, role of the managerial accountant in technology management. Prerequisite(s): ACCT 3270 or 5130, 4100; or consent of department.

5640. Current Topics in Accounting Information Systems. 3 hours. Acquaints students with current topics related to accounting information systems. Current topics will be selected by the instructor and may include, but will not be limited to, the following: accounting issues involving Enterprise Resource Planning software packages, the accountant’s role in electronic commerce, and forensic auditing. Instruction may include cases and/or lecture format. The course is structured to enhance the ability of students to think critically, and to develop the knowledge, skills, and attitudes necessary to compete effectively in the rapidly changing world of information technology. Intended for those interested in new and emerging areas of accounting information systems. Prerequisite(s): ACCT 4100 or 6 hours of BCIS above the 3000 level.

5710. Petroleum Accounting. 3 hours. An introduction to the oil and gas industry and the specialized financial accounting procedures associated with the industry. Areas emphasized include exploration, leasing, drilling, producing, amortization conveyances, joint interests, unitizations, carried interests, and partnerships and special gas contracts. Prerequisite(s): ACCT 3120, 3270 or 5130; BLAW 5050.

5760. Oil and Gas Taxation. 3 hours. A survey of federal tax laws affecting the oil and gas industry. Exploration; drilling, development and leasing; conveyances; depletion and amortization; the Windfall Profit Tax. Prerequisite(s): ACCT 5120 (3110, 3120), 3270 or 5130, 5300 (4500); BLAW 5050 (3430).

5800. Internship. 3 hours each. A supervised productive and educationally meaningful work experience in a job related to the student’s career objective. Prerequisite(s): meet employer’s requirements and have consent of department chair. May be taken as a free elective.
5890. International Accounting. 3 hours. Integrates the functional areas of accounting and the functional areas of business administration in a global decision making framework. Cross-functional and global approaches to organizational issues are emphasized. The course is structured to enhance the ability of students to think critically, and to develop knowledge, skills, and attitudes necessary to compete effectively in the global perspectives on accounting, environmental, social, and political influences on accounting, accounting information systems in a multinational enterprise, performance evaluation in a multinational enterprise, comparative international analysis of financial statements, and the exploration of timely topical issues related to international accounting. Prerequisite(s): ACCT 5020; ECON 5000; BCIS 5090 (2610, 3610); MATH 1190 or 1400; MSCI 5010; FINA 3770 or equivalent.

5900-5910. Special Problems. 1-3 hours each. Open to students who are capable of developing a problem independently. Problem chosen by the student and developed through conferences and activities under the direction of the instructor. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

6010. Seminar on Advanced Topics in Accounting Research. 3 hours. Covers one or more special fields. Topics covered in this course depend on the needs of the students enrolled each semester. Prerequisite(s): consent of department.

6190. Seminar on Theory Development and Theory Formulation. 3 hours. Explores theory formulation and development in disciplines related to accounting; evaluates the ontological, epistemological and methodological structure of contemporary accounting research and critically examines the adequacy of contemporary research from a historical perspective. Prerequisite(s): doctoral status and consent of instructor.

6290. Seminar on Behavioral Research in Accounting. 3 hours. Critically examines behavioral theories as well as methods and their application to accounting research. The course draws on cognitive psychology and accounting literature. Prerequisite(s): doctoral status and consent of instructor.

6900-6910. Special Problems. 1-3 hours each. Research by doctoral students in fields of special interest. Includes project research studies and intensive reading programs, accompanied by conferences with professors in fields involved. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

6940. Individual Research. Variable credit. Individual research for the doctoral candidate. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

6950. Doctoral Dissertation. 3, 6 or 9 hours. To be scheduled only with consent of department. 12 hours credit required. No credit assigned until dissertation has been completed and filed with the graduate dean. Doctoral students must maintain continuous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

Aerospace Studies
see Undergraduate Catalog

Anthropology

Anthropology, ANTH = 0480

5010. Anthropological Thought and Praxis I. 3 hours. Considers the history of anthropological concepts, the major historical debates in anthropological theory, and historical tensions between applied and theoretical knowledge. Special emphasis is given to critical examination of concept and theory formation, and the application of anthropological ideas to the problems of everyday life.

5015. Anthropological Thought and Praxis II. 3 hours. Considers contemporary anthropological concepts and theories and the major debates that have been produced by them. Special emphasis is given to the most recent tensions and debates on the relationships between theoretical and applied knowledge. Specific attention is paid to the relationships between social theory and social policy formation. Prerequisite(s): ANTH 5010.

5020. Seminar on Research Methods and Design. 3 hours. Provides quantitative and statistical skills to complement those used in qualitative and ethnographic research: research design, sampling and scaling techniques, tests for reliability and validity, and tests of association and significance. Special emphasis will be given to the use of SPSS. Prerequisite(s): SOCI 4870 or equivalent, or consent of instructor. (Same as SOCI 5200.)

5030. Medical Anthropology. 3 hours. This course presents perspectives in contemporary medical anthropology, with a focus on the biocultural basis of health and sociocultural variations in illness and healing (ethnomedicine). It includes study of comparative health systems, political-economic and ethical issues in health and care, health professions and patients’ views of illness.

5040. Ethnographic and Qualitative Methods. 3 hours. Focuses on ethnographic and qualitative methods and the development of the skills necessary for the practice of anthropology. Special emphasis is given to qualitative techniques of data collection and analysis, grant writing, the use of computers to analyze qualitative data, and ethical problems in conducting qualitative research. Prerequisite(s): ANTH 5010 and 5015 or consent of instructor.
5060. Problems and Cases in the Application of Anthropological Knowledge. 3 hours. Examines case studies and specific problems in the application of anthropological knowledge to the variety of subjects and in a variety of settings: health, business and organizational culture, development, education, social welfare, environment, agriculture, gender, crime, drug use, sexuality, borders, ethnic and race relations, and social policy. Knowledge gained in the study of theory and methods is used in the discussion of problems and case studies in applied anthropology. Prerequisite(s): ANTH 5010, 5015, 5020 and 5040.

5070. Urban Ethnic Cultures. 3 hours. Course examines how ethnic identity is experienced and articulated in the urban context, historically and contemporarily. Comprehension of the fundamental dynamics that influence the development and maintenance of ethnic cultures in cities, drawing on key concepts from anthropology and urban studies. General overview of how ethnic and racial relations are socially structured in the United States, followed by an examination of some of the symbolic materials and mediums through which people express a sense of ethnic identity and belonging – music, dress, dance, and stories. Consideration of how these expressive cultures unfold in urban settings, both shaped by and reconstituting city life in this country.

5200. Seminar in Cultural Anthropology. 3 hours. A survey of anthropological attempts to understand and explain the similarities and differences in culture and human behavior.

5610. Topics in Sociocultural Anthropology. 3 hours. Cross-cultural and ethnographic investigation, analysis and discussion of a significant, contemporary topic of interest to students in various graduate programs. May be repeated for credit.

5800. Applying Anthropology: Practicum I. 3 hours. Provides experiential learning in applied anthropology through placement in business, government, community, and social service organizations and agencies. This 100-hour (minimum) placement is planned in cooperation with the student to meet specialized career goals. The practicum includes a weekly (one-hour) integrated seminar. Practicum I has three phases: 1) analysis of the practicum setting; 2) analysis of the cultural diversity dimensions of the agency; and 3) identification of an ethnographic research project. Prerequisite(s): ANTH 5010, 5015, 5020 and 5040.

5810. Applying Anthropology: Practicum II. 3 hours. Provides experiential learning in applied anthropology through placement in business, government, community, and social service organizations and agencies. This 120-hour (minimum) placement is planned in cooperation with the student to meet specialized career goals. The practicum includes a weekly (one-hour) integrated seminar. In Practicum II, the student designs and implements an ethnographic study. The aim of the project is to study a practice issue that agencies collaboratively help identify. Prerequisite(s): ANTH 5010, 5015, 5020, 5040 and 5800.

5900-5910. Special Problems. 1-3 hours each.

Applied Economics

Applied Economics, AECO = 0430

The following courses usually are offered by faculty members in the Institute of Applied Economics. Additional courses in other departments and colleges may be included in a student’s degree plan upon recommendation of the adviser and consent of the dean of the School of Graduate Studies.

5010. Interdisciplinary Seminar. Variable credit.

5050. Seminar in Contemporary Applied Economic Problems. 3 hours. Analysis and discussion of significant contemporary issues in economics and public policy. May be repeated for credit.

5870. Research Methods. 3 hours. Research methodology for business and the social sciences. Topics include research design; techniques of exploratory data analysis; measures of association; a survey of multivariate factor, discriminant and clustering procedures; and an introduction to linear regression analysis. Prerequisite(s): 3 hours of college statistics or consent of instructor. Offered fall semester only.

5880. Multivariate Regression Analysis. 3 hours. Application of multivariate regression analysis to issues in business and the social sciences. Topics include estimation and analysis of linear models under ideal and non-ideal conditions, instrumental variables estimation and estimation of models with limited dependent variables. Emphasis is placed upon the application of computer technology to practical problems in forecasting and policy analysis. Prerequisite(s): 3 hours of college statistics or consent of instructor.

5950. Master’s Thesis. 6 hours. Research methods emphasizing the philosophy of science, basic statistical methods and basic research design; preparation of a number of research proposals reflecting alternative research designs and alternative statistical methodologies, and a minithesis with emphasis on empirical studies. Required of all Master of Science candidates. Offered fall semester only.

5920-5930. Research Problems in Lieu of Thesis. 1-3 hours each. Open to advanced students capable of doing independent research in economic education, and labor and industrial relations under the direction of the instructor.

5920-5930. Research Problems in Lieu of Thesis. 6 hours each. Research methods emphasizing the philosophy of science, basic statistical methods and basic research design; preparation of a number of research proposals reflecting alternative research designs and alternative statistical methodologies, and a minithesis with emphasis on empirical studies. Required of all Master of Science candidates.

5950. Master’s Thesis. 3 or 6 hours. To be scheduled only with consent of department. 6 hours credit required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun. May be repeated for credit.

Applied General Music

see Music
Applied Gerontology

Applied Gerontology, AGER = 0410

5200. Seminar on Research Methods and Design. 1-3 hours. Focuses on policy research and its implications for programs in aging, and on techniques of evaluation of programs for the elderly.

5250. Topics in Gerontology. 1-3 hours. In-depth analysis and discussion of significant subjects in aging. May be repeated for credit as topics vary.

5300. Computer Applications in Long-Term Care and Community-Based Services for the Aging. 4 hours. Overview of entire subject of small computers, including terminology, how computers work and capabilities of computers; effective application of computers in the field of aging, including laboratory experience with hardware and software commonly used by professionals delivering health and social services to the aged.

5350. Basic Mediation Skills in Aging. 3 hours. This course, which utilizes negotiation and mediation principles and techniques, meets the dispute resolution training needs of individuals serving the elderly and their families. Included are such professionals as social workers, counselors, discharge planners, home health administrators, care managers, nursing home staff, adult protective service workers, ombudsmen, health and human service staff, and anyone else contracted to serve the elderly and their family members.

5400. Health Delivery Systems. 3 hours. A cross-cultural overview of health delivery systems followed by an extensive consideration of all aspects of the health delivery system in the United States; government and private sector involvement in delivery of health services to the aged is emphasized. (Same as SOCI 5400.)

5500. Retirement and Retirement Preparation. 1-3 hours. Investigation of retirement as a social institution with emphasis upon the implications for the individual and society. Includes rationale, content and methods involved in retirement planning programs.

5560. Seminar on Minority Aging. 3 hours. An examination of the current state of gerontological knowledge with regard to each of the federally designated minority groups in the United States: African Americans, Asians/Pacific Islanders, Hispanics, and Native Americans. Each student will have the opportunity to explore the state of knowledge about a particular group or a research issue across populations.

5600. Housing for the Elderly: Planning, Public Policy and Research. 1-3 hours. Theoretical, research and practical literature concerning housing alternatives is considered. Emphasis is on the four housing development stages: need assessment, financing, physical design and management of a housing site; and how theory, research and public policy relate to each of these issues.

5700. Social Gerontology. 1-3 hours. Demographic, social and cultural aspects of aging, with particular emphasis upon American society and the types of problems encountered by older people. May be repeated for credit as topics vary.

5710. Health Aspects of Human Aging. 1-3 hours. Examination of general and cellular theories of aging and general age-related changes in various body systems. Issues covered include myths and facts about physical health and aging, normal age-related changes and common chronic illnesses associated with old age. Students will become familiar with medical terminology to facilitate effective communication with health care professionals who work with the elderly in both institutional and community settings.

5740. Financial Issues in Aging Administration. 3 hours. Addresses the need of the administrator/manager who is not a financial expert to understand, identify, and experience some applications of practical information related to financial/ management issues in residential and community-based programs for the elderly.

5750. Processes of Aging. 1-3 hours. Advanced seminar in social gerontology with emphasis upon psychosocial changes associated with aging.

5770. Program Evaluation in Aging Services. 3 hours. This seminar is designed to provide students with the basic skills and perspectives required to undertake evaluations of health and social programs for the aged, and to assess the merits of program evaluations conducted by others. Emphasis is placed on the unique service needs of older persons; the distinctive character of the facilities, agencies, and programs that serve them; and special challenges faced by those who attempt to assess the benefits of such efforts.

5780. Federal, State and Local Programs in Aging. 1-3 hours. History of social policy in aging; derivations and directions of public policy, interrelationships of agencies; discussion of selected programs and services for the aged.

5790. Needs Assessment and Program Planning for the Elderly. 3 hours. Principles, techniques, and skills used to identify the needs of elders at the community level and to design programs individually tailored to meet those needs in such areas as access, health, nutrition, housing, income maintenance, employment, personal support, and training and education.

5800. Grant Proposal Writing for Aging Services. 1-3 hours. Today’s health, social and housing programs for older persons are rarely self-supporting. Government funding, insurance payments and client fees cover only a portion of the cost of delivering needed services. As a result, a program’s success depends on its ability to secure other types of income. This course provides the skills needed to conceive, prepare and submit successful proposals for external funding of innovative human service projects for the elderly. As part of the course, each student will develop a proposal designed to help a community program respond to a specific problem facing the aged.

5810. Seminar on Administration of Long-Term Care and Retirement Facilities I. 3 hours. The continuum of long-term care; management principles and functions; organization of long-term care facilities; employment issues; government regulations and their enforcement; marketing long-term care; and other topics pertinent to the administration of long-term care and retirement facilities.
5820. Seminar on Administration of Long-Term Care and Retirement Facilities II. 3 hours. Overview of departments within the long-term care facility; the facility’s relations with families, volunteers, and the public; safety issues; education and training; history and trends in the long-term care field; and other topics pertinent to the administration of long-term care and retirement facilities.

5830. Seminar on Administration of Community-Based Programs in Aging. 3 hours. Management of community-based programs for the elderly, focusing on personnel issues, including hiring, firing, and supervising; roles, responsibilities, and relations with governing boards; fundraising with special events, foundations, and grant proposal writing. Topics covered also include mission statements, planning, technology audits, outcome evaluation, marketing, compensation and benefits, and volunteers.

5840. Internship in Administration of Programs in Aging. 3 hours. Five hundred-clock-hour practicum in approved agency serving the aged. Credit awarded only upon completion of internship. Pass/no pass only.

5850. Internship in Administration of Programs in Aging. 3 hours. Five hundred-clock-hour practicum in approved agency serving the aged. Credit awarded only upon completion of internship. Pass/no pass only.

5860. Seminar on the Psychology of Aging. 1-3 hours. Theoretical and research literature concerned with the psychological aspects of aging. Age-related changes in physical, perceptual and cognitive processes are considered with regard to their effects on the occupational, social and personal adjustments and motivations of the aging adult. (Same as PSYC 5860.)

5880. Ethical Issues in an Aging Society. 3 hours. An exploration of the moral, ethical and legal issues that population aging poses at the individual, family, service provider and societal levels. Illustrative topics include the elderly’s access to health care, self-determination and advance directives in old age, and filial responsibility to aging parents.

5890. Psychological Counseling for Late Maturity and Old Age. 1-3 hours. Study of the predictable and normal dependencies of aging; techniques of individual, family and group counseling applied to later life with emphasis on problems of retirement, health and bereavement. (Same as PSYC 5890.)

5900-5910. Special Problems. 1-3 hours each. Individual study assigned with consent of major professor and instructor.

5940. Proseminar on Applications in Practice. 3 hours. The focus of this capstone seminar is the application of gerontological theory to practice issues in the field of aging. Students demonstrate their ability to apply theory to practice through class discussion and the submission of a major written project. Continuous enrollment required once work on project has begun.

5960-5970. Studies in Aging Institute. 1-3 hours each. Scheduled regularly for participants in institutes. May be repeated for credit. No more than 6 hours allowed for regular students.

6150. Theories of Aging. 3 hours. An intensive analysis of the theories of aging that have been advanced by researchers in the social and behavioral sciences from 1950 to the present. Prerequisite(s): a minimum of 12 hours in gerontology, including AGER 4550 or 5700, or equivalent.

Applied Gerontology, Related Courses

The following courses are taught in related departments:

ACCT 5020. Accumulation and Analysis of Accounting Data. 1.5 hours. Provides an understanding of accounting procedures and concepts utilized by management in making decisions. Basic concepts and techniques of accounting; the role of an accounting system in business operations and management; preparation and interpretation of financial reports. This course meets the deficiency requirement in accounting for MBA candidates and may be counted as part of a graduate program in a field other than business administration.

BLAW 5050. Legal, Regulatory, and Ethical Environment of Business. 1.5 hours. Introduction to the legal environment of business, with particular emphasis on managerial decision-making. Includes a study of the litigation process and constitutional law; selected areas of private and public law, including government regulation; international dimensions of the legal environment of business, business ethics and the social responsibility of business organizations. Business context is emphasized with a focus on individual and managerial decision-making in response to legal and ethical issues.

MGMT 5520. Management of Health Service Organizations I. 3 hours. Provides advanced study of the unique operational applications of business/managerial theory, methodology and best practice to acute, home and long term care health service institutions, including facilities design and management, financial analysis and management, systems analysis and evaluation, application and management of information technology, assessment of health needs and marketing, quality improvement, human resource management and the legal/ethical aspects of health care.

Applied Private Music

see Music

Applied Technology, Training and Development

see Technology and Cognition

Archaeology

see Undergraduate Catalog
Art

Art, ART = 1210

5130. Seminar in Renaissance Art. 3 hours. Selected problems in Renaissance art. Prerequisite(s): ART 4130. May be repeated for credit as topics vary.

5180. Seminar in Seventeenth-Century Art. 3 hours. Selected problems in 17th-century art. Prerequisite(s): ART 4180. May be repeated for credit as topics vary.

5190. Seminar in Art History. 3 hours. Research and study in selected topical areas of art history. May be repeated for credit as topics vary.

5200. Contemporary Architecture. 3 hours. Biological, structural and social problems of human shelter; analysis of achievement in contemporary architecture.

5340. Seminar in American Art. 3 hours. Selected problems in American art. Prerequisite(s): ART 4340. May be repeated for credit as topics vary.

5350. Research in Art. 3 hours. A study of research techniques and their applications in the field of visual arts; preparation of a prospectus.

5360. Seminar in Nineteenth-Century Art. 3 hours. Selected problems in 19th-century art. Prerequisite(s): ART 4360. May be repeated for credit as topics vary.

5370. Seminar in Twentieth-Century Art. 3 hours. Selected problems in 20th-century art. Prerequisite(s): ART 4370. May be repeated for credit as topics vary.

5380. Seminar in Eighteenth-Century Art. 3 hours. Selected problems in 18th-century art. Prerequisite(s): ART 4380. May be repeated for credit as topics vary.

5390. Seminar in Art Museum. 3 hours. Study of the functions of an art museum — collection, preservation, exhibitions, research and interpretation of art objects. Visits to North Texas art museums required.

5410. Seminar in Discipline-Based Art Education. 3 hours. Examination of theory development in disciplined-based art education (DBAE). Emphasis is placed on analyzing the evolving theoretical foundations, which inform DBAE practice. Influences from art and aesthetic education, curriculum reform movements, and social issues are identified and considered. Prerequisite(s): graduate art education.

5550. Seminar in Art Museum Education I. 3 hours. Study of the museum’s public role, centering on history and theory of art museum education. Audience identification and museum education careers stressed toward aim of understanding, developing, and expanding learning opportunities in museums. Prerequisite(s): art education and art history, graduate level.

5560. Seminar in Art Museum Education II. 3 hours. Emphasis on current practices of art museum education with advanced study in areas of specialization. Prerequisite(s): ART 5550 or consent of instructor.

5610. Artist’s Bookmaking. 3 hours. (2;4) Design and creation of books as works of art at the master’s level. Utilization of techniques of book design and bookbinding to create personal artistic statements in a sequential format. Prerequisite(s): competency in photography or printmaking or consent of school.

5700. Seminar in University Art Teaching. 3 hours. A study of problems unique to university art faculty; professional practices in various fields of art teaching. May be repeated for credit as topics vary.

5800. Graduate Studio. 3 hours. Courses for students qualified to develop professional competence in special areas of studio work. Prerequisite(s): 12 hours of art in the selected area and consent of school. All may be repeated for credit.

5801. Sculpture Studio.
5802. Painting Studio.
5803. Ceramics Studio.
5804. Drawing Studio.
5805. Printmaking Studio.
5806. Photography Studio.
5807. Communication Design Studio.
5809. Interior Design Studio.
5810. Jewelry and Metalworking Studio.
5811. Fibers: Weaving Studio.

5825. Professional Practices for the Studio Artist. 3 hours. A study of theoretical and practical aspects of succeeding as a practicing artist outside the academy. Survey of the protocols and common practices expected of the artists as a productive member of the business community wherein fine art is the commodity.

5850. Seminar in Art Education. 3 hours. Selected problems in art education, theory and practice. Prerequisite(s): consent of school. May be repeated for credit as topics vary.

5860. Curriculum Development and Program Assessment in Art. 3 hours. Processes for developing and sequencing the curriculum and methodologies for the assessment of educational programs and student learning in art for elementary and secondary public schools and higher education.

5870. History of Art Education. 3 hours. Seminar explores the history and philosophy of education in relationship to the teaching of art in public schools and higher education.

5880. Trends and Issues in Art Education. 3 hours. Research into current literature and practical applications in American and international art education.
5900-5910. Special Problems. 1-3 hours each. Conference courses open to advanced students capable of doing independent research under the direction of the instructor. Not to be registered for except when other graduate courses are not available. Registration permitted only with consent of school. A maximum of 3 semester hours of credit for each course.

5920-5930. Research Problems in Lieu of Thesis. 3 hours each. Research dealing with significant problems in the field of art. Courses open to MFA students who are doing a project in lieu of a thesis. Student must mount an MFA exhibition as part of course requirements for 5930.

5950. Master’s Thesis. 3 or 6 hours. To be scheduled only with consent of school. 6 hours credit required. No credit assigned until thesis has been completed and filed with graduate dean. Continuous enrollment required once work on thesis has begun. May be repeated for credit.

5960-5970. Art Institute. 1-3 hours each. For students accepted by the university as participants in special institute programs.

6900-6910. Special Problems. 1-3 hours each. Conference courses for doctoral students. Directed reading and research in fields of special interest.

6950. Doctoral Dissertation. 3, 6 or 9 hours. To be scheduled only with consent of school. 12 hours credit required. No credit assigned until dissertation has been completed and filed with the graduate dean. Doctoral students must maintain continuous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit.

Astronomy
see Undergraduate Catalog

Behavior Analysis

Behavior Analysis, BEHV = 0435

5000. Observation and Measurement of Behavior and Environment. 3 hours. An examination of the factors to be considered in observing and measuring behavior and environment; methods of recording data with emphasis on the conditions under which each method is most appropriate.

5010. Experimental Analysis of Behavior. 3 hours. Reviews classical experimental literature in behavior analysis. Compares methodology to that in natural and social sciences. Special emphasis on experimental analysis of human behavior.

5020. Theory and Philosophy in Behavior Analysis. 3 hours. Study of the conceptual framework of behavior analysis; studies epistemological issues and nature of scientific explanation; examines common misconceptions and provides theoretical foundations for applications and basic research.

5030. Applied Behavior Analysis and Autism III: Supervision and Training. 4 hours. Describes behavioral intervention literatures as they relate to the change agents responsible for treatment implementation. Students design and implement change agent data collection systems, training packages, and complete extensive practical training. Students also explore issues in the funding and systems involved in the provision of treatment. Prerequisite(s): BEHV 4000.

5100. Introduction to Behavior Analysis. 3 hours. Defines and delimits the subject matter of behavior analysis. Examines the principles that describe behavioral processes and distinguishes the learned and unlearned components of operant and respondent behavior. Relates behavior change procedures to the processes accounting for learned behavior.

5140. Research Methods in Behavior Analysis. 3 hours. An overview of strategies and tactics of experimental design in behavior analysis. Includes strengths and weaknesses of single organism methodology in basic and applied research. Topics include issues of experimental logic, experimental control, variability, data analysis and display, and interpretation of experimental findings.

5150. Techniques in Applied Behavior Analysis. 3 hours. Analysis of problems in behavioral terms. Selection of management strategy and behavior change techniques, including behavioral contracting, contingency management, programmed instruction, removal or reduction of environmental stressors. Consideration of ethical issues, including informed consent, need for non-coercive or at least restrictive intervention. Supervised practical experience.

5250. Topics in Behavior Analysis. 3 hours. In-depth analysis and discussion of significant topics in behavior analysis. Topics include but are not limited to the following: philosophy of measurement of behavioral phenomena; rule-governed vs. contingency-governed behavior; the creation of settings and interpersonal dynamics; legal, ethical and professional issues in behavior analysis.

5330. Verbal Behavior and the Analysis of Human Behavior. 3 hours. Use of behavior analysis in understanding the nature and development of human communication. Explores how and why communication fails; develops guidelines for enhancing communication through understanding of the underlying behavioral processes.

5540. Legal, Ethical and Professional Issues in Behavior Analysis. 3 hours. Addresses and reviews the effects of court decisions in development and implementation of behavioral interventions, ethical requirements of the Behavior Analysis Certification Board, and professional conduct in treatment, intervention, and consultation settings. Topics include accountability, confidentiality, quality of services, quality of life, emergency management, research, professional collaborations, and ethical safeguards.

5560. Development of Behavior Intervention Programs. 3 hours. Focus is on the integrated components of behavioral programming. Includes developing behavioral objectives, functional analysis, design of intervention procedures, evaluative criteria and the integration of these components into a readable document.
5570. Training and Supervision of Staff in Human Service Settings. 3 hours. Includes analysis of political and social contingencies existing in most institutional settings. Describes training considerations and ways to establish a positive work environment for staff and clients. Principles underlying effective supervisory practices are described.

5810. Practicum. 2 hours. (0;0;2) Students work in a small group in a field setting under the immediate supervision of a faculty member in the department. The purpose of this practicum is to provide experience in applying behavioral principles in a setting where faculty feedback is continuously available.

5815. Practicum. 1 hour. (0;0;1) Students work individually or in pairs on a project in any of a variety of applied settings. They are supervised by faculty through weekly meetings and occasional on-site observation. Project must be pre-approved, in writing, by faculty supervisor before registration. Practicum projects typically require about 100 clock hours (including time in the field and time meeting with supervisor). The purpose of this practicum is to provide the student with experience in planning and implementing behavior change. This course may be repeated for credit. Prerequisite(s): BEHV 5810.

5820. Internship. 3 hours. (0;0;3) Students work in the field, under the supervision of a qualified behavior analyst, in a setting of their choice for a period of 6 weeks. Internship settings include (but are not limited to) agencies serving persons with developmental disabilities, business and industry, consulting firms, research facilities, schools, and offices of physicians, psychologists and other private practitioners. Prerequisite(s): BEHV 5810 and 5815.

5900-5910. Special Problems. 1-3 hours each. Open to graduate students who are capable of independent work in a specific area of interest. Outline of problem and proposed activities must be submitted in writing to faculty and approved in advance of registration.

5950. Master’s Thesis. 3 or 6 hours. To be scheduled only with consent of department. 6 hours credit required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun. May be repeated for credit.

6000. Behavioral Interventions in Health and Medicine. 3 hours. Course is constructed around a series of cases in which behavioral interventions are planned to improve health, prevent disease, or mitigate the effects of chronic health problems of individuals. A behavioral analysis of the problem in the context of individuals’ overall repertoire and life circumstances is followed by design of an intervention plan based on behavioral principles. Problems likely to need resolution for successful intervention are identified and addressed.

Biochemistry

see Biological Sciences

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### Biological Sciences

**Biochemistry, BIOC = 0116**

**5340. Molecular Biology.** 3 hours. Mechanisms and regulation of genetic expression, chromosome replication, mutagenesis and DNA repair, and gene cloning in prokaryotic and eukaryotic systems. Prerequisite(s): BIOC 4570 and 4580, or BIOC 4570 and 4580, and at least two of the following: BIOC 4540, 4550 or 4560, or BIOC 3450, 3510 or 3520. (Same as BIOL 5340.)

**5540. Biochemistry I.** 3 hours. (3;0;1) Chemistry and biochemistry of carbohydrates, lipids, amino acids and proteins, and nucleic acids; biochemical energetics, enzyme catalysis, vitamins and coenzymes, and their interrelationships in energy-producing cycles and pathways. A recitation period is scheduled for problem-solving and student reports from the current biochemical literature. Prerequisite(s): CHEM 2380 or consent of department.

**5550. Biochemistry II.** 3 hours. (3;0;1) Continuation of BIOC 5540. Metabolic pathways in biosynthesis and degradation of lipids, nucleic acids, proteins and carbohydrates, photo-synthesis, nitrogen cycle, biochemical genetics and metabolic regulation. A recitation period is scheduled for problem-solving and student reports from the current biochemical literature. Prerequisite(s): BIOC 5540 or consent of department.

**5560. Biochemistry Laboratory.** 2 hours. (1;3) Analysis and characterization of amino acids, peptides, enzymes, lipids, nucleic acids, carbohydrates, and metabolic pathways and processes. Techniques include a variety of chromatographic methods, electrophoresis, UV-vis spectroscopy and radiochemistry. Prerequisite(s): BIOC 5540 (may be taken concurrently). (Same as BIOC 4560.)

**5580. Molecular Biology and Biotechnology Laboratory.** 2 hours. Experiments in recombinant DNA techniques, gene regulation and other areas of molecular biology. Prerequisite(s): BIOC or BIOL 5340 (may be taken concurrently). (Same as BIOC 4580 and BIOL 5580.)

**5680. Selected Topics in Biochemistry.** 1-3 hours. Current research interests in the field of biochemistry. Prerequisite(s): consent of department. May be repeated for credit as topics vary.

**5900-59110. Special Problems.** 1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor.

**5940. Seminar in Current Biochemistry.** 1 hour. A study of current literature; current research emphasized. May be repeated for credit.

**5950. Master’s Thesis.** 3 or 6 hours. To be scheduled only with consent of department. 6 hours credit required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun. May be repeated for credit.

**6010. Seminar for Doctoral Candidates.** 3 hours. Demonstration of competence in a specific area of biochemistry and/or molecular biology as evidenced by criteria established by the faculty. May be repeated for credit.
6600. Advanced Molecular Biology. 3 hours. Genetic structure and regulation of gene expression in prokaryotic and eukaryotic organisms; mechanisms of gene action, gene/ enzyme relationships and metabolic control; biochemical manipulation and characterization of genetic macromolecules. Prerequisite(s): BIOC 4550 or 5550 or equivalent. (Same as BIOL 6600.)

6610. Advanced Metabolism. 3 hours. Advanced intermediary metabolism of carbohydrates, lipids, nitrogenous compounds and nucleic acids. Relevant new findings particularly regarding the regulation of these pathways are also covered. Prerequisite(s): BIOC 4550/5550 or consent of department.

6620. Advanced Cell Biology. 3 hours. Structure and function of animal and plant cells with emphasis on cell membranes, cytoplasmic organelles and the nucleus; readings in current literature. Prerequisite(s): biochemistry, BIOL 3510/3520 or equivalent, or consent of department. (Same as BIOL 6620.)

6630. Protein Structure and Function. 3 hours. An introduction to protein structure. Coverage of recurring structural motifs and the determination of protein structure as it determines enzyme function. Catalytic reaction mechanisms, protein-substrate interactions, and the kinetics of enzyme catalyzed reactions. Prerequisite(s): BIOC 4550 or 5550.

6640. Biochemical Regulation. 3 hours. A study of regulation in metabolic processes and pathways, emphasizing the theories of metabolic flux and enzyme regulation. Fundamental regulatory mechanisms, such as allostereism, covalent protein modification and induction, are discussed in the context of fundamental cell metabolism and signal transduction. Prerequisite(s): BIOC 4550 or 5550, or consent of department.

6650. Plant Physiology and Biochemistry. 3 hours. This course emphasizes contemporary aspects of plant biochemistry and physiology using examples from the current research literature. Lectures focus on physiological processes that are specialized and unique to higher plants, including photosynthesis, and dormancy. Biochemical and physiological approaches are integrated as they relate to the overall control of plant growth and development. Prerequisite(s): one of the following: BIOC 4540 or 4550, or BIOL 3510 or 4570, or plant physiology, or consent of the instructor.

6680. Advanced Techniques in Biochemistry. 1-3 hours. Methods and instrumentation currently used in biochemical analyses. Presented in four-week minicourses consisting of 8 hours of lecture and 24 hours of laboratory. Topics vary from year to year but include, among others, protein sequencing and amino acid analysis, nucleic acid sequencing, tissue culture, monoclonal antibody production, column chromatography, radioisotopes, peptide synthesis, and gel electrophoresis and electrofocusing. Prerequisite(s): consent of department. May be repeated for credit as topics vary.

6900-6910. Special Problems. 1-3 hours each. For doctoral students capable of developing a problem independently through conferences and activities directed by the instructor. Problem selected by the student with the consent of the major professor.

6940. Individual Research. 1-12 hours. Doctoral research of independent nature. May be repeated for credit.

6950. Doctoral Dissertation. 3, 6 or 9 hours. To be scheduled only with consent of department. 12 hours credit required. No credit assigned until dissertation has been completed and filed with the graduate dean. Doctoral students must maintain continuous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit.

6990. Postdoctoral Research. 1-3 hours. For postdoctoral fellows to further training and research experience in developing and solving research problems independently. Prerequisite(s): consent of department. May be repeated for credit.

Biological Sciences, BIOL = 0114

5001. Contemporary Topics in Molecular Biology. 1-3 hours. Contemporary topics in molecular biology and biochemistry. Topics may vary from semester to semester and may include eukaryotic and prokaryotic molecular genetics, DNA profiling, physiology and metabolism and application of recombinant DNA technologies. May be repeated for credit as topics vary.

5002. Contemporary Topics in Microbiology. 1-3 hours. Contemporary topics in microbiology. Topics vary from semester to semester and may include bacterial physiology or metabolism and microbial chemistry. May be repeated for credit as topics vary.

5003. Contemporary Topics in Neuroscience. 1-3 hours. Contemporary topics in neuroscience and physiology. Topics vary from semester to semester and may include neurophysiology, computational neuroscience, neurotransmitters, central nervous system trauma. May be repeated for credit as topics vary.

5005. Contemporary Topics in Biology. 1-3 hours. Contemporary topics in the biological sciences. Topics may vary from semester to semester and may include topics such as human development, epidemiology or plant physiology. May be repeated for credit as topics vary.

5040. Contemporary Topics in Environmental Science and Ecology. 1-3 hours. Contemporary topics and issues in environmental science and ecology. Topical themes include global climate change, biodiversity, wetlands, population and aquatic, terrestrial or plant ecology. May be repeated for credit as topics vary.

5051. Community Ecology. 3 hours. Structure, dynamics and diversity of biotic communities and ecosystems. Focus on population interactions, niche relationships and processing of matter and energy. Prerequisite(s): six hours of biology including BIOL 2140.

5052. Community Ecology Laboratory. 1 hour. Field and laboratory exercises on distribution, dispersion, abundance and diversity of organisms and their populations. Focus on quantitative description of biotic communities and ecosystems. Prerequisite(s): concurrent enrollment in or credit for BIOL 5051 or consent of department.
5060. Electron Microscopy. 4 hours. (2:6) Theory and application of scanning and transmission electron microscopy, including sample preparation and analytical techniques.

5070. Insect Biology. 4 hours. (3:3) Morphology, physiology, ethology, classification and control of insects and related arthropods. Prerequisite(s): 6 hours of biology.

5080. Radiation Safety. 1 hour. Radiation sources, interaction of radiation with matter and human tissues, radiation measurement and dosage, instrumentation, regulations and practical safety procedures.

5110. Endocrinology. 3 hours. Regulation of physiological processes in animals by hormones and related chemical agents. Prerequisite(s): BIOL 3800 or equivalent, or consent of department.

5120. Environmental Contaminants. 2 hours. Presents a scientific overview of environmental contaminants, their occurrence, sources and impact on humans and the environment.

5150. Pharmacology: The Biological Basis of Drug Action. 3 hours. An overview of pharmacology for graduate students, based on principles of drug action. The course emphasizes drugs by class, and not specific drugs per se. Course covers general principles, antibiotics and pharmacology of the autonomic, cardiovascular, central nervous and endocrine systems.

5160. Advanced Techniques in Microbiology and Molecular Biology. 6 hours. (0:6) Intensive laboratory exercises in cultivation, analysis and gene transfer in bacterial mutants. Further emphasis on techniques for studying macromolecular and enzyme synthesis, preparation and analysis of plasmid DNA, cloning and gene expression. Prerequisite(s): microbiology, biochemistry or BIOL 3510.

5180. Techniques in Molecular Biology. 6 hours. (1:6) Teaches advanced molecular biology laboratory methodology. Techniques include gene cloning, plasmid purification, restriction analysis, DNA fingerprinting and DNA sequencing. Prerequisite(s): BIOL/BIOC 4570, or BIOL 5340, or consent of instructor.

5200. Environmental Health. 3 hours. An introduction to the environmental determinants of health that focuses on health risks of human-mediated changes to the environment, as well as the regulatory framework which directs decision making on environmental issues. Consideration given to health implications of growing populations, available food quantity and quality, loss of habitat and biodiversity, radiation, toxins in the environment, sanitation, solid and hazardous waste disposal, and environmental degradation including noise, air and water pollution.

5220. Neuropsychopharmacology. 3 hours. A comprehensive examination of the physiological effects on major psychotropic drug classes that affect the central nervous system, including the interactions between neurotransmitter systems and physiology; neuroanatomical pathways and behavior; synaptic functions and behavioral disorders.

5250. Advanced Human Physiology. 3 hours. Physiological mechanisms in humans, with emphasis on medical physiology.

5260. Principles of Evolution. 3 hours. Genetic, systematic, ecological, historical and geographical concepts of evolution. Prerequisite(s): consent of department.

5270. Limnology. 4 hours. (2:4:1) Physical, chemical and biological factors that affect productivity in reservoirs, lakes and ponds. Field studies using current limnological methods and instruments. For biologists, chemists, teachers and sanitarians. Prerequisite(s): 12 hours biology or 6 hours biology plus 6 hours of another science.

5280. Aquatic Botany. 3 hours. (2:3) Ecology, identification and management of aquatic plants and algae. Special emphasis on the role of aquatic plants in reservoir and river ecosystems. Prerequisite(s): 8 hours of biology.

5300. Physiological Ecology. 3 hours. Physiological, behavioral, and biochemical adaptations of animals to environmental limiting factors, including temperature, oxygen, water, salinity, light and toxic chemicals.

5340. Molecular Biology. 3 hours. Mechanisms and regulation of genetic expression, chromosome replication, mutagenesis and DNA repair, and gene cloning in prokaryotic and eukaryotic systems. Prerequisite(s): BIOL/BIOC 4570/4580 and at least two of the following: BIOL 4540/4550/4560 or BIOL 3450 or 3510/3520. (Same as BIOC 5340.)

5360. Chemistry of Water and Water Pollution. 4 hours. (3;3;0) Chemical and engineering approaches to water and waste water treatment. Laboratory studies for assessing chemicals in water and waste water. Application of standardized analytical methods for evaluating water quality. Prerequisite(s): 6 hours of chemistry.

5380. Fundamentals of Aquatic Toxicology. 3 hours. (2:3) Theory and methodologies used by scientists, regulatory agencies and industry to measure the impact of man’s activities on freshwater aquatic ecosystems. The course has its foundations in history, but concentrates on current methodologies and theories.

5400. Wetland Ecology and Management. 4 hours. (3:4) Ecology and management of various types of wetlands with emphasis on the role of aquatic and wetland plants in determining wetland structure and function. Wetland restoration and creation for wildlife habitat or water quality benefits are reviewed.

5420. Industrial Microbiology. 3 hours. Use of microorganisms and microbial processes in the pharmaceutical, chemical and food industries. Prerequisite(s): biochemistry, BIOL 4500.

5440. Stream Ecology. 4 hours. (3:4) Ecological principles of how stream dynamics influence the biological and hydrologic patterns and processes occurring in stream ecosystems. Laboratory studies designed to teach techniques and to test hypotheses related to environmental assessment. Prerequisite(s): 3 hours of ecology. (Same as BIOL 4440.)

5470. Laboratory Techniques in Cytology. 1 hour. (0:3:1) Cytological techniques in plants, animals and humans, including karyotyping, cell and tissue culture, and sex chromatin analysis. Prerequisite(s): consent of department. May be taken with or without BIOL 5490.
5490. Cytology and Cytogenetics. 3 hours. Cell structure and function in plants and animals with emphasis on genetic and chromosomal aberrations. Prerequisite(s): consent of department.

5500. Advanced Bacterial Physiology. 3 hours. Growth, processes of metabolism, genetics, regulatory control, structure, adaptation and differentiation mechanisms in bacteria. Emphasis on comparative analysis and current literature. Prerequisite(s): general microbiology, biochemistry or BIOL 3510/3520.

5510. Advanced Immunology. 3 hours. Immune defense mechanisms, including immunobiology, immunochemistry, serology, immune responses to infectious agents, allergy and autoimmune diseases.

5520. Invertebrate Biology. 4 hours. (3;3) Biology of non-vertebrate animals with emphasis on anatomical, physiological and behavioral adaptations to varied environments and phylogenetic relationship. Prerequisite(s): 6 hours of biology.

5570. Aquatic Insects of North America. 4 hours. (3;4) Ecology, sampling methods, systematics and classification of Nearctic aquatic insects at the family level; use of keys and key terminology in aquatic insect identification. Prerequisite(s): invertebrate zoology or entomology, or consent of instructor.

5580. Molecular Biology and Biotechnology Laboratory. 2 hours. (0;5) Experiments in recombinant DNA techniques, gene regulation and other areas of molecular biology. Prerequisite(s): BIOL or BIOC 5340 (may be taken concurrently). (Same as BIOC 5580.)

5620. Human Development. 3 hours. Basic embryology, human reproduction, child development (physiological and cognitive) from the neonatal period through the teenage years.

5630. Human Teratology. 3 hours. Principals of teratology and embryology, including study strategies, reproduction toxicants, drugs and lactation, risk assessment, and known human teratogenic agents.

5650. Environmental Science Field Course. 6 hours. (3;5) Advanced field methods and approaches for analysis of the physical, chemical and ecological aspects of aquatic, terrestrial and estuarine ecosystems are covered. On a rotating basis, the field course focuses on alpine lakes, deserts and estuaries. May be repeated for credit as topics vary. Prerequisite(s): consent of instructor.

5670. Natural History and Philosophy of Rivers. 6 hours. (3,5) Ecological, geological, and philosophical history of arid watersheds of the western United States. Extended field trip required. Desert canyons are geologically unique and present wonderful opportunities to study interactions of geology, fauna, flora, environment, cultural development and environmental ethics. Prerequisite(s): consent of instructor. (Same as BIOL 4670 and PHIL 5670.)

5720. Sediment Toxicology. 3 hours. Mechanisms of contaminant transport and fate in freshwater and marine sediments and pollutant effects at the individual, population and biotic community levels. Sediment contaminant bioavailability and biaccumulation into food webs and the scientific aspects of legal control and remediation of hazardous sediments. Prerequisite(s): one year of chemistry and biology or consent of department.

5750. Neuroscience. 3 hours. Brain chemistry, physiology and anatomy; neural basis of memory, perception, rhythms, emotion, cognition; development of the nervous system; neurological disorders. Prerequisite(s): 16 hours of biology or consent of department. (Same as BIOL 4750.)

5760. Neurobiology Laboratory. 1 hour. (0;3) Vertebrate neuroanatomy and experimental neurobiology using electrophysiological and behavioral methods. Prerequisite(s): concurrent enrollment in BIOL 6460 or consent of department.

5800. Microbial Genetics. 3 hours. Genetic structure, inheritance and gene expression in microorganisms and their viruses. Prerequisite(s): BIOL 3450 and 4500 or equivalent, and consent of department.

5830. Advanced Genetics. 3 hours. Genetic structure and inheritance in viruses, bacteria and higher organisms, including gene biochemistry, gene expression, population genetics, cytogenetics and organelle genetics. Prerequisite(s): BIOL 3450 or equivalent, and consent of department.

5840. Medical Genetics and Genetic Counseling. 3 hours. Human genetics, including cytogenetics, immunogenetics, population genetics, molecular genetics, human biochemical genetics and genetic counseling. Prerequisite(s): BIOL 3350 or 3450 or equivalent.

5860. Biological Sciences Seminar Series. 1 hour. A weekly seminar series covering a broad range of biological research topics. Invited speakers are prominent local, regional or national researchers. May be repeated for credit. Pass/no pass only.

5880. Environmental Sciences Seminar Series. 1 hour. A weekly seminar series covering a broad range of environmental research topics. Invited speakers are prominent local, regional or national researchers. May be repeated for credit. Pass/no pass only.

5900-5910. Special Problems. 1-3 hours each. Independent study or laboratory research. Problem must be approved by major professor. No more than 6 hours may be counted toward a degree.

5920-5930. Research Problems in Lieu of Thesis. 3 hours each.

5950. Master’s Thesis. 3 or 6 hours. To be scheduled only with consent of department. 6 hours credit required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun. May be repeated for credit.

5960. Science Institute. 1-6 hours. For students who assist in instruction or participate in special research workshops. Prerequisite(s): consent of department. No more than 6 hours may be counted toward a degree.

6010. Biology Seminar. 1 hour. Weekly lectures on research in biology and related disciplines. Prerequisite(s): consent of department. May be repeated for credit as topics change.
6070. Ecology of Benthic Organisms. 4 hours. (3;2;1) Adaptations, biotic interrelationships and population characteristics of bottom-dwelling aquatic organisms. Field techniques, population analysis and dynamics in both lentic and lotic habitats. Prerequisite(s): BIOL 2140 or equivalent, and a minimum of 7 hours advanced or graduate ecology.

6080. Current Advances in Pharmacology. 3 hours. Course covers the latest advances in pharmacology on a rotating basis, with emphasis on neuropharmacology, autonomic pharmacology and biochemical/molecular pharmacology. May be repeated up to a total of three times to cover all aspects.

6150. Communication in Scientific Teaching and Research. 3 hours. A seminar and workshop that cover lecture course techniques, laboratory preparation and teaching, seminar techniques, research presentations at scientific meetings, research publications, research proposals, scientific illustration, photography, departmental and university services for teaching and research, and job-seeking techniques in academe, government and industry.

6200. Bioinstrumentation and Analytical Techniques. 4 hours. (3;0;1) Current research instrumentation and techniques in biological sciences. Prerequisite(s): consent of department.

6220. Biostatistics. 6 hours. Statistical methods and experimental design; descriptive statistics; data presentation; parametric and non-parametric methods of hypothesis testing, including two-sample tests, analysis of variance, regression and correlation analyses; introduction to multivariate statistics. Competency with computer statistical packages is developed. Computer fee required.

6240. Multivariate Biostatistics. 2 hours. Application of techniques, e.g., multiple regression, discriminate, factor and cluster analyses, to explore multivariable biological and environmental data in a seminar setting. Emphasis is placed on concepts and applications rather than theory and development. Prerequisite(s): BIOL 6620 or graduate level statistics and familiarity with either SAS or SSPS statistical software.

6320. Remote Sensing. 4 hours. (3;3) The theoretical bases and practical aspects of digital remote sensing. Remote sensing technology is reviewed and data analysis techniques are presented. Approaches to the development of a remote sensing project are given. Hands-on experience is provided in the laboratory. Prerequisite: GEOG 5170 is recommended.

6340. Environmental Impact Assessment. 4 hours. (3;3) The principles and practices of preparing environmental impact assessments and statements. Procedures for predicting and assessing impacts on the physical, chemical, biological, cultural and socioeconomic environments are given. Techniques for selecting a preferred action from a group of alternatives are presented.

6360. Environmental Engineering. 4 hours. (3;3) Water, land and air pollution control technologies are presented. Engineering approaches to pollution problems are demonstrated by considering technical feasibility and economic constraints. Laboratory exercises provide instruction for quantitative analysis of water and waste water; field trips to various pollution-control facilities. Prerequisite(s): CHEM 1410-1420 and 1430-1440.

6370. Aquatic Chemistry. 3 hours. Quantitative treatment of the variables that determine the composition of natural waters and factors governing natural water cycles.

6380. Environmental Chemistry. 4 hours. (3;1) Thermodynamics and kinetics of physical and chemical reactions under environmental conditions. Transfer of laboratory results to field situations. Offers basic knowledge necessary to understand the fate and transport of chemicals in the atmosphere and hydrosphere. Prerequisite(s): 15 hours of chemistry.

6390. Techniques in Environmental Analysis. 4 hours. (3;3) Theory and application of advanced analytical chemistry techniques for metals and organics in environmental and biological samples. Introduces methods for trace metals analysis and identification, and organics separation and identification techniques. Laboratory teaches state-of-the-art spectroscopic and chromatographic techniques.

6400. Ecological Risk Assessment. 3 hours. A detailed treatment of aquatic and terrestrial methods and procedures used to assess the ecological hazard of chemicals in the environment. Emphasizes quantitative methods in testing, site assessment, monitoring procedures, regulatory requirements and field and laboratory techniques useful to assess damage to aquatic, terrestrial and avian resources. Prerequisite(s): ecology, statistics, general chemistry (8 hours), or consent of the instructor.

6460. Cellular Neuroscience. 3 hours. A detailed examination of the nervous system, specifically neuroanatomy, neurophysiology, neurochemistry and sensory transduction. Prerequisite(s): consent of department.

6480. Systems Neuroscience. 3 hours. A detailed examination of the major brain functions, including sensation, perception, movement, emotions, language, thought and memory. Prerequisite(s): BIOL 6460 or equivalent, or consent of the instructor.

6500. Brain Development and Plasticity. 3 hours. Development of the nervous system from early embryo through adulthood; neurogenesis, cell migration, differentiation, synaptogenesis; similarities among mechanisms of ontogeny, learning and regeneration; emphasis on experimental approaches. Prerequisite(s): BIOL 4750 or 6480 or equivalent is recommended.

6540. Neurochemistry. 3 hours. Chemistry of the nervous system and behavior; pharmacology, anatomy and physiology of neurotransmitter systems; current techniques in neurochemistry and neuropharmacology. Prerequisite(s): BIOL 4750 or 6460 or equivalent, and one semester of undergraduate biochemistry are recommended.

6600. Advanced Molecular Biology. 3 hours. Genetic structure and regulation of gene expression in prokaryotic and eukaryotic organisms; mechanisms of gene action, gene/ enzyme relationships and metabolic control; biochemical manipulation and characterization of genetic macromolecules. Prerequisite(s): BIOL 4570 or 5340 or equivalent. (Same as BIOC 6600.)
6620. Advanced Cell Biology. 3 hours. Structure and function of animal and plant cells with emphasis on cell membranes, cytoplasmic organelles and the nucleus; readings in current literature. Prerequisite(s): biochemistry, BIOL 3510/3520 or equivalent, or consent of department. (Same as BIOC 6620.)

6900-6910. Special Problems. 1-3 hours each. Independent study or laboratory research for doctoral students. Problem must be approved by major professor. No more than 6 hours may be counted toward a degree.

6940. Individual Research. 1-12 hours. May be repeated for credit, not to exceed 12 hours. Pass/no pass only.

6950. Doctoral Dissertation. 3, 6 or 9 hours. To be scheduled only with consent of department. 12 hours credit required. No credit assigned until dissertation has been completed and filed with the graduate dean. Doctoral students must maintain continuous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit.

Molecular Biology

Related Courses Offered at Texas Woman’s University

Students who wish to enroll in the following TWU courses may do so through a cross-registration mechanism administered by the Toulouse School of Graduate Studies at UNT.

BACT 6533. Plasmids as Vectors for Recombinant DNA. 3 hours. Molecular structure and replication of plasmids. Utilization of plasmids for isolation, characterization, and expression of prokaryotic and eukaryotic genes. One lecture, 6 laboratory hours a week.

BACT 6543. Viruses as Vectors for Recombinant DNA. 3 hours. Replicative cycle of viruses utilized in recombinant DNA technology. Viruses used to isolate genetic material from other sources and characterization of the recombinant DNA by size, restriction endonuclease mapping and nucleic acid sequencing. One lecture, 6 laboratory hours a week.

BIOL 5123. Biostatistics. 3 hours. Advanced studies in biometric systems, experimental design and data analysis. 3 lecture hours a week. Prerequisite(s): 12 hours of biology and permission of instructor.

BIOL 5133. Advanced Genetics. 3 hours. Theory, experimental methods, and data analysis of modern advances in genetics. 3 lecture hours a week. Prerequisite(s): permission of instructor.

BIOL 5653. Molecular Biology. 3 hours. Introduction to neural and physiological mechanisms of endocrine function with emphasis on reproduction and response to stress. Survey of current literature. 3 lecture hours a week.

BIOL 6334. Advanced Cell Biology. 4 hours. Survey of current understanding of biogenesis, architecture and function of cellular organelles. The cell cycle and regulation of cell growth. 4 lecture hours. Prerequisite(s): permission of instructor.

BIOL 6513. Molecular Biology. 3 hours. Survey of current understanding of DNA structure, organization, chromosome replication, gene transcription, ribosome assembly and translation. Emphasis is on molecular processes and their regulation in both prokaryotes and eukaryotes. 3 lecture hours a week. Prerequisite(s): CHEM 5613 and CHEM 5623 or permission of instructor.

BIOL 6653. Developmental Biology. 3 hours. Experimental evidence and molecular analysis of the embryogenesis of animals and mechanisms of cellular differentiation. Reading assignments, lectures and review of recent research publications in the field. 3 lecture hours a week.

ZOOL 5423. Endocrinology. 3 hours. Advanced studies of biology and biochemistry of the glands of internal secretion. 3 lecture hours a week. Prerequisite(s): ZOOL 4243.

Business Administration, College of

Business Administration, Interdepartmental, BUSI = 0370

5190. Administrative Strategy. 3 hours. Capstone course providing the integration of functional areas of business administration. Requires students to determine policy at the general- or top-management level. Students address strategic organizational problems and the optimization of the total enterprise. Course includes the use of lectures, case analysis and special topics. This course must be taken in the student’s last semester of coursework.

5410. Creative Thinking and the Business Idea. 3 hours. Introduces the professional MBA to students with the major themes developed for the program. The course discusses the essential of entrepreneurship, risk taking and market opportunity. Students are expected to develop a major discussing the market opportunities for a business product or service. Co-requisite(s): FINA 5170.

5420. Assessing the Business Opportunity. 3 hours. Investigates what a business professional needs to conduct a thorough industry, market and competitor analysis and to determine the degree of match between the opportunity and the firm. Topics developed are mission and vision, understanding corporate strategy and structure, market segments and demand factors, etc. Co-requisite(s): must take ACCT 5130 in the same semester. Prerequisite(s): BUSI 5410.
5430. Designing, Creating and Managing the Delivery Systems. 3 hours. Focuses on the essentials of designing, creating and managing the business firm’s delivery system. Topics include designing value into products and services, creating and managing distribution channels, quality management ideas, process planning and facility layout. Co-requisite(s): BCIS 5120. Prerequisite(s): BUSI 5420.

5440. Growing Business in Changing Environments. 3 hours. Studies the essentials of managing the business firm within evolving environments. Concepts required for monitoring and control, along with tools for decision making. Sets the foundation for other topics such as Organizational structures, redesign, threats and opportunities, and adjusting delivery and communications systems to dynamic environments. Co-requisite(s): MSCI 5180. Prerequisite(s): BUSI 5430.

5900. Special Problems. 1-3 hours. Open to graduate students who are capable of developing a problem independently. Problem chosen by the student and developed through conferences and activities under the direction of the instructor. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA MBA/MS Advising Office prior to registration.

5920-5930. Problems in Lieu of Thesis. 3 hours each.

6100. Seminar in University Teaching for Business Administration. 3 hours. Topics in teaching methodologies. Focus on those topics that provide doctoral students with practical teaching tips to help them become more effective teachers. Different learning styles are addressed and frameworks, theories, and teaching models are presented that help doctoral students continually improve their teaching throughout their career.

6220. Applied Regression Analysis. 3 hours. Applications of multivariate regression analysis, canonical correlation analysis, and nonparametric statistical procedures to issues in business research involving multivariate data. Topics include building, evaluating, and validating a regression model; analyzing models using hierarchical regression, contrast coding, partial correlations and path analysis; and comparing parametric and corresponding nonparametric tests. Prerequisite(s): MSCI 5180 or equivalent and BUSI 6450. May be taken concurrently with BUSI 6220.

6240. Applied Multivariate Statistics. 3 hours. Applications of multivariate statistical procedures involving data reduction techniques and analyzing multidimensional relationships in business research. Topics include multivariate analysis of variance, discriminant analysis, logistic regression, exploratory factor analysis, cluster analysis, multidimensional scaling and conjoint analysis. Prerequisite(s): BUSI 6220.

6280. Applications in Causal and Covariance Structure Modeling. 3 hours. Application of CSM techniques to the analysis of behavioral data in business research. “Hands-on” practice using LISREL to examine measurement and structural models containing directly observed and latent variables. Provides a solid working knowledge of how to conceptualize measurement and structural models, the standard LISREL and SIMPLIS syntax for estimating these models, and proper interpretation of LISREL output. LISREL assumptions, limitations, tricks, and traps are explored. Specific topics include reviews of causality and path analysis, covariance algebra, creating path diagrams and structural equations, LISREL notation and syntax, considerations in model identification, estimation, evaluation and interpretation. Specific application areas include confirmatory factor analysis and its extensions, causal models with directly observed and latent variables. Course also takes a critical look at the analysis of experimental data, modeling quadratic and interaction terms, analysis of ordinal and other non-normal variables. Prerequisite(s): BUSI 6220, 6240 (may be taken concurrently), and 6450. Students must have a thorough knowledge of multiple regression, factor analysis, ANOVA and ANCOVA. Students are also expected to have a solid grasp of the fundamentals of research design, including how to assess the internal and external validity of research designs, as well as how to assess the validity and reliability of multi-item behavioral measures. Exposure to matrix algebra is encouraged.

6450. Business Research Methods. 3 hours. Designed to introduce PhD students to the methods and measurements of business research, including scientific method, research design and measurement. Prerequisite(s): MSCI 5180 or equivalent.

6460. Foundations of Scientific Inquiry. 3 hours. Seminar in scientific inquiry for doctoral students in business administration. Focus on topics that provide doctoral students with a better understanding of theoretical frameworks used in business research. Form and structure of explanations, laws, and theories used in business research are examined and discussed. The seminar is intended to be a rigorous course that exposes doctoral students to an array of topics for understanding basic business research.

6480. Advanced Issues in Research Design. 3 hours. Experimental and quasi-experimental approaches to solving problems using the scientific method. Observation, generalization, explanation, and prediction using experimentation and statistical inference. Statistical principles in experimental design including ANOVA and MANOVA techniques. After completing the course, students are prepared for conducting experiments. Prerequisite(s): BUSI 6450 or equivalent.

6900. Special Problems. 1-3 hours. Open to graduate students who are capable of developing a problem independently. Problem chosen by the student and developed through conferences and activities under the direction of the instructor. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.
5090. Introduction to Business Computer Information Systems, BCIS = 0315

3 hours. Examines the interaction between information systems and the organizational context. Specific topics to be covered include the strategic role of information systems (IS), interorganizational systems, the Internet and WWW, electronic commerce, reengineering, the human impacts of IS, the management of change, IS development and implementation, and emerging types of information technology. Course work includes lectures, readings, case analyses and discussion, electronic meeting technology, hands-on computer assignments, and a team field project.

5110. Structure of Programming Languages, 3 hours.
Introduces graduate students to new approaches in programming business applications. Makes use of visual programming tools as well as traditional programming tools such as COBOL. Problem-solving techniques and structured programming are covered early and used throughout the course. Prerequisite(s): BCIS 5090 or equivalent, or consent of department.

5120. Information Systems Development, 3 hours.
The foundations of business information systems analysis and design. Concentration on contemporary design methodologies and computer-aided software engineering techniques. Topics include strategic information systems planning, requirements analysis, user interface design, data design, process design, system testing, ethics, and system audit ability, control and security. Prerequisite(s): BCIS 5090 or equivalent, or consent of department.

5130. Operating Environments, 3 hours.
Advanced technical concepts including basic operating system resources, command and control languages, and operating system internals and utilities. COBOL and Assembler implementation, capabilities, and resource requirements are covered for IBM MVS/ESA and VM/ESA., UNIX, and Windows NT. Introduces students to advanced software technical concepts that form the foundation of business computer systems. Prerequisite(s): BCIS 5090 or equivalent, or consent of department.

5420. Foundations of Database Management Systems, 3 hours.
An introduction to database and database management systems technology within the framework of a business environment. Topics include the study of analysis, design, development and implementation of database-oriented file organizations in business applications. Prerequisite(s): BCIS 5120 or equivalent, or consent of department.

5610. Executive and Decision Support Technologies, 3 hours.
An analysis of how computer systems can assist executive decision making and improve productivity. Emphasis is placed on the design, construction, utilization and managerial impacts of executive support systems. Prerequisite(s): BCIS 5120 or consent of department.

5620. Networking and Telecommunications, 3 hours.
The purpose of this course is to develop an understanding of the strategic impact on the business organization of the convergence of telecommunications and computer topics. The course includes the design and organizational restructuring issues associated with new technologies in telecommunications. Prerequisite(s): BCIS 5120 or consent of department.

5630. N-Tier Systems, 3 hours.
Examines technical and managerial issues associated with the design, development, and deployment of client/server computer systems. Topics include architectures, platform connectivity and project management. Prerequisite(s): BCIS 5110, 5120 and 5420, or consent of department.

5640. Object Oriented Systems, 3 hours.
Examines a variety of managerial issues associated with developing and implementing object-oriented system applications within business. Prerequisite(s): BCIS 5120 and 5420, or consent of department.

5650. Emerging Information Technologies, 3 hours.
Examines various managerial and technical issues associated with the introduction of new information technologies within the firm. Subjects include environmental scanning for new IT developments, assessment of new IT, and legal/ethical issues. Prerequisite(s): BCIS 5120 and 5420, or consent of department.

5660. Data Administration and Project Management, 3 hours.
Examines data administration and project management functions including the implementation and acquisition of business computer information systems within the constraints of legal, technological, economic and environmental issues. Topics are analyzed with respect to their impact on the selection, acquisition, utilization and evaluation of business computer information systems. Prerequisite(s): BCIS 5120 and 5420, or consent of department.

5670. International Issues in Information Technology, 3 hours.
Discussion and in-depth analysis of contemporary information systems topics with emphasis on the economic and technological impact of computer information systems on the business environment. Prerequisite(s): BCIS 5120 or consent of department.
5680. Electronic Commerce Systems. 3 hours. Provides tools, skills, and an understanding of technology, business concepts and issues that surround the emergence of electronic commerce on the Internet. In addition to acquiring basic skills for navigating the Internet and creating a personal electronic presence of the World Wide Web, the student will develop an understanding of the current practices and opportunities in electronic publishing, electronic shopping, electronic distribution, and electronic collaboration. The student will also explore several of the problem areas in electronic commerce such as security (authentication, privacy), encryption, safeguarding or intellectual property rights, acceptable use policies, and legal liabilities. Prerequisite(s): BCIS 5120, and 5420 or consent of department.

5690. Topics in Information Technology. 3 hours. Current issues dealing with the development and use of information technologies in business. Prerequisite(s): BCIS 5120 or consent of department. May be repeated for credit.

5700. Strategic Use of Information Technology. 3 hours. Provides an overview and understanding of the issues involved in the strategic management of the information assets of organizations. Examines a broad range of issues and problems associated with the management of information technology (IT) and information systems (IS) and their alignment with the strategic goals of the organizations. Focuses on the managerial rather than the technical issues and views IS from the perspective of managers at all levels. Prerequisite(s): Completion of Foundation and Technology Sequence course work and within 9 hours of graduation.

5800. Cooperative Education Internship. 1-3 hours. Supervised work in a job related to student’s career objective. Prerequisite(s): student must meet employer’s requirements and have consent of department chair or BCIS master’s coordinator. Pass/no pass only, and cannot be used as a support course.

5900-5910. Special Problems. 1-3 hours each. Open to graduate students who are capable of developing a problem independently. Problem chosen by the student and developed through conferences and activities under the direction of the instructor. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

6010. Seminar in Business Administration. 3 hours. Covers one or more special fields. May be repeated for credit, and two or more sections may be taken concurrently.

6650. Seminar in Man-Machine Studies. 3 hours. The study of computer information systems in the context of their interaction with human users, including an examination of how the human user makes decisions and is supported or inhibited in that task by the orientation and design of information systems.

6660. Comparative Information Systems Theory. 3 hours. Comparative study of present theories with particular attention to the role of computer-based information systems in the organizational policy of business, government and other institutions. Prerequisite(s): consent of department. May be repeated for credit.

6670. Topics in Information Systems. 3 hours. Topics of historical, current and future relevance in the design, development, installation and management of computer-based information systems are examined using readings, case studies and lectures. Prerequisite(s): consent of department. May be repeated for credit.

6900. Special Problems. 1-3 hours. Research by doctoral students in fields of special interest. Includes project research studies and intensive reading programs, accompanied by conferences with professors in fields involved. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

6910. Special Problems. 3 hours. Research by doctoral students in fields of special interest. Includes project research studies and intensive reading programs, accompanied by conferences with professors in field involved. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

6940. Individual Research. 1-12 hours. Individual research for the doctoral candidate. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

6950. Doctoral Dissertation. 3, 6 or 9 hours. To be scheduled only with consent of department. 12 hours credit required. No credit assigned until dissertation has been completed and filed with the graduate dean. Doctoral students must maintain continuous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

Management Science, MSCI = 0320

5010. Statistical Analysis. 1.5 hours. Basic descriptive and inferential statistics; includes frequency distributions, averages, dispersions, index numbers, time-series analysis, probability, theoretical distributions, sampling distribution, estimation, tests of significance, chi-square, regression and correlation, analysis of variance and sample design. Prerequisite(s): MATH 1190 or equivalent. This course meets the deficiency requirement of statistics (MSCI 3700 and 3710) for MBA candidates, and may be counted as part of a graduate program in a field other than business administration.

5180. Introduction to Decision Making. 3 hours. Emphasis on model assumptions, applying the correct statistical model and interpreting the results. Topics include simple regression, multiple regression (e.g., qualitative variable coding, model building) and experimental design (e.g., completely randomized design, randomized block design, multi-factor designs). Prerequisite(s): MSCI 5010 or equivalent.
5210. Model-Based Decision Making. 3 hours. Explains how model-based decision support systems aid managerial decision processes. Attention will be paid to the how and why such a model is used in a support system environment. Course topics include the use of mathematical, statistical, and business models that are embedded in decision support systems for dealing with both structured and semi-structured decision problems. Students identify opportunities and problems for which the use of modeling will enhance a decision maker’s chance of success. Different type of models and decision structuring techniques will be compared and contrasted, and appropriate techniques will be illustrated to analyze real-life situations. Prerequisite(s): MSCI 5010 or equivalent.

5220. Statistical Sampling. 3 hours. Introduction to sampling theory and applications. Attention is focused on major survey sampling techniques, including cluster, ratio, stratified and simple random sampling. Principal concepts and methods of acceptance sampling that are useful in quality control are presented, including operating characteristic curves, and single, double and sequential sampling plans for attributes and variables. Prerequisite(s): MSCI 5180 or consent of department.

5230. Non-Parametric Statistics for Business Research. 3 hours. Analysis of business research data that is categorical or ordinal (ranked or scaled), and is therefore not suitable for computations such as means and standard deviations. Topics include measurements of consumer preferences, market segmentation, labor or job grades, racial and sex classifications, and exempt characteristics and performance ratings. Single and multiple sample techniques are discussed. Prerequisite(s): MSCI 5010 or equivalent, or consent of department.

5240. Data-Based Decision Systems. 3 hours. A survey of time-series analysis techniques is presented. Topics include smoothing techniques and Box-Jenkins methodology. Prerequisite(s): MSCI 5180 or consent of department.

5250. Statistical Techniques in Simulation. 3 hours. An examination of construction and use of simulation models in business. Random number and process generators, construction of simulation models, introduction to special purpose simulation languages and research project. Prerequisite(s): MSCI 5010 or consent of department.

5260. Problem Solving and Decision-Making Process. 3 hours. Development of analytical techniques essential to effective solution of problems involving risk and uncertainty; integrative and unified treatment of classical Bayesian and normative decision theory as conceptual foundations for the development of decision techniques. Prerequisite(s): student must be within 9 hours of graduation.

5310. Reliability and Life-Data Analysis. 3 hours. Principal topics in reliability and life-data analysis are covered, including statistical failure models, probability plotting, hazard plotting, series systems, competing risks, censored data and accelerated life tests. Applications to advanced technology industries and software reliability are included. Prerequisite(s): MSCI 5180 or consent of department.

5320. Quality Control. 3 hours. Broad coverage of managerial and statistical aspects of quality control, including quality assurance and quality management.

5330. Model Assurance and Quality Management. 3 hours. Explains how model-based decision support systems aid managerial decision processes. Attention will be paid to the how and why such a model is used in a support system environment. Course topics include the use of mathematical, statistical, and business models that are embedded in decision support systems for dealing with both structured and semi-structured decision problems. Students identify opportunities and problems for which the use of modeling will enhance a decision maker’s chance of success. Different type of models and decision structuring techniques will be compared and contrasted, and appropriate techniques will be illustrated to analyze real-life situations. Prerequisite(s): MSCI 5010 or consent of department.

5900-5910. Special Problems. 1-3 hours each. Open to graduate students who are capable of developing a problem independently. Problem chosen by the student and developed through conferences and activities under the direction of the instructor. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

6000. Theory and Application of Nonparametric Statistics. 3 hours. Analysis of business research data that is categorical or ordinal (ranked or scaled). Topics include linear rank statistics, test of location for single and multiple sample problems, goodness-of-fit tests, measures of association, related samples tests and independent samples tests, rank tests for ordered alternatives, and permutation tests. Prerequisite(s): MSCI 5180 or equivalent.

6010. Seminar in Business Administration. 3 hours. Covers one or more special fields. May be repeated for credit, and two or more sections may be taken concurrently.

6710. Theory and Application of Stochastic Modeling. 3 hours. Probabilistic modeling techniques with emphasis on manufacturing and services. Specific topics covered include inventory theory and methods, scheduling, queuing theory, availability, maintainability, reparability, reliability, Markov processes and renewal theory. Prerequisite(s): MSCI 5180.

6720. Experimental Design and Statistical Modeling. 3 hours. Emphasis is focused on both the design and analysis aspects of planned experimentation. Topics include completely randomized designs, block designs, factorial designs, design resolution and fractional factorial designs, response surface analysis, evolutionary operations in process improvement and Taguchi methods. Prerequisite(s): MSCI 5180.

6740. Mathematical Programming. 3 hours. A study of advanced deterministic mathematical programming techniques. Topics include quadratic programming, dynamic programming, integer programming, goal programming, large-scale linear programming and other non-linear techniques. Prerequisite(s): MSCI 5210 or consent of department.

6750. Management Science Seminar. 3 hours. Organizational problems involved in the development and implementation of various management science models, as well as the applicability of the models to different technical problems in varying ecotechnological systems; in-depth study of areas of potential application of the more widely used management science models. Prerequisite(s): consent of department. May be repeated for credit.

6900. Special Problems. 1-3 hours. Research by doctoral students in fields of special interest. Includes project research studies and intensive reading programs, accompanied by conferences with professors in fields involved. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.
6910. Special Problems. 3 hours. Research by doctoral students in fields of special interest. Includes project research studies and intensive reading programs, accompanied by conferences with professors in field involved. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

6940. Individual Research. Variable credit. Individual research for the doctoral candidate. May be repeated for credit. Prerequisite(s): approved applications for special problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

6950. Doctoral Dissertation. 3, 6 or 9 hours. To be scheduled only with consent of department. 12 hours credit required. No credit assigned until dissertation has been completed and filed with the graduate dean. Doctoral students must maintain continuous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit. Prerequisite(s): approved applications for specific problems/independent research/dissertation credit must be submitted to the COBA Student Advising Office prior to registration.

Business Law
see Finance, Insurance, Real Estate and Law

Chamber Music
see Music

Chemistry
Chemistry, CHEM = 0118

5010. Introduction to Graduate Teaching and Research. 2 hours. Topics include university policies, safety in the laboratory, first aid techniques, teaching techniques, audiovisual facilities and operation, use of the university libraries, university/departmental computational facilities, PC facilities and use, and maintaining a research journal. Required for all full-time first-year graduate students. Prerequisite(s): graduate standing in the chemistry department.

5200. Physical Chemistry. 3 hours. A survey of selected topics in physical chemistry, including thermodynamics, mechanics, statistical mechanics, heterogeneous and homogeneous equilibria, and chemical kinetics. Prerequisite(s): CHEM 3520 or consent of department.

5210. Advanced Physical Chemistry. 3 hours. The basic concepts of quantum mechanics are emphasized utilizing several models to aid in the description, such as the square well model, the rigid rotator, the hydrogen atom and the hydrogen molecule ion. The applications of quantum mechanics to chemical systems are considered in terms of resonance, wave mechanics, perturbation and variation methods. Prerequisite(s): pass exemption examination in physical chemistry, or CHEM 5200.

5380. Organic Chemistry. 3 hours. A survey of organic chemistry involving a systematic study of classes of reactions with an integration of fact and theory. Prerequisite(s): CHEM 2380 or consent of department.

5390. Selected Topics in Analytical Chemistry. 3 hours. Topics of current interest, which vary from year to year. Prerequisite(s): consent of department. May be repeated for credit as topics vary.

5450. Advanced Techniques in Analytical Chemistry. 1-3 hours. Methods and instrumentation currently used in the analysis of materials. Presented in modular units of approximately three to four weeks duration. Typical subjects include fundamentals of liquid and gas-liquid chromatography, atomic absorption spectroscopy, polarography and related electroanalytical methods and X-ray fluorescence spectroscopy. Credit: 1 semester hour per module. May be repeated for credit as topics vary. Laboratory fee when laboratory involved.

5460. Surveys of Modern Analytical Chemistry. 3 hours. A survey of modern analytical methods with emphasis on instrumental techniques and data handling, including separation methods, electrochemical methods and spectroscopy. Prerequisite(s): consent of department.

5500. Physical Organic Chemistry. 3 hours. The mechanisms of organic reactions and the effect of reactant structures on reactivity. Prerequisite(s): pass exemption examination in organic chemistry, or CHEM 5380.

5530. Materials Chemistry. 3 hours. Application of quantum chemical principles to understanding the general behavior of materials. Course will include semiconductors, metals, catalysts and “nano-designed” materials (e.g., quantum wells). Prerequisite(s): CHEM 3520 or equivalent, or consent of department.

5560. Inorganic Chemistry. 3 hours. A survey of inorganic chemistry involving a systematic study of atomic structure, structure and bonding in inorganic and organometallic compounds, and representative inorganic reactions. Prerequisite(s): consent of department.

5570. Advanced Analytical Chemistry. 3 hours. This course covers an advanced treatment of analytical chemistry, including the following topics: advanced separation methods, analytical applications of electrochemistry and spectroscopy, experimental design, sampling and data analysis. Prerequisite(s): pass exemption examination in analytical chemistry, or CHEM 5460.

5610. Selected Topics in Physical Chemistry. 3 hours. Topics of current interest, which vary from year to year. Prerequisite(s): consent of department. May be repeated for credit as topics vary.

5620. Selected Topics in Inorganic Chemistry. 3 hours. Topics of current interest, which vary from year to year. Topics include ligand field theory, physical methods in inorganic chemistry, group theory and molecular symmetry, and recent advances in transition and non-transition metal chemistry. Prerequisite(s): consent of department. May be repeated for credit as topics vary.