

# ORFALEA COLLEGE OF BUSINESS

Business Bldg. (03), Room 455  
Phone: 805.756.2705  
<https://www.cob.calpoly.edu/>

Dean: Damon Fleming  
Associate Dean: Bruce Greenbaum  
Assistant Dean: Amy Carter  
Assistant Dean, Advancement: Mary Kelting

## Academic Programs

Program name	Program type
Accounting	Minor
Business Administration	BS, MBA
Business Analytics	MS
Economics	BS, Minor
Entrepreneurship	Minor
Industrial Technology	Minor
Industrial Technology and Packaging	BS
Packaging	Minor
Packaging Value Chain	MS
Quantitative Economics	MS
Sales	Minor
Taxation	MS

## Mission Statement

We prepare career-ready, global business leaders through hands-on discovery and application.

The BS degree program and the graduate programs in Business Administration are accredited by the AACSB—The International Association to Advance Collegiate Schools of Business. The BS degree program in Industrial Technology and Packaging is accredited by the Association of Technology, Management, and Applied Engineering (ATMAE). The objective of accreditation is to foster high-quality educational programs.

The college's educational philosophy follows the Cal Poly tradition—that of enlisting maximum student involvement in the learning process through case analysis, special projects, internships, computer simulations and other learn by doing exercises. The college has state-of-the-art computer facilities which are available to students to meet their coursework needs. Educational programs are designed to challenge highly motivated students to become tomorrow's socially responsible business leaders through a learn-by-doing technology-oriented education. The curricula include general education requirements and specialized studies in the student's major field. Optional areas of concentration within each major enable the student to select the program most closely suited to the chosen career field.

The college is organized into six areas:

- Accounting and Business Law
- Economics
- Finance

- Industrial Technology and Packaging
- Marketing
- Management, Human Resources, and Information Systems

This organizational structure allows for programs of study that blend broad-based knowledge of the functional disciplines of Business and Economics with an in-depth study of particular discipline(s).

## Accounting and Business Law

Business Bldg. (03), Room 403  
Phone: 805.756.1543

Area Chair: Rodney Mock

Accounting provides information for making informed business decisions by decision makers both external and internal to the firm. The Accounting and Business Law Area works closely with the accounting profession to help ensure curriculum relevancy and technical competency.

## Economics Area

Business Bldg. (03), Room 407  
Phone: 805.756.2783

Area Chair: Jason Lepore

The mission of the economics program is to educate students in the models and problem-solving tools of economics. The Economics Area offers a bachelor of science degree, a master of science degree, and a minor in Economics.

## Finance Area

Business Bldg. (03), Room 407  
Phone: 805.756.1472

Interim Area Chair: Brian Ayash

The Finance Area offers the Financial Management (FM) concentration which provides a rigorous, coherent, real-world-based, and up-to-date curriculum to prepare students for rewarding careers. The FM students gain in-depth knowledge of Fixed Income Securities (Bond Markets), Security Analysis and Portfolio Management (Equity and Derivative Markets), Corporate Finance (Mergers and Acquisitions and Initial Public Offerings), Alternative Investments (Foreign Exchange, Commodities and Real Estate), and Quantitative Methods.

Finance classes are taught in the **Financial Analysis Resource Center**, a special-purpose classroom with data terminals, and real time display of stock prices. The computers are equipped with financial data and software, which permits students to work on real-world problems - individually and in teams.

Finance students have outstanding internship and senior project opportunities, including the ability to pursue the Chartered Financial Analyst (CFA) designation; the ability to participate in the Student Managed Portfolio Project, where they assume an active role in investing Cal Poly Corporation endowment funds; and the opportunity to intern with major corporations, investment banks, and money management firms. Our graduates pursue careers in Financial Services, Corporate Finance, and as Financial Analysts, working for investment banks, brokerage firms, the asset management industry, the real estate industry, consulting firms, and other facets of business.

## Industrial Technology and Packaging Area

Business Bldg. (03), Room 405  
Phone: 805.756.2676

Area Chair: Javier de la Fuente

The Industrial Technology Area offers a bachelor of science degree in Industrial Technology and Packaging, with concentrations in Industrial Technology, and Packaging, and minors in Industrial Technology and in Packaging. IT is also the administrative home for the interdisciplinary Entrepreneurship concentration and minor, and the Consumer Packaging Solutions concentration.

## Management, Human Resources, and Information Systems Area

Business Bldg. (03), Room 405  
Phone: 805.756.2012

Area Chair: Leida Chen

The Management, Human Resources, and Information Systems Area's goals are fourfold:

1. to provide students with management theories, strategies, and practices essential for understanding how modern organizations operate and succeed in a complex and global environment,
2. to introduce students to the information technologies that enable the success of critical business processes and enhance worker creativity and productivity,
3. to engage students in learning about team dynamics and team leadership, and
4. to prepare our graduates, through a focus on experiential learning, for rewarding careers in a myriad of industries.

The Management, Human Resources, and Information Systems Area offers all business students coursework in organizational behavior, information systems, international management, and business strategy. We offer concentration specific courses in both of the concentrations that are housed in the Management, Human Resources, and Information Systems Area: (1) Management and Human Resources, and (2) Information Systems.

## Marketing Area

Business Bldg. (03), Room 403  
Phone: 805.756.1543

Area Chair: Jeffrey Hess

The Marketing Area offers the Marketing Management concentration which cultivates agile marketers, who integrate data analytics, critical thinking and creativity. The curriculum is a conscious balance among the technical rigors of data, the nuance of creative strategy, and the finesse of customer relationship management. Students engage in hands-on projects that provide experience and confidence. From market research to communications strategies, students have opportunities to provide data-driven guidance and creative solutions to local startups, Cal Poly organizations, and the community.

As a discipline with broad applications, the Marketing Management concentration offers flexible career paths and work styles. Graduates are in demand for positions in market research and analytics; business

development and sales; and marketing communications, advertising, digital and product marketing.

## Orfalea Student Services

Business Bldg. (03), Room 100  
Phone: 805.756.2601  
<https://newscully.cob.calpoly.edu/studentservices/>

### Mission Statement

Orfalea Student Services empowers future global business leaders to forge their unique path to success. We cultivate a dynamic and inclusive environment that supports student needs through advising, mentoring, and connection to industry. We deliver comprehensive programming that encourages exploration, leadership, and exposure beyond the classroom, resulting in career ready graduates who add value to their communities and industry.

### Services Provided

- Professional Advisors that provide advising and counseling addressing areas of personal, academic, and career success
- Peer Advisors that provide assistance with progress to degree, study abroad, change of major and other administrative issues
- Peer Tutors
- Peer, Young Alumni, and Executive Mentors
- Career readiness programs and initiatives, including career coaching, and connection with employers and industry
- BUS 100 (Student Orientation & College Success)
- Enrollment management
- Student scholarships and grants
- Orfalea OutREACH, a Faculty & Staff student referral system
- Diversity & Inclusivity initiatives, including the Multicultural Business Program
- Ambassadors, who provide prospective student and executive tours
- International student support
- Quarterly workshops, events and programs focused on student success

## Transfer Students

Transfer students to the Orfalea College of Business should refer to the curricula listed for the appropriate major. Please note that all lower division courses may be completed at most California Community Colleges. Full time students who have successfully completed all lower division courses prior to transferring to the College of Business can usually anticipate graduating in six quarters. Admitted transfer students should seek immediate advising assistance from Orfalea Student Services.

## BS Business Administration

The undergraduate business program provides students with the knowledge and the analytical skills essential for employment in all sectors of business, industry, governmental and non-profit organizations. Graduates of the business program will understand the fundamentals of how a successful enterprise operates, and will have sufficient depth in an area of study to begin a successful career by providing immediate value to an organization.

The Orfalea College of Business engages in a comprehensive assessment plan to ensure student achievement of these objectives.

The Business Administration degree program consists of five components: Major, Concentration, Support, General Education, and Electives.

## Concentrations

Students may choose from the following concentrations:

- Accounting Concentration
- Consumer Packaging Concentration
- Entrepreneurship Concentration
- Financial Management Concentration
- Information Systems Concentration
- Management and Human Resources Concentration
- Marketing Management Concentration
- Real Estate Finance Concentration
- Quantitative Analysis Concentration

## BS Economics

Economics is the study of how people choose to use resources.

Economics is a way of thinking, and students can apply this way of thinking to nearly any aspect of the world. The undergraduate curriculum in economics is designed to:

- provide a firm grounding in modern economic theory;
- instill the capacity for independent thought about economic policies and problems;
- develop the capacity for quantitative research, and
- provide basic descriptive knowledge about the US and the world economy.

An undergraduate major in economics opens many possibilities for employment. Many large firms, including banks, other financial institutions, and manufacturing companies, accept economists in substantial numbers. There are also many opportunities for employment in government at the state, federal, or international levels. In addition, a growing number of research and consulting firms employ large numbers of economists in such areas as forecasting, industry analysis, and litigation.

An undergraduate economics training also provides excellent preparation for business school, the study of law, or for pursuing doctoral studies in economics, business and public policy.

## Concentrations

Students may elect to complete curriculum in General Economics or choose from the following concentrations:

- Accounting Concentration
- Consumer Packaging Concentration
- Entrepreneurship Concentration
- Financial Management Concentration
- Information Systems Concentration
- Management and Human Resources Concentration
- Marketing Management Concentration
- Real Estate Finance Concentration
- Quantitative Analysis Concentration

## BS Industrial Technology and Packaging

The Industrial Technology and Packaging program incorporates a broad range of technical skills and business management to prepare individuals for positions in technology management or as entrepreneurs. The curriculum is particularly suited for careers that involve working with people and technology. The collaborative, project-based classes/laboratories create well-rounded, problem solving graduates that would be successful and quickly functional in a variety of industries including manufacturing and packaging. Students develop a strong foundation in science, liberal arts, business and management disciplines; a technical core including industrial power systems, materials and processes, quality management, lean six sigma, safety management, packaging, and product development. The curriculum includes extensive hands-on coursework in two concentrations: Industrial Technology and Packaging Technology. The Industrial Technology concentration offers courses pertinent to general operations management, supply chain management and lean processes, while the Packaging Technology concentration offers specialized courses in design and testing of packaging products and systems.

## Concentrations

- Industrial Technology Concentration
- Packaging Technology Concentration

## Accounting Minor

The minor is designed to provide students from other majors a basic foundation in accounting. Upon successful completion of the minor, students will have coursework that can be applied towards the requirements for licensure as a Certified Public Accountant in California and most other states. Students wishing to pursue such licensure are encouraged to pursue a Master of Science in Accounting or a Master of Science in Taxation upon completion of their undergraduate education.

Students applying to the minor must be at sophomore level standing with a minimum GPA of 3.0. Acceptance into the Accounting minor is not guaranteed and capacity is limited. The Accounting Area will select only the most qualified applicants with an interest in pursuing licensure. Not open to Business and Economics majors.

## Economics Minor

This minor is designed to give students from other majors a general competency in economics. Students are encouraged to meet with the advisor of the Economics Minor to develop a course of study that complements their major curriculum. For more information, contact the Economics Area office.

## Entrepreneurship Minor

The goal of the Entrepreneurship minor is to empower students to create economic and social value in any discipline. Students in the Entrepreneurship minor will acquire the tools, develop the skills, and cultivate the mindset of an entrepreneur. This minor comprises a set of courses chosen to provide a balanced and interdisciplinary approach to entrepreneurship. While the Entrepreneurship minor is open to students from all colleges, it is not open to Business Administration or Economics majors, since those majors are able to choose an Entrepreneurship concentration. There is an application process and students must be in good standing in their majors.

## Industrial Technology Minor

The Industrial Technology minor offers a choice of courses in technology, design, operations, quality, and supply chain for non-Industrial Technology and Packaging majors. These courses provide supplemental knowledge and skills for non-technical majors who wish to obtain a position related to operations in a company.

## Packaging Minor

The purpose of this interdisciplinary minor is to complement the non-Industrial Technology and Packaging majors with a planned curriculum in packaging. The program is designed to capitalize on theories and skills learned in other disciplines thereby uniquely preparing students for success as packaging professionals in positions ranging from highly technical research and development through purchasing, production, sales and management.

Students gain the skills needed for the design of package forms and graphics, the specifications of materials and machinery to be used, the evaluation of package systems, as well as the planning and coordinating of packaging requirements. These specialized skills result from an integration of knowledge gained through the packaging curriculum with that of the major discipline. A significant understanding of packaging issues and their impact on the industry is also gained.

## Sales Minor

Through the Sales minor, students learn how to build and maintain business relationships, sell, manage, and lead. Students develop important career building connections through mentors, internships and a practicum to receive the knowledge and experience necessary to succeed in their career. The program is open to all Cal Poly undergraduate majors.

## Graduate Programs Master of Business Administration

Business Bldg. (03), Room 409  
Phone: 805.756.2637  
cobgmp@calpoly.edu  
<https://gradbusiness.calpoly.edu/>

Program Director: Benjamin Alexander

### Programs of Study/Specializations Available

MBA - General Management Specialization  
MBA - Graphic Communication Document Systems Management Specialization

### Architecture or Landscape Architecture Pathway

This pathway is only available to students who are enrolled in Cal Poly's Bachelor of Architecture (BArch) program or Bachelor of Landscape Architecture (BLA) program. Students may request permission to enroll in MBA courses during their fifth/final year of study. Upon completion of the BArch or BLA degree, students are eligible to formally apply for admission to the MBA program. Students who fulfill all the requirements first receive their bachelor's degree and then the MBA. Contact the Graduate

Programs Office in the Orfalea College of Business for additional information.

## Option to Simultaneously Pursue MBA & Another Master's Degree

The Orfalea College of Business permits students to develop an individualized program of study that incorporates the required elements of two distinct Cal Poly graduate degree programs. This option offers graduate students the opportunity to simultaneously pursue an MBA degree in the Orfalea College of Business and a Master's Degree in any one of Cal Poly's other colleges.

To participate in this option, students must apply to, meet the qualifications for, and be accepted into each program independently. Students must first apply for formal admission to one specific Cal Poly graduate program such as the MBA program. After enrollment in a specific graduate program, the student must apply to, meet the qualifications for, and be accepted into the second program. The two degrees must be awarded in the same quarter.

## General Characteristics

Cal Poly's MBA programs are designed to prepare students to enter successful management positions in industry, government, and not-for-profit organizations. The programs give graduates a broad management foundation. Cal Poly's MBA programs are 60 to 64 units in length, depending on specialization, and consist of core courses and elective courses.

## Tuition and Fees

The MBA programs have separate professional fees associated with them. Please see Financial Aid (<https://www.calpoly.edu/financial-aid/costs-and-affordability/>) for more information.

## Admission/Acceptance Requirements

Admission to the MBA programs is based upon:

- successful completion of an accredited undergraduate program of study
- prior academic performance
- Graduate Management Admission Test (GMAT) or Graduate Records Examination general test (GRE) scores, with particular emphasis on performance on the quantitative portion
- prior work experience (desirable).

## Culminating Experience

In order to satisfy the culminating experience requirement, students must satisfactorily pass a comprehensive examination.

## PROGRAMS OF STUDY MBA – General Management Specialization

This program allows students to take electives of particular interest that fit their specific needs or career objectives. The program consists of 36-quarter-units of required courses with the remaining elective units selected from a focused group of advanced courses.

## MBA - Graphic Communication Document Systems Management Specialization

**NOTE: Applications for admission to the MBA Graphic Communication Documents Systems Management Specialization program are not currently being accepted. Contact the Orfalea College of Business for further information.**

This specialization is offered in conjunction with the Graphic Communication Department in the College of Liberal Arts, and is designed for those interested in graphic communication-related management careers. The program, focused on document systems management, contains a strong research component, including research assignments relevant to an individual company and the document industry as a whole. Students participate in research and development projects for the Graphic Communication Institute at Cal Poly.

## MS Business Analytics

Business Bldg. (03), Room 409  
Phone: 805.756.2637  
cobgmp@calpoly.edu  
<https://gradbusiness.calpoly.edu/>

Program Director: Brennan Davis

### General Characteristics

The MS in Business Analytics is a comprehensive interdisciplinary business degree program that encompasses economics, statistics, cloud computing, ethics, marketing, human resources, and information systems. The program offers a holistic approach to data analytics, combining qualitative reasoning with quantitative tools to identify key business problems and translate data analytics into decisions that improve business performance. Students will acquire broad training in all aspects of business analytics with particular emphasis on industry projects, statistical modeling, and communication. Students will work on collaborative industry projects to engage with real-world problems, and gain valuable experience working for a client in a team. Program may be offered in a classroom-based or hybrid format.

### Tuition and Fees

The MS Business Analytics program is offered through Extended Education. As such, the program carries a separate tuition and fee schedule available in the Office of the Associate Dean, Orfalea College of Business.

### Admission/Acceptance Requirements

To qualify for admission to a Master's program, you must meet the Cal Poly university admission requirements for graduate standing, which are described in the Graduate Education (<https://catalog.calpoly.edu/graduateeducation/>) section of the Cal Poly Catalog, as well as professional, personal, scholastic, and other standards as prescribed by the program. The program-specific requirements for admission are as follows:

- Official transcripts of all course work
- Competitive GMAT or GRE score (valid for five years)
- Statement of purpose
- Two letters of recommendation
- Completion of GSB 512 Quantitative Analysis with a grade of B or better, or:

- Completion of at least two undergraduate college-level courses in statistics
- Completion of at least one undergraduate college-level course in calculus
- Applicants whose native language is not English must have taken TOEFL within the last two years with a minimum score of 550 (paper version) and 213 (computerized version) or 80 (internet based). The TOEFL requirement is waived for certain applicants; see [https://admissions.calpoly.edu/applicants/international/toefl\\_ielts.html](https://admissions.calpoly.edu/applicants/international/toefl_ielts.html) for details.

### Culminating Experience

The culminating experience for the MSBA program takes the form of a collaborative industry project, in which students synthesize ideas and techniques learned throughout the program, and apply these to a real business challenge. Each student's completed project is evaluated by a three-member faculty panel, in consultation with industry partners and program administration, to complete this requirement.

## MS Packaging Value Chain

**NOTE: Applications for admission to the MS Packaging Value Chain program are not currently being accepted. Contact the Orfalea College of Business for further information.**

Business Bldg. (03), Room 409  
Phone: 805.756.2637  
cobgmp@calpoly.edu  
<https://gradbusiness.calpoly.edu/>

Program Director: Jay Singh

### General Characteristics

The MS in Packaging Value Chain program is a fully online, interdisciplinary degree program that encompasses packaging science, design, marketing, finance, supply chain, operations and statistics. The focus of the program is to present how the package can be used to create value addition and includes courses that build on each other towards a holistic understanding of the global packaging diaspora. The program develops competencies in essential packaging abilities and related business acumen, promotes transference of learning to the workplace for professionals, and provides opportunities for leadership roles.

Recent bachelor's degree graduates in packaging or related disciplines can also seek to significantly enhance their learning towards a high-order perspective of packaging's impact across the global value chains.

### Tuition and Fees

The MS Packaging Value Chain program is offered through Extended Education. As such, the program carries a separate tuition and fee schedule available in the Office of the Associate Dean, Orfalea College of Business.

### Admission/Acceptance Requirements

To qualify for admission to a Master's program, you must meet the Cal Poly university admission requirements for graduate standing, which are described in the Graduate Education (<https://catalog.calpoly.edu/graduateeducation/>) section of the Cal Poly Catalog, as well as professional, personal, scholastic and other standards as prescribed by the program. The program specific requirements for admission to the MS Packaging Value Chain program must be submitted via the Cal Poly



Graduate Education (<http://www.grad.calpoly.edu/>) website and are as follows:

- Completion of a bachelor's degree in packaging or a related field from an accredited college or university
- Official transcripts of all course work
- Statement of purpose
- Two letters of recommendation
- Completion of at least two college level courses in physics, chemistry (including organic chemistry), and statistics
- Completion of at least one college level course in calculus
- Applicants whose native language is not English must have taken TOEFL within the last two years with a minimum score of 550 (paper version) and 213 (computerized version) or 80 (internet based). The TOEFL requirement is waived for certain applicants; see [https://admissions.calpoly.edu/applicants/international/toefl\\_ielts.html](https://admissions.calpoly.edu/applicants/international/toefl_ielts.html) for details.

## Culminating Experience

The Applied Industry Project course, completed during the last quarter of the program, will provide students with the opportunity to synthesize the ideas and methods they have learned over the duration of the MS Packaging Value Chain program, fulfilling the requirements for a culminating experience as specified in the California Code of Regulations.

## MS Quantitative Economics

Business Bldg. (03), Room 409  
Phone: 805.756.2637  
[cobgmp@calpoly.edu](mailto:cobgmp@calpoly.edu)  
<https://gradbusiness.calpoly.edu/>

Program Director: Carlos Flores

## General Characteristics

The master of science degree program in economics is a full-time, four-quarter program designed to provide advanced preparation in econometrics and applied microeconomics for individuals desiring careers as economists or data analysts in the business, financial, or government sectors. The program provides the technical skills required to engage in economic analyses that involve economic modeling, forecasting, numerical optimization, and data analysis.

## Tuition and Fees

The MS Economics program is offered through Extended Education. As such, the program carries a separate tuition and fee schedule available in the Office of the Associate Dean, Orfalea College of Business.

## Admission/Acceptance Requirements

For admission to the program with a classified or conditionally classified status, a student should hold a bachelor's degree from an accredited institution with a minimum grade point average of 2.5 in the last 90 quarter units (60 semester units) attempted and have completed coursework in intermediate microeconomics, intermediate macroeconomics, econometrics, calculus, and statistics. Applicants are required to submit scores for the General Test of the Graduate Record Examination. An applicant who meets these standards but lacks the prerequisite coursework may be admitted as a conditionally classified student and must make up any deficiencies before advancement to classified graduate standing.

## Culminating Experience

Students are required to pass a written comprehensive exam in economics.

## MS Taxation

Business Bldg. (03), Room 409  
Phone: 805.756.2637  
[cobgmp@calpoly.edu](mailto:cobgmp@calpoly.edu)  
<https://gradbusiness.calpoly.edu/>

Program Director: David Chamberlain

## General Characteristics

The Master of Science in Taxation at Cal Poly is recognized by the accounting firms as one of the elite programs in taxation. The program is a one-year, full-time comprehensive program, that covers a broad range of specialized tax curriculum; such as, partnership taxation, corporate taxation, state and local taxation, international tax and tax research. The degree program provides students with the opportunity to learn from nationally recognized tax scholars, major industry players and seasoned tax practitioners. Students graduating from the masters are highly sought after by recruiters, and are promoted early in public accounting, government and industry as a result of their tax expertise. The program satisfies CPA accounting study requirements in the state of California.

Winter quarter requires an internship for class credit, where students engage in learn-by-doing at the accounting firms on sophisticated tax transactions.

## Tuition and Fees

The MS Taxation program is offered through Extended Education. As such, the program carries a separate tuition and fee schedule available in the Office of the Associate Dean, Orfalea College of Business.

## Admission/Acceptance Requirements

Acceptance to the program is based upon an applicant's:

- submission of an application for graduate admission via <https://calstate.edu/apply> (<https://calstate.edu/apply/>),
- successful completion of an accredited undergraduate program of study and (i) four (4) quarter units in federal taxation *and* (ii) eight (8) quarter units in accounting or two (2) years of equivalent experience in accounting,
- prior academic performance with particular emphasis placed on performance during the last 90 graded quarter units completed prior to application (or equivalent)

## Culminating Experience

All students are required to pass a comprehensive examination, which is normally given during the final quarter of the program.

## BUS Courses

### BUS 100. Student Orientation and College Success. 2 units

Term Typically Offered: F

Orientation to majors, minors, and concentrations for the development of a personalized four-year graduation plan. Skills for academic success: goal setting, time management, study skills, registration strategies, and overall adjustment to college life, including connection to a social peer network. 2 lectures.

**BUS 200. Special Problems for Undergraduates. 1-4 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: Consent of area coordinator.

Individual investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units.

**BUS 204. Financial Literacy. 4 units**

Term Typically Offered: F, W, SP

2020-21 or later catalog: GE Area B4

2019-20 or earlier catalog: GE Area B1

Introduction to personal finance. Budgeting, savings, employee benefits, retirement planning, taxes, insurance, and real estate. Course may be offered in classroom-based or online format. 4 lectures. Fulfills GE Area B4.

**BUS 206. Business Professionalism and Career Readiness. 2 units**

Term Typically Offered: F, W, SP

Career development, personal branding, and internship preparation, with a focus on interpersonal communication, resume, cover letter, and interviewing skills. Career exploration for future concentration selection, including the formulation of a college leadership and career development plan. Course may be offered in classroom-based or online format. 2 lectures.

**BUS 207. Legal Responsibilities of Business. 4 units**

Term Typically Offered: F,W,SP,SU

Examination of the American legal system and important legal principles for business operations, such as those involved with contracts, torts, agency, business organizations, and employment. Emphasis on how legal principles help define socially responsible conduct. Case studies. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 212. Financial Accounting for Nonbusiness Majors. 4 units**

Term Typically Offered: F, W

Introduction to financial accounting theory and practice with an emphasis on financial statement preparation and analysis. Not open to Business majors. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 214. Financial Accounting. 4 units**

Term Typically Offered: F,W,SP,SU

Principles of financial accounting for Business majors. The course prepares students to understand and interpret financial statement information. Financial reporting standards are explored to give students an understanding of how financial events are reflected in financial statements. Not open to students with credit in AGB 214. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 215. Managerial Accounting. 4 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: Demonstrated competency in electronic spreadsheet, word processing, and presentation applications; BUS 212 or BUS 214 or equivalent.

Applications of accounting for making business decisions. Content includes planning and control issues including cost behavior, budget preparation, performance reporting; addresses social responsibility and employee motivational and behavioral considerations. Preparation of spreadsheet applications useful for decision-making. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 220. Business Basics for Entrepreneurs. 4 units**

Term Typically Offered: F, SP

Prerequisite: Entrepreneurship minors only.

Basic business concepts for non-business major entrepreneurs, including unit economics and simple financial statements, intellectual property, entrepreneurial marketing, information technology, team management, and business ethics. Course may be offered in classroom-based or online format. 4 lectures.

**BUS 234. Introduction to Design Thinking. 4 units**

Term Typically Offered: W

Prerequisite: Entrepreneurship minors only.

Introduction to the process of design thinking and human centered design, including design process, methodology, and implementation. Empathy, creativity, iterative prototyping, and contextual design of products and services. 4 lectures. Crosslisted as BUS/ENGR 234.

**BUS 270. Selected Topics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Open to undergraduate students and consent of instructor.

Directed group study of selected topics. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 lectures.

**BUS 301. Global Financial Institutions and Markets. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: ECON 222.

Role of private and public financial institutions in allocating capital globally and promoting international commerce. Financial institutions covered include the FED, IMF, World Bank, investment banks and others. Detailed exploration of the history and functions of these institutions. 4 lectures.

**BUS 302. International and Cross Cultural Management. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: Completion of GE Area A with grades of C- or better; completion of GE Area C2; completion of GE Area D1; one course in GE Area D2 (or in GE Area D3 for students on the 2019-20 or earlier catalogs); and completion of GE Area E (GE Area D4 for students on the 2017-19 or earlier catalogs).

Dimensions of culture and its variations within and across nations. Impact of culture on managing in a global context. Development of managerial competencies requisite to working in and supervising multicultural groups in international corporations. Frameworks for analyzing cultural and contextual influences on organizational behavior, culture shock and readjustment, expatriation and repatriation, cultural change and innovation, intercultural conflict, and ethical dilemmas. Case studies, behavioral simulations, self-assessments and fieldwork. 4 lectures.

**BUS 303. Introduction to International Business. 4 units**

Term Typically Offered: TBD

Prerequisite: A grade of C- or better in ECON 222.

Special terms, concepts, and institutions associated with the environment in which international companies operate. Students will be enabled to understand, analyze and offer solutions to global business problems. 4 lectures.

**BUS 304. International Supply Chains. 4 units**

Term Typically Offered: F

Prerequisite: Consent of instructor. Recommended: ECON 201 or ECON 221 or ECON 222.

Development of effective supply chains that cross national boundaries with specific examples of import/export between the United States and target country. Study tour to target country as an essential course activity. Pre-trip lectures, readings and assignments; on-the-road business tours, and post-trip import-export proposal. Conducted in English; no prior international business or travel experience required. Passport and Visa required. Field trip required. The Class Schedule will list country selected. 3 lectures, 1 activity.

**BUS 306. Leadership Development and Career Success. 1 unit**

Term Typically Offered: W, SP

CR/NC

Prerequisite: Junior standing. Recommended: BUS 206.

Leadership self-development, resilience/growth mindset and strategies for finding meaningful and enjoyable work for a fulfilled career and life after graduation. Advanced career preparation, networking, relationship building, influencing, opportunity building, and business etiquette. Credit/No Credit grading only. 1 activity.

**BUS 310. Introduction to Entrepreneurship. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: Completion of GE Area A with grades of C- or better.

Role and impact of entrepreneurship and technology startups; characteristics and traits of entrepreneurs; opportunity identification and assessment; frameworks for building startups; the founding team; organizational and legal issues; business and value proposition models; acquiring resources; entrepreneurial risk; realizing and harvesting value. Course may be offered in classroom-based or online format. 4 lectures. Crosslisted as BUS/ENGR 310.

**BUS 311. Managing Technology in the International Legal Environment. 4 units**

Term Typically Offered: W, SP

2020-21 or later: Upper-Div GE Area D

2019-20 or earlier catalog: GE Area D5

Prerequisite: Junior standing; completion of GE Area A with grades of C- or better; one course in GE Area B4 with a grade of C- or better (GE Area B1 for students on the 2019-20 or earlier catalogs); completion of GE Area D1; and one course in GE Area D2.

Analysis of U.S. and international laws regarding technological innovations from economic, social and political perspectives. Copyrights, patents, trademarks, trade secrets, contracts, products liability and privacy. The Internet, computer programs and biotechnology. 4 lectures. Fulfills GE Upper-Division D (GE Area D5 for students on the 2019-20 or earlier catalogs).

**BUS 313. Customer Development. 4 units**

Term Typically Offered: W, SP

Prerequisite: BUS 310 or completion of GE Area A with grades of C- or better; Entrepreneurship minor or Entrepreneurship concentration only.

Experiential approach to understanding the customer development process in the lean startup context. Design, implementation, and validation of repeatable and scalable business model strategies. Course may be offered in classroom-based or online format. 4 lectures.

**BUS 319. Accounting Information Systems. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 214 or Accounting minors with credit in AGB 214.

Comprehensive coverage of manual and computerized accounting processes and internal controls. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 320. Federal Income Taxation for Individuals. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 215.

Federal income taxation and planning for individuals. Federal role of taxation in the business decision-making process. Issues related to individual income tax preparation and introduction to basic property transactions. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 321. Intermediate Accounting I. 4 units**

Term Typically Offered: F, W

Prerequisite: BUS 214 and BUS 215.

Comprehensive coverage of financial reporting issues. Covers financial statements, revenue recognition, and assets other than investments. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 322. Intermediate Accounting II. 4 units**

Term Typically Offered: W, SP

Prerequisite: BUS 321 with a grade of C- or better; Business majors must have formally declared their concentration to enroll.

Comprehensive coverage of financial reporting issues. Covers investments, liabilities, equities, and the Cash Flows Statement. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 323. Intermediate Accounting III. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 322.

Detailed examination of the technical and theoretical aspects of accounting for leases, pensions, income taxes, accounting changes and errors, business combinations, and major differences between the US Generally Accepted Accounting Principles and International Financial Reporting Standards. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 330. Funding and Managing Startup Companies. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: Entrepreneurship concentration, BUS 310, and BUS 342; or Entrepreneurship minor, BUS 220, and BUS 310.

Basics of entrepreneurial business financial management. Readings on financing startup and growing ventures. Forms and uses of equity and debt financing. Capitalization tables and exit analyses. Investor pitch process. Legal, governance and ethical issues in entrepreneurial financing and operations. Course may be offered in classroom-based or online format. 4 seminars.



**BUS 342. Fundamentals of Corporate Finance. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 214 with a grade of C- or better, or consent of instructor; and STAT 252 or any 300 level statistics course.

Theory and applications of financing business operations. Financial management of current and fixed assets from internal and external sources. Analysis, planning, control, and problem solving. The use of technology in the form of financial calculators and/or spreadsheets. Course may be offered in classroom-based or online format. 4 lectures.

**BUS 346. Principles of Marketing. 4 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: Completion of GE Area A with grades of C- or better.

Development of an understanding of the marketing process: identifying target markets; developing and launching products or services; and managing pricing, promotion, and distribution strategies. Course may be offered in classroom-based, online, or hybrid format. 2 lectures, 2 discussions.

**BUS 347. Professional Selling Skills. 4 units**

Term Typically Offered: F

Prerequisite: Sophomore standing.

Exploration and cultivation of skills in personal selling. Understanding customers, interpersonal relationships, and the influences of psychology, sociology, economics, and public policy on buyer/seller interactions. 4 lectures.

**BUS 348. Technology-Based Professional Sales. 4 units**

Term Typically Offered: W

Prerequisite: BUS 347; Sales minors only.

Strategy and technology used in the practice of professional selling. Social selling, customer relationship management (CRM), and insight into sales strategy through exploration of contemporary topics in professional sales. 4 lectures.

**BUS 382. Leadership and Organizations. 4 units**

Term Typically Offered: F, W

Prerequisite: Completion of GE Area A with grades of C- or better; completion of GE Area C2; completion of GE Area D1; one course in GE Area D2 (or in GE Area D3 for students on the 2019-20 or earlier catalogs); and completion of GE Area E (GE Area D4 for students on the 2017-19 or earlier catalogs).

Evaluation of macro dimensions of business organizations including environment, mission, goals, strategies, structure, people, and technology. Internal leadership processes at different organizational levels. Case analysis, experiential class activities. Application to business solutions in technology-oriented settings. 4 lectures.

**BUS 384. Human Resources Management. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: Completion of GE Area A with grades of C- or better; completion of GE Area C2; completion of GE Area D1; one course in GE Area D2 (or in GE Area D3 for students on the 2019-20 or earlier catalogs); and completion of GE Area E (GE Area D4 for students on the 2017-19 or earlier catalogs).

Introduction to functional areas of the discipline including staffing, compensation, employee development and labor relations. Additional workplace issues addressed include performance and human capital management, employer legal and social responsibility for employee wellbeing, managing a diverse/global workforce, and using human resource information systems. 4 lectures.

**BUS 387. Organizational Behavior. 4 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: Completion of GE Area A with grades of C- or better; ECON 221; and BUS 207. Recommended: STAT 252.

Application of behavioral, social and organizational science concepts to management. Exploration of the interactions between individuals and the organizations in which they work and live. Individual, interpersonal, team, intergroup and organizational levels of analysis included in topics such as expectations, perception, communications, creativity, leadership style, cultural and ethical behavior, group dynamics, team effectiveness and work design. 4 lectures.

**BUS 388. Cultivating Human Capital. 4 units**

Term Typically Offered: SP

Prerequisite: BUS 384 and STAT 252.

Organizations' processes of selecting, training and developing employees. Issues related to human resources planning, recruitment, and selection. Needs assessment, including organization, person, and task or competency analysis. Designing, delivering and evaluating employee training and human resource development in knowledge-based organizations. 4 lectures. Formerly BUS 475.

**BUS 389. Introduction to Business Negotiation for Entrepreneurs. 4 units**

Term Typically Offered: SP

Prerequisite: Completion of GE Area A with grades of C- or better. Entrepreneurship minors only.

Negotiation theory and skills required for successful entrepreneurship. Emphasis on negotiation simulations and role playing, with hands-on experience in applying negotiation skills. 4 lectures.

**BUS 391. Information Systems. 4 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: ITP 125 for Industrial Technology and Packaging majors; or BUS 214 for all other majors.

Computer applications in business and industry. Information systems and integrated systems concepts, computer hardware and software, strategic uses of information systems, databases, data warehousing, decision support systems and artificial intelligence, network basics, electronic commerce, systems development, ethical use of information, employing technology in a socially responsible manner, and emerging trends and technologies in information systems. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 392. Business Application Development. 4 units**

Term Typically Offered: F, SP

Prerequisite: BUS 391.

The fundamental concepts and models of application development needed to understand the key processes related to building functioning business applications and appreciate the complexity of application development. The concepts of computer programming, data structures, problem solving, programming logic, and fundamental design techniques. Up-to-date application development tools and technologies currently used by business enterprises. 4 lectures.

**BUS 393. Database Systems in Business. 4 units**

Term Typically Offered: W, SP, SU

Corequisite: BUS 392; Business and Economics majors must have formally declared their concentration to enroll.

Design, development, testing, and implementation of databases for business applications. Data modeling with entity relationship diagrams (ERD) and class diagrams (UML). Data normalization, data integrity, the effect of business rules on data normalization. Advanced queries using structured query language (SQL). Database application development culminating in a database project. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 394. Systems Analysis and Design. 4 units**

Term Typically Offered: F, W

Prerequisite: BUS 391; Business and Economics majors must have formally declared their concentration to enroll.

Systems analysis and design. Systems development life cycle, requirements gathering, process modeling using data flow diagrams, use case analysis and diagramming, UI design. 4 lectures.

**BUS 395. Information Systems Project Management. 4 units**

Term Typically Offered: F, SP

Prerequisite: BUS 391; Business and Economics majors must have formally declared their concentration to enroll.

Introduction to key components of project management in the IS context, with focus on the technical, cultural, and interpersonal skills necessary to manage IS projects successfully. Project scope management, schedule and cost management, quality management, and risk management. 4 lectures.

**BUS 396. Consumer Insights. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: For GRC Majors, GRC 361; for all other majors, BUS 346.

Process of individuals selecting, purchasing, using, or disposing of products, services, ideas, or experiences, based upon psychology, sociology, cultural anthropology, semiotics, and micro/macro economics. Consumer experience through analysis of the consumer journey and touch points. 4 lectures.

**BUS 399. IT Infrastructure and Security Management. 4 units**

Term Typically Offered: F, SP

Prerequisite: BUS 391; Business and Economics majors must have formally declared their concentration to enroll.

Fundamental concepts of networking and infrastructure management. Includes theoretical and practical discussion on TCP/IP, wired and wireless LAN, cloud computing, and information security. 4 lectures.

**BUS 400. Special Problems for Advanced Undergraduates. 1-4 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: Senior standing.

Individual investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units.

**BUS 401. General Management and Strategy. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 342, BUS 346, BUS 387, BUS 391, senior standing, and completion of one of the following: ITP 303, ITP 326, ITP 330, ITP 341, or ITP 371. Corequisite: BUS 411.

Application of interdisciplinary skills to business and corporate strategy analysis formulation and implementation of business, corporate and global level strategies. Consideration of interdependence between external environments and internal systems. Focus on responsibilities, tasks, and skills of general managers, including socially responsible behavior and governance. Case studies, group problem solving, experiential class activities. Capstone course of Business core curriculum. Course may be offered in classroom-based, online, or hybrid format. 4 seminars.

**BUS 404. Governmental and Social Influences on Business. 4 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: BUS 207 and ECON 222.

Analysis from legal, economic, political, and ethical perspectives, of the changing domestic and international environments of the business enterprise. Topics include administrative law, agencies and regulatory policy, antitrust law, public policy analysis, business-government relations, and corporate responsibility. Case studies. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 406. Managing Mergers, Acquisitions and Divestitures. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 342, BUS 346, and BUS 387.

Issues associated with analyzing, negotiating, and managing mergers, acquisitions and divestitures (MADS) using cross-cultural, interdisciplinary perspective. Rationale for decision to pursue MADS and processes for identifying targets; valuing and negotiating MADS; staffing and human resource management issues; strategic control and integration; and cross-cultural conflict and divided loyalties in domestic and international MADS. Lectures, case studies and simulation. 4 lectures.

**BUS 408. Innovation and Entrepreneurship Through Disruptive Technologies. 4 units**

Term Typically Offered: SP

Prerequisite: BUS 310.

Theory of disruptive innovation and its use in creating business and entrepreneurial opportunity. Basic technical underpinnings of disruptive technologies, including artificial intelligence, autonomous vehicles, Internet of Things, augmented and virtual reality, machine learning, and genetic engineering. 4 lectures.

**BUS 409. Law of Real Property. 4 units**

Term Typically Offered: SU

Prerequisite: Senior standing.

Legal problems of acquisition, ownership and transfer of real property. Contracts, agency, estates, and co-ownership, mortgages and deeds, covenants, conditions, and restrictions, easements, landlord-tenant, and zoning. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 410. The Legal Environment of International Business. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 207 and ECON 222.

U.S., foreign, and international law affecting international business transactions. U.S. and foreign cultural, ethical, and political norms and legal institutions, and their effect on law and business. 4 lectures.

**BUS 411. Business Knowledge Exit Exam. 0 unit**

Term Typically Offered: F, W, SP

CR/NC

Prerequisite: Senior standing. Recommended: BUS 215 and BUS 404.

Assessment of BS Business Administration Program Learning Objective 1 (Apply knowledge to identify opportunities and solve business problems) through completion of an exam and the senior exit survey. Results will only be used to improve the curriculum. Credit/No Credit grading only. Course offered online only.

**BUS 412. Advanced Managerial Accounting. 4 units**

Term Typically Offered: SP

Prerequisite: BUS 215.

Product costing systems including hybrid costing systems, management control systems, cost allocation, activity based costing, cost information for decision making, new manufacturing environments, and strategic control systems. International dimension integrated in the course content. Course may be offered in classroom-based or online format. 4 lectures.

**BUS 416. Volunteer Income Tax Assistance - Senior Project. 4 units**

Term Typically Offered: W

Prerequisite: BUS 320 or equivalent, senior standing.

Training and practice in the preparation of state and federal individual income tax returns. Coverage of the deductions and credits applicable to individuals. Students provide free tax assistance and income tax preparation to community residents under the supervision of qualified professionals. 2 lectures, 2 activities.

**BUS 417. Taxation of Corporations and Partnerships. 4 units**

Term Typically Offered: F

Prerequisite: BUS 320 or equivalent.

Comparative study of the taxation of C corporations and flow-through tax entities, including S corporations, partnerships and limited liability companies. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 418. Listening to the Customer. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: For GRC Majors, GRC 361; for all other majors, BUS 346; Business majors must have formally declared their concentration to enroll.

Discovery and development of customer insights based on a project-oriented introduction to the research process. Development of research questions. Design and application of multiple research methods (e.g. secondary, observation, interview, focus group, survey research). Exploratory and confirmatory approaches leading to the analysis, interpretation, and presentation of results. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 419. Strategic Marketing Measurement. 4 units**

Term Typically Offered: W, SP

Prerequisite: BUS 396; BUS 418; STAT 252.

Development of skills to gather, analyze, and report information critical for marketing decision making. Focus on primary data collection and analytical techniques (e.g. experimental design, descriptive statistics, cross-tabulation, ANOVA, and regression). Other methods may include data mining, GIS, and customer relationship management (CRM). 4 lectures.

**BUS 421. Marketing Analytics and Business Intelligence. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 346; STAT 252 or STAT 302.

Analysis of customer information using a broad range of tools and techniques. Application of analytic findings to marketing decision-making. Integration of data into reporting platforms that emphasize return on marketing investment. Course may be offered in classroom-based or online format. 4 lectures.

**BUS 422. Accounting for Government and Not-For-Profit Entities. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 321.

Accounting and reporting by state and local governments and not-for-profit entities. State and local governmental topics include: fund structures, budgetary accounting, the modified accrual basis of accounting, reporting concepts and practices, contributions, restricted resources, endowments. Course may be offered in classroom-based or online format. 4 lectures.

**BUS 423. Digital Marketing Metrics and Management. 4 units**

Term Typically Offered: F, SP

Prerequisite: BUS 396 and BUS 418.

Measurement and optimization of digital marketing. Return on investment, lifetime value of the customer, customer acquisition costs, search engine marketing, paid search, display advertising, website analytics, email marketing, social media marketing, online reputation, mobile marketing, and new media marketing. Course may be offered in classroom-based or online format. 4 lectures.

**BUS 424. Accounting Ethics. 4 units**

Term Typically Offered: W, SP

Prerequisite: BUS 321.

Study of professional responsibilities and oversight within the accounting profession. Corporate fraud in accounting. Current accounting and auditing events. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 425. Auditing. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 322.

Survey of the auditing environment including institutional, ethical, and legal liability dimensions. Introduction to audit planning, assessing materiality and audit risk, collecting and evaluating audit evidence, considering the internal control structure, substantive testing, and reporting. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 430. Internship/Cooperative Education. 2-12 units**

Term Typically Offered: F,W,SP, SU

CR/NC

Prerequisite: Approval of area chair; junior standing; and a Cal Poly cumulative GPA of at least 2.5 without being on academic probation.

Work experience in business, government, or non-profit sector that provides an opportunity to explore career interests while applying knowledge and skills learned in the classroom in a work setting. Periodic written progress reports, final report, and periodic evaluation by work supervisor required. Credit/No Credit grading. Major credit limited to 4 units; total credit limited to 12 units.

**BUS 431. Security Analysis and Portfolio Management. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 342; BUS 391; ECON 339 or STAT 324. Business majors must have formally declared their concentration to enroll.

In-depth analysis of equity market and its instruments. Detailed study of leading stock valuation models. Impact of changes in the firm's fundamentals and in macroeconomic factors on stock prices. Brief introduction to equity and index derivatives. 4 lectures.

**BUS 433. International Finance. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 431 or BUS 439.

Financial management of international business. International capital and money markets, international financial institutions, special problems in evaluating direct foreign investment, and financial techniques used in international business operations. 4 lectures.

**BUS 434. Real Estate Finance. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 439.

Analyses of real estate financing techniques and funding sources for development projects. Effects of federal, state, and local taxes on real estate investments. In-depth investigation and computer analyses of real estate investment projects. 4 lectures.

**BUS 435. Real Estate Investment. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 434.

Intensive investigation and computer analysis of real estate investment opportunities. Problems in real estate and property management. 4 lectures.

**BUS 436. Entrepreneurial Finance. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 215 and BUS 342.

Process of financing new and fast-growing firms. Readings on the venture capital process, from seed capital through the initial public offering. Valuation of firms seeking venture capital, and those planning their initial public offering. Valuing convertible securities. Real options valuation. Course may be offered in classroom-based or online format. 4 seminars.

**BUS 437. Retirement and Estate Planning. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 431 and BUS 439.

Retirement planning and employee benefits; Social Security and Medicare; types of retirement plans; qualified plan characteristics; distribution options; and group insurance benefits. Trusts, power of attorney, and probate. 4 lectures.

**BUS 438. Advanced Corporate Finance. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 431 and BUS 439.

Corporate finance with an emphasis on managing the corporation to create shareholder value. Detailed treatment of topics such as capital budgeting, capital structure, economic value-added, corporate distribution policy, financial distress, and mergers and acquisitions. 4 lectures.

**BUS 439. Fixed Income Securities Market. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 342 and BUS 391; Business majors must have formally declared their concentration to enroll.

Development of analytical skills for properly valuing fixed income securities. Bond pricing, yields, and volatility; interest rate term structure and yield curve; securities, market structure, and analytical techniques; bond portfolio strategies and an introduction to interest rate derivatives. 4 lectures.

**BUS 441. Computer Applications in Finance. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 438.

A combination lecture/computer lab course focusing on computer acquisition of financial data and the subsequent application of financial theory and analysis to this data so as to facilitate financial decision making. 4 lectures.

**BUS 442. Introduction to Futures and Options. 4 units**

Term Typically Offered: W

Prerequisite: BUS 431.

An in-depth analysis of derivatives markets and instruments. Emphasis on the valuation of futures, options, swaps, and other derivative securities. 4 seminars.

**BUS 443. Case Studies in Real Estate Finance. 4 units**

Term Typically Offered: SP

Prerequisite: BUS 431 or BUS 434.

Analytical and decision-making techniques in applying Financial Real Estate theory to business and property management valuation. Real estate valuation techniques and their application to real estate investment. Incorporates case studies, databases, and specialized real estate valuation software, such as ARGUS. 4 lectures.

**BUS 444. Financial Engineering and Risk Management. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 442.

Advanced course synthesizing concepts from corporate finance, derivative securities, statistics, and computer science. Emphasis on both computer programming in a matrix programming language (Matlab) to solve practical risk management and valuation problems, and analytical training in the area of stochastic calculus, and its application to derivative security pricing. Practical applications of derivatives for controlling risk in an international corporate environment. 4 lectures.

**BUS 445. Ethics and Behavior Finance. 4 units**

Term Typically Offered: F, W

Prerequisite: BUS 342.

Contemporary theoretical and empirical issues including agency theory, reputation building, game theory, and financial ethics. Discussion of the application of ethics theory to financial decisions. May include lectures, case analyses, student presentations, and guest speakers. 4 lectures.

**BUS 446. International Marketing. 4 units**

Term Typically Offered: W

Prerequisite: BUS 346.

Development of an understanding of global marketing strategy. Acquisition of information about international markets and its use to describe customers, understand markets, and make marketing mix decisions. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 448. The Finance of Mergers and Acquisitions. 4 units**

Term Typically Offered: SP

Prerequisite: BUS 438.

Comprehensive coverage of financial aspects concerning mergers and acquisitions. Valuation of companies, strategic and other motivations underlying mergers, structuring of transactions, deal tactics and strategy, leveraged buyouts, and cross-border mergers. Most suitable for careers in corporate finance, and investment banking. 4 lectures.

**BUS 450. Current Topics in Marketing. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 396 and BUS 418.

Selected topics in emerging areas of marketing. Intended for students in the Marketing Management concentration who want to learn and acquire in-depth knowledge and skills. The Class Schedule will list topic selected. Total credit limited to 8 units. 4 lectures.

**BUS 451. New Product Development and Launch. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 418 and STAT 252. Recommended: BUS 396.

Project-based skills for developing new products and planning for their launch. Major phases of product development: product innovation strategy, idea generation and screening, concept development and testing, technology drivers. Introduction to product launch, including segmentation, targeting, positioning, pricing, and branding. 4 lectures.

**BUS 452. Product Management. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 396 and BUS 418.

Development of individual and project-based skills in managing products in the growth, maturity, and decline stages of their life cycles. Emphasis on distribution, pricing, and communication strategies required to maintain distinctive product advantages. May include developing a comprehensive communication plan. 4 lectures.

**BUS 453. Digital and New Media Marketing. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 396 or BUS 418.

Definitions and tools of digital and new media marketing communications including social media audits and governance. Planning integrated marketing communications across digital tools and new media channels that reflect a client organization's strategy for managing its identity and reputation. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 454. Marketing Projects. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 396 and BUS 418.

Client-based course providing an opportunity to apply marketing abilities. Teams draw upon research, analytical, and strategic marketing skills to develop an actionable plan that addresses a critical marketing challenge faced by an organization. Deliverables include research findings and written and verbal presentation to the organization and instructor. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 455. Marketing Strategy. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: Three of the following: BUS 419, BUS 421, BUS 423, BUS 430, BUS 450, BUS 451, BUS 452, BUS 453.

Integration of key marketing concepts using tools such as computer simulations, readings, and/or case studies. Development and implementation of strategic and tactical decisions for companies and brands. 4 lectures.

**BUS 458. Solving Big World Challenges. 4 units**

Term Typically Offered: F

Prerequisite: Completion of GE Area A with grades of C- or better.

Apply human-centered design practices to address a social or an environmental challenge, specific to a local community. Achieve revenue-generating social impact through innovative business models. Practice team competencies including problem-solving, interviewing, brainstorming, prototyping, and written, visual, and oral communication. 4 lectures. Crosslisted as BUS/COMS 458.



**BUS 459. Social Media's Role in Integrated Marketing Communications. 4 units**

Term Typically Offered: SP

Prerequisite: BUS 453; JOUR 331; JOUR 342; GRC 338 or GRC 376 or GRC 377 or JOUR 390.

Integrative project experience in social media marketing and/or integrative marketing communications campaign: research target markets, identify appropriate social media and other media channels. Field trips required. 4 seminars.

**BUS 461. Senior Project I. 2 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: Senior standing.

Selection and analysis of a problem under faculty supervision. Problems typical of those which graduates must solve in their fields of employment. Formal report is required. Minimum 120 hours total time.

**BUS 462. Senior Project II. 2 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: Senior standing.

Selection and analysis of a problem under faculty supervision. Problems typical of those which graduates must solve in their fields of employment. Formal report is required. Minimum 120 hours total time.

**BUS 463. Senior Project: Low Income Taxpayer Clinic. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: Senior standing; BUS 320; Graduation Writing Requirement; and approval of the Instructor.

Acquire fundamental knowledge of federal tax laws and procedures in a clinical setting. Practice with multiple authoritative accounting, auditing and tax databases, conduct legal research, and business writing. Resolve real world accounting, auditing and tax controversies for Low Income Taxpayer Clinic clients.

**BUS 464. Applied Senior Project Seminar. 4 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: Senior standing.

Selection and analysis of business problems and opportunities in directed individual or group-based projects. Problems typical to those which graduates could encounter in their fields of employment. Formal report required. 4 seminars.

**BUS 466. Sales Practicum. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 348.

Capstone course for the Sales minor, students explore building and maintaining relationships, apply selling skills, and prepare themselves for a career in professional selling. 4 seminars.

**BUS 468. Blockchain in Business. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 392 or CSC 101 or CSC 232 or ECON 395.

Blockchain technology in business, with application examples in management (including HR, marketing and accounting), operation systems (manufacturing, supply chain and other service systems), finance (including stock trading, real estate transactions and P2P payment systems) and entrepreneurship. 4 lectures. Crosslisted as BUS/ITP 468.

**BUS 469. Foundations of Financial Technology. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 342; BUS 391; and ECON 339 or STAT 324.

Introduction to financial technology and its landscapes. Theoretical foundations including machine-learning, blockchain, cryptocurrencies, and platforms as well as a set of industry cases studies and practices. Course may be offered in classroom-based or online format. 4 lectures.

**BUS 470. Selected Advanced Topics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group study of selected topics for advanced students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 lectures.

**BUS 471. Managing and Rewarding Employee Performance. 4 units**

Term Typically Offered: SP

Prerequisite: BUS 384 and STAT 252.

Managing and compensating employee performance. Motivation theories, performance measures, evaluation and feedback systems/practices, planning for performance improvement. Advantages and challenges of pay-for-performance systems. Design and management of total compensation systems. Compensation systems as a factor in employee development and organizational performance. 4 lectures.

**BUS 474. Independent Study in Accounting. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 322.

Individual investigation, research, study or survey of selected topics in accounting, auditing or taxation. Total credit limited to 8 units, repeatable in the same term. The Class Schedule will list topic selected.

**BUS 476. Leading Social Innovation in Organizations. 4 units**

Term Typically Offered: SP

Prerequisite: Completion of GE Area A with grades of C- or better.

Fundamentals and practice of leading social innovation in existing and new organizations. Emphasis on collective action tools and processes that support social initiatives with positive impact. 4 lectures.

**BUS 477. Management Consulting and Change Management. 4 units**

Term Typically Offered: W

Prerequisite: BUS 382 or BUS 387.

Analysis of development and trends in the field of organization change and development. Application of behavioral and organizational science knowledge and social technology to growth and change of organizations for improving effectiveness and sustainability. Principles of management consulting. 4 seminars.

**BUS 480. People Analytics. 4 units**

Term Typically Offered: W

Prerequisite: BUS 384 or BUS 387; and STAT 252 or equivalent.

Data-driven approach to human resource practices with emphasis on the strategic use of analytics to drive effective practice and support decision-making; use of appropriate data sources and techniques for testing HR-related questions; considerations for collection and use of human data. 4 lectures.

**BUS 487. Launching and Growing the Technology Start-Up. 4 units**

Term Typically Offered: W

Prerequisite: BUS 310 and consent of instructor.

Topics in entrepreneurial settings, focusing on technology startups. Frameworks, analytical skills, and decision-making tools used in growing entrepreneurial businesses. Field trip required. 4 lectures.

**BUS 488. Building a Startup Skill Set. 4 units**

Term Typically Offered: F

Prerequisite: BUS 310; BUS 313 or BUS 418; Business majors must have declared their concentration to enroll. Recommended: BUS 330.

Process of evolving a startup's business model, focusing on product-market fit; go-to-market strategies; revenue streams; cost structure; partnerships; key activities; and key resources. Exploration of a personal entrepreneurial pathway. 4 seminars.

**BUS 489. Negotiation. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: BUS 387.

Theory and practice of negotiation in a variety of professional and managerial contexts (e.g., labor relations, business acquisitions, compensation, business disputes) and in one-on-one, group, and team-based arrangements. Includes impact of culture, ethics, dispute resolution, coalitions and use of creativity to develop integrative solutions. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 490. Data Visualization. 4 units**

Term Typically Offered: W, SP

Prerequisite: BUS 497.

Fundamentals and practice of data visualization with an emphasis on storytelling within organizations. Theoretical focus on human cognition and perception. Application of principles through software tools. 4 lectures.

**BUS 491. Decision Support Systems. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 391, STAT 251 or equivalent; Business and Economics majors must have formally declared their concentration to enroll.

Modeling organizational systems and processes such as computer networks, transportation systems, manufacturing systems, retail systems, etc. Developing computer simulation models and animation of systems to provide decision support in selecting system design alternatives. Applying quantitative methods to model uncertainty and conduct statistical performance analysis. 4 lectures.

**BUS 492. Technology-Supported Collaboration. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 387 and BUS 391.

Collaboration from multiple perspectives, applying best practices and empirically-supported insights toward successful collaboration in organizational settings. Theories of teams, collaboration, and the technologies to support these processes. Application of techniques for leadership, problem solving, communications, virtual collaboration, and collaboration technologies. 4 lectures.

**BUS 493. User Experience Analysis and Design. 4 units**

Term Typically Offered: SP

Prerequisite: BUS 394.

Fundamentals of User Experience Analysis and Design. Best practices in mobile/web/desktop user interfaces. Persona development. Prototyping using software tools. Includes theoretical and practical discussion of user experience analysis and design in business settings. 4 lectures.

**BUS 495. Software Testing. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 392.

Theory and practice of software testing, including state-of-the-art practices, design issues, staffing issues, test management issues, and other related areas. Software testing tools utilized for applications testing, and test management. 4 lectures.

**BUS 496. Electronic Commerce. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 392.

Focus on the technology of electronic commerce, including programming, development environments and security, through a series of lectures, guest speakers, demonstrations, exercises and case studies. Networking, client/server computing, and web/database design concepts. Working e-commerce application required at end of course. 4 lectures.

**BUS 497. Business Analytics. 4 units**

Term Typically Offered: W, SP, SU

Prerequisite: BUS 393 and STAT 252.

Introduction to the concepts and applications of business analytics, using business case study and problem-solving approach. Data warehouse design and implementation. Supervised learning techniques for classification and prediction. Unsupervised learning techniques for dimension reduction and pattern recognition. Text analytics. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**BUS 498. Directed Topics in Information Systems. 4 units**

Term Typically Offered: F, SP

Prerequisite: BUS 392.

Specialized Information Systems (IS) topic selected from the IS areas of current interest. Intended for advanced IS concentration students who want to learn and acquire in-depth IS knowledge and skills. The Class Schedule will list topic selected. Total credit limited to 12 units. 4 lectures.

**BUS 499. Data Communications and Networking. 4 units**

Term Typically Offered: F, W

Prerequisite: BUS 391; Business and Economics majors must declare their concentrations in order to enroll.

Combines the fundamental concepts of data communications and networking with practical applications in business. Provides a basic understanding of the technical and managerial aspects of business telecommunication. Introduction to data communications and applications and technical fundamentals, and to network products, technologies, applications, and services. 4 lectures.

## ECON Courses

### **ECON 200. Special Problems for Undergraduates. 1-2 units**

Term Typically Offered: TBD

Prerequisite: Sophomore standing and consent of department head.

Individual investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units, with a maximum of 2 units per quarter.

### **ECON 201. Survey of Economics. 4 units**

Term Typically Offered: F, W, SP

2020-21 or later catalog: GE Area D2

2019-20 or earlier: GE Area D2 or D3

Basic principles of microeconomics and macroeconomics. Emphasis on applications to current local, national and global economic issues. Not open to student with credit in ECON 222. Course may be offered in classroom-based or hybrid format. 4 lectures. Crosslisted as ECON/HNRS 201. Fulfills GE Area D2 (GE Area D2 or GE Area D3 for students on the 2019-20 or earlier catalogs).

### **ECON 202. Using Big Data to Solve Economic and Social Problems. 4 units**

Term Typically Offered: F, SP

Introduction to basic methods in empirical economic analysis, including regression, causal inference, and machine learning. Applications of the methods to equality of opportunity, education, racial disparities, innovation and entrepreneurship, health care, climate change, criminal justice, and tax policy. Course may be offered in classroom-based or hybrid format. 4 lectures.

### **ECON 221. Microeconomics. 4 units**

Term Typically Offered: F, W, SP

Microeconomic principles. Marginal and equilibrium analysis of commodity and factor markets in determination of price and output. Normative issues of efficiency and equity. 4 lectures.

### **ECON 222. Macroeconomics. 4 units**

Term Typically Offered: F, W, SP

2020-21 or later catalog: GE Area D2

2019-20 or earlier: GE Area D2 or D3

Introduction to macroeconomics including aggregate output, employment, inflation, and economic growth. Money and the monetary system. Macroeconomic policy including fiscal and monetary policy. 4 lectures. Fulfills GE Area D2 (GE Area D2 or GE Area D3 for students on the 2019-20 or earlier catalogs).

### **ECON 270. Selected Topics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Open to undergraduate students and consent of instructor.

Directed group study of selected topics. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 lectures.

### **ECON 303. Economics of Poverty, Discrimination and Immigration. 4 units**

Term Typically Offered: F,W,SP, SU

2020-21 or later: Upper-Div GE Area D

2019-20 or earlier catalog: GE Area D5

USCP

Prerequisite: Junior standing; completion of GE Area A with grades of C- or better; one course in GE Area B4 with a grade of C- or better (GE Area B1 for students on the 2019-20 or earlier catalogs); and ECON 201 or ECON 222.

Economic analysis of the cause, extent and impact of poverty, discrimination and immigration and of the policies designed to address these socioeconomic issues. Emphasis on the experience of African-Americans, Latinos, and women in the United States. 4 lectures. Crosslisted as ECON/HNRS 303. Fulfills GE Upper-Division D (GE Area D5 for students on the 2019-20 or earlier catalogs); and USCP.

### **ECON 304. Comparative Economic Systems. 4 units**

Term Typically Offered: F, W, SP

2020-21 or later: Upper-Div GE Area D

2019-20 or earlier catalog: GE Area D5

Prerequisite: Junior standing; completion of GE Area A with grades of C- or better; one course in GE Area B4 with a grade of C- or better (GE Area B1 for students on the 2019-20 or earlier catalogs); and ECON 201 or ECON 222.

Analysis of economic systems as a set of mechanisms and institutions for decision making, and the implementation of decisions regarding income distribution, the levels of consumption and production, and the level of economic welfare. 4 lectures. Fulfills GE Upper-Division D (GE Area D5 for students on the 2019-20 or earlier catalogs).

### **ECON 311. Intermediate Microeconomics I. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: ECON 201 or ECON 221; and MATH 141 or MATH 221.

Consumer behavior and the theory of demand; production, cost, supply functions; perfect competition; monopoly and oligopoly; labor markets. 4 lectures.

### **ECON 312. Intermediate Microeconomics II. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: ECON 311.

Game theory; risk, uncertainty and information; choice over time; asset markets; general equilibrium; welfare economics, externalities and public goods. 4 lectures.

### **ECON 313. Intermediate Macroeconomics. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: ECON 201 or ECON 222. Corequisite: ECON 311.

Study of the macroeconomy, macroeconomic theories, and macroeconomic policies. Nature of growth. Business cycles. Money and inflation. Fiscal policy. Monetary policy. Financial crises. 4 lectures.

**ECON 330. International Trade Theory. 4 units**

Term Typically Offered: W

Prerequisite: Either ECON 221 and ECON 222, or ECON 201.

Theory of comparative advantage, gains from trade, and recent developments in trade theory; examination of tariffs, quotas, exchange controls, other trade barriers and underlying policy issues; review of U.S. commercial policy, GATT, the common market, regional and world economic organizations. 4 lectures. Not open to students with credit in ECON 404 or equivalent.

**ECON 337. Money, Banking and Credit. 4 units**

Term Typically Offered: F, W

Prerequisite: Either ECON 221 and ECON 222, or ECON 201.

Financial markets and institutions. Structure of the banking industry and impacts of technological change in banking. Structure and operations of the Federal Reserve. Impacts of monetary policy on the economy. 4 lectures.

**ECON 339. Econometrics. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: either ECON 221 and ECON 222; or ECON 201; MATH 141 or MATH 221, and STAT 252 or STAT 302.

Application of statistical methods useful in economics. General linear regression model. Specific issues and problems related to economic models: multicollinearity, autocorrelation, heteroscedasticity, dummy variables, lagged variables, and simultaneous equation estimation. Application and evaluation of selected examples of empirical economic research. Microcomputer applications. 4 lectures.

**ECON 345. Environmental and Natural Resource Economics. 4 units**

Term Typically Offered: TBD

Prerequisite: ECON 201; or ECON 221 and ECON 222.

Economics of environmental resource management. Conservation, sustainability, and dynamic efficiency in natural resources. Effects of property rights and economic incentives on environmental and economic systems. Design of local and global environmental policies to align market outcomes with social welfare goals. 4 lectures. Not open to students with credit in ECON 431, ECON 432 or equivalent.

**ECON 395. Programming for Economics and Analytics. 4 units**

Term Typically Offered: F, W

Prerequisite: Junior standing; STAT 252 or STAT 302.

Basic principles of algorithmic problem solving and computer programming for economics and business analytics applications. Functions, iteration, recursion, and data structures. Testing and debugging. Design of algorithms and algorithmic complexity. Stochastic programs. Graph optimization. Credit will only be granted in one of the following courses: CSC 108, CSC 202, ECON 395. 4 lectures.

**ECON 400. Special Problems. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Consent of department head.

Individual investigation, research, studies, or surveys of selected problems. Total credit limited to 4 units.

**ECON 403. Industrial Organization. 4 units**

Term Typically Offered: W

Prerequisite: ECON 312.

Application of basic tools of economics to American Industry. Case studies of individual firms and industries. Performance of various business structures, such as monopoly and oligopoly. Effects of government regulation and antitrust policy. 4 lectures.

**ECON 404. International Trade Theory. 4 units**

Term Typically Offered: TBD

Prerequisite: ECON 312.

Theory of comparative advantage, neoclassical model of trade, offer curves and terms of trade, edgeworth boxes, valuation of factor inputs, effects of migration and mobility of funds, emerging growth and trade distortions, welfare effects of trade, and recent developments in trade theory. 4 lectures.

**ECON 405. International Monetary Economics. 4 units**

Term Typically Offered: SP

Prerequisite: ECON 313.

Nature of international payments, U.S. balance of payments. Theory and practice of foreign exchange rate determination under the gold standard, paper standard, and IMF system; international money and capital markets; problems of international liquidity and monetary stability. 4 lectures.

**ECON 406. Applied Forecasting. 4 units**

Term Typically Offered: TBD

Prerequisite: ECON 339.

Use of economic, financial, and other time series data to construct and evaluate forecasts. Forecasting methods including regression-based models, exponential smoothing, ARIMA and the GARCH family of models. 4 lectures.

**ECON 408. Mathematical Economics. 4 units**

Term Typically Offered: SP

Prerequisite: ECON 312.

Applications of quantitative techniques to topics in microeconomic and macroeconomic theory. Use of multivariate calculus and linear algebra in formulating static economic models. Applications of statistical inference, estimation and forecasting in economic models. 4 lectures.

**ECON 409. Probability Models for Economic Decisions. 4 units**

Term Typically Offered: F

Prerequisite: ECON 312.

Decision making in complex, realistic situations. Simulation of random variables in Excel. Risk aversion. Subjective assessment of probabilities and correlations. Decision trees. Optimal bidding in auctions. The winner's curse. Moral hazard and risk sharing. Repeated investment decisions under risk. 4 lectures.

**ECON 410. Public Finance and Cost-Benefit Analysis. 4 units**

Term Typically Offered: TBD

Prerequisite: ECON 312 or graduate standing.

Principles of rational decision making with respect to government revenues and spending. Measurement of costs and benefits, and criterion selection. Taxation, user fees, deficit financing, public goods, neighborhood effects and zoning. Microcomputer applications. 4 lectures.

**ECON 413. Labor Economics. 4 units**

Term Typically Offered: F

Prerequisite: ECON 312.

Wage determination theory, basic economic factors that affect the labor movement, economic impact of union activities on employment, output, income, wages, prices, and national economic policy. 4 lectures.

**ECON 417. Development of Economic Analysis. 4 units**

Term Typically Offered: TBD

Prerequisite: ECON 311.

Analysis of ideas related to the development of economic theory in the Western civilization from the Greeks through the classical, neoclassical, and Keynesian to the current post-Keynesian concepts. 4 lectures.

**ECON 424. Monetary Economics. 4 units**

Term Typically Offered: TBD

Prerequisite: ECON 313.

The role of money in our economy. Focus on the links between monetary policy, interest rates, prices, housing markets, mortgage lending and overall economic activity. Public policy issues relating to real estate markets. 4 lectures.

**ECON 431. Environmental Economics. 4 units**

Term Typically Offered: F

Sustainability Focused

Prerequisite: ECON 312.

Economic dimensions of environmental abuse and protection. Use of simple economic models in developing and evaluating environmental policies. Overview of current environmental problems. Issues related to the sustainability of economic growth at the national and international levels. 4 lectures.

**ECON 432. Economics of Energy and Resources. 4 units**

Term Typically Offered: W

Sustainability Focused

Prerequisite: ECON 312 or graduate standing.

Economic theory and public policies as applied to problems of natural resources and energy. Dynamic resource and energy models developed with reference to public and private sector growth. Application of the principles of capital theory emphasized. Case studies. Computer software applications in the study of natural resources and energy under uncertainty. 4 lectures.

**ECON 434. Urban Economics. 4 units**

Term Typically Offered: W

Prerequisite: ECON 311. Recommended: ECON 312.

Application of basic tools of economic analysis to problems of urban regions. Causes and possible cures for inadequate growth rate, income levels, and the quality of life in urban regions. 4 lectures.

**ECON 435. Economics of Land and Water. 4 units**

Term Typically Offered: TBD

Prerequisite: ECON 312 or graduate standing.

Economic analysis of natural resource issues, policies and management with an emphasis on land and water use decisions in the western U.S. Urban demand for water; water supply and economic growth; economic impacts of surface water law and institutions; economics of land management. 4 lectures.

**ECON 440. Advanced Econometrics. 4 units**

Term Typically Offered: F, SP

Prerequisite: ECON 339.

Modern advanced econometric techniques with a special focus on those commonly used in academic and non-academic settings. Discrete dependent variable models, instrumental variables, causal inference, nonlinear estimation, panel data, seemingly unrelated regression, distributed lag models, cointegration, and error correction models. 4 lectures.

**ECON 445. Experimental and Behavioral Economics. 4 units**

Term Typically Offered: SP

Prerequisite: ECON 312 and ECON 395.

Design and implementation of economic experiments including computer programming and statistical methods for experimental analysis. Behavioral economic models as an alternative to neoclassical economics including prospect theory, time-inconsistent preferences, and social preferences. 4 lectures.

**ECON 460. Research Methodology in Applied Economics. 4 units**

Term Typically Offered: F, W

Prerequisite: ECON 313; ECON 339 and Senior standing.

Theory and practice of the development of economic analysis. Steps in the formulation and execution of an economics research project. 4 lectures.

**ECON 461. Senior Project I. 2 units**

Term Typically Offered: TBD

Prerequisite: ECON 313 and senior standing.

Selection and analysis of a problem under faculty supervision. Problems typical of those which graduates must solve in their fields of employment. Formal report is required. Minimum 120 hours total time.

**ECON 462. Senior Project II. 2 units**

Term Typically Offered: TBD

Prerequisite: ECON 313 and senior standing.

Selection and analysis of a problem under faculty supervision. Problems typical of those which graduates must solve in their fields of employment. Formal report is required. Minimum 120 hours total time.

**ECON 464. Applied Senior Project. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: Senior standing and two 400-level ECON courses other than ECON 460. Corequisite: ECON 460.

Analysis of selected economic topics and problems in directed individual or group-based projects, which require application of economic models, principles and theory to investigate important business, economic or social issues. Formal report required. 4 seminars.



**ECON 470. Selected Advanced Topics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group study of selected topics for advanced students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 lectures.

**ECON 519. Econometrics and Data Analysis. 4 units**

Term Typically Offered: F

Prerequisite: GSE 518. Corequisite: GSE 524.

Identification and estimation of linear and nonlinear regression models for analyzing business data. Topics include multiple linear regression; model selection; robust standard errors; instrumental variables; maximum likelihood estimation; logit/probit, ordered logit/probit, and other microeconomic models. 4 lectures.

**GSA Courses****GSA 501. Graduate Accounting Individual Research. 1-4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing in Accounting and formal petition with approval from the Associate Dean.

Advanced individual research in accounting topics planned and completed under the direction of a member of the college faculty. Designed to meet the needs of qualified students who wish to pursue investigations in accounting which cannot be followed effectively in regularly offered elective courses. A formal written proposal must be accepted by the Associate Dean of OCOB before work begins.

**GSA 536. Taxation of Trusts, Estates, and Transfer Taxes. 4 units**

Term Typically Offered: SP

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Income taxation of trusts and estates as flow-through entities; transfer taxation of gifts and estates, including generation-skipping transfers. 4 lectures.

**GSA 537. State and Local Taxation. 4 units**

Term Typically Offered: F

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Multi-state income and franchise taxation; property taxes; sales and use taxes; and the constitutional authority for the imposition of state taxes. 4 lectures.

**GSA 538. Current Developments in Taxation. 4 units**

Term Typically Offered: F

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Current developments in income taxation of individuals, trusts and estates and business entities; transfer taxation of gifts and estates; and ethics and professional responsibility in taxation. 4 lectures.

**GSA 539. Clinical Tax Education Internship. 9 units**

Term Typically Offered: W

CR/NC

Prerequisite: OCOB graduate standing in Specialization in Tax, MS Accounting program.

Accounting internship that allows graduate level accounting students the opportunity to apply skills and competencies to an employment opportunity. Placement in a full-time supervised work experience at a public accounting firm or in an accounting or internal audit department of a private enterprise or government agency. Credit/No Credit grading only.

**GSA 540. Taxation of Corporations and Partnerships. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Comparative study of the taxation of C corporations and flow-through tax entities, including S corporations, partnerships and limited liability companies. Not open to students with credit in BUS 417. 4 lectures.

**GSA 541. Advanced Financial Reporting Issues I. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Comprehensive coverage of selected advanced financial accounting and reporting topics. Topics include accounting changes and errors, leases, pensions and other post-employment benefits, income taxes, and consolidated financial statements. Course may be offered in classroom-based or online format. 4 seminars.

**GSA 543. Advanced Financial Reporting Issues II. 5 units**

Term Typically Offered: TBD

Prerequisite: GSA 541 and OCOB graduate standing or approval from the Associate Dean.

Comprehensive coverage of selected advanced financial accounting and reporting topics. Topics include financial statement footnote and MD&A disclosures and coverage of SEC statutes, regulations and filing forms. Course may be offered in classroom-based or online format. 5 seminars.

**GSA 544. Advanced Enterprise Wide Business Processes for Accounting. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Study of various transactions in order to understand the underlying business processes and information flows between various business units, in order for a transaction to occur and be properly reported, and the information determined that is critical for the information system to capture. Emphasis on role of information systems in controlling the authorization of transactions, access to information, access to assets, preparation of accounting records and reports. 4 seminars.

**GSA 545. Applied Accounting Research and Communications. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Advanced use of authoritative accounting and auditing data bases and actual filings by public companies. Frequent writing and speaking exercises. Real world accounting and auditing issues facing public and private enterprises. In-depth coverage of federal and state regulation of securities transactions. Course may be offered in classroom-based or online format. 4 lectures.

**GSA 546. Tax Research and Administrative Procedures. 4 units**

Term Typically Offered: F

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Research techniques applicable to tax issues including the communication of research results. Administrative procedures necessary for tax compliance with the various tax jurisdictions with primary emphasis on IRS practices. 4 seminars.

**GSA 548. Advanced Individual Taxation and Tax Planning. 4 units**

Term Typically Offered: F

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Advanced concepts concerning the impact of taxes on individuals. Introduction to transfer taxes imposed on individuals. Financial, estate and compensation tax planning issues. 4 seminars.

**GSA 549. Advanced Taxation of Flow-Through Entities. 4 units**

Term Typically Offered: SP

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Advanced and special topics related to the income tax treatment of partnerships, limited liability companies, trusts and S corporations and their owners and beneficiaries. Creation, operation, liquidation and sale of such organizations. 4 seminars.

**GSA 550. Advanced Corporate Taxation. 4 units**

Term Typically Offered: SP

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Advanced and special topics related to the income tax treatment of regular corporations and their shareholders. Mergers and acquisitions, tax accounting methods and periods, cross-boundary topics, and current issues. 4 seminars.

**GSA 551. International Taxation. 4 units**

Term Typically Offered: SP

Corequisite: BUS 417, or BUS 414 and BUS 415, and OCOB graduate standing or approval from the Associate Dean.

Fundamental tax concepts of inbound and outbound investments of U.S. taxpayers, controlled foreign corporations, Subpart F, the foreign tax credit, transfer pricing and contracting country treaties. 4 lectures.

**GSA 552. Fraud Auditing and Examination. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Occupational and financial statement fraud; particular emphasis on the breakdown of corporate governance and ethics systems and developing internal control systems to prevent and detect fraudulent activities. 4 lectures.

**GSA 553. International Accounting. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

International accounting, auditing, and corporate governance standards including international financial reporting standards (IFRS). 4 lectures.

**GSA 554. Advanced Spreadsheet Modeling for Accounting. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Advanced topics in electronic spreadsheets and their use in accounting and financial applications. Developing spreadsheet models for data analysis and decision making. Integrating automation tools and external data sources into spreadsheets. Course may be offered in classroom-based or online format. 4 lectures.

**GSA 555. Database Modeling and Analysis for Accounting. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Fundamental concepts in database analysis, design, implementation, administration, and audit including issues such as requirements specification, REA modeling, ER modeling, normalization, SQL, transaction control, database security, and query optimization. May also include topics such as data warehouses, XBRL and ebXML. Course may be offered in classroom-based or online format. 4 lectures.

**GSA 556. Financial Accounting and Valuation. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Comprehensive coverage of approaches to the measurement of fair values that are used in accounting situations such as mergers and acquisitions, recognition of stock based compensation, and determination of impairments in the carrying amounts of long-lived assets including intangible assets and goodwill. Role of financial reporting in the valuation of securities, credit analysis, and the determination of the cost of capital. Course may be offered in classroom-based or online format. 4 lectures.

**GSA 570. Selected Advanced Topics for Accounting. 1-4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Directed group study of selected topics for graduate students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 lectures.

## GSB Courses

### GSB 500. Independent Study. 1-4 units

Term Typically Offered: F,W,SP,SSU

Prerequisite: OCOB graduate standing and formal petition with approval from the Associate Dean.

Advanced study planned and completed under the direction of the Director of Graduate Programs. Open only to graduate students who have demonstrated ability to do independent work. A formal written proposal must be accepted by the Associate Dean of OCOB Graduate Programs before work begins.

### GSB 501. Individual Research. 1-4 units

Term Typically Offered: F,W,SP,SSU

Prerequisite: OCOB graduate standing and formal petition with approval from the Associate Dean.

Advanced individual research planned and completed under the direction of a member of the college faculty. Designed to meet the needs of qualified students who wish to pursue investigations which cannot be followed effectively in regularly offered elective courses. A formal written proposal must be accepted by the Associate Dean of OCOB Graduate Programs before work begins.

### GSB 503. Collaborative Industry Project. 1-8 units

Term Typically Offered: F,W,SP,SSU

Prerequisite: OCOB graduate standing and formal petition with approval from the Associate Dean.

Collaborative business project with a client organization that allows graduate level students the opportunity to apply knowledge, skills and competencies to address a business problem. Small teams work in collaboration with a client organization and a faculty advisor. A formal written proposal must be accepted by the Associate Dean of OCOB Graduate Programs before work begins. The project may last up to one year. Course may be offered in classroom-based or online format.

### GSB 510. Data Visualization and Communication in Business. 4 units

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Principles of data visualization and storytelling. Data visualization tools for different types of data in the context of business analytics. Communication of results for business actionable insights. Software use includes Excel, Tableau and R. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

### GSB 511. Accounting for Managers. 4 units

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Emphasis on development of the ability to read and interpret public and internal financial reports. Public reporting responsibilities of companies and management's responsibilities for developing and maintaining effective internal control systems. 4 lectures.

### GSB 512. Quantitative Analysis. 4 units

Term Typically Offered: F

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Focus on a variety of statistical techniques that help to transform data into useful information that can be used to make informed business predictions and decisions. Course may be offered in classroom-based, online, or hybrid format. 4 seminars.

### GSB 513. Organizational Behavior. 4 units

Term Typically Offered: F

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Application of behavioral, social and organizational science concepts to management. Individual, team and organizational levels of analysis, including such topics as expectations, perception, motivation, communications, creativity, leadership, cultural and ethical behavior, group dynamics, team effectiveness, work design, organization change and development. 4 seminars.

### GSB 514. The Legal and Regulatory Environment of Business. 4 units

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Legal and regulatory environment in which business operates. Consideration of historical, societal, and global perspectives reflecting political, social and/or economic beliefs and values. Strong emphasis on fundamental concepts of law and analytical tools to understand interaction between law, ethics and management decisions. 4 seminars.

### GSB 516. Strategic Marketing Analytics. 4 units

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Analysis of customer information, using a broad range of tools and techniques including predictive, statistical, and optimization models. Integration of data into reporting platforms. Application of findings to marketing decision-making. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

### GSB 517. Strategic People Analytics. 4 units

Term Typically Offered: SP

Prerequisite: GSE 519; and OCOB graduate standing or approval from the Associate Dean.

Application of business analytics approaches and techniques to understanding and managing human resources. Emphasizes problems addressed using people analytics, including which methods are best and under what conditions, data quality and validity issues, and interpretation in the HR context. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**GSB 518. Essential Statistics for Business Analytics. 4 units**

Term Typically Offered: SU

Prerequisite: OCOB graduate standing or approval from the instructor.

Statistics background needed for analysis of business data and econometrics. Topics include basics of probability theory, random variables, distribution functions, conditional distributions, independence, expectations, covariance, correlation, random samples, estimation, asymptotic theory, hypothesis testing, and confidence intervals. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**GSB 520. Data Management for Business Analytics. 4 units**

Term Typically Offered: F

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Exploration of data management including relational databases, data warehouses, and NOSQL databases. Foundation for analyzing, designing, implementing and using information repositories in a business environment. Topics include the database development life cycle, data modeling, SQL programming, data quality and integration. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**GSB 521. Cloud Services & Applications for Business Analytics. 4 units**

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean. Recommended: GSB 520.

Apply cloud resources for business analytics. Identify business benefits of cloud computing, storage, networking, data management and security. Use web services to analyze big data including query, statistical analysis, machine learning and visualization. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**GSB 522. Advanced Management Information Systems. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Analysis of the challenges, successes, and failures managers face when planning for and implementing information system initiatives, particularly enterprise systems such as supply chain management, customer relationship management and enterprise resource planning systems. Focus on the strategic and operational impact of emerging information technologies in modern day business management. Design and development of knowledge worker applications including database and decision support systems. 4 lectures.

**GSB 523. Managerial Economics. 4 units**

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Managerial economics, or microeconomics, focuses on private markets. Choices made by firms and consumers within topics that include demand, supply, efficiency, marketing structure, and government intervention. Development of an analytical framework for analyzing how these topics are important for managers. 4 lectures.

**GSB 524. Marketing Management. 4 units**

Term Typically Offered: F

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Introduction to marketing management. Concepts and principles necessary to plan, direct and control the product, promotion, distribution and pricing strategies of the firm. 4 lectures.

**GSB 525. Project Management. 4 units**

Term Typically Offered: SU

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Focus on project management tools and processes required to establish priorities for and management of projects within normal and abnormal scope, money and time constraints. Planning, organizational and resource challenges common to a variety of project types. Product life cycle, normal operational, new product introduction and profit oriented product family projects reviewed in service and production environments. 4 lectures.

**GSB 529. Effective Communication Skills for Managers. 4 units**

Term Typically Offered: SU

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Enhancement of business writing and oral presentation skills, organized around two areas: 1) preparing written business documents and reports, and 2) professional oral presentation skills. Preparation of a variety of business reports and documents. Multiple business presentations. 4 lectures.

**GSB 530. Data Analytics and Mining for Business. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Exploration of the concepts, tools and techniques of data mining in the business context, using case study and problem-solving approaches. Topics include multidimensional data modeling, predictive analytics, pattern discovery, forecasting, text mining, and data visualization. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**GSB 531. Managerial Finance. 4 units**

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Theories, practices and tools of corporate financial decision making. Topics include valuation of fixed income securities and stocks, capital budgeting, capital structure, dividends, and an overview of financial markets and institutions. Introduction to valuation of derivative securities, market efficiency, and agency costs. 4 seminars.

**GSB 533. Aggregate Economics Analysis and Policy. 4 units**

Term Typically Offered: SP

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Development of the theoretical and empirical framework of the macroeconomy in which businesses must operate. Topics include GDP, inflation, unemployment, interest rates and monetary and fiscal policies. The dynamics of the macroeconomic environment over time. 4 lectures.

**GSB 534. Lean Operations Management. 4 units**

Term Typically Offered: SP

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Introduction to the operations function and its interaction with other areas in an organization. Emphasis on applying lean six sigma thinking to achieve competitive advantage in cost, quality, time, and flexibility in manufacturing and service operations. 4 lectures. Course may be offered in classroom-based or online format.

**GSB 536. Data Ethics for Business Analytics. 2 units**

Term Typically Offered: SP

Prerequisite: GSB 520; and OCOB graduate standing or approval from the Associate Dean.

Examination of ethical risks raised by data analysis, including data collection, ownership and usage. Philosophical examination of topics raised by data analysis, including consent, privacy, transparency, bias and potential harms from data collection and use. Course may be offered in classroom-based, online, or hybrid format. 2 lectures.

**GSB 539. Graduate Internship in Business. 2-8 units**

Term Typically Offered: W

CR/NC

Prerequisite: OCOB graduate standing and formal petition with approval from the Associate Dean.

Correlation of experience and academic knowledge. Placement in a supervised business or public organization. A formal written proposal must be accepted by the Associate Dean of OCOB Graduate Programs before work begins. Credit/No Credit grading only.

**GSB 544. Computing and Machine Learning for Business Analytics. 4 units**

Term Typically Offered: F

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Use of computers for advanced data analysis in business analytics. Topics include computer programming using statistical software, data gathering and cleaning, and machine learning. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**GSB 545. Advanced Machine Learning for Business Analytics. 4 units**

Term Typically Offered: SP

Prerequisite: GSB 544; and OCOB graduate standing or approval from the Associate Dean.

Use of computers for advanced machine learning in business analytics. Topics include boosting, ensemble learning, Bayesian methods, and various types of neural networks. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**GSB 550. Bayesian Econometrics. 4 units**

Term Typically Offered: TBD

Prerequisite: GSE 520.

Introduction to Bayesian econometrics with a focus on business decision making. Making appropriate use of prior information; computation of posterior densities; Bayesian forecasting and policy evaluation; model selection and diagnostic tools; alternative loss functions tailored to specific business applications. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**GSB 551. Prescriptive Analytics. 4 units**

Term Typically Offered: SP

Prerequisite: GSE 519 or GSE 520.

Monte Carlo simulation. Decision making under uncertainty. Linear and non-linear programming. Dynamic models of growth and arrivals. Model risk. Applications to finance, operations, strategic planning, and marketing. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**GSB 555. Negotiation. 4 units**

Term Typically Offered: SP

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Theory and practice of negotiation in a variety of professional and managerial contexts (e.g., business acquisitions, compensation, business disputes, transfer pricing, inter- and intra-organizational) and in one-on-one, group, and team-based arrangements. Includes impact of culture, ethics, dispute resolution, coalitions and use of creativity to develop integrative solutions. Course may be offered in classroom-based, online, or hybrid format. 4 seminars.

**GSB 556. Entrepreneurship and New Venture Management. 4 units**

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Exploration of entrepreneurship with emphasis on the formation and management of new business ventures. Analysis of typical operating problems of these firms and application of appropriate techniques for their solution. 4 seminars.

**GSB 562. Seminar in General Management and Strategy. 4 units**

Term Typically Offered: SP

Corequisite: OCOB graduate standing and GSB 511, GSB 513, GSB 523, GSB 531, GSB 533 and either GSB 512 or IME 503; and either GSB 524 or GSB 573; and either GSB 534 or IME 580, or approval from the Associate Dean.

Application of interdisciplinary skills to business and corporate strategy formulation and implementation. Analysis of interdependence between external environments and internal systems. Focus on responsibilities, tasks, and skills of general managers. Case studies, group problem solving. Integrating course of MBA core curriculum. Course satisfies comprehensive examination requirement. 4 seminars.

**GSB 563. International Business Tour. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Business tour exposure to different management systems and their operating environments. Pre-trip and on-the-road meetings, readings, case studies and discussions. Tours of firms, government offices, ministries, etc; interviews of managers and government officials. Conducted in English. Passport required. The Class Schedule will list topic selected. Total credit limited to 8 units. 2 seminars, 2 activities.



**GSB 564. Entrepreneurial Finance. 4 units**

Term Typically Offered: TBD

Prerequisite: GSB 531; and OCOB graduate standing or approval from the Associate Dean.

The process of financing new and fast-growing firms. Preparation of pro forma financial statements for a new venture. Readings on the venture capital process, from seed capital through the initial public offering (IPO). Valuation of firms seeking venture capital, and those planning their IPO. Valuing convertible securities. Real options valuation. 4 lectures.

**GSB 569. Managing Technology in the International Legal Environment. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Practical legal decisions required to conduct business for or with high technology companies. Methods to protect high technology developments in international markets, including copyrights, patents, trade secrets, trademarks and contracts. 4 seminars.

**GSB 570. Selected Advanced Topics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Directed group study of selected topics for advanced students. Total credit limited to 8 units. The Class Schedule will list topic selected. 1 to 4 seminars.

**GSB 575. Career Readiness in Data Analytics. 1 unit**

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Career development and preparation with specific focus on the impact of organizational structures on the professions of business analytics and data science. Personal marketing in a dynamic technological environment. Course may be offered in classroom-based or online format. 1 lecture.

**GSB 583. Management of Human Resources. 4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

An overview of the major functional and support activities in the personnel/human resource field, including strategic human resource planning, job analysis, recruitment, selection, performance appraisal, compensation, employee rights, and employee safety and health. 4 seminars.

**GSB 590. Energy and Environmental Finance. 4 units**

Term Typically Offered: SP

Prerequisites: GSB 511, GSB 523, and GSB 531; or OCOB graduate standing or approval from the Associate Dean.

Overview of theory and practical tools to improve financing and investment decisions as they relate to the energy industry and markets, and achieve environmental objectives including valuation models, real options, energy derivatives, project finance, impact investing, and managing climate and technological risks. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**GSB 595. Managing Change. 4 units**

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

The knowledge and the elementary skills/competencies needed to intervene in an organization in order to improve its effectiveness. Design and use of action to improve organizational effectiveness. 4 seminars.

**GSB 597. Seminar in Selected Economic Problems. 4 units**

Term Typically Offered: TBD

Prerequisite: GSB 523 and OCOB graduate standing or approval from the Associate Dean.

Selected economic problems analyzed at an advanced level in a particular field, such as international trade, public finance, urban, industrial organization or transportation. 4 seminars.

**GSE Courses****GSE 500. Independent Study. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Consent of department head.

Advanced study planned and completed under the direction of a departmental faculty member. Open only to graduate students demonstrating ability to do independent work. Enrollment by petition.

**GSE 510. Essential Mathematics for Economic Analysis. 4 units**

Term Typically Offered: SU

Prerequisite: Graduate standing. Recommended: MATH 206, MATH 244, MATH 408, or MATH 410.

Review and discussion of the basic math tools needed for graduate work in economics, including set theory, linear algebra, properties of functions, static and dynamic optimization. 4 lectures.

**GSE 511. Microeconomic Analysis. 4 units**

Term Typically Offered: F

Prerequisite: Graduate standing. Concurrent: GSE 510.

Preferences and choice, preferences over commodities, consumer demand theory, producer theory, choice under uncertainty, simultaneous and sequential move games, incomplete information games, mechanism and incentive design. 4 lectures.

**GSE 512. Dynamic Stochastic Modeling. 4 units**

Term Typically Offered: W

Prerequisite: GSE 511 and graduate standing.

Finite Markov chains, linear state space models, dynamic programming, rational expectations equilibrium, Markov perfect equilibrium, Stackelberg plans, general equilibrium under certainty and uncertainty, Arrow securities, consumption-based asset pricing, incomplete markets. 4 lectures.

**GSE 518. Essential Statistics for Econometrics. 4 units**

Term Typically Offered: SU

Prerequisite: Graduate standing. Recommended: MATH 206 or MATH 244 or GSE 510.

Statistical concepts for use in theoretical and applied econometric applications including random variables, independence, expectations, probability, distributions, covariance and correlation, large sample theory, and properties of estimators. 4 lectures.

**GSE 519. Econometrics and Data Analysis. 4 units**

Term Typically Offered: F

Prerequisite: GSB 518 or GSE 518. Corequisite: GSB 544 or GSE 524.

Identification and estimation of linear and nonlinear regression models for analyzing business data. Topics include multiple linear regression; model selection; robust standard errors; instrumental variables; maximum likelihood estimation; logit/probit, ordered logit/probit, and other microeconomic models. Course may be offered in classroom-based, online, or hybrid format. 4 lectures.

**GSE 520. Advanced Econometrics I. 4 units**

Term Typically Offered: F

Prerequisite: GSE 518 and graduate standing. Recommended: ECON 339.

The linear regression model. Confidence and prediction intervals. Hypothesis testing. The generalized regression model and heteroscedasticity. Identification and causal inference: randomization, regression, instrumental variables, regression discontinuity, differences in differences. 4 lectures.

**GSE 522. Advanced Econometrics II. 4 units**

Term Typically Offered: W

Prerequisite: GSE 520 and graduate standing.

Maximum likelihood estimation. Binary, multinomial, and ordered discrete response models. Truncated, censored regression. Structural equation modeling. Factor models, filtering and Bayes rule. Random utility and mixed logit models. Demand estimation. 4 lectures.

**GSE 524. Computing and Machine Learning for Economics. 4 units**

Term Typically Offered: F

Prerequisite: Graduate standing.

Use of computers for advanced data analysis in economics and analytics. Topics include computer programming using statistical software, data gathering and cleaning, and machine learning. 4 lectures.

**GSE 526. Microeconometrics. 4 units**

Term Typically Offered: W

Prerequisite: GSE 520 and graduate standing. Recommended: GSE 524.

Potential outcomes framework and causal treatment effects. Unconfoundedness designs, including matching and propensity score methods. Selection on unobservable designs. Quantile regressions. The econometrics of randomized experiments. 4 lectures.

**GSE 532. Environmental and Natural Resource Economics. 4 units**

Term Typically Offered: TBD

Sustainability Focused

Prerequisite: GSE 511 and graduate standing.

Economic analysis of pollution, congestion, public good provision, and natural resource conservation. Static and dynamic efficiency, economic growth and sustainability, pollution taxes, marketable permits, and the design of market-based regulations. 4 lectures.

**GSE 534. International Economics. 4 units**

Term Typically Offered: TBD

Prerequisite: GSE 511 and graduate standing.

Analysis of the international movement of goods, services, capital and payments. The role of exchange rates, tariffs, quotas, and transport costs. Relationship between international trade and economic growth. 4 lectures.

**GSE 536. Public Economics. 4 units**

Term Typically Offered: TBD

Prerequisite: GSE 511 and graduate standing.

Economic analysis of the rationale for public expenditure and taxation. Externalities, pollution and public policy, income redistribution and public welfare, public goods, collective choice and political institutions, public budgeting techniques and cost-benefit analysis, taxation and tax policy, state-local finance and fiscal federalism. 4 lectures.

**GSE 538. Industrial Economics. 4 units**

Term Typically Offered: SP

Prerequisite: GSE 511 and graduate standing.

Economic theories of industrial organization with specific reference to such topics as cartels, market concentration and performance, vertical integration, franchise contracts, ownership and control of firms, multipart and discriminatory pricing, and tie-in sales. Economic aspects of antitrust law and government regulation of industry. 4 lectures.

**GSE 542. Advanced Labor Economics. 4 units**

Term Typically Offered: SP

Prerequisite: GSE 522 and graduate standing, or consent of instructor.

Recommended: GSE 526.

Research methods in labor economics and application of modern empirical techniques to the analysis of labor markets. Topics include labor supply and demand, discrimination, migration, and human capital accumulation. 4 lectures.

**GSE 544. Evidence-Based Decision Analysis. 4 units**

Term Typically Offered: SP

Prerequisite: GSE 520 and graduate standing. Recommended: GSE 524 and GSE 526.

Representing uncertainty using discrete and continuous conditional probabilities. Monte Carlo simulation of independent and correlated random variables. Optimization of decision variables. Randomization in program evaluation. Model mis-specification. Visualization and representation of the results of a decision analysis. Case studies. 4 lectures.

**GSE 546. Incentives and Market Design. 4 units**

Term Typically Offered: SP

Prerequisite: GSE 511 and graduate standing.

Ascending, first-price, second-price, and double auctions. Revenue equivalence, multi-unit auctions, the Vickrey-Clarke-Groves mechanism, and matching markets. The deferred acceptance algorithm, the immediate acceptance algorithm, and the many-to-one matching model. 4 lectures.

**GSE 552. Machine Learning for Prediction and Causal Inference. 4 units**

Term Typically Offered: SP

Prerequisite: GSE 526 and graduate standing.

Regularization, model selection, and supervised and unsupervised learning. Post model selection inference for causal effects. Double/debiased machine learning, causal trees, causal forests, and synthetic controls. 4 lectures.

**GSE 570. Selected Advanced Topics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Graduate standing or consent of instructor.

Directed group study of selected topics for graduate students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 lectures.

**GSE 580. Seminar in Economics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Graduate standing.

Advanced topics in economics chosen according to the common interests and needs of the students enrolled. The Class Schedule will list topic selected. 1 to 4 seminars. Total credit limited to 5 units.

**GSE 599. Thesis. 4 units**

Term Typically Offered: TBD

Prerequisite: Graduate standing and consent of thesis committee.

Individual research under the general supervision of the faculty, leading to a graduate thesis of suitable quality. Minimum of 8 units required for degree.

**ITP Courses****ITP 100. Student Orientation, College Success and Career Readiness. 1 unit**

Term Typically Offered: F

Orientation to ITP major and concentrations. Development of a personalized graduation plan. Skills for academic success: goal setting, time management, study skills, registration strategies, overall adjustment to college life, including connection to a social peer network and Career Readiness. Field trip required. 1 activity.

**ITP 125. Introduction to Supply Chain and Packaging Systems. 3 units**

Term Typically Offered: F

Comprehensive overview of topics and opportunities in Industrial Technology and Packaging. Discusses fundamentals of product and package design, operations, supply chain management, innovation, and sustainability as related to curriculum. Includes practical application of tools to address real world challenges. 3 lectures.

**ITP 150. Industrial Power Systems. 4 units**

Term Typically Offered: W

Corequisite: PHYS 123.

A survey of common industrial power systems. Labs include fundamentals of electrical/electronic circuits, fluid power, internal combustion engines and renewable energy sources. 3 lectures, 1 laboratory.

**ITP 203. Personal Leadership - 7 Habits. 4 units**

Term Typically Offered: W

Learn and practice the what, why, and how of personal leadership. Uses the 7 Habits of Highly Effective People framework to provide students with skills they will use repeatedly in their careers and life. Course offered online only. 4 lectures.

**ITP 211. Industrial Safety and Quality Program Leadership. 4 units**

Term Typically Offered: W

Prerequisite: ITP 150.

Effective program development and leadership to implement safety and quality process improvement. Application of industrial leadership, knowledge, skills and methods to develop and implement total safety and quality management programs. Class project includes the oral presentation. 3 lectures, 1 activity.

**ITP 233. Product Modeling and Communication. 4 units**

Term Typically Offered: W, SP

Fundamental theory and practice of digital modeling with emphasis on hands-on use of two dimensional and three dimensional modeling software commonly used in industry. Includes part/assembly modeling, geometric dimensioning/tolerancing and fundamental skills in communicating product design data in accordance with industry standards. 2 lectures, 2 activities.

**ITP 234. Packaging Design Fundamentals. 4 units**

Term Typically Offered: F, SP

A comprehensive overview of fundamental structural and graphic concepts for package design. Focus on design thinking, two-dimensional and three-dimensional form creation, design elements, visual perception, photo rendering, and rapid prototyping. 3 lectures, 1 laboratory.

**ITP 260. Manufacturing Processes and Materials. 4 units**

Term Typically Offered: F

Prerequisite: CHEM 111 or CHEM 124 or CHEM 127.

Introduction to a wide variety of manufacturing processes and materials with emphasis on metallic products. Analysis of relationships among manufacturing processes, materials and product design. Provides experiential learning on safe and efficient operations of manufacturing equipment. 3 lectures, 1 laboratory.

**ITP 270. Selected Topics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Open to undergraduate students and consent of instructor.

Directed group study of selected topics. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 lectures.

**ITP 275. Industrial Facility Systems and Equipment. 4 units**

Term Typically Offered: TBD

Prerequisite: ITP 150. Corequisite: ITP 211.

Develop an understanding of contemporary issues in modern industrial facilities. Emphasis on support systems and equipment such as heating and cooling; material handling; electrical, hydraulic, pneumatic power systems; and energy management. Includes facilities sustainability and lean practices. 3 lectures, 1 activity.

**ITP 302. Developing and Presenting New Enterprise Strategies. 4 units**

Term Typically Offered: TBD

Prerequisite: Completion of GE Area A1 with a grade of C- or better (GE Area A2 for students on the 2019-20 or earlier catalogs); and BUS 346.

Taking new industrial enterprise concept to launch. Planning and management of product-based start-up including integration of: product development; manufacturability and costs; outsourcing; channel selection; supply chain; inventory and scheduling. Application to project case study. Emphasis on developing effective technical presentations. 2 lectures, 2 activities.

**ITP 303. Lean Six Sigma Green Belt. 4 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: STAT 217, STAT 218, STAT 251, or any 300 or 400 level statistics course.

Develop skills to function as lean six sigma leader. Discussion and problem sessions cover lean six sigma green belt body of knowledge: define, measure, analyze, improve, control. Team skills necessary to complete projects. Course may be offered in classroom-based or online format. 4 lectures.

**ITP 326. Product Design and Development. 4 units**

Term Typically Offered: F, W

Prerequisite: ITP 233 or BUS 310.

Overview of user-centered design methods involving sketching and quick prototyping techniques for new product development. Topics include: design thinking, identification of user needs, concept generation/selection/testing, industrial design, visual perception, ergonomics, sustainable design, product architecture, and intellectual property. 3 lectures, 1 laboratory.

**ITP 330. Packaging Fundamentals. 4 units**

Term Typically Offered: F,W,SP,SU

2020-21 or later: Upper-Div GE Area B

2019-20 or earlier catalog: GE Area B5, B6, or B7

Sustainability Focused

Prerequisite: Junior standing or Industrial Technology and Packaging Major; completion of GE Area A with grades of C- or better; completion of GE Area B1 (GE Area B3 for students on the 2019-20 or earlier catalogs); and one course in GE Area B4 with a grade of C- or better (GE Area B1 for students on the 2019-20 or earlier catalogs).

Overview of packaging functions, materials and development. Discuss value addition to product-package systems via various packaging materials, processes, design and protective packaging for global distribution. Illustrates the impact of packaging on environment. Course may be offered in classroom-based, online, or hybrid format. 3 lectures, 1 laboratory. Fulfills GE Area Upper-Division B (GE Areas B5, B6, or B7 for students on the 2019-20 catalog).

**ITP 341. Packaging Polymers and Processing. 4 units**

Term Typically Offered: W, SP, SU

2020-21 or later: Upper-Div GE Area B

2019-20 or earlier catalog: GE Area B5, B6, or B7

Sustainability Related

Prerequisite: Junior standing or Industrial Technology and Packaging Major; completion of GE Area A with grades of C- or better; CHEM course in GE Area B1 (GE Area B3 for students on the 2019-20 or earlier catalogs); and one course in GE Area B4 with a grade of C- or better (GE Area B1 for students on the 2019-20 or earlier catalogs).

Physical and chemical properties of plastic materials and processing techniques. Evaluation of current materials and technologies to reduce waste and to improve reuse and recycling. Applied laboratory using common industry processes emphasizes relationships among processing, structure, properties, and consumer response. Course may be offered in classroom-based, or hybrid format. 3 lectures, 1 laboratory. Fulfills GE Area Upper-Division B (GE Areas B5, B6, or B7 for students on the 2019-20 catalog).

**ITP 371. Supply Chain Management in Manufacturing and Services. 4 units**

Term Typically Offered: F,W,SP,SU

Prerequisite: A grade of C- or better, or consent of instructor, in: MATH 141 or MATH 221, and STAT 217 or STAT 218 or STAT 251 or any 300 or 400 level statistics course.

Introduction to supply chain management and performance metrics. Supply or value chains dealing with hard goods and services from design to daily management. Project management techniques and technology for making and implementing decisions. Course may be offered in classroom-based or online format. 4 lectures.

**ITP 390. Industrial Automation. 4 units**

Term Typically Offered: W

Prerequisite: ITP 260.

Programming and setup of computer-controlled manufacturing/assembly machinery. Includes introduction to smart manufacturing and industrial internet of things. Familiarization with CNC machines, robots, 3D printing, programmable logic controllers and online data monitoring. 3 lectures, 1 laboratory.

**ITP 400. Special Problems for Advanced Undergraduates. 1-4 units**

Term Typically Offered: F, W, SP

Prerequisite: Consent of instructor.

Individual investigation, research, studies, or surveys of selected problems. Total credit limited to 8 units, with a maximum of 4 units per quarter.

**ITP 403. Lean and Quality Systems Management. 4 units**

Term Typically Offered: F, W

Prerequisite: ITP 303; Business majors must have formally declared their concentration to enroll.

Process improvement and quality assurance viewed from systems perspective including cost, time, and process. Lean thinking and tools studied as problem solving approach achieving continuous improvement through waste elimination and variability reduction. Projects improve processes in manufacturing, supply chain or service. 4 lectures.

**ITP 404. Lean Six Sigma Green Belt Certification Project. 4 units**

Term Typically Offered: TBD

Prerequisite: ITP 303.

Tools and concepts required to complete a Lean Six Sigma Green Belt Certification project (LSSGB). Supervised independent completion of an LSSGB project for a client selected by the student. Written and verbal presentation of process and results.

**ITP 406. Professional Technical Selling. 4 units**

Term Typically Offered: F, SP

Prerequisite: BUS 346.

Technical competencies in complex business-to-business selling through project selling teams, providing extended product/service solutions to customer buying committees. Individual mock sales presentations (with written proposals) and team case study presentations. 4 lectures.

**ITP 408. Fiber-Based Packaging. 4 units**

Term Typically Offered: W, SP

Prerequisite: ITP 330.

Design of packaging systems using paper, paperboard, corrugated fiberboard, and other fiber-based materials. Physical and chemical properties, manufacturing, converting operations, commercial applications, and sustainability. Survey of tests and procedures for fiber-based packaging materials and packaging products following ASTM, TAPPI, and ISO standards. 3 lectures, 1 laboratory.

**ITP 409. Packaging Machinery and Processes. 4 units**

Term Typically Offered: F

Prerequisite: ITP 330.

Integrated study of packaging machinery and processes from a practical and operational viewpoint. Understanding basic processes and interrelationship between packaging machinery and type of product, production layout and efficiency, material handling and distribution equipment, quality control and ancillary systems. 3 lectures, 1 activity.

**ITP 410. Operations Planning and Control. 4 units**

Term Typically Offered: F

Prerequisite: BUS 391; and ITP 303 or ITP 371.

Linking supply chain operations to deliver value to the end customer. Contrasting of advanced manufacturing concepts, such as pull systems, sales and operations planning, mixed model manufacturing, level production, and theory of constraints to traditional materials requirements planning systems. 3 lectures, 1 activity.

**ITP 411. Packaging Sustainability. 4 units**

Term Typically Offered: F, SP

Sustainability Focused

Prerequisite: ITP 330.

A comprehensive overview of cradle-to-cradle sustainability concerns that apply to the packaging life cycle, tools for measuring & reporting sustainability and communicating sustainability initiatives. 3 lectures, 1 laboratory.

**ITP 412. Instrumental Analysis of Packaging Polymers. 4 units**

Term Typically Offered: TBD

Prerequisite: ITP 341.

Overview of various analytical methods and tools used for the evaluation of polymers and other packaging materials including thermal characterization, spectroscopy, chromatography. Qualitative and quantitative analysis of the matter. Identification of polymeric materials and morphology. Mass transfer measurement. 3 lectures, 1 laboratory.

**ITP 413. Packaging Quality Assessment. 4 units**

Term Typically Offered: SP

Prerequisite: ITP 341 and ITP 408.

Overview of the role that packaging quality plays in consumer packaged goods. Techniques used for testing and evaluating the quality of consumer product packaging, including material quality assessment, product-package interaction and human-package interaction. 3 lectures, 1 laboratory.

**ITP 414. Packaging Laws & Regulations. 4 units**

Term Typically Offered: W

Prerequisite: ITP 408 and ITP 411.

Comprehensive overview of the U.S. laws and regulations applicable to packaging of different types of consumer products, and related government organizations. Awareness of legal and regulatory requirements related to packaging solutions. Course may be offered in classroom-based or online format. 4 lectures.

**ITP 415. Supply Chain and Logistics. 4 units**

Term Typically Offered: W, SP

Sustainability Related

Prerequisite: One of the following: ITP 303, ITP 326, ITP 330, or ITP 341; and ITP 371.

Key concepts, tools, and approaches for making effective supply chain and logistics decisions in support of business goals. Practical management issues and applications are the focus rather than theoretical, mathematical optimization. Business cases and simulations are used to illustrate and explore best practices. 4 lectures.

**ITP 419. Cooperative Education/Internship. 1-4 units**

Term Typically Offered: F, W

Prerequisite: Approval of area chair, junior standing, and a CPSLO cumulative GPA of at least 2.5 without being on academic probation.

Work experience in business, industry, government and other areas of student career interest. Periodic written progress reports, final report, and evaluation by work supervisor required. Total credit limited to 4 units.

**ITP 428. Commercialization of New Technologies. 4 units**

Term Typically Offered: F, SP

Prerequisite: BUS 342, BUS 346, or ITP 326.

Concepts, frameworks, and experiences necessary to understand the business potential of technology innovations and determine if one or more sustainable market opportunities can be identified to exploit them. Hands-on exercises and real new inventions to illustrate concepts. 4 lectures.

**ITP 430. Healthcare Packaging. 4 units**

Term Typically Offered: W

Prerequisite: ITP 330.

Study of packaging systems for pharmaceuticals, nutraceuticals, and medical devices. Characteristics and properties of materials, forms, and sterilization methods. Design principles for products for healthcare. Laboratory exercises on packaging operations, materials, and evaluation methods. International and federal regulations and standards. Field trip may be required. 3 lectures, 1 laboratory.

**ITP 461. Senior Project I. 2 units**

Term Typically Offered: W

Prerequisite: Consent of instructor.

Selection and completion of a project under faculty supervision. Projects typical of problems graduates must solve in their field of employment. Project results presented in a formal report, and must be completed in two quarters. Minimum 120 hours total time.



**ITP 462. Senior Project II. 2 units**

Term Typically Offered: SP

Prerequisite: Consent of instructor.

Selection and completion of a project under faculty supervision. Projects typical of problems graduates must solve in their field of employment. Project results presented in a formal report, and must be completed in two quarters. Minimum 120 hours total time.

**ITP 464. Applied Industrial Technology Senior Project Seminar. 4 units**

Term Typically Offered: F, W, SP

Prerequisite: Senior standing.

Selection and analysis of industrial and technological problems and opportunities in directed individual or group-based projects. Problems typical to those which graduates could encounter in their fields of employment. Formal report required. Minimum 120 hours of total time. 4 seminars.

**ITP 467. Applied Business and Production Management. 4 units**

Term Typically Offered: SP

Prerequisite: ITP 211, ITP 233, ITP 260, ITP 326, and BUS 346.

An integrative manufacturing business and production systems experience, including design, prototyping, processing, quality control, resource management, cost-control, marketing, sales, packaging, and technical documentation. Team projects reflect the real-world, dynamic environment of product development and production. 2 lectures, 2 laboratories.

**ITP 468. Blockchain in Business. 4 units**

Term Typically Offered: TBD

Prerequisite: BUS 392 or CSC 101 or CSC 232 or ECON 395.

Blockchain technology in business, with application examples in management (including HR, marketing and accounting), operation systems (manufacturing, supply chain and other service systems), finance (including stock trading, real estate transactions and P2P payment systems) and entrepreneurship. 4 lectures. Crosslisted as BUS/ITP 468.

**ITP 470. Selected Advanced Topics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group study and seminars in selected topics in industrial technology. Open to undergraduate students. The Class Schedule will list topic selected. Total credit limited to 12 units. 1 to 4 lectures.

**ITP 471. Selected Advanced Laboratory. 1-4 units**

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group laboratory study of selected topics for advanced students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 laboratories.

**ITP 475. Distribution Packaging Dynamics. 4 units**

Term Typically Offered: F

Prerequisite: ITP 330.

Survey of tests and procedures for packaging materials and packaging products following ASTM and ISTA standards. The testing procedures include tests for shock, vibration, drop and impact as prescribed for shipment by truck, rail, sea, and air. Hands-on product/packaging testing for quality control. 3 lectures, 1 laboratory.

**ITP 485. Packaging Development. 4 units**

Term Typically Offered: SP

Prerequisite: ITP 341, ITP 408, and ITP 475.

Integrative approach to developing new packaging systems by balancing the needs of the different value chain stakeholders. Interplay of package design for end-users, marketing, manufacturing, distribution, and disposal. Class project focuses on cross-disciplinary collaboration, design thinking, discovery, and disruptive innovation. 3 lectures, 1 laboratory.

**ITP 500. Individual Study. 1-6 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing and formal petition with approval from the Associate Dean.

Advanced study planned and completed under the direction of a member of the department faculty. Open only to graduate students who have demonstrated ability to do independent work. Maximum of 6 units may be applied to degree requirements.

**ITP 570. Selected Advanced Topics. 1-4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Directed group study of selected topics for advanced students. Open to undergraduate students. The Class Schedule will list topic selected. Total credit limited to 16 units. 1 to 4 seminars.

**ITP 571. Selected Advanced Topics Laboratory. 1-4 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Directed group laboratory study of selected topics for advanced students. The Schedule of Classes will list title selected. Total credit limited to 16 units. 1-4 laboratories.

**ITP 599. Industrial and Technical Studies Thesis. 3 units**

Term Typically Offered: TBD

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Completion of a thesis involving individual research that is significant to the field of industrial and technical systems. A formal written proposal must be accepted by the Associate Dean of OCOB Graduate Programs before work begins. Course satisfies culminating experience requirement through the completion of the comprehensive thesis. Total credit limited to 9 units.

## GSP Courses

### GSP 530. Packaging Value Chain. 2 units

Term Typically Offered: W, SU

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Packaging value chain from raw material supplier to retailers in the context of meeting current needs within the packaging arena. Global exploration of value chain strategies to increase innovation, sustainability, cost savings, quality, organizational agility, and responsiveness. Course may be offered in classroom-based or online format. 2 lectures.

### GSP 532. Packaging Materials. 4 units

Term Typically Offered: F

Prerequisite: OCOB graduate standing or approval from the Associate Dean of OCOB. Corequisite: GSP 530.

Fundamental and physical properties of packaging materials. Processing of materials. Design and fabrication of packaging materials for efficient, economically viable and environmental sustainable product-package systems for global supply chain solutions. Course may be offered in classroom-based or online format. 4 lectures.

### GSP 533. Advanced Packaging Laws and Regulations. 3 units

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean. Corequisite: GSP 530.

Overview of packaging laws and regulations. Content ranges from FDA, USDA, FTC, and EPA concepts, to labeling and structural issues such as bio-terror, product security and environmental packaging to materials issues, litigation, international concepts and intellectual property issues. Course may be offered in classroom-based or online format. 3 lectures.

### GSP 535. Packaging Value in Logistics and Supply Chain Management. 3 units

Term Typically Offered: SU

Prerequisite: OCOB graduate standing or approval from the Associate Dean. Corequisite: GSP 530.

Integrated view of procurement, operations and logistics management. Management of the flow of products from raw material sourcing and acquisition through delivery to the final user. Capturing and understanding the value across these flows and how to increase it. Course may be offered in classroom-based or online format. 3 lectures.

### GSP 536. Packaging Design. 4 units

Term Typically Offered: F

Prerequisite: OCOB graduate standing or approval from the Associate Dean. Corequisite: GSP 530.

Overview of structural and graphic design concepts for package design with focus on creating value throughout the entire packaging value chain. Topics include design thinking, innovation, design processes, two-dimensional and three-dimensional design elements, positioning, value creation, and distribution packaging considerations. Course may be offered in classroom-based or online format. 4 lectures.

### GSP 537. Distribution Packaging for Business Managers. 4 units

Term Typically Offered: SU

Prerequisite: OCOB graduate standing or approval from the Associate Dean of OCOB.

Physical properties of distribution packaging and equipment used in prototyping and testing of product-packaging systems for global supply chains. Application of packaging knowledge to solve distribution packaging problems in modern business, with a view towards costs and environmental sustainability. Course may be offered in classroom-based or online format. 4 lectures. Formerly ITP 537.

### GSP 538. Quality Evaluation of Packaged Products. 4 units

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean. Corequisite: GSP 530.

Overview of the role of quality of packaged product and techniques used for testing and evaluating quality of consumer products as related to material quality assessment, product-package interaction and human-package interaction. Course may be offered in classroom-based or online format. 4 Lectures.

### GSP 539. Marketing and Sales for Packaged Products. 4 units

Term Typically Offered: W

Prerequisite: OCOB graduate standing or approval from the Associate Dean. Corequisite: GSP 530.

Packaging as a means to increase sales of product. Package design, structure, materials and production costs. Exploration of color, imagery, sustainability, and recent trends. Course is offered online only. 4 lectures.

### GSP 540. Quantitative Analysis for Packaging. 4 units

Term Typically Offered: SP

Prerequisite: OCOB graduate standing or approval from the Associate Dean. Corequisite: GSP 530.

Analytical and quantitative techniques. Summary measures, smoothing, interpolation curve fitting, root-finding, extrema. Numerical differentiation, integration. Boundary value problems. Numerical simulation. Course may be offered in classroom-based or online format. 4 lectures.

### GSP 541. Corporate Finance for Packaging. 4 units

Term Typically Offered: SP

Prerequisite: OCOB graduate standing or approval from the Associate Dean. Corequisite: GSP 530.

Decisions with financial implications for firms' owners and stakeholders in the context of packaging. Choice of best packaging alternative from the financial standpoint. Course offered online only. 4 Lectures.

### GSP 591. Applied Industry Project I. 5 units

Term Typically Offered: SP

Prerequisite: OCOB graduate standing or approval from the Associate Dean.

Initiation, completion and presentation of an individual project, involving research, allowing an opportunity to apply knowledge, skills, and competencies to address a significant issue in the field of packaging value chain, preferably in connection with the student's employment. Formerly ITP 591.