

INDUSTRIAL ENGINEERING

CAREER FOCUS OPTIONS/TECHNICAL ELECTIVES

- This list is to help students find options for their Career Focus Area. Students must do required courses listed for a specific area, but a substitute can be discussed with the Undergraduate Associate Chair.
- All business courses are subject to approval by the W.P.Carey School of Business. Students must have the prerequisites required by the course. Students need a minimum 2.5 ASU Cumulative GPA and 2.5 business GPA.
- Students need to submit a list of courses they would like to use for their Career Focus Area. Please see the undergraduate advisor for more information.
- In general, the technical elective course needs to be industrial engineering.

IEE COURSES

M IEE 368 Facilities Analysis and Design. (3)

fall

Planning, analysis, and design of the tangible physical assets of the firm. Emphasizes facilities location, materials handling, automation, computer integration, and utilization of financial resources. Applications in diverse fields. Lecture, lab. Prerequisite: IEE 300. General Studies: [L](#)

M IEE 369 Work Analysis and Design. (3)

spring

Planning, analysis, and design of methods of accomplishing work. Emphasizes human factors, work planning, methods analysis and design, and work measurement. Applications in diverse fields. Lecture, lab. Prerequisite: IEE 300. General Studies: [L](#)

M IEE 405 Developing Information Systems Applications. (3)

spring

Analysis and design of distributed information system applications using object and relational architectures. Integrated lecture/lab. Prerequisites: CSE205; IEE305.

M IEE 431 Engineering Administration. (3)

fall and summer

Introduces quantitative and qualitative approaches to management functions, engineering administration, organizational analysis, decision making, and communication. Credit is allowed for only IEE 431 or 541. Prerequisite: senior standing.

M IEE 437 Human Factors Engineering. (3)

fall

Study of the human psychological and physiological factors that underlie the design of equipment and the interaction between people and machines. Credit is allowed for only IEE 437 or 547.

M IEE 463 Computer Aided Manufacturing and Control. (3)

spring

Computer control in manufacturing, CIM, NC, logic controllers, group technology, process planning, and robotics. Cross-listed as MAE453. Credit is allowed for only IEE463 or MAE453. Fee. Prerequisite: IEE360 or MAE351. *General Studies:* [CS](#)

M IEE498 OR in Hospitals. (3)

fall

Emphasizes the Characteristics of the Hospital System, Problems Solvable by Operations Research; Managing Change is not OR solvable, Best Published Practices, Professional Opportunities in the Industry. Prerequisites: IEE376, ECE380 or IEE380, CSE100 or 110. Credit is allowed for only IEE498 or IEE598.

OTHER ENGINEERING COURSES

M MAE 318 Sensors and Controls. (5)

fall and spring

Introduces measurement systems, feedback control modeling and dynamics of physical systems, computer simulations and real-time experiments. Integrated lecture/lab. Fee. Prerequisites: EEE202; MAE212.

M EEE 334 Circuits II. (4)

fall and spring

Design of analog and digital circuits. Diodes/BJTs/Mosfets. Digital and analog circuit building blocks. Fundamentals of mixed signal circuits. Lecture, lab. Fee. Prerequisite: EEE202.

M MAE 351 Manufacturing Processes. (3)

fall and spring

Production technique and equipment. Casting and molding, forming, machining, joining and assembly, computer-integrated manufacturing, rapid prototyping, and electronics manufacturing. Credit is allowed for only MAE351 or IEE360. Fee. Prerequisite: ECE350 or MSE250.

M MAE 384 Numerical Methods for Engineers. (3)

fall and spring

Numerical methods and computational tools for selected problems in engineering. Cross listed as CEE384. Credit is allowed for only MAE384 or CEE394. Prerequisites: preferably MAT275 or 274, preferable MAT343 or 242 or 342. Pre- or co-requisite: MAT272 or 294 ST: Calculus for Engineers III.

M FSE 394 Introduction to Entrepreneurship. (3)

fall and spring

Examination of the who, what, when, where, why and how of entrepreneurship. Learn how to carve out an entrepreneurial career path as an alternative or supplement to a traditional engineering career.

OTHER ENGINEERING COURSES

**Any other Ira A. Fulton School of Engineering 3XX or 4XX level course can be used to fulfill Career Focus or Technical Elective credit hours with approval from the Undergraduate Associate Chair.

INTERNATIONAL BUSINESS CERTIFICATE COURSES

****IE has a Global emphasis focus area. If you are interested you can also receive the International Business Certificate. There are certain criteria that you must meet before acquiring the certificate. For more information go to http://wpcarey.asu.edu/up/international_programs/international_business_certificate.cfm.**

All students who take business courses must adhere to the criteria required by the W.P. Carey School of Business.

M IBS 300 Principles of International Business. (3)

fall, spring, summer

Multidisciplinary analysis of international economic and financial environment. Operations of multinational firms and their interaction with home and host societies. Prerequisite: ECN 211. *General Studies:* [G](#). IBS Note 1. In addition to individual course prerequisites, nonbusiness students must have at least a 2.50 ASU cumulative GPA, a 2.50 ASU business GPA, and 56 earned semester hours to register for any upper-division business course unless otherwise noted.

M IBS 306 Survey of International Economics. (3)

fall and spring

Survey of international trade issues, commercial policy, trade theory, customs unions, and international monetary topics. Cross-listed as ECN 306. Credit is allowed for only IBS 306 or ECN 306. Prerequisites: ECN 211, 212. *General Studies:* [SB](#), [G](#).

IBS Notes 1, 2. In addition to individual course prerequisites, nonbusiness students must have at least a 2.50 ASU cumulative GPA, a 2.50 ASU business GPA, and 56 earned semester hours to register for any upper-division business course unless otherwise noted. MAT211 or 272 with a grade of "C" (2.00) or higher is a prerequisite for all upper-division economic courses except ECN 382 and 384.

M IBS 400 Cultural Factors in International Business. (3)

fall, spring, summer

Cultural role in international business relations; applied principles of cross-cultural communications, negotiations, and management; regional approaches to business relations. Prerequisites: IBS 300, 306 (or ECN 306); MGT 300 (or 320). *General Studies:* [C](#), [G](#)

M ECN 331 Alternative Economic Systems. (3)

once a year

Alternative institutions, past and present, for organizing the social division of labor. Property rights, information, and incentives in industrial societies. Prerequisites: ECN 211, 212.

ECN Note 1: MAT 210 or 270 with a grade of "C" or higher is a prerequisite for all upper-division economics courses except ECN 382 and 384. In addition, an ASU GPA of 2.50 or higher is a prerequisite for ECN 313 and 314. *General Studies:* [SB](#), [G](#).

M ECN 360 Economic Development. (3)

selected semesters

Theories of economic growth and development. Role of capital formation, technological innovation, population, and resource development in economic growth. Prerequisites: ECN 211, 212.

ECN Note 1: MAT 210 or 270 with a grade of "C" or higher is a prerequisite for all upper-division economics courses except ECN 382 and 384. In addition, an ASU GPA of 2.50 or higher is a prerequisite for ECN 313 and 314. *General Studies:* [SB](#), [G](#).

M ECN 365 Economics of Russia and Eastern Europe. (3)

once a year

Origins and analysis of contemporary institutions. Comparative development and differentiation in the 20th century. Prerequisites: ECN 211, 212.

ECN Note 1: MAT 210 or 270 with a grade of "C" or higher is a prerequisite for all upper-division economics courses except ECN 382 and 384. In addition, an ASU GPA of 2.50 or higher is a prerequisite for ECN 313 and 314. *General Studies:* [SB](#), [G](#).

M ECN 436 International Trade Theory. (3)

once a year

Comparative-advantage doctrine, including practices under varying commercial policy approaches. Economic impact of international disequilibrium. Prerequisite: ECN 314. Pre- or corequisite: ECN 313. **ECN Note 2:** ECN 313 and 314 with grades of "C" or higher are prerequisites or pre- or corequisites for all 400-level economics courses. *General Studies:* [SB](#), [G](#).

M ECN 438 International Monetary Economics. (3)

once a year

History, theory, and policy of international monetary economics. Balance of payments and exchange rates. International financial markets, including Eurocurrency markets. Prerequisite: ECN 313. Pre- or corequisite: ECN 314. **ECN Note 2:** ECN 313 and 314 with grades of "C" or higher are prerequisites or pre- or corequisites for all 400-level economics courses. *General Studies:* [SB](#), [G](#).

M MGT 459 International Management. (3)

fall and spring

Concepts and practices of multinational and foreign firms. Objectives, strategies, policies, and organizational structures for operating in various environments. Credit is allowed for only MGT 459 or IBS 494 ST: International Management or ST: Multinational Management. Prerequisite: IBS 300

M SCM 463 Global Supply Chain Management. (3)

once a year

Supply chain activities in international business with special emphasis on management of transportation, global sourcing, customs issues, and facility location in a global environment. Prerequisite: upper-division standing.

M FIN 456 International Financial Management. (3)

fall, spring, summer

Exchange rate determination, financial markets, managing multinational corporations, capital budgeting, and hedging currency risk exposure from an international perspective. Prerequisite: professional program business student majoring in Finance. Prerequisites with a grade of "C" or higher: ACC 315; FIN 331, 361. *General Studies:* [G](#).

OTHER BUSINESS COURSES

****All students who choose to take a business course as a technical elective or part of their career focus must adhere to the requirements of the W.P. Carey School of Business to take the courses.**

M LES 305 Legal, Ethical, and Regulatory Issues in Business. (3)

fall, spring, summer

Legal theories, ethical issues, and regulatory climate affecting business policies and decisions. Fee. Lecture, Web-based delivery.

M SCM 300 Global Supply Operations. (3)

fall, spring, summer

Resources and information to create and deliver products globally. Interfirm systems and industry supply chains. Customer, producer, and employee perspectives. Fee. Lecture, discussion. Prerequisites: ACC 240; CIS 200; QBA 221

M ECN 382 Managerial Economics. (3)

fall, spring, summer

Applies economic analysis to managerial decision making. Market analysis in the context of the socio-legal environment. Does not satisfy Economics major requirements. Lecture, discussion. Prerequisites: minimum ASU GPA of 2.00; junior standing.

M LES 380 Consumer Perspective of Business Law. (3)

fall and spring

Role of law as it affects society. Uses case studies to present principles that govern business and consumers. Lecture, television. Prerequisites: 2.00 GPA; junior standing.