

# INDUSTRIAL ENGINEERING

## ELECTIVES LISTS

### 2022-2023

The IMSE curriculum provides students with the opportunity to obtain a greater depth of knowledge through several different elective areas: Management, Focus, Engineering Topic, and Social Sciences and Humanities.

\* Students who entered ISU prior to Fall '14 must select two courses from each of the Management, Focus, and Engineering Topic elective lists. Students must also choose four Social Sciences and Humanities electives.

\*Students who entered ISU in or after Fall '14 must select two courses from each of the Focus and Engineering Topic elective lists and one from the Management elective list. Students must also choose four Social Sciences and Humanities electives.

### ***MANAGEMENT ELECTIVES***

\*Students who entered ISU prior to Fall '14 will choose two courses from the Management elective list.

\*Students who entered ISU in or after Fall '14 will choose one course from the Management elective list.

| Class     | Description  | Prerequisites   | Semester |
|-----------|--|---|----------|
| ACCT 284  | Financial Accounting                                   |   | F.S.SS.  |
| AFAS 341  | Air Force Leadership Studies I                         |   | F.       |
| CON E 222 | Contractor Organization and Management of Construction | Completion of basic program within current semester   | F.S.     |
| ECON 320  | Labor Economics  | ECON 101  | VARIES   |
| ECON 334  | Entrepreneurship in Agriculture                        | ECON 101  | F.S.     |
| ECON 337  | Agricultural Marketing                                 | ECON 101 required, ECON 235 recommended               | VARIES   |
| ECON 344  | Public Finance   | ECON 101  | VARIES   |
| IE 450    | Technical Sales for Engineers I                        | Credit or enrollment in IE 305                        | F.       |
| MGMT 310  | Entrepreneurship and Innovation (ENTSP)                | Sophomore classification                              | F.S.     |
| MGMT 370  | Management of Organizations                            | ECON 101 or ECON 102                                  | F.S.SS.  |
| MGMT 414  | International Management                               | MGMT 370 or MGMT 371                                  | F.S.     |
| MIS 301   | Management Information Systems                         | COM S 113 or ENGR 160 equivalent                      | VARIES   |
| MKT 340   | Principles of Marketing                                | Credit or current enrollment in ECON 101              | F.S.SS.  |
| PSYCH 250 | Psychology of the Workplace                            |   | VARIES   |
| PSYCH 450 | Industrial Psychology                                  | 2 courses in psychology including PSYCH 101, STAT 101 | F.S.     |
| SP CM 312 | Business and Professional Speaking                     | SP CM 212   | F.S.     |

Last Updated 07/2022 JAL

**NOTE: Verify all prerequisites with current course catalog.**

F. – Fall  
S. – Spring  
SS. – Summer

## FOCUS ELECTIVES

Students will choose two classes (6 credits total) from the five focus areas: Systems Engineering & Engineering Management, Human Factors, Operations Research & Analytics, Manufacturing, & Enterprise Computing.

**Systems Engineering and Engineering Management** - focuses on the strategies necessary for solving internal and external problems of a company in areas such as production, quality, project management, sales, and marketing strategies.

| Class        | Description   | Prerequisites   | Semester                        |
|--------------|---|---|---------------------------------|
| ACCT 215     | Legal Environment of Business                             | Sophomore classification  | F.S.SS.                         |
| ACCT 285     | Managerial Accounting                                     | ACCT 284  | F.S.SS.                         |
| AER E 452    | Introduction to Systems Engineering & Analysis (I E)      | Junior Classification in Engineering  | SS                              |
| CON E 380    | Engineering Law   | Junior Classification   | F.S.                            |
| ECON 355     | International Trade and Finance *                         | ECON 101, ECON 102  | VARIES                          |
| ECON 371     | Introductory Econometrics                                 | ECON 301, ECON 302 or ECON 353, STAT 326  | F.S.                            |
| ECON 416     | Industrial Organization                                   | ECON 301  | VARIES                          |
| ECON 431     | Managerial Economics                                      | ECON 301  | VARIES                          |
| ECON 437     | Commodity Marketing and Risk Management                   | ECON 235, ECON 301, STAT 326  | VARIES                          |
| ECON 455     | International Trade *                                     | ECON 301  | VARIES                          |
| ECON 457/557 | International Finance *                                   | ECON 302  | VARIES                          |
| ECON 532     | Managerial Economics for the Global Organization          | Enrollment in MBA or BAS program, not for ECON majors                                   | VARIES                          |
| ECON 571     | Intermediate Econometrics                                 | ECON 500  | S.                              |
| ENGR 430     | Entrepreneurial Product Engineering (IE)                  | Junior Classification   | F. Alt S., offered irregularly. |
| ENGR 434X    | Entrepreneurial Product Engineering Design Project (IE)   | I E 430 or ENGR 430   | S.                              |
| FIN 301      | Principles of Finance                                     | ACCT 284, ECON 101, and STAT 226 (or STAT 231)  | F.S.SS.                         |
| I E 430      | Entrepreneurial Product Engineering (ENGR)                | Junior Classification   | F. Alt S., offered irregularly. |
| I E 434X     | Entrepreneurial Product Engineering Design Project (ENGR) | I E 430 or ENGR 430   | S.                              |
| I E 451      | Technical Sales for Engineers II                          | I E 450   | S.                              |
| I E 452      | Introduction to Systems Engineering & Analysis (AER E)    | Junior Classification in Engineering  | SS                              |
| I E 463X     | Introduction to Engineering and Systems Management        | STAT 231 or STAT 305 or equivalent, upperclassman standing and permission of instructor | S.                              |
| I E 470/570  | Systems Engineering and Project Management                | I E 305 and course in basic statistic   | VARIES                          |
| I E 560      | Engineering Risk Analysis                                 | Course in basic probability and statistics  | VARIES                          |
| I E 561      | Total Quality Management                                  | Course in quality control   | VARIES                          |
| I E 563      | Engineering and Systems Management                        | I E 305 and course in basic statistics  | VARIES                          |
| I E 564      | Decision Analysis   | Course in probability and statistics  | VARIES                          |
| MGMT 371     | Organizational Behavior                                   | Sophomore classification  | F.S.                            |
| MGMT 471     | Personnel and Human Resource Management                   | MGMT 371  | F.S.                            |
| MGMT 472     | Management of Diversity                                   | Junior classification   | F.S.                            |
| MKT 368      | Marketing Analytics (MIS)                                 | MKT 340   | F.S.                            |
| MKT 442      | Sales Management  | MKT 340   | F.S.                            |
| SCM 301      | Supply Chain Management                                   | ECON 101, STAT 226 (or STAT 231)  | VARIES                          |

|         |  |                                      |        |
|---------|--|--------------------------------------|--------|
| SCM 450 | Enterprise Resource Planning Systems in Supply Chain (MIS) | SCM 301, MIS 301 or I E 148, I E 341 | VARIES |
| SCM 461 | Principles of Transportation                               | SCM 301                              | VARIES |
| SCM 466 | Global Trade Management                                    | SCM 301                              | F.S.   |

\* Meets International Perspectives Requirement.

**Human Factors** - focuses on with the relationships between people and their work tasks, machines, information, environment, engineering as well as technology.

| Class     | Description   | Prerequisites                      | Semester |
|-----------|---|------------------------------------|----------|
| I E 571   | Occupational Biomechanics                           | C E 274, STAT 231                  | VARIES   |
| I E 572   | Design and Evaluation of Human-Computer Interaction | I E 271 or Graduate classification | VARIES   |
| I E 576   | Human Factors in Product Design                     | I E 572 or I E 577                 | VARIES   |
| I E 577   | Human Factors                                       | I E 271 or Graduate classification | VARIES   |
| KIN 355   | Biomechanics  | PHYS 111 or PHYS 115               | F.S.SS.  |
| PSYCH 350 | Human Factors in Technology                         | PSYCH 101; Junior classification   | F.       |

**Operations Research and Analytics** - focuses on the design and analysis of quantitative models and methods having applications in production and service systems such as inventory control, scheduling, transportation, and logistics.

| Class       | Description   | Prerequisites  | Semester |
|-------------|---|--|----------|
| COM S 207   | Fundamentals of Computer Programming (MIS)<br>Credit may not be applied toward graduation for both Com S 207/MIS 207 and Com S 227.   | MATH 150 or placement into MATH 140 or higher                        | F.S.SS.  |
| ECON 207    | Applied Economic Optimization   | MATH 151, MATH 160, MATH 165 or equivalent                           | F.S.     |
| I E 313X    | Crisis Decision Making and Risk Management with Defense Applications  | MATH 151, MATH 160, or MATH 166                                      | VARIES   |
| I E 403/503 | Introduction to Sustainable Production Systems  | Credit or enrollment in I E 341                                      | VARIES   |
| I E 405/505 | Advanced Engineering Economy for Complex Engineering Projects   | MATH 265, MATH 267, STAT 231 and I E 305, or instructor's permission | VARIES   |
| I E 508     | Design and Analysis of Allocation Mechanisms  | I E 312 or MATH 307  | VARIES   |
| I E 510     | Network Analysis  | I E 312  | VARIES   |
| I E 513     | Analysis of Stochastic Systems  | STAT 231   | VARIES   |
| I E 514     | Production Scheduling   | I E 312, I E 341   | VARIES   |
| I E 519     | Simulation Modeling and Analysis  | COM S 311, STAT 401  | VARIES   |
| I E 534     | Linear Programming  | I E 312  | VARIES   |
| I E 541     | Inventory Control and Production Planning   | I E 341  | VARIES   |
| MATH 207    | Matrices and Linear Algebra   | 2 semesters of calculus  | F.S.SS.  |
| MATH 317    | Theory of Linear Algebra  | Credit or enrollment in MATH 201 or COM S 230 or CPR E 310           | F.S.     |
| MATH 435    | Geometry I  | MATH 201 or COM S 230 or CPR E 310; MATH 207 or MATH 317             | F.       |
| MIS 207     | Fundamentals of Computer Programming (COM S)<br>Credit may not be applied toward graduation for both Com S 207/MIS 207 and Com S 227. | MATH 150 or placement into MATH 140 or higher                        | F.S.SS.  |

**Manufacturing** - focuses on the design, analysis, operation, and control of manufacturing processes and systems.

| Class         | Description  | Prerequisites           | Semester |
|---------------|--|-------------------------|----------|
| A B E 363     | Agri-Industrial Applications of Electric Power and Electronics | A B E 216               | F.S.     |
| A B E 404/504 | Instrumentation for Agricultural and Biosystems Engineering    | A B E 316 and A B E 363 | F.       |

|               |   |   |                                       |
|---------------|---|---|---------------------------------------|
| A B E 451/551 | Food and Bioprocess Engineering   | A B E 216 and credit or enrollment in M E 436 or CH E 357; or FS HN 351 and MATH 266 or MATH 267  | S.                                    |
| A B E 469/569 | Engineering for Grain Storage, Preservation, Handling, and Processing Systems | A B E 216   | S.                                    |
| AER E 423     | Composite Flight Structures   | E M 324, MAT E 273  | S.                                    |
| E E 332       | Semiconductor Materials and Devices (MAT E)                                   | CPR E and E E majors: E E 230; MAT E majors: MAT E 317  | S.                                    |
| E E 432/532   | Microelectronics Fabrication Techniques (MAT E)                               | PHYS 232 and PHYS 232L; MAT E majors: MAT E 317; CPR E and E E majors: E E 230  | VARIES                                |
| E M 362       | Principles of Nondestructive Testing (MAT E)                                  | PHYS 132 and PHYS 132L or PHYS 232 and PHYS 232L  | S.                                    |
| E M 362L      | Nondestructive Testing Laboratory (MAT E)                                     | Credit or enrollment in E M 362   | S.                                    |
| ENSCI 480     | Engineering Analysis of Biological Systems (A B E, GLOBE)                     | A B E 380 or permission of the instructor   | F.                                    |
| I E 444/544   | Micro/Nano Scale Additive Printing  | I E 348 or equivalent manufacturing engineering course  | F.                                    |
| I E 445/545   | Rapid Prototyping and Manufacturing   | I E 248 or similar manufacturing engineering course, MATH 265.<br>For I E 545: Undergraduates at Senior Standing if given permission by instructor. | VARIES                                |
| I E 446/546   | Geometric Variability in Manufacturing  | I E 348, or MAT E 216, or M E 324   | VARIES                                |
| I E 447/547   | Biomedical Design and Manufacturing (B M E)                                   | Students with three semesters or less before graduation   | VARIES                                |
| I E 449/549   | Computer Aided Design and Manufacturing                                       | I E 248 or similar manufacturing engineering course, MATH 265   | VARIES                                |
| I E 543       | Wind Energy Manufacturing   | Undergraduate engineering degree or permission of instructor  | Alt. S., offered even-numbered years. |
| I E 588       | Information Systems for Manufacturing   | I E 148, I E 448  | VARIES                                |
| MAT E 214     | Structural Characterization of Materials                                      | MAT E 215, PHYS 231   | F.S.                                  |
| MAT E 321     | Introduction to Ceramic Science   | MAT E 216   | F.                                    |
| MAT E 322     | Introduction to Ceramic Processing  | MAT E 214, MAT E 321  | S.                                    |
| MAT E 332     | Semiconductor Materials and Devices (E E)                                     | CPR E and E E majors: E E 230; MAT E majors: MAT E 317  | S.                                    |
| MAT E 341     | Metals Processing   | MAT E 214 and either MAT E 215, 273 or 392  | F.                                    |
| MAT E 351     | Introduction to Polymeric Materials   | MAT E 216   | F.                                    |
| MAT E 362     | Principles of Nondestructive Testing (E M)                                    | PHYS 132 and PHYS 132L or PHYS 232 and PHYS 232L  | S.                                    |
| MAT E 362L    | Nondestructive Testing Laboratory (E M)                                       | Credit or enrollment in E M 362   | S.                                    |
| MAT E 418     | Mechanical Behavior of Materials  | MAT E 216;<br>Credit or enrollment in MAT E 319   | F.S.                                  |
| M E 270       | Introduction to Mechanical Engineering Design                                 | M E 160 or equivalent, M E 170 or equivalent, PHYS 231 and PHYS 231L  | F.S.                                  |
| M E 324       | Manufacturing Engineering   | M E 270, E M 324, MAT E 273 and M E 324L  | F.S.SS.                               |
| M E 370       | Engineering Measurements  | E E 442, STAT 305   | F.S.SS.                               |
| M E 410       | Mechanical Engineering Applications of Mechatronics                           | E E 442, E E 448, credit or enrollment in M E 421   | Alt. S., offered irregularly.         |
| M E 411       | Automatic Controls  | M E 370, and credit or enrollment in M E 421  | F.                                    |
| M E 418/518   | Mechanical Considerations in Robotics   | Credit or enrollment in M E 421   | S.                                    |
| M E 419       | Computer-Aided Design   | M E 325   | F.S.                                  |
| M E 421       | System Dynamics and Control   | E E 442, E E 448, M E 345, MATH 267   | F.S.SS.                               |

**Enterprise Computing** - focuses on the integration of information within the functional units of an enterprise as well as among multiple enterprises.

| Class       | Description   | Prerequisites  | Semester  |
|-------------|---|--|-----------|
| COM S 207   | Fundamentals of Computer Programming (MIS) <b>Credit may not be applied toward graduation for both Com S 207/MIS 207 and Com S 227.</b>   | MATH 150 or placement into MATH 140 or higher  | F.S.SS.   |
| COM S 227   | Object-oriented Programming <b>Credit may not be applied toward graduation for both Com S 207 and 227.</b>                                | Credit or Enrollment in MATH 143 or higher; COM S 127 or CPR E 185 or S E 185 or E E 285 or DS 201 | F.S.SS.   |
| COM S 228   | Introduction to Data Structures   | Minimum of C- in COM S 227, credit or enrollment in MATH 165                                       | F.S.SS.   |
| E E 285     | Problem Solving Methods and Tools for Electrical Engineering  |  | VARIABLES |
| FIN 450     | Analytical Methods in Finance   | STAT 326, and ECON 301 or FIN 301  | F.S.      |
| I E 420/520 | Engineering Problem Solving with R  | An introductory statistics course: STAT 231 or equivalent  | S.        |
| I E 481/581 | e-Commerce Systems Engineering  | I E 148  | VARIABLES |
| I E 483/583 | Data Mining   | I E 148, I E 312, and STAT 231   | VARIABLES |
| I E 487/587 | Big Data Analytics and Optimization   | I E 312, STAT 231  | S.        |
| I E 582     | Enterprise Modeling and Integration   | 3 credits in information technology or information systems   | VARIABLES |
| I E 585     | Requirements and Architecture Engineering   | 3 credits in information technology or information systems   | VARIABLES |
| I E 588     | Information Systems for Manufacturing   | I E 148, IE 448  | VARIABLES |
| MIS 207     | Fundamentals of Computer Programming (COM S) <b>Credit may not be applied toward graduation for both Com S 207/MIS 207 and Com S 227.</b> | MATH 150 or placement into MATH 140 or higher  | F.S.SS.   |

Last Updated 07/2022 JAL

**NOTE: Verify all prerequisites with current course catalog.**

**F. – Fall  
S. – Spring  
SS. – Summer**

# ENGINEERING TOPIC ELECTIVES

Students will choose two classes (6 credits total) from the Engineering Topic elective list.

| Class         | Description  | Prerequisites   | Semester                               |
|---------------|--|---|--|
| A B E 216     | Fundamentals of Agricultural and Biosystems Engineering                                | A B E 160 or permission of the instructor   | F.                                     |
| A B E 363     | Agri-Industrial Applications of Electric Power and Electronics                         | A B E 216   | F.S.                                   |
| A B E 380     | Principles of Biological Systems Engineering   | A B E 316   | S.                                     |
| A B E 404/504 | Instrumentation for Agricultural and Biosystems Engineering                            | A B E 316 and A B E 363   | F.                                     |
| A B E 413     | Fluid Power Engineering (M E)  | Credit or enrollment in E M 378 or M E 335, A B E 216 or M E 270  | F.                                     |
| A B E 415     | Agricultural & Biosystems Engineering Design I   | A B E 316 (majors only)   | F.S.                                   |
| A B E 451/551 | Food and Bioprocess Engineering  | A B E 216 and credit or enrollment in M E 436 or CH E 357; or FS HN 351 and MATH 266 or MATH 267            | S.                                     |
| A B E 466     | Multidisciplinary Engineering Design (AER E, B M E, CPR E, E E, ENGR, I E, M E, MAT E) | Student must be within two semesters of graduation; permission of instructor.                               | F.S.                                   |
| A B E 469/569 | Engineering for Grain Storage, Preservation, Handling, and Processing Systems          | A B E 216   | S.                                     |
| A B E 472/572 | Design of Environmental Modification Systems for Animal Housing                        | A B E 216, M E 231  | Alt. S., offered even-numbered years.  |
| A B E 480/580 | Engineering Analysis of Biological Systems (ENSCI, GLOBE)                              | A B E 380 or permission of the instructor   | F.                                     |
| A B E 511     | Bioprocessing and Bioproducts  | A B E 216 or equivalent, CHEM 167 or higher, BIOL 173 or higher, senior or graduate classification          | F.                                     |
| AER E 261     | Introduction to Performance and Design   | MATH 166, PHYS 231, PHYS 231L, credit or enrollment in AER E 161  | F.S.                                   |
| AER E 310     | Aerodynamics I: Incompressible Flow  | Grade of C- or better in AER E 261 and MATH 265   | F.S.                                   |
| AER E 423     | Composite Flight Structures  | E M 324, MAT E 273  | S.                                     |
| AER E 452     | Introduction to Systems Engineering & Analysis (I E)                                   | Junior Classification in Engineering  | SS.                                    |
| AER E 466     | Multidisciplinary Engineering Design (A B E, B M E, CPR E, E E, ENGR, I E, M E, MAT E) | Student must be within two semesters of graduation; permission of instructor.                               | F.S.                                   |
| AER E 467     | Multidisciplinary Engineering Design II (ENGR, I E, M E, MAT E)                        | Student must be within two semesters of graduation or permission of instructor.                             | Alt. F., Alt. S., offered irregularly. |
| AER E 468/568 | Large-Scale Complex Engineered Systems (I E)   | Senior standing in College of Engineering or permission of AER E 468 instructor                             | S.                                     |
| AER E 481     | Advanced Wind Energy: Technology and Design  | AER E 381 or Senior classification in Engineering or Junior in Engineering with a course in fluid mechanics | S.                                     |
| CH E 210      | Material and Energy Balances   | CHEM 178, MATH 166, CH E 160  | F.S.                                   |
| CH E 310      | Computational Methods in Chemical Engineering  | CH E 160, CH E 205, CH E 210, MATH 265  | F.S.                                   |
| CH E 356      | Transport Phenomena I  | CH E 205, CH E 210, PHYS 231, PHYS 231L; credit or enrollment in MATH 267                                   | F.S.                                   |
| CH E 357      | Transport Phenomena II   | CH E 356  | F.S.                                   |
| CH E 358      | Separations  | CH E 310, CH E 357, CH E 381  | F.S.                                   |
| CH E 381      | Chemical Engineering Thermodynamics  | CH E 202, MATH 267, PHYS 232, CHEM 325; credit or enrollment in CH E 310, PHYS 232L                         | F.S.                                   |

|              |  |   |  |
|--------------|--|---|--|
| CH E 382     | Chemical Reaction Engineering  | CH E 310, CH E 381; credit or enrollment in CH E 357                                      | F.S.                                   |
| CH E 415/515 | Biochemical Engineering  | CH E 357, CHEM 331; BBMB 301 or BBMB 303 or BBMB 404                                      | VARIES                                 |
| CON E 352    | Mechanical Systems in Buildings  | CON E 222, CON E 251, PHYS 232 and PHYS 232L; or permission of instructor                 | F.S.                                   |
| CON E 353    | Electrical Systems in Buildings  | PHYS 232 and PHYS 232L and credit or enrollment in CON E 352; or permission of instructor | F.S.                                   |
| CON E 354    | Building Energy Performance  | CON E 352 or permission of instructor   | F.                                     |
| CPR E 281    | Digital Logic  | Sophomore classification  | F.S.                                   |
| CPR E 288    | Embedded Systems I: Introduction   | CPR E 281, COM S 207 or COM S 227 or E E 285  | F.S.                                   |
| CPR E 308    | Operating Systems: Principles and Practice   | CPR E 381 or COM S 321  | F.S.                                   |
| CPR E 466    | Multidisciplinary Engineering Design (A B E, AER E, B M E, E E, ENGR, I E, M E, MAT E)   | Student must be within two semesters of graduation; permission of instructor.             | F.S.                                   |
| CPR E 489    | Computer Networking and Data Communications  | CPR E 288 or COM S 327  | F.S.                                   |
| E E 224      | Signals and Systems I  | E E 201, MATH 267   | F.S.                                   |
| E E 230      | Electronic Circuits and Systems  | E E 201, MATH 267   | F.S.                                   |
| E E 303      | Energy Systems and Power Electronics   | MATH 267, PHYS 232; credit or enrollment in E E 230                                       | F.S.                                   |
| E E 311      | Electromagnetic Fields and Waves   | E E 201, MATH 265, PHYS 232, credit or enrollment in MATH 267                             | F.S.                                   |
| E E 332      | Semiconductor Materials and Devices (MAT E)  | CPR E and E E majors: E E 230; MAT E majors: MAT E 317                                    | S.                                     |
| E E 333      | Electronic Systems Design  | E E 230, CPR E 281  | F.                                     |
| E E 351      | Analysis of Energy Systems   | PHYS 232  | VARIES                                 |
| E E 432/532  | Microelectronics Fabrication Techniques (MAT E)  | PHYS 232 and PHYS 232L; MAT E majors: MAT E 317; CPR E and E E majors: E E 230            | VARIES                                 |
| E E 448      | Introduction to AC Circuits and Motors (2 credits)                                       | E E 442   | F.S.                                   |
| E E 452      | Electrical Machines and Power Electronic Drives  | E E 303, E E 324  | S.                                     |
| E E 455      | Introduction to Energy Distribution Systems  | E E 303, credit or enrollment in E E 324  | F.                                     |
| E E 456      | Power System Analysis I  | E E 303, credit or enrollment in E E 324  | F.                                     |
| E E 457      | Power System Analysis II   | E E 303, credit or enrollment in E E 324  | S.                                     |
| E E 459/559  | Electromechanical Wind Energy Conversion and Grid Integration                            | Credit or enrollment in E E 452, E E 456  | VARIES                                 |
| E E 466      | Multidisciplinary Engineering Design (A B E, AER E, B M E, CPR E, ENGR, I E, M E, MAT E) | Student must be within two semesters of graduation; permission of instructor.             | F.S.                                   |
| E E 554      | Power System Dynamics  | E E 456, E E 457, E E 475   | S.                                     |
| E E 555      | Advanced Energy Distribution Systems   | E E 455   | VARIES                                 |
| E E 556      | Power Electronic Systems   | E E 452   | VARIES                                 |
| E M 324      | Mechanics of Materials   | C E 274   | F.S.SS.                                |
| E M 362      | Principles of Nondestructive Testing (MAT E)   | PHYS 132 and PHYS 132L or PHYS 232 and PHYS 232L  | S.                                     |
| E M 362L     | Nondestructive Testing Laboratory (MAT E)  | Credit or enrollment in E M 362   | S.                                     |
| ENGR 340     | Intro to Wind Energy: System Design & Delivery   | MATH 166, PHYS 222  | F.                                     |
| ENGR 466     | Multidisciplinary Engineering Design (A B E, AER E, B M E, CPR E, E E, I E, M E, MAT E)  | Student must be within two semesters of graduation; permission of instructor.             | F.S.                                   |
| ENGR 467     | Multidisciplinary Engineering Design II (AER E, I E, M E, MAT E)                         | Student must be within two semesters of graduation and permission of instructor.          | Alt. F., Alt. S., offered irregularly. |
| I E 313X     | Crisis Decision Making and Risk Management with Defense Applications                     | MATH 151, MATH 160, or MATH 166   | VARIES                                 |
| I E 403/503  | Introduction to Sustainable Production Systems   | Credit or enrollment in I E 341   | VARIES                                 |
| I E 405/505  | Advanced Engineering Economy for Complex Engineering Projects                            | MATH 265, MATH 267, STAT 231, and IE 305, or permission by instructor                     | VARIES                                 |

|             |  |  |  |
|-------------|--|--|--|
| I E 420/520 | Engineering Problem Solving with R   | An introductory statistics course STAT 231 or equivalent   | VARIES                                 |
| I E 422X    | Design and Analysis Applications for System Improvement                                  | IE 222, IE 271, IE 305, IE 361 and credit or enrollment in IE 413 OR permission of instructor                                      | VARIES                                 |
| I E 444/544 | Micro/Nano Scale Additive Printing   | I E 348 or equivalent manufacturing engineering course   | F.                                     |
| I E 445/545 | Additive Manufacturing and Rapid Production Methods                                      | I E 248 or similar manufacturing engineering course, MATH 265. Undergraduates at Senior standing if given permission by instructor | VARIES                                 |
| I E 446/546 | Geometric Variability in Manufacturing   | I E 348, or MAT E 216, or M E 324  | VARIES                                 |
| I E 447/547 | Biomedical Design and Manufacturing  | Students with three semesters or less before graduation  | VARIES                                 |
| I E 449/549 | Computer Aided Design and Manufacturing  | I E 248 or similar manufacturing engineering course, MATH 265  | VARIES                                 |
| I E 452     | Introduction to Systems Engineering & Analysis (AER E)                                   | Junior Classification in Engineering   | SS.                                    |
| I E 466     | Multidisciplinary Engineering Design (A B E, AER E, B M E, CPR E, E E, ENGR, M E, MAT E) | Student must be within two semesters of graduation; permission of instructor.  | F.S.                                   |
| I E 467     | Multidisciplinary Engineering Design II (AER E, ENGR, M E, MAT E)                        | Student must be within two semesters of graduation or permission of instructor.  | Alt. F., Alt. S., offered irregularly. |
| I E 468/568 | Large-Scale Complex Engineered Systems (AER E)   | Senior standing in College of Engineering or permission of AER E 468 instructor  | S.                                     |
| I E 470/570 | Systems Engineering and Project Management   | I E 305 and course in basic statistics.  | VARIES                                 |
| I E 481/581 | e-Commerce Systems Engineering   | I E 148  | VARIES                                 |
| I E 483/583 | Data Mining  | I E 148, I E 312, and STAT 231   | VARIES                                 |
| I E 487/587 | Big Data Analytics and Optimization  | I E 312, STAT 231  | S.                                     |
| I E 508     | Design and Analysis of Allocation Mechanisms   | I E 312 or MATH 307  | VARIES                                 |
| I E 510     | Network Analysis   | I E 312  | VARIES                                 |
| I E 513     | Analysis of Stochastic Systems   | STAT 231   | VARIES                                 |
| I E 514     | Production Scheduling  | I E 312, I E 341   | VARIES                                 |
| I E 519     | Simulation Modeling and Analysis   | COM S 311, STAT 401  | VARIES                                 |
| I E 534     | Linear Programming   | I E 312  | VARIES                                 |
| I E 541     | Inventory Control and Production Planning  | I E 341  | VARIES                                 |
| I E 543     | Wind Energy Manufacturing  | Undergraduate engineering degree or permission of instructor   | Alt. S., offered even-numbered years   |
| I E 560     | Engineering Risk Analysis  | Course in basic probability and statistics   | VARIES                                 |
| I E 561     | Total Quality Management   | Course in quality control  | VARIES                                 |
| I E 563     | Engineering and Systems Management   | I E 305 and course in basic statistics   | VARIES                                 |
| I E 564     | Decision Analysis  | Course in probability and statistics   | VARIES                                 |
| I E 571     | Occupational Biomechanics  | E M 274, STAT 231  | VARIES                                 |
| I E 572     | Design and Evaluation of Human-Computer Interaction                                      | I E 271 or Graduate classification   | VARIES                                 |
| I E 576     | Human Factors in Product Design  | I E 572 or I E 577   | VARIES                                 |
| I E 577     | Human Factors  | I E 271 or Graduate classification   | VARIES                                 |
| I E 582     | Enterprise Modeling and Integration  | 3 credits in information technology or information systems   | VARIES                                 |
| I E 585     | Requirements and Architecture Engineering  | 3 credits in information technology or information systems   | VARIES                                 |
| I E 588     | Information Systems for Manufacturing  | I E 148, I E 448   | VARIES                                 |
| MAT E 214   | Structural Characterization of Materials   | MAT E 215, PHYS 231  | F.S.                                   |

|             |  |   |  |
|-------------|--|---|--|
| MAT E 216   | Introduction to Materials Science and Engineering II                                     | MAT E 215, MAT E 273 or MAT E 392; credit or enrollment in PHYS 232                               | F.S.                                   |
| MAT E 311   | Thermodynamics in Materials Engineering  | CHEM 178, MAT E 215 or MAT E 273 or MAT E 392, and credit or enrollment in MAT E 216 and MATH 267 | F.                                     |
| MAT E 321   | Introduction to Ceramic Science  | MAT E 216   | F.                                     |
| MAT E 322   | Introduction to Ceramic Processing   | MAT E 214, MAT E 321  | S.                                     |
| MAT E 332   | Semiconductor Materials and Devices (E E)  | CPR E and E E majors: E E 230; MAT E majors: MAT E 317  | S.                                     |
| MAT E 341   | Metals Processing  | MAT E 214 and either MAT E 215, 273 or 392  | F.                                     |
| MAT E 351   | Introduction to Polymeric Materials  | MAT E 216   | F.                                     |
| MAT E 362   | Principles of Nondestructive Testing (E M)   | PHYS 132 and PHYS 132L or PHYS 232 and PHYS 232L  | S.                                     |
| MAT E 362L  | Nondestructive Testing Laboratory (E M)  | Credit or enrollment in MAT E 362   | S.                                     |
| MAT E 418   | Mechanical Behavior of Materials   | MAT E 216; credit or enrollment in MAT E 319  | F.S.                                   |
| MAT E 466   | Multidisciplinary Engineering Design (A B E, AER E, B M E, CPR E, E E, ENGR, I E, M E)   | Student must be within two semesters of graduation; permission of instructor.                     | F.S.                                   |
| MAT E 467   | Multidisciplinary Engineering Design II (AER E, ENGR, I E, M E)                          | Student must be within two semesters of graduation or permission of instructor.                   | Alt. F., Alt. S., offered irregularly. |
| M E 324     | Manufacturing Engineering  | M E 270, E M 324, MAT E 273 and M E 324L  | F.S.SS.                                |
| M E 332     | Engineering Thermodynamics II  | M E 231   | F.S.SS.                                |
| M E 345     | Engineering Dynamics   | C E 274, credit or enrollment in MATH 266 or MATH 267   | F.S.SS.                                |
| M E 370     | Engineering Measurements   | E E 442, STAT 305   | F.S.SS.                                |
| M E 410     | Mechanical Engineering Applications of Mechatronics                                      | E E 442, E E 448, credit or enrollment in M E 421   | Alt. S., offered irregularly.          |
| M E 411     | Automatic Controls   | M E 370, and credit or enrollment in M E 421  | F.                                     |
| M E 413     | Fluid Power Engineering (A B E)  | Credit or enrollment in E M 378 or M E 335, A B E 216 or M E 270                                  | F.                                     |
| M E 415     | Mechanical Systems Design  | M E 324, M E 325  | F.S.                                   |
| M E 418/518 | Mechanical Considerations in Robotics  | Credit or enrollment in M E 421   | S.                                     |
| M E 419     | Computer-Aided Design  | M E 325   | F.S.                                   |
| M E 421     | System Dynamics and Control  | E E 442, E E 448, M E 345, MATH 267   | F.S.SS.                                |
| M E 433     | Alternative Energy   | PHYS 232 and PHYS 232L and CHEM 167   | F.                                     |
| M E 436     | Heat Transfer  | M E 335   | F.S.SS.                                |
| M E 437     | Introduction to Combustion Engineering   | Credit in M E 332 or equivalent   | S.                                     |
| M E 441     | Fundamentals of Heating, Ventilating, and Air Conditioning                               | Credit or enrollment in M E 436   | F.                                     |
| M E 442     | Heating and Air Conditioning Design  | M E 441 or with instructor permission   | S.                                     |
| M E 444     | Elements and Performance of Power Plants   | M E 332, credit or enrollment in M E 335  | S.                                     |
| M E 449     | Internal Combustion Engines  | M E 332   | F.                                     |
| M E 466     | Multidisciplinary Engineering Design (A B E, AER E, B M E, CPR E, E E, ENGR, I E, MAT E) | Student must be within two semesters of graduation; permission of instructor.                     | F.S.                                   |
| M E 467     | Multidisciplinary Engineering Design II (AER E, ENGR, I E, MAT E)                        | Student must be within two semesters of graduation or permission of instructor.                   | Alt. F., Alt. S., offered irregularly. |
| M E 530     | Advanced Thermodynamics  | M E 332   | F.                                     |

|           |  |  |  |
|-----------|--|--|--|
| M E 542   | Advanced Combustion  | M E 332 or CH E 381                            | Alt. F.,<br>offered odd-<br>numbered<br>years. |
| M E 545   | Thermal Systems Design                                     | M E 436  | Alt S.,<br>offered odd-<br>numbered<br>years   |
| M S E 520 | Thermodynamics and Kinetics in Multicomponent<br>Materials | MAT E 311 or CHEM 321, MATH 266 or<br>MATH 267 | F.   |

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**NOTE: Verify all prerequisites with current course catalog.**

**F. – Fall**  
**S. – Spring**  
**SS. – Summer**

## ***Social Sciences and Humanities Electives***

The Industrial Engineering program has created a list of Social Science and Humanities (SSH) courses for students to choose from to meet the 12 credits required for graduation. Six credits in the SSH area must be 200-level or above, and six credits must form a sequence of prerequisite or related courses. This list contains numerous US Diversity and International Perspectives courses: students must have 3 credits in each for graduation as a part of the 12 credit SSH requirement. Please check these courses with your adviser prior to completing the course.

**\*\* Be sure to check the current catalog for prerequisites. \*\***

| <b>African American Studies (AF AM):</b>            | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 201 - Introduction to African American Studies      | X                     |                     |                    |
| 325 - Peoples and Cultures of Africa (ANTHR)        |                       | X                   |                    |
| 330 - Ethnic and Race Relations (SOC)               | X                     |                     |                    |
| 334 - Africana Religions (RELIG)                    | X                     |                     |                    |
| 347 - Studies in African American Literature (ENGL) | X                     |                     |                    |
| 350 - Women of Color in the U.S. (WGS)              | X                     |                     |                    |
| 353 - History of African Americans I (HIST)         | X                     |                     |                    |
| 354 - History of African Americans II (HIST)        | X                     |                     |                    |
| 460 - Seminar in African American Culture           | X                     |                     |                    |

| <b>Agronomy (AGRON):</b>                                 | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 342 - World Food Issues: Past and Present (ENV S, FS HN) |                       | X                   |                    |

| <b>Apparel, Merchandising and Design (A M D):</b>                    | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 165 - Dress, Appearance, and Diversity in U.S. Society               | X                     |                     |                    |
| 354 - Fashion History I: Prehistoric to Mid-19 <sup>th</sup> Century |                       | X                   |                    |
| 362 - Cultural Perspectives of Global Dress                          |                       | X                   |                    |

| <b>American Indian Studies (AM IN):</b>                    | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 210 - Introduction to American Indian Studies              | X                     |                     |                    |
| 240 - Introduction to American Indian Literature (ENGL)    | X                     |                     |                    |
| 310 - Contemporary Topics in American Indian Studies       | X                     |                     |                    |
| 315 - Archaeology of North America (ANTHR)                 | X                     |                     |                    |
| 322 - Peoples and Cultures of Native North America (ANTHR) | X                     |                     |                    |
| 332/532 - Current Issues in Native North America (ANTHR)   | X                     |                     |                    |
| 346 - American Indian Literature (ENGL)                    | X                     |                     |                    |

| <b>Anthropology (ANTHR):</b>                                   | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 201 - Introduction to Cultural Anthropology                    |                       | X                   |                    |
| 230 - Globalization and the Human Condition                    |                       | X                   |                    |
| 306 - Cultural and Interpretation                              |                       | X                   |                    |
| 308 - Archaeology  |                       |                     | X                  |
| 309 - Introduction to Culture and Language (LING)              |                       | X                   |                    |
| 313/513 - Kinship and Marriage in a Global Perspective         |                       | X                   |                    |
| 315/515 - Archeology of North America (AM IN)                  | X                     |                     |                    |
| 322/522 - Peoples and Cultures of Native North America (AM IN) | X                     |                     |                    |
| 323/523 - Topics in Latin American Anthropology (US LS)        |                       |                     | X                  |

|  |   |   |  |
|--|---|---|--|
| 325 - Peoples and Cultures of Africa (AF AM)                       |   | X |  |
| 332/532 - Current Issues in Native North America (AM IN)           | X |   |  |
| 340/540 - Magic, Witchcraft, and Religion (RELIG)                  |   | X |  |
| 376 - Classical Archeology (CL ST)                                 |   | X |  |
| 411/511 - Anthropology for Global Professionals                    |   | X |  |
| 444/544 - Cross-cultural Perspective on Gender and Sexuality (WGS) |   | X |  |

| <b>Architecture (ARCH):</b>                                      | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 221 - Histories and Theories of Architecture to 1750             |                       | X                   |                    |
| 321 - History of the American City                               | X                     |                     |                    |
| 420 - Topics in American Architecture                            | X                     |                     |                    |
| 427/527 - History, Theory, and Criticism of Chinese Architecture |                       | X                   |                    |

| <b>Art History (ART H):</b>        | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|------------------------------------|-----------------------|---------------------|--------------------|
| 280 - History of Art I             |                       | X                   |                    |
| 281 - History of Art II            |                       | X                   |                    |
| 382 - Art and Architecture of Asia |                       | X                   |                    |
| 383 - Greek and Roman Art (CL ST)  |                       |                     | X                  |
| 385 - Renaissance Art              |                       |                     | X                  |
| 388 - Modern Art and Theory        |                       |                     | X                  |
| 395 - Art and Theory Since 1945    | X                     |                     |                    |
| 396 - History of Photography       |                       |                     | X                  |
| 487 - Nineteenth-Century Art       |                       |                     | X                  |
| 494 - Women/Gender in Art (WGS)    | X                     |                     |                    |

| <b>Biology (BIOL):</b>                             | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 307 - Women in Science and Engineering (WGS, WISE) | X                     |                     |                    |

| <b>Classical Studies (CL ST):</b>   | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 273 - Greek and Roman Mythology   |                       | X                   |                    |
| 275 - The Ancient City  |                       | X                   |                    |
| 310 - Ancient Philosophy (PHIL)   |                       |                     | X                  |
| 353 - World Literature: Western Foundations through Renaissance (ENGL)        |                       | X                   |                    |
| 372 - Greek and Roman Tragedy and Comedy                                      |                       | X                   |                    |
| 373 - Heroes of Greece, Rome, and Today                                       |                       | X                   |                    |
| 374 - Sex, Gender, and Culture in the Ancient Mediterranean World (HIST, WGS) |                       | X                   |                    |
| 376 - Classical Archaeology (ANTHR)   |                       | X                   |                    |
| 383 - Greek and Roman Art (ART H)   |                       |                     | X                  |
| 394 - The Archaeology of Greece: An Introduction (Only 2 credit course)       |                       | X                   |                    |
| 395 - Study Abroad: The Archaeology of Greece                                 |                       | X                   |                    |
| 402 - Greek Civilization (HIST)   |                       |                     | X                  |
| 403 - Roman Civilization (HIST)   |                       |                     | X                  |
| 430/530 - Foundations of Western Political Thought (POL S)                    |                       |                     | X                  |

| <b>Communication Studies (COMST):</b>       | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 101 - Introduction to Communication Studies |                       |                     | X                  |
| 210 - Communication and U.S. Diversity      | X                     |                     |                    |
| 211 - Interpersonal Communication           |                       |                     | X                  |
| 310 - Intercultural Communication           |                       | X                   |                    |

|                                    |  |  |   |
|------------------------------------|--|--|---|
| 314 - Organizational Communication |  |  | X |
| 325 - Nonverbal Communication      |  |  | X |

| <b>Community and Regional Planning (C R P):</b>  | <b>U.S<br/>Diversity</b> | <b>Intl.<br/>Persp.</b> | <b>IE SSH<br/>ONLY</b> |
|--|--------------------------|-------------------------|------------------------|
| 291 - World Cities and Globalization             |                          | X                       |                        |
| 376 - Rural, Urban and Regional Economics (ECON) |                          |                         | X                      |

| <b>Criminal Justice (C J):</b>                         | <b>U.S<br/>Diversity</b> | <b>Intl.<br/>Persp.</b> | <b>IE SSH<br/>ONLY</b> |
|--|--------------------------|-------------------------|------------------------|
| 241 - Youth and Crime (SOC)                            |                          |                         | X                      |
| 320 - American Judicial Process (POL S)                |                          |                         | X                      |
| 332 - Philosophy of Law (PHIL)                         |                          |                         | X                      |
| 340 - Deviant and Criminal Behavior (SOC)              |                          |                         | X                      |
| 484 - Topical Studies in Criminal and Juvenile Justice |                          |                         | X                      |

| <b>Design Studies (DSN S):</b> | <b>U.S.<br/>Diversity</b> | <b>Intl.<br/>Persp.</b> | <b>IE SSH<br/>ONLY</b> |
|--------------------------------|---------------------------|-------------------------|------------------------|
| 183 - Design in Context        |                           |                         | X                      |

| <b>Economics (ECON):</b>                                    | <b>U.S.<br/>Diversity</b> | <b>Intl.<br/>Persp.</b> | <b>IE SSH<br/>ONLY</b> |
|---|---------------------------|-------------------------|------------------------|
| 101 - Principles of Microeconomics                          |                           |                         | X                      |
| 102 - Principles of Macroeconomics                          |                           |                         | X                      |
| 230 - Farm Business Management                              |                           |                         | X                      |
| 235 - Introduction to Agricultural Markets                  |                           |                         | X                      |
| 301 - Intermediate Microeconomics                           |                           |                         | X                      |
| 302 - Intermediate Macroeconomics                           |                           |                         | X                      |
| 313 - Economics of Sports                                   |                           |                         | X                      |
| 320 - Labor Economics                                       |                           | X                       |                        |
| 321 - Economics of Discrimination (WGS)                     | X                         |                         |                        |
| 332 - Cooperatives  |                           |                         | X                      |
| 353 - Money, Banking, and Financial Institutions            |                           |                         | X                      |
| 355 - International Trade and Finance                       |                           | X                       |                        |
| 362 - Applied Ethics in Agriculture (SOC)                   |                           |                         | X                      |
| 371 - Introductory Econometrics                             |                           |                         | X                      |
| 376 - Rural, Urban and Regional Economics (C R P)           |                           |                         | X                      |
| 380 - Energy, Environmental and Resource Economics (ENV S)  |                           |                         | X                      |
| 385 - Economic Development (GLOBE)                          |                           | X                       |                        |
| 387 - Economies of China and India                          |                           | X                       |                        |
| 401 - Topics in Microeconomics                              |                           |                         | X                      |
| 402 - Topics in Macroeconomics                              |                           |                         | X                      |
| 416 - Industrial Organization                               |                           |                         | X                      |
| 418 - Introduction to Game Theory                           |                           |                         | X                      |
| 455 - International Trade                                   |                           | X                       |                        |
| 457/557 - International Finance                             |                           | X                       |                        |
| 460/560 - Agricultural, Food, and Trade Policy              |                           |                         | X                      |
| 466 - Agricultural Finance                                  |                           |                         | X                      |
| 480/580 - Intermediate Environmental and Resource Economics |                           |                         | X                      |

| <b>Electrical Engineering (E E):</b>                 | <b>U.S.<br/>Diversity</b> | <b>Intl.<br/>Persp.</b> | <b>IE SSH<br/>ONLY</b> |
|--|---------------------------|-------------------------|------------------------|
| 458 - Economic Systems for Electrical Power Planning |                           |                         | X                      |

| <b>English (ENGL):</b>  | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 201 - Introduction to Literature  |                       |                     | X                  |
| 227 - Survey of American Literature to 1865                             |                       |                     | X                  |
| 228 - Survey of American Literature since 1865                          |                       |                     | X                  |
| 237 - Survey of Film History  |                       |                     | X                  |
| 240 - Introduction to American Indian Literature (AM IN)                | X                     |                     |                    |
| 275 - Analysis of Popular Culture Texts (SP CM)                         |                       |                     | X                  |
| 330 - Science Fiction   |                       |                     | X                  |
| 335 - Studies in Film   |                       |                     | X                  |
| 339 - Literary Theory and Criticism                                     |                       |                     | X                  |
| 340 - Women's Literature (WGS)  | X                     |                     |                    |
| 344 - U.S. Latino/a Literature  | X                     |                     |                    |
| 345 - Women and Literature: Selected Topics (WGS)                       | X                     |                     |                    |
| 346 - American Indian Literature (AM IN)                                | X                     |                     |                    |
| 347 - Studies in African American Literature (AF AM)                    | X                     |                     |                    |
| 349 - Topics in Multicultural Literatures of the United States          | X                     |                     |                    |
| 353 - World Literature: Western Foundations through Renaissance (CL ST) |                       | X                   |                    |
| 354 - World Literature: Seventeenth Century to the Present              |                       | X                   |                    |
| 358 - Myth and Fairytale  |                       |                     | X                  |
| 360 - Studies in American Literature to 1800                            |                       |                     | X                  |
| 362 - Studies in 19th Century American Literature                       |                       |                     | X                  |
| 364 - Studies in American Literature: 1900 to the Present               |                       |                     | X                  |
| 370 - Shakespeare   |                       | X                   |                    |
| 373 - Studies in British Literature: The Middle Ages                    |                       |                     | X                  |
| 375 - Studies in British Literature: The Restoration and 18th Century   |                       | X                   |                    |
| 376 - Studies in British Literature                                     |                       | X                   |                    |
| 389 - Postcolonial Literature   |                       | X                   |                    |
| 393 - The History of Children's Literature                              |                       |                     | X                  |
| 420 - History of the English Language (LING)                            |                       |                     | X                  |
| 422 - Women, Men, and the English Language (LING, WGS)                  | X                     |                     |                    |

| <b>Environmental Science (ENSCI):</b>                 | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 324 - Energy and the Environment (ENV S, GEOL, MTEOR) |                       |                     | X                  |

| <b>Environmental Studies (ENV S):</b>   | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 201 - Introduction to Environmental Issues (BIOL, ENSCI) (Only 2 credit course) |                       |                     | X                  |
| 324 - Energy and the Environment (ENSCI, GEOL, MTEOR)                           |                       |                     | X                  |
| 334 - Environmental Ethics (PHIL)   |                       |                     | X                  |
| 342 - World Food Issues: Past and Present (AGRON, FS HN)                        |                       | X                   |                    |
| 345 - Population and Society (SOC)  |                       | X                   |                    |
| 380 - Energy, Environmental and Resource Economics (ECON)                       |                       |                     | X                  |
| 382 - Environmental Sociology (SOC)   |                       |                     | X                  |
| 383 - Environmental Politics and Policies (POL S)                               |                       |                     | X                  |
| 384 - Religion and Ecology (RELIG)  |                       | X                   |                    |
| 484 - Sustainable Communities (C R P)   |                       |                     | X                  |

| <b>Foreign Languages &amp; Literatures:</b> | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| ASL 101 - American Sign Language I          | X                     |                     |                    |
| ASL 102 - American Sign Language II         | X                     |                     |                    |
| CHIN 101 - Elementary Mandarin Chinese I    |                       |                     | X                  |

|   |  |   |   |
|---|--|---|---|
| CHIN 102 - Elementary Mandarin Chinese II                     |  | X |   |
| CHIN 201 - Intermediate Mandarin Chinese I                    |  | X |   |
| CHIN 202 - Intermediate Mandarin Chinese II                   |  | X |   |
| CHIN 272 - Introduction to Chinese Culture                    |  | X |   |
| CHIN 301 - Advanced Mandarin Chinese I                        |  | X |   |
| CHIN 302 - Advanced Mandarin Chinese II                       |  | X |   |
| CHIN 304 - Chinese for Global Professionals                   |  | X |   |
| CHIN 370 - Chinese Literature in English Translation          |  | X |   |
| CHIN 375 - China Today  |  | X |   |
| FRNCH 101 - Elementary French I                               |  |   | X |
| FRNCH 102 - Elementary French II                              |  | X |   |
| FRNCH 201 - Intermediate French I                             |  | X |   |
| FRNCH 202 - Intermediate French II                            |  | X |   |
| FRNCH 301 - French Writing and Grammar                        |  | X |   |
| FRNCH 304 - French for Global Professionals                   |  | X |   |
| FRNCH 320 - France Today                                      |  | X |   |
| FRNCH 370 - French Studies in English                         |  | X |   |
| FRNCH 378 - French and/or Francophone Film Studies in English |  | X |   |
| GER 101 - Elementary German I                                 |  |   | X |
| GER 102 - Elementary German II                                |  | X |   |
| GER 201 - Intermediate German I                               |  | X |   |
| GER 202 - Intermediate German II                              |  | X |   |
| GER 301 - Reading   |  | X |   |
| GER 305 - Conversation  |  | X |   |
| GER 320 - Germany Today                                       |  | X |   |
| GER 330 - German Literature and Culture                       |  | X |   |
| GER 370 - German Studies in English                           |  | X |   |
| GER 371 - The Holocaust in Text, Image, and Memory            |  | X |   |
| GER 375 - Grimms' Tales                                       |  | X |   |
| GER 378 - German Film and Media Studies                       |  | X |   |
| GER 395 - Study Abroad  |  | X |   |
| GER 476 - Topics in German Cultural Studies                   |  | X |   |
| LATIN 101 - Elementary Latin I                                |  |   | X |
| LATIN 102 - Elementary Latin II                               |  | X |   |
| PORT 101 - Elementary Portuguese I                            |  |   | X |
| PORT 102 - Elementary Portuguese II                           |  | X |   |
| PORT 112 - Elementary Portuguese, Accelerated II              |  | X |   |
| RUS 101 - Introduction to Russian Language Culture I          |  |   | X |
| RUS 102 - Introduction to Russian Language Culture II         |  | X |   |
| RUS 201 - Intermediate Russian I                              |  | X |   |
| RUS 202 - Intermediate Russian II                             |  | X |   |
| RUS 301 - Composition and Conversation                        |  | X |   |
| RUS 304 - Russian for Global Professionals                    |  | X |   |
| RUS 314 - Reading Russian Literary and Cultural Texts         |  | X |   |
| RUS 370 - Russian Studies in English Translation              |  | X |   |
| RUS 375 - Russia Today  |  | X |   |
| RUS 395 - Study Abroad  |  | X |   |
| SPAN 101 - Elementary Spanish I                               |  |   | X |
| SPAN 102 - Elementary Spanish II                              |  | X |   |
| SPAN 201 - Intermediate Spanish I                             |  | X |   |
| SPAN 202 - Intermediate Spanish II                            |  | X |   |
| SPAN 297 - Intensive Intermediate Spanish                     |  | X |   |
| SPAN 303 - Spanish Conversation and Composition               |  | X |   |

|   |  |   |   |
|---|--|---|---|
| SPAN 304 - Spanish for Global Professionals   |  | X |   |
| SPAN 314 - Textual and Media Analyses   |  | X |   |
| SPAN 321 - Spanish Civilization   |  | X |   |
| SPAN 322 - Latin American Civilization  |  | X |   |
| SPAN 323 - Spain Today  |  | X |   |
| SPAN 326 - Studies in Hispanic Art or Film  |  | X |   |
| SPAN 330 - Studies in Spanish Literature  |  | X |   |
| SPAN 332 - Studies in Latin American Literature   |  | X |   |
| SPAN 351 - Introduction to Spanish-English Translation (LING, US LS)  |  | X |   |
| SPAN 352 - Spanish Pronunciation (LING)   |  | X |   |
| SPAN 370 - Hispanic Topics in English Translation   |  | X |   |
| SPAN 395 - Study Abroad   |  | X |   |
| SPAN 401/501 - Advanced Composition and Grammar   |  | X |   |
| SPAN 440/540 - Seminar on the Literatures and Cultures of Spain   |  | X |   |
| SPAN 441/541 - Seminar on Cervantes and the Golden Age  |  | X |   |
| SPAN 445/545 - Seminar on the Literatures and Cultures of Latin America   |  | X |   |
| SPAN 462 - Contrastive Analysis of Spanish/English for Translators (LING)   |  |   | X |
| SPAN 463/563 - Contemporary Spanish Linguistics (LING)  |  | X |   |
| <b>Note: Students having a native language(s) other than English may not use elementary, intermediate or advanced-level grammar, conversational or composition courses in that language(s).</b> |  |   |   |

| <b>Geology (GEOL):</b>                                 | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 324 - Energy and the Environment (ENSCI, ENV S, MTEOR) |                       |                     | X                  |

| <b>Gerontology (GERON):</b>                             | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 373 - Death as a Part of Living (HD FS)                 |                       |                     | X                  |
| 377 - Aging and the Family (HD FS)                      | X                     |                     |                    |
| 378 - Retirement Planning and Employee Benefits (HD FS) | X                     |                     |                    |

| <b>Global Resource Systems (GLOBE):</b> | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 385 - Economic Development (ECON)       |                       | X                   |                    |

| <b>History (HIST):</b>                                   | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 201 - Introduction to Western Civilization I             |                       | X                   |                    |
| 202 - Introduction to Western Civilization II            |                       | X                   |                    |
| 207 - Chinese Civilization                               |                       | X                   |                    |
| 221 - Survey of United States History I                  |                       |                     | X                  |
| 222 - Survey of United States History II                 |                       |                     | X                  |
| 280 - Introduction to History of Science I               |                       | X                   |                    |
| 281 - Introduction to History of Science II              |                       | X                   |                    |
| 284 - Wonders of the World, Global History of Innovation |                       | X                   |                    |
| 307 - American Popular Culture                           |                       |                     | X                  |
| 325 - Society and Politics in England, 1525-1700         |                       |                     | X                  |
| 336 - History of Modern China I                          |                       | X                   |                    |
| 337 - History of Modern China II                         |                       | X                   |                    |
| 338 - Modern Japanese History                            |                       | X                   |                    |
| 340 - History of Latin America I                         |                       |                     | X                  |
| 341 - History of Latin America II                        |                       | X                   |                    |
| 353 - History of African Americans I (AF AM)             | X                     |                     |                    |
| 354 - History of African Americans II (AF AM)            | X                     |                     |                    |

|  |   |   |   |
|--|---|---|---|
| 374 - Sex, Gender, and Culture in the Ancient Mediterranean World (CL ST, WGS) |   | X |   |
| 380 - History of Women in Science, Technology, and Medicine (WGS)              | X |   |   |
| 386 - History of Women in America (WGS)  | X |   |   |
| 389 - American Military History  |   | X |   |
| 390 - World Military History   |   | X |   |
| 402 - Greek Civilization (CL ST)   |   |   | X |
| 403 - Roman Civilization (CL ST)   |   |   | X |
| 405 - Transformations of the Early Medieval World                              |   |   | X |
| 406 - The Birth of Europe in the High Middle Ages                              |   |   | X |
| 408 - Europe, 1500-1648  |   |   | X |
| 414 - European Cultural and Intellectual History                               |   |   | X |
| 419 - History of Modern France   |   |   | X |
| 421 - History of Russia I  |   | X |   |
| 422 - History of Russia II   |   | X |   |
| 424 - History of Modern Germany  |   |   | X |
| 428 - Punishment, Mentalities, and Society in England, 1550-1868               |   |   | X |
| 431 - Modern England   |   | X |   |
| 441 - History of Modern Mexico and Central America                             |   |   | X |
| 450 - Colonial America   |   |   | X |
| 451 - American Revolutionary Era   |   |   | X |
| 455 - U.S. Civil War and Reconstruction Era                                    |   |   | X |
| 458 - U.S. 1900 to 1945  |   |   | X |
| 459 - U.S. 1945 to the Present   |   |   | X |
| 460 - The Great Plains   |   |   | X |
| 461 - The Rural South  |   |   | X |
| 465 - The American West  |   |   | X |
| 468 - History of Rural America   |   |   | X |
| 473 - Civil Rights and Ethnic Power (AF AM, US LS)                             | X |   |   |
| 482 - Birth, Death, Medicine, and Disease                                      |   |   | X |
| 488 - American Stuff, Colonial Times to the Present                            |   |   | X |

| <b>Human Development and Family Studies (HD FS):</b>            | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 102 - Individual and Family Development, Health, and Well-being |                       |                     | X                  |
| 239 - Consumer Issues   | X                     |                     |                    |
| 240 - Literature for Children                                   | X                     |                     |                    |
| 249 - Parenting and Family Diversity Issues                     | X                     |                     |                    |
| 276 - Human Sexuality   | X                     |                     |                    |
| 373 - Death as a Part of Living (GERON)                         |                       |                     | X                  |
| 377 - Aging and the Family (GERON)                              | X                     |                     |                    |
| 378 - Retirement Planning and Employee Benefits (GERON)         | X                     |                     |                    |

| <b>International Studies (INTST):</b>       | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 235 - Introduction to International Studies |                       | X                   |                    |

| <b>Journalism and Mass Communication (JL MC):</b> | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 101 - Mass Media and Society                      |                       |                     | X                  |
| 401 - Mass Communication Theory                   |                       |                     | X                  |
| 461 - History of American Journalism              |                       |                     | X                  |
| 462 - Media Ethics, Freedom, Responsibility       |                       |                     | X                  |

|  |   |   |   |
|--|---|---|---|
| 464 - Journalism and Literature                  |   |   | X |
| 474 - Communication Technology and Social Change |   | X |   |
| 476/576 - World Communication Systems            |   | X |   |
| 477 - Diversity in the Media                     | X |   |   |

| <b>Landscape Architecture (L A):</b>                | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 371 - History of Modern Landscapes, 1750 to Present |                       |                     | X                  |
| 373 - Gardens and Landscapes from Antiquity to 1750 |                       | X                   |                    |

| <b>Linguistics (LING):</b>   | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 309 - Introduction to Culture and Language (ANTHR)                   |                       | X                   |                    |
| 351 - Introduction to Spanish-English Translation (SPAN, US LS)      |                       | X                   |                    |
| 352 - Spanish Pronunciation (SPAN)                                   |                       | X                   |                    |
| 420 - History of the English Language (ENGL)                         |                       |                     | X                  |
| 422 - Women, Men, and the English Language (ENGL, WGS)               | X                     |                     |                    |
| 462 - Contrastive Analysis of Spanish/English for Translators (SPAN) |                       |                     | X                  |
| 463/563 - Contemporary Spanish Linguistics (SPAN)                    |                       | X                   |                    |

| <b>Meteorology (MTEOR):</b>                           | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 324 - Energy and the Environment (ENSCI, ENV S, GEOL) |                       |                     | X                  |

| <b>Music (MUSIC):</b>                  | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 102 - Introduction to Music Listening  |                       | X                   |                    |
| 383 - History of Music I               |                       | X                   |                    |
| 384 - History of Music II              |                       | X                   |                    |
| 472 - History of American Music        | X                     |                     |                    |
| 473 - Topics in Advanced Music History |                       |                     | X                  |
| 475 - Music of the Romantic Era        |                       |                     | X                  |

| <b>Philosophy (PHIL):</b>                          | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 201 - Introduction to Philosophy                   |                       |                     | X                  |
| 230 - Moral Theory and Practice                    |                       |                     | X                  |
| 235 - Ethical Issues in a Diverse Society          | X                     |                     |                    |
| 310 - Ancient Philosophy (CL ST)                   |                       |                     | X                  |
| 314 - 17th Century Philosophy                      |                       |                     | X                  |
| 315 - 18th Century Philosophy                      |                       |                     | X                  |
| 316 - 19th Century Continental Philosophy          |                       |                     | X                  |
| 317 - 20th and 21st Century Continental Philosophy |                       |                     | X                  |
| 318 - History of Analytic Philosophy               |                       |                     | X                  |
| 320 - Existentialism                               |                       |                     | X                  |
| 330 - Ethical Theory                               |                       |                     | X                  |
| 331 - Moral Problems in Medicine                   |                       |                     | X                  |
| 332 - Philosophy of Law (C J)                      |                       |                     | X                  |
| 334 - Environmental Ethics (ENV S)                 |                       |                     | X                  |

|   |   |  |   |
|---|---|--|---|
| 335 - Social and Political Philosophy     |   |  | X |
| 336 - Bioethics and Biotechnology         |   |  | X |
| 338 - Feminist Philosophy (WGS)           | X |  |   |
| 340 - Aesthetics                          |   |  | X |
| 343 - Philosophy of Technology            |   |  | X |
| 350 - Philosophy of Religion (RELIG)      |   |  | X |
| 364 - Metaphysics: God, Minds, and Matter |   |  | X |
| 366 - Truth, Belief, and Reason           |   |  | X |
| 380 - Philosophy of Science               |   |  | X |
| 430 - Value Theory                        |   |  | X |
| 450 - Agency and Free Will                |   |  | X |
| 485 - Philosophy of Physics               |   |  | X |

| <b>Political Science (POL S):</b>   | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 111 - Introduction to American Government                                       |                       |                     | X                  |
| 121 - Introduction to International Politics                                    |                       | X                   |                    |
| 125 - Democracy and Dictatorship: Introduction to Comparative Politics          |                       | X                   |                    |
| 235 - Introduction to Ethics and Politics                                       |                       |                     | X                  |
|   |                       |                     |                    |
| 301 - Introduction to Empirical Political Science Research                      |                       |                     | X                  |
| 305 - Comparative Political Behavior  |                       |                     | X                  |
| 306 - Public Opinion and Voting Behavior  |                       |                     | X                  |
| 310 - State and Local Government  |                       |                     | X                  |
| 312 - Special Topics in American Government and Politics (Only 2 credit course) |                       |                     | X                  |
| 313 - Special Topics in Theory and Methods (Only 2 credit course)               |                       |                     | X                  |
| 314 - Special Topics in Comparative Politics (Only 2 credit course)             |                       |                     | X                  |
| 315 - Special Topics in International Relations (Only 2 credit course)          |                       | X                   |                    |
| 318 - Campaign and Elections  |                       |                     | X                  |
| 319 - Law and Politics  |                       |                     | X                  |
| 320 - American Judicial Process (C J)   |                       |                     | X                  |
| 334 - Politics and Society (SOC)  |                       |                     | X                  |
| 335 - Science, Technology, and Public Policy                                    |                       |                     | X                  |
| 340 - Politics of Developing Areas  |                       | X                   |                    |
| 343 - Latin American Government and Politics (US LS)                            |                       | X                   | X                  |
| 344 - Public Policy   |                       |                     | X                  |
| 346 - European Politics   |                       | X                   |                    |
| 349 - Politics of Russia and Eastern Europe                                     |                       | X                   |                    |
| 350 - Politics of the Middle East   |                       | X                   |                    |
| 356 - Theories of International Politics  |                       |                     | X                  |
| 357 - International Security Policy   |                       |                     | X                  |
| 358 - United States Foreign Policy  |                       |                     | X                  |
| 359 - Current Issues in American Foreign Policy                                 |                       |                     | X                  |
| 360 - American Institutions: Congress   |                       |                     | X                  |
| 361 - American Institutions: The Presidency                                     |                       |                     | X                  |
| 370 - Religion and Politics (RELIG)   |                       |                     | X                  |
| 381 - International Political Economy   |                       |                     | X                  |

|  |   |   |   |
|--|---|---|---|
| 383 - Environmental Politics and Policies (ENV S)          |   |   | X |
| 385 - Women in Politics (WGS)                              | X |   |   |
| 413/513 - Intergovernmental Relations                      |   |   | X |
| 417 - Campaign Rhetoric (SP CM)                            |   |   | X |
| 420 - Constitutional Law                                   |   |   | X |
| 421 - Constitutional Freedoms                              |   |   | X |
| 422/522 - International Law                                |   |   | X |
| 430/530 - Foundations of Western Political Thought (CL ST) |   |   | X |
| 431/531 - Modern Political Thought                         |   |   | X |
| 452/552 - Comparative Foreign Policy                       |   | X |   |
| 453/553 - International Organizations                      |   |   | X |
| 477/577 - Government, Business, and Society                |   |   | X |
| 480/580 - Ethics and Public Policy                         |   |   | X |
| 487/587 - Electronic Democracy                             |   |   | X |

| <b>Psychology (PYSCH):</b>                            | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 101 - Introduction to Psychology                      |                       |                     | X                  |
| 230 - Developmental Psychology                        |                       |                     | X                  |
| 280 - Social Psychology                               |                       |                     | X                  |
| 314 - Motivation                                      |                       |                     | X                  |
| 315 - Drugs and Behavior                              |                       |                     | X                  |
| 316 - Cognitive Psychology                            |                       |                     | X                  |
| 346 - Psychology of Women (WGS)                       | X                     |                     |                    |
| 360 - Personality Psychology                          |                       |                     | X                  |
| 381 - Social Psychology of Small Group Behavior (SOC) |                       |                     | X                  |
| 460 - General Psychopathology                         |                       |                     | X                  |

| <b>Religious Studies (RELIG):</b>                   | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 205 - World Religions (WLC)                         |                       | X                   |                    |
| 210 - Religion in America                           | X                     |                     |                    |
| 220 - Introduction to the Bible                     |                       |                     | X                  |
| 242 - History of Christianity: Early to Medieval    |                       | X                   |                    |
| 321 - The Hebrew Bible                              |                       |                     | X                  |
| 322 - The New Testament                             |                       |                     | X                  |
| 334 - Africana Religions (AF AM)                    | X                     |                     |                    |
| 336 - Religion and Gender (WGS)                     | X                     |                     |                    |
| 340/540 - Magic, Witchcraft, and Religion (ANTHR)   |                       | X                   |                    |
| 342 - Religion and U.S. Latino/a Literature (US LS) | X                     |                     |                    |
| 350 - Philosophy of Religion (PHIL)                 |                       |                     | X                  |
| 352 - Religions of India (WLC)                      |                       | X                   |                    |
| 358 - Islam (WLC)                                   |                       | X                   |                    |
| 360 - Religion and Ethics                           |                       |                     | X                  |
| 370 - Religion and Politics (POL S)                 |                       |                     | X                  |
| 384 - Religion and Ecology (ENV S)                  |                       | X                   |                    |
| 485 - Theory and Method in Religious Studies        |                       |                     | X                  |

| <b>Sociology (SOC):</b>                                 | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 134 - Introduction to Sociology                         |                       |                     | X                  |
| 219 - Sociology of Intimate Relationships               |                       |                     | X                  |
| 230 - Rural Society in Transition                       |                       |                     | X                  |
| 235 - Social Problems and American Values               | X                     |                     |                    |
| 241 - Youth and Crime (C J)                             |                       |                     | X                  |
| 305 - Social Psychology: A Sociological Perspective     |                       |                     | X                  |
| 310 - Community   |                       |                     | X                  |
| 325 - Transition in Agriculture                         |                       |                     | X                  |
| 327 - Gender and Sexualities in Society (WGS)           | X                     |                     |                    |
| 328 - Sociology of Masculinities and Manhood (WGS)      | X                     |                     |                    |
| 330 - Ethnic and Race Relations (AF AM)                 | X                     |                     |                    |
| 331 - Social Class and Inequality                       | X                     |                     |                    |
| 332 - The Latino/Latina Experience in U.S. Society      | X                     |                     |                    |
| 334 - Politics and Society (POL S)                      |                       |                     | X                  |
| 340 - Deviant and Criminal Behavior (C J)               |                       |                     | X                  |
| 345 - Population and Society (ENV S)                    |                       | X                   |                    |
| 362 - Applied Ethics in Agriculture (ECON)              |                       |                     | X                  |
| 380 - Sociology of Work                                 |                       |                     | X                  |
| 381 - Social Psychology of Small Group Behavior (PSYCH) |                       |                     | X                  |
| 382 - Environmental Sociology (ENV S)                   |                       |                     | X                  |
| 401 - Contemporary Sociological Theories                |                       |                     | X                  |
| 411 - Social Change in Developing Countries             |                       | X                   |                    |
| 415 - Dynamics of Social Change                         |                       |                     | X                  |
| 485 - Sociology of the Family                           |                       |                     | X                  |

| <b>Speech Communication (SP CM):</b>                            | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|---|-----------------------|---------------------|--------------------|
| 216 - America Speaks: Great Speakers and Speeches in US History | X                     |                     |                    |
| 323 - Gender and Communication (WGS)                            | X                     |                     |                    |
| 417 - Campaign Rhetoric (POL S)                                 |                       |                     | X                  |

| <b>Theatre (THTRE):</b>                                    | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 465 - Theatre History: Ancient to 19 <sup>th</sup> Century |                       |                     | X                  |
| 466 - Theatre History: 19 <sup>th</sup> Century to Present |                       |                     | X                  |

| <b>U.S. Latino/a Studies Program (US LS):</b>        | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 211 - Introduction to U.S. Latino/a Studies          | X                     |                     |                    |
| 342 - Religion and U.S. Latino/a Literature (RELIG)  | X                     |                     |                    |
| 343 - Latin American Government and Politics (POL S) |                       | X                   |                    |

| <b>Women's and Gender Studies (WGS):</b>             | <b>U.S. Diversity</b> | <b>Intl. Persp.</b> | <b>IE SSH ONLY</b> |
|--|-----------------------|---------------------|--------------------|
| 201 - Introduction to Women's and Gender Studies     | X                     |                     |                    |
| 203 - Introduction to Lesbian Studies                | X                     |                     |                    |
| 301 - International Perspectives on Women and Gender |                       | X                   |                    |

|   |   |   |   |
|---|---|---|---|
| 307 - Women in Science and Engineering (BIOL, WISE)                             | X |   |   |
| 321 - Economics of Discrimination (ECON)  | X |   |   |
| 323 - Gender and Communication (SP CM)  | X |   |   |
| 327 - Gender and Sexualities in Society (SOC)                                   | X |   |   |
| 328 - Sociology of Masculinities and Manhood (SOC)                              | X |   |   |
| 336 - Religion and Gender (RELIG)   | X |   |   |
| 338 - Feminist Philosophy (PHIL)  | X |   |   |
| 340 - Women's Literature (ENGL)   | X |   |   |
| 345 - Women and Literature: Selected Topics (ENGL)                              | X |   |   |
| 346 - Psychology of Women (PSYCH)   | X |   |   |
| 350 - Women of Color in the U.S. (AF AM)  | X |   |   |
| 374 - Sex, Gender, and Culture in the Ancient Mediterranean World (CL ST, HIST) |   | X |   |
| 380 - History of Women in Science, Technology, and Medicine (HIST)              | X |   |   |
| 385 - Women in Politics (POL S)   | X |   |   |
| 386 - History of Women in America (HIST)  | X |   |   |
| 401 - Feminist Theories   |   |   | X |
| 422 - Women, Men, and the English Language (ENGL, LING)                         | X |   |   |
| 444/544 - Cross-cultural Perspectives on Gender and Sexuality (ANTHR)           |   | X |   |
| 494 - Women/Gender in Art (ART H)   | X |   |   |
| <b>** Be sure to check the current catalog for prerequisites. **</b>            |   |   |   |

Last Updated 07/2022 JAL

## Courses Not Offered in 2022-2023 Catalog

The courses listed below are approved for Industrial Engineering majors, but are not being offered in the 2022-2023 academic year. If you took one of these courses in the past, it will still count towards your IE degree.

| Engineering Electives not in 2022-2023 Catalog |  |   |  |
|--|--|---|--|
| A E 423x                                       | Energy and the Environment   | MATH 160 or higher, PHYS 221, A B E 216 or ME 270   | F.                                     |
| C E 430x                                       | Anerobic Biproducts  | C E 326   | VARIES                                 |
| C E 511  | Bioprocessing and Bioproducts (A B E)  | A B E 216, C E 326 or equivalent, MATH 160 or MATH 165, CHEM 167 or higher, BIOL 173 or BIOL 211 or higher, Senior or Graduate classification | F.                                     |
| CON E 454x                                     | Building Energy Modeling   | CON E 354   | F.                                     |
| CPR E 467                                      | Multidisciplinary Engineering Design II (AER E, E E, ENGR, I E, M E, MAT E)  | Student must be within two semesters of graduation and permission of instructor.  | Alt. F., Alt. S., offered irregularly. |
| E E 467  | Multidisciplinary Engineering Design II (AER E, CPR E, ENGR, I E, M E, MAT E)  | Student must be within two semesters of graduation and permission of instructor.  | Alt. F., Alt. S., offered irregularly. |
| ECON 333                                       | Advanced Farm Business management  | ECON 230  | VARIES                                 |
| E M 345  | Engineering Dynamics   | E M 274, credit or enrollment in MATH 266 or 267  | F.S.SS.                                |
| I E 222  | Design & Analysis Methods for Systems Improvements *Only an Engr Topic Elective for students who began I E program before Fall 2014. | I E 248; credit and enrollment in I E 271   | S.                                     |
| I E 347X                                       | Medical Manufacturing  | MAT E 273   | VARIES                                 |
| I E 409  | Interdisciplinary Systems Effectiveness  | Junior or Senior classification   | F.SS.                                  |
| I E 578X                                       | Human-Centered Design and Manufacturing  |   | VARIES                                 |
| MAT E 363                                      | Materials for Wind Energy  | ENGR 340  | S                                      |
| MAT E 442                                      | Structure/Property Relations in Nonferrous Metals  | MAT E 215 or 273 or 392   | F.                                     |
| M E 446  | Power Plant Design   | M E 332, credit or enrollment in M E 335  | F.                                     |
| M E 540  | Solar Energy Systems   | ME 436  | F.                                     |
| MGMT 313                                       | Feasibility Analysis and Business Planning   | MGMT 310  | F.S.                                   |
| NUC E 401                                      | Nuclear Radiation Theory and Engineering   | PHYS 222, MATH 266 or MATH 267  | F.                                     |
| NUC E 402                                      | Nuclear Reactor Engineering  | NUC E 401, permission of Nuclear Engineering program director   | S.                                     |
| NUC E 441                                      | Probabilistic Risk Assessment  | STAT 305 or equivalent  | S.                                     |
| NUC E 461                                      | Radiation Detection, Measurement and Simulation  | NUC E 401   | S.                                     |
| STAT 407                                       | Methods of Multivariate Analysis   | STAT 301 or STAT 326 or STAT 401, knowledge of matrix algebra   | F.                                     |

| SSH Classes not in 2022-2023 Catalog   | U.S. Diversity | Intl. Persp. | IE SSH ONLY |
|--|----------------|--------------|-------------|
| AF AM 348 - Cont. African American Literature                                | X              |              |             |
| AM IN 323 - Topics in Latin American Anthropology (ANTHR)                    |                |              | X           |
| AM IN 328 - American Indian Religions (RELIG)                                | X              |              |             |
| AM IN 342 - American Indian Women Writers (W S) (ENGL)                       | X              |              |             |
| AM IN 432 - Current Issues in Native North America (now listed as AM IN 332) | X              |              |             |
| ANTHR 333 - Asian American Material Cultures (HIST)                          | X              |              |             |
| ANTHR 337 - Andean Archaeology   |                | X            |             |
| ANTHR 412 - Psychological Anthropology                                       | X              |              |             |
| ANTHR 432 - Current Issues in Nat. N. America (now listed as ANTHR 332)      | X              |              |             |
| ANTHR 439 - Medical Anthropology   |                | X            |             |

|   |   |   |   |
|---|---|---|---|
| ARCH 222 - History of Architecture II                         |   | X |   |
| ART H 181 - Origins and Evolution of Modern Design            |   |   | X |
| ART H 481 - Art and Architecture of India                     |   | X |   |
| CL ST 404 - Roman Social History                              |   |   | X |
| C R P 253 - Survey of Community and Regional Planning         |   |   | X |
| C R P 270 - Forces Shaping Our Metropolitan Env. (DSN S 270)  | X |   |   |
| CZECH 101 - Elementary Czech                                  |   |   | X |
| CZECH 102 - Elementary Czech II                               |   | X |   |
| CZECH 201 - Intermediate Czech I                              |   | X |   |
| CZECH 202 - Intermediate Czech II                             |   | X |   |
| DSN S 181 - Origins and Evolution of Modern Design            |   |   | X |
| DSN S 221 - History of Architecture I (ARCH)                  |   | X |   |
| DSN S 222 - History of Architecture II (ARCH)                 |   | X |   |
| DSN S 270 - Forces Shaping Our Metropolitan Environment       | X |   |   |
| DSN S 280 - History of Art I (ART H)                          |   | X |   |
| DSN S 281 - History of Art II (ART H)                         |   | X |   |
| DSN S 371 - History of Modern Landscapes, 1750 to Present     |   |   | X |
| DSN S 373 - Gardens and Landscapes from Antiquity to 1750     |   | X |   |
| DSN S 382 - Art and Architecture in Asia                      |   | X |   |
| DSN S 383 - Greek and Roman Art                               |   |   | X |
| DSN S 385 - Renaissance Art                                   |   |   | X |
| DSN S 388 - Modern Art and Theory                             |   |   | X |
| DSN S 395 - Art and Theory Since 1945                         | X |   |   |
| DSN S 396 - History of Photography                            |   |   | X |
| DSN S 481 - Art and Architecture in India                     |   | X |   |
| DSN S 487 - Nineteenth Century Art                            |   |   | X |
| DSN S 494 - Women/Gender in Art                               | X |   |   |
| ECON 308 - Agent-Based Computational Economics                |   |   | X |
| ECON 312 - History of Economic Thought                        |   |   | X |
| ECON 370 - Comparative Capitalism and Economic Transitions    |   | X |   |
| ECON 378 - Retirement Planning and Employee Benefits          | X |   |   |
| ECON 458 - Economic Systems for Electric Power Planning (E E) |   |   | X |
| ENGL 205 - Popular Culture Analysis                           |   |   | X |
| ENGL 231 - Readings in American Literature & Culture          |   |   | X |
| ENGL 301 - Cultural Studies                                   |   |   | X |
| ENGL 342 - American Indian Women Writers (AM IN, W S)         | X |   |   |
| ENGL 348 - Cont. African American Literature                  | X |   |   |
| ENGL 366 - Studies in Drama                                   |   |   | X |
| ENGL 374 - Studies in British Literature: The Renaissance     |   | X |   |
| ENGL 378 - Studies in British Literature: 1900 to Present     |   |   | X |
| ENGL 384 - 20th Century & Contemporary Literature             |   |   | X |
| ENGL 482 - Environmental Politics & Policies                  |   |   | X |
| ENV S 442 - The Policy and Politics of Coastal Areas (POL S)  |   |   | X |
| ENV S 472 - U.S. Environmental History (HIST)                 |   |   | X |
| FRNCH 310 - French Pronunciation and Phonetics                |   |   | X |
| FRNCH 314 - Textual Analysis                                  |   |   | X |
| FRNCH 333 - Modern French Literature                          |   | X |   |
| FRNCH 334 - The French Literary Tradition                     |   | X |   |
| FRNCH 375 - Contemporary France and the Francophone World     |   | X |   |
| FRNCH 395 - Study Abroad                                      |   | X |   |
| FRNCH 440 - Topics in French Studies                          |   | X |   |
| FRNCH 471 - Foundations of French Civilization                |   | X |   |
| FRNCH 472 - Modern France and French Civilization             |   | X |   |

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| FS HN 432 - World Food Issues: Past and Present (AGRON, ENV S, T SC)           |   | X |   |
| GER 471 - Foundations of German Civilization                                   |   |   | X |
| GER 472 - Topics in German Cultural Studies (now listed as GER 476)            |   |   | X |
| GREEK 101 - Elementary Ancient and New Testament Greek I                       |   |   | X |
| GREEK 102 - Elementary Ancient and New Testament Greek II                      |   | X |   |
| GREEK 201 - Intermediate Classical Greek                                       |   | X |   |
| GREEK 332 - Introduction to Classical Greek Literature                         |   | X |   |
| GREEK 441 - Advanced Readings in Greek Literature                              |   | X |   |
| GREEK 442 - Advanced Topics in Greek Literature                                |   | X |   |
| HIST 225 - Introduction to Asian American Studies                              | X |   |   |
| HIST 240 - Latina/o History (US LS)  | X |   |   |
| HIST 245 - Introduction to Latin American History                              |   | X |   |
| HIST 285 - Modern Wonders of the World   |   |   | X |
| HIST 305 - Cultural Heritage of the Modern World                               |   |   | X |
| HIST 323 - Science and Religion (RELIG)  |   | X |   |
| HIST 339 - U.S.-Asian Relations  |   | X |   |
| HIST 351 - Social and Cultural History of American People I                    |   |   | X |
| HIST 352 - Social and Cultural History of American People II                   |   |   | X |
| HIST 355 - Early American Republic   |   |   | X |
| HIST 356 - U.S. Civil War and Reconstruction Era                               |   |   | X |
| HIST 371 - The Holocaust in Text, Image, and Memory                            |   | X |   |
| HIST 388 - History of Modern Astronomy   |   |   | X |
| HIST 404 - Roman Social History  |   |   | X |
| HIST 410 - 19th Century Europe   |   |   | X |
| HIST 425 - History of Modern Germany II  |   | X |   |
| HIST 454 - Slavery and the Crisis of Union                                     |   |   | X |
| HIST 456 - American Family History   |   |   | X |
| HIST 462 - History of American Thought I                                       |   |   | X |
| HIST 463 - History of American Thought II                                      |   |   | X |
| HIST 464 - Nineteenth Century America  |   |   | X |
| HIST 466 - North American Expansion  |   |   | X |
| HIST 469 - Contemporary America  |   |   | X |
| HIST 470 - The United States and the Cold War I                                |   |   | X |
| HIST 471 - The United States and the Cold War II                               |   |   | X |
| HIST 472 - U. S. Environmental History (ENV S)                                 |   |   | X |
| HIST 483 - History of Social and Behavioral Sciences                           |   |   | X |
| HIST 484 - Science, Technology, Medicine, and Public Policy                    |   |   | X |
| HIST 489 - History of American Science   |   |   | X |
| HD FS 349 - Parenting and Family Diversity Issues (now listed under HD FS 249) | X |   |   |
| LAS 211 - Introduction to U.S. Latino/a Studies                                | X |   |   |
| LAS 225 - Introduction to Asian American Studies                               | X |   |   |
| LAS 325 - Introduction to Asian American Studies                               | X |   |   |
| LAS 385 - The Holocaust  |   | X |   |
| LATIN 201 - Intermediate Latin   |   | X |   |
| LATIN 332 - Introduction to Latin Literature                                   |   | X |   |
| LATIN 441 - Advanced Readings in Latin Literature                              |   | X |   |
| LATIN 442 - Advanced Topics in Latin Literature                                |   | X |   |
| M S 283 - The U. S. Army in American Society to 1917                           |   |   | X |
| MUSIC 471 - Tones of Florence - A Study in Humanism                            |   | X |   |
| PHIL 381 - Philosophy of the Social and Behavioral Sciences                    |   |   | X |
| PHIL 460 - Epistemology and Metaphysics  |   |   | X |
| PHIL 480 - Controversies in Science  |   |   | X |
| PHIL 483 - Philosophy of Biology   |   |   | X |

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| POL S 311 - Municipal Government and Politics                                |   |   | X |
| POL S 332X - Latino Politics   | X |   |   |
| POL S 341 - Politics of Japan  |   | X |   |
| POL S 345 - Immigration Policy   |   | X |   |
| POL S 371 - Public Organizations and Leadership                              |   |   | X |
| POL S 406 - Public Opinion and Voting Behavior (now listed as POL S 306)     |   |   | X |
| POL S 410 - Iowa Government and Politics                                     |   |   | X |
| POL S 433 - American Political Thought                                       |   |   | X |
| POL S 442/542 - The Policy and Politics of Coastal Areas (ENV S)             |   |   | X |
| POL S 451 - International Politics of Asia                                   |   |   | X |
| POL S 464 - Political Parties and Interest Groups                            |   |   | X |
| POL S 470 - Political Game Theory  |   |   | X |
| POL S 483 - Law and Management   |   |   | X |
| POL S 485 - Comparative Public Administration                                |   |   | X |
| POL S 486 - Science, Technology, and Public Policy (now listed as POL S 335) |   |   | X |
| POLSH 101 - Elementary Polish I  |   |   | X |
| POLSH 102 - Elementary Polish II   |   | X |   |
| POLSH 201 - Intermediate Polish I  |   | X |   |
| POLSH 202 - Intermediate Polish II   |   | X |   |
| PORT 202 - Intermediate Portuguese II  |   |   | X |
| PORT 301 - Advanced Grammar, Composition, and Conversation                   |   |   | X |
| PORT 321 - Luso-Brazilian Civilization and Culture                           |   |   | X |
| PORT 330 - Readings in Luso-Brazilian  |   |   | X |
| PORT 370 - Luso-Brazilian Topics in English Translation                      |   |   | X |
| PSYCH 318 - Thinking and Decision Making                                     |   |   | X |
| PSYCH 401 - History of Psychology  |   |   | X |
| RELIG 260 - Religious Ethics (now listed under RELIG 360)                    |   |   | X |
| RELIG 280 - Introduction to Catholicism                                      |   |   | X |
| RELIG 323 - Science and Religion (HIST)                                      |   | X |   |
| RELIG 328 - American Indian Religions (AM IN)                                | X |   |   |
| RELIG 333 - Introduction to Judaism  |   | X |   |
| RELIG 338 - Latino/a Religious Experience                                    |   |   | X |
| RELIG 356 - African Religions  |   | X |   |
| RELIG 376 - Classical Archaeology (ANTHR, CL ST)                             |   | X |   |
| RELIG 377 - Social Dimensions of Religion (SOC)                              |   |   | X |
| RELIG 453 - Buddhism   |   | X |   |
| RUS 320 - Russia Today (now listed as RUS 375)                               |   |   | X |
| RUS 376 - Topics in Russian, East European, and Eurasian Studies             |   |   | X |
| RUS 401 - Advanced Composition and Conversation                              |   |   | X |
| RUS 440 - Seminar in Russian Studies   |   |   | X |
| SERBC 101 - Elementary Serbo-Croatian I                                      |   |   | X |
| SERBC 102 - Elementary Serbo-Croatian II                                     |   | X |   |
| SOC 130 - Rural Institutions and Organizations                               |   |   | X |
| SOC 264 - Small Group Dynamics   |   |   | X |
| SOC 377 - Social Dimensions of Religion (RELIG)                              |   |   | X |
| SOC 420 - Complex Organizations  |   |   | X |
| SOC 431 - Chicanos/Chicanas in Contemporary Society                          | X |   |   |
| SOC 435 - Urban Sociology  |   |   | X |
| SOC 461 - Life Course Sociology  |   |   | X |
| SOC 484 - Topical Studies in Criminal and Juvenile Justice (CJ ST)           |   |   | X |
| SPAN 301 - Spanish Grammar and Composition                                   |   | X |   |
| SPAN 331 - Survey of Spanish Literature from 1700 to the Present             |   | X |   |
| T C 165 - Dress and Diversity in Society (now listed as AMD 165)             | X |   |   |

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| T C 354 - History of European & North American Dress (now listed as AMD 354) |   | X |   |
| T C 362 - Cultural Perspectives of Dress (now listed as AMD 362)             |   | X |   |
| T SC 341 - Technology: International, Social, & Human Issues                 |   |   | X |
| T SC 342 - World Food Issues: Past and Present (AGRON, ENV S, FS HN)         |   | X |   |
| T SC 343 - Philosophy of Technology (PHIL)                                   |   |   | X |
| T SC 474 - Communication Technology & Social Change (JL MC)                  |   | X |   |
| US LS 332 - The Latino/Latina Experience in U.S. Society (SOC)               | X |   |   |
| U ST 342 - World Food Issues: Past and Present                               |   | X |   |
| W S 342 - American Indian Women Writers (AM IN) (ENGL)                       | X |   |   |
| W S 394 - Women in Art   | X |   |   |

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