ENGINEERING PROFESSIONAL DEVELOPMENT (E P D)

E P D 151 — TECHNICAL INFORMATION RESOURCES
1 credit.

Development of information retrieval skills and effective search strategies, focusing on technical information resources appropriate for engineers and scientists. Selection and use of electronic bibliographic databases, indexes and abstracts, patents and government information, library catalogs, and computer networks will be integral to individual and team projects. Enroll Info: None

Requisites: None
Repeatable for Credit: No
Last Taught: Spring 2015

E P D 199 — FRESHMAN INDEPENDENT STUDY
1-3 credits.

Enroll Info: None

Requisites: Consent of instructor
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2011

E P D 265 — TEAMS AND THE ENGINEERING PROFESSION
1 credit.

The communication strategies necessary for effective teamwork in engineering and science professions is the focus of this project-based course. Project options include international, ethical, and engineering business plan issues. Key communication elements are team structures, interpersonal skills, team theories, application, and evaluation. Enroll Info: EPD 155 or other crse that satisfies Part A Communication Requirement or EPD 160 or cons inst

Requisites: None
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2016

E P D 275 — TECHNICAL PRESENTATIONS
2 credits.

This course focuses on the principles and theory of effective oral technical presentations and provides a framework for applying the principles in professional settings common to the engineering profession. The course consists of five parts: 1) preparation, delivery, and evaluation of oral presentation on technical subjects, 2) analysis of professional "real-world" technical presentations, 3) survey of presentation technology, 4) self-analysis including listening and non-verbal skills, and 5) practice of group discussion and interview skills. Enroll Info: So st

Requisites: None
Repeatable for Credit: No
Last Taught: Spring 2020

E P D 299 — SOPHOMORE INDEPENDENT STUDY
1-3 credits.

Enroll Info: None

Requisites: Consent of instructor
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2011

E P D 332 — BASIC TECHNICAL JAPANESE II
3 credits.

Completes the grammar necessary for reading technical writing in the sciences. Concludes with individual projects in specialized fields. Enroll Info: None

Requisites: E P D 330 (or E ASIAN 330 prior to fall 2019)
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2017

E P D 374 — INTERMEDIATE TECHNICAL JAPANESE I
3 credits.

Fundamentals of Japanese grammar and the most frequent 300 Kanji in the physical sciences; reading, comprehending and translating Japanese scientific texts. Enroll Info: Does not satisfy LS language requirements.

Requisites: ASIALANG 203 (E ASIAN 203 prior to Summer 2019)
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019

E P D 375 — INTERMEDIATE TECHNICAL JAPANESE II
3 credits.

Continuation of E P D 374; development of a Kanji frequency list and translation of a technical article. Enroll Info: Does not satisfy LS language or major requirement. Not open to special students.

Requisites: E P D 374 (or E ASIAN 374 prior to fall 2019)
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

E P D/ASIALANG 377 — BUSINESS JAPANESE COMMUNICATION
3 credits.

Enhances students' oral and written communication skills that are specific to business contexts. Review essential grammar and honorific expressions for proper styles of communication. Develop the understanding of cultural and geographical factors that influence business practices in Japan. Enroll Info: Students with prior experience in the language are required to take a placement test administered by the department. Not open to students with credit for E ASIAN 377 prior to Fall 2019.

Requisites: ASIALANG 204 or 358 (or E ASIAN 204 prior to Fall 2019)
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2020
E P D 378 — NETWORK SKILLS FOR REMOTE LEARNERS
1 credit.
This course is designed to provide students with the knowledge, skills, and attitudes they need to be efficient and effective independent learners in a networked environment. The three primary modules for the course include: learning management, information management, and computer skills. Enroll Info: Admission to Master of Engineering in Engineering Management or Master of Engineering in Engine Systems distance degree program or department consent
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Summer 2016

E P D 395 — ELEMENTS OF COMPUTER-ASSISTED PUBLISHING
3 credits.
This course focuses on concepts of the writing-to-publishing process and computer-assisted publishing. It integrates principles of technical writing and graphic design with the use of microcomputers. Laboratory work includes the design of a technical document. Enroll Info: EPD 397 or cons inst
Requisites: None
Repeatable for Credit: No
Last Taught: Fall 2015

E P D 397 — TECHNICAL COMMUNICATION
3 credits.
Communication for engineering, science, and technology; theory and practice in planning, preparing, and critiquing reports, proposals, instructions, and business correspondence; research strategies, collaborative work; oral presentations. Enroll Info: Junior standing
Requisites: None
Course Designation: Gen Ed - Communication Part B
Repeatable for Credit: No
Last Taught: Spring 2020

E P D 398 — TECHNICAL COMMUNICATIONS INTERNSHIP
1 credit.
Two component course: 1) professional writing experience entailing approximately 80 hours internship with a local corporation, industry, government agency, or educational unit; and 2) one 50 minute class every other week to structure the internship and provide discussion of related issues. Enroll Info: EPD 397; 6 cr in other communicatn crses or cons inst
Requisites: None
Course Designation: Level - Advanced
L&S Credit: Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2020

E P D 399 — JUNIOR INDEPENDENT STUDY
1-3 credits.
Enroll Info: None
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit: Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2012

E P D 416 — ENGINEERING APPLICATIONS OF STATISTICS
3 credits.
Course provides knowledge and skills to apply statistics to many types of engineering problems. Focuses on developing statistically-based experimental techniques and tests for measures of validity, application of computer-based statistical tools, and approaches to distillation of data. Enroll Info: Admission to Master of Engineering in Engineering Management distance degree program or department consent
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019

E P D 470 — ENGINEERING PROBLEM SOLVING WITH COMPUTERS
3 credits.
Develops computer-assisted skills necessary for solving complex engineering problems. Uses a series of case studies that develop techniques for solving linear and nonlinear algebraic systems, optimization problems, data approximation problems, and systems of ordinary differential equations. Enroll Info: Admission to Master of Engineering in Engineering Management distance degree program or department consent
Requisites: Declared in Master of Engineering in Professional Practice program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

E P D 497 — TECHNICAL EDITING
1 credit.
Principles and practices of editing technical and scientific documents. Overview of the editing process; defining the editor's rules and responsibilities, revising at structural and sentence levels, and addressing stylistic conventions of technical fields. Application to technical and scientific documents such as reports, proposals, and user manuals. Enroll Info: EPD 397 or cons inst
Requisites: None
Repeatable for Credit: No
Last Taught: Spring 2016

E P D 499 — SENIOR INDEPENDENT STUDY
1-3 credits.
Enroll Info: None
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit: Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2019
E P D 518 — QUALITY ENGINEERING AND QUALITY MANAGEMENT
3 credits.

The overall purpose of this course is to enhance the learners’ basic business and decision-making skills related to quality systems and process improvement. Enroll Info: Admission to Master of Engineering in Engineering Management distance degree program or department consent
Requisites: Declared in Master of Engineering in Professional Practice program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

E P D 601 — JAPANESE FOR BUSINESS AND INDUSTRY
3-4 credits.

Business language and commercial practices in contemporary Japanese society. Enroll Info: None
Requisites: E P D 375 or ASIALANG 304 (or E ASIAN 304 or 375 prior to fall 2019)
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2018

E P D 602 — JAPANESE FOR POLITICS AND GOVERNMENT
3-4 credits.

Language and patterns of expression used in political discourse and policymaking in Japan. Enroll Info: None
Requisites: E P D 375 or ASIALANG 304 (or E ASIAN 304 or 375 prior to fall 2019)
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2019

E P D 603 — ADVANCED TECHNICAL JAPANESE SEMINAR
3-4 credits.

Students will read an intermediate/advanced Japanese university textbook in the sciences and view videotaped lectures by Japanese university faculty members in parallel with the content of the textbook. Enroll Info: E Asian 430 or consent of instructor
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2019

E P D 604 — RESEARCH IN JAPANESE TECHNICAL LITERATURE
2-6 credits.

Graduate students in the sciences and engineering pursue individual projects to explore recent Japanese literature in their research fields. Enroll Info: EPD 530 or EPD 603 or consent of instructor
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2020

E P D 611 — ENGINEERING ECONOMICS AND MANAGEMENT
3 credits.

This course addresses principles and practices of interpreting financial information and performing engineering-related economic analyses. This course focuses on the practical use of economic information for decision-making. The four course modules are: 1) Basic Accounting Concepts; 2) Management Concepts; 3)Pricing and Product Decisions; and 4) Systems. Enroll Info: Admission to Master of Engineering in Engineering Management distance degree program or department consent
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

E P D 612 — TECHNICAL PROJECT MANAGEMENT
3 credits.

Learn key principles and tools of project management applicable to a broad range of engineering projects. The course covers techniques for project planning, scheduling, resource allocation, and project tracking, as well as the interface between projects and the organizations within which they are executed. Enroll Info: Admission to Master of Engineering in Engineering Management distance degree program or department consent
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019

E P D 613 — INTERNATIONAL ENGINEERING STRATEGIES AND OPERATIONS
3 credits.

Provides a comparative examination and analysis of global trends and regional variations for engineering concepts, standards and practices. Using organizational case studies, the course will describe and analyze multi-national engineering operations and summarize best practices and caveats. Enroll Info: Admission to Master of Engineering in Engineering Management distance degree program or department consent
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019
E P D 614 — MARKETING FOR TECHNICAL PROFESSIONALS
3 credits.
Equips practicing engineers and related technical professionals to develop an in-depth understanding of marketing. Learn to partner more effectively with marketing specialists, better market own ideas and projects, gain buy-in from upper management, and better serve internal and external clients. Enroll Info: None
Requisites: Declared in Master of Engineering: Engineering Management, Data Analytics, Engine Systems, Manufacturing Systems Engineering, or Sustainable Systems Engineering
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

E P D 615 — INDEPENDENT READING AND RESEARCH IN APPLIED ENGINEERING
2 credits.
Conduct independent reading and research in an applied engineering topic of student’s choice under the guidance of a UW faculty member or project mentor. Learn and use a variety of in-depth research techniques with assistance from Wendt Engineering Library. Employ a thorough understanding of genre conventions to craft an in-depth proposal, literature review, and technical presentation for distinct practitioner audiences. Present results of research at subsequent Master of Engineering in Engineering Management residency public session in late August. Enroll Info: None
Requisites: Declared in Master of Engineering in Professional Practice program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Summer 2017

E P D 616 — ENGINEERING LAW
2 credits.
Addresses important legal issues especially relevant to the practice of engineering. Gain awareness and ability to properly address patents, trade secrets, contracts, employment and non-disclosure agreements, as well as product and professional liability. Learn to avoid legal problems that often affect engineering projects and organizations. Enroll Info: None
Requisites: Declared in Master of Engineering: Engineering Management, Data Analytics, Engine Systems, Manufacturing Systems Engineering, or Sustainable Systems Engineering
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Summer 2019

E P D 617 — COMMUNICATING TECHNICAL INFORMATION
3 credits.
Develops skills necessary for engineering professionals to communicate technical and managerial information. Covers approaches for communicating to diverse audiences and for action-oriented purposes. Emphasizes communication problem solving and communication efficiency. Includes individual and collaborative projects using oral, written, and electronic media. Enroll Info: Admission to Master of Engineering in Engineering Management distance degree program or department consent
Requisites: Declared in Master of Engineering in Professional Practice program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

E P D 618 — APPLIED LEADERSHIP AND MANAGEMENT OF ENGINEERING ORGANIZATIONS
3 credits.
Addresses strategies, models, and practices for leading and managing engineering organizations in a context directly relevant to practicing engineers. Students will engage in self-reflection about styles, beliefs, and past experiences with leadership and management. Course project of direct relevance to student’s organization will integrate theory, models, case studies, and real-time experiences from student’s workplace. Students will gain broad exposure to diverse approaches to leadership and management, and a deeper understanding of how to put what is being learned into effective action. Enroll Info: Admission to Master of Engineering in Engineering Management distance degree program or department consent
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

E P D 619 — FOSTERING AND LEADING INNOVATION
3 credits.
Learn to develop vision, culture, and practices that value and drive innovation within engineering and technical organizations. Grow your ability to build an enterprise that values, pursues, and delivers innovative technical services and products. Enroll Info: None
Requisites: Declared in Master of Engineering: Engineering Management, Data Analytics, Engine Systems, Manufacturing Systems Engineering, or Sustainable Systems Engineering
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019
E P D 620 — ELECTRIFIED POWERTRAIN SYSTEMS
2 credits.
Micro, mild, full, and plug-in electrical powertrain systems, their components and the interactions between them, with special attention paid to generators, motors, and inverters. Learn about key metrics for sizing and matching components based on performance. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

E P D 621 — BATTERIES FOR XELECTRIFIED VEHICLES
2 credits.
Concepts of vehicle hybridization levels; battery accessories, components, and materials; battery life and management; as well as various failure modes of batteries. Development of equivalent circuit models (ECM) for cells that can be used for real time control and diagnostics. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

E P D 622 — ENGINE DESIGN I
2 credits.
The overall purpose of this course is to provide the learners with an understanding of engine applications, customer need assessment, and engineering product planning. Enroll Info: Admission to Master of Engineering in Engine System degree prgm B.S. in engr or equiv. EPD 621
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

E P D 623 — ENGINE DESIGN II
4 credits.
The overall purpose of this course is to provide the learners with an advanced understanding of internal combustion engine design. Enroll Info: Admission to Master of Engineering in Engine Systems degree prgm B.S. in engr or equiv. EPD 621 622
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2018

E P D 624 — ENGINE PERFORMANCE AND COMBUSTION
4 credits.
Provides learners with a physically based understanding of combustion, efficiency, and exhaust emission formation and control in internal combustion engines. Enroll Info: Admission to Master of Engineering in Engine System degree prgm B.S. in engr or equiv
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

E P D 625 — ENGINE GAS DYNAMICS
2 credits.
Provides a physically based understanding of gas dynamics with applications to internal combustion engines. Enroll Info: None
Requisites: E P D 642 and declared in Master of Engineering: Engine Systems
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019

E P D 626 — ENGINE PROJECT MANAGEMENT
3 credits.
Learn and practice how to plan, manage, and control a variety of projects, from simple design exercises to the complete design, analysis, development and release to production of a new engine. Enroll Info: Admission to Master of Engineering in Engine Systems degree prgm B.S. in engr or equiv
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

E P D 627 — PERSPECTIVES ON ENGINE MODELING
2 credits.
Learn about problem definition and planning, tool selection, model construction, calibration, application and data presentation in order to integrate the most appropriate modeling tools into an engine design and development project. Enroll Info: Admission to Master of Engineering in Engine Systems degree prgm B.S. in engr or equiv
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2017
E P D 628 — ANALYSIS OF TRENDS IN ENGINES
2 credits.

Take a scientifically-based look at trends in energy availability, emission control and refueling, and technological advances to make an assessment of the future of engines and powertrain systems for vehicles throughout the world. Enroll Info: Admission to Master of Engineering in Engine Systems Degree Program and B.S. in Engineering or equivalent
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Summer 2011

E P D 629 — POWERTRAIN SYSTEMS AND CONTROLS
4 credits.

Explore fundamental control concepts for development and analysis, modeling requirements and considerations related to control and diagnostics, and the application of these tools to powertrain systems. Enroll Info: None
Requisites: Declared in Master of Engineering, Engine Systems program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2018

E P D 630 — ENGINE DESIGN III
3 credits.

Builds further experience in engine development project organization; materials and processes; and engine validation. Project organization lessons emphasizing the phases of engine development and the importance of a design freeze with increased scrutiny of design modifications as the engine progresses toward production. Additional engine system components and processes such as forging, plastic molding, and billet machining. Reliability validation expanded to component and system-level validation through rig and engine testing. Test plans calibrated to engine volumes and cost in order to develop an appropriate mechanical development and reliability plan. Enroll Info: None
Requisites: E P D 623 and 624
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

E P D 631 — ELECTRIFIED VEHICLE-LEVEL MODELING
2 credits.

Development of hybrid and electric vehicle powertrain and sub-system mathematical models. Simulations of drive cycles for evaluating component, sub-system, or package performance in the vehicle for fuel economy and emissions. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

E P D 632 — ANALYSIS OF TRENDS IN ENGINES
2 credits.

Application of fundamental fluid dynamics and thermodynamics principles to intake air boosting for internal combustion engines. Turbocharger and Supercharger design and operating principles, applications to engine system design. Includes both simple, single-stage systems, and multi-stage systems (series, series-sequential, parallel-sequential). Pulse conservation and exhaust gas recirculation will be addressed. Includes advanced considerations including the Miller Cycle, turbocompounding, and e-boosting. Enroll Info: None
Requisites: E P D 625 or concurrent enrollment
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

E P D 633 — ENGINE BOOSTING
2 credits.

Sustainability and recycling aspects in the life cycles of plastics and polymeric materials. Chemistries that can be used to make polymers from sustainable or renewable sources and biodegradable polymers. Current recycling practices and their limitations including polymer-based materials such as composites and layered packaging. Textile recycling and plastic pollution including microplastics are covered. Enroll Info: None
Requisites: E P D 636
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

E P D 634 — POLYMER COATINGS
3 credits.

Introduction to coatings, especially focusing on the polymer science and chemistry in these coatings. Chemistry behind these coatings, physical science such as film formation, and the role of various additives used in common formulations. Enroll Info: None
Requisites: E P D 636
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

E P D 635 — POLYMER CHARACTERIZATION
3 credits.

Basic principles used for both quantitative and qualitative characterization of polymeric materials, including both assessment of their synthesis and of their structural features at different length scales. Discussion of techniques such as NMR and GPC, thermal characterization, rheological characterization, as well as scattering of various types of electromagnetic radiation. Introduction to characterization methods used in industry and polymer crystallography. Enroll Info: None
Requisites: E P D 636
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

E P D 636 — POLYMER CHARACTERIZATION
3 credits.

Basic principles used for both quantitative and qualitative characterization of polymeric materials, including both assessment of their synthesis and of their structural features at different length scales. Discussion of techniques such as NMR and GPC, thermal characterization, rheological characterization, as well as scattering of various types of electromagnetic radiation. Introduction to characterization methods used in industry and polymer crystallography. Enroll Info: None
Requisites: E P D 636
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

E P D 637 — PLASTICS RECYCLING AND SUSTAINABILITY
3 credits.

Sustainability and recycling aspects in the life cycles of plastics and polymeric materials. Chemistries that can be used to make polymers from sustainable or renewable sources and biodegradable polymers. Current recycling practices and their limitations including polymer-based materials such as composites and layered packaging. Textile recycling and plastic pollution including microplastics are covered. Enroll Info: None
Requisites: E P D 636
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
**E P D 641 — ESSENTIAL SKILLS FOR ENGINEERING PRODUCTIVITY**

2 credits.

Essential Skills for Engineering Productivity (ESEP) provides the knowledge, skills and attitudes needed to be efficient and effective independent learners in a networked environment. This course focuses on key concepts and critical skills for remote learning, teamwork, working with colleagues at a distance, and engineering productivity. Additionally, a large component of this course teaches effective ways of getting engineering information across to large or small audiences in live or web based presentations. Enroll Info: Admission to an online Master of Engineering Program

**Requisites:** None

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2015

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**E P D 642 — THERMAL SYSTEMS ENGINEERING**

2 credits.

Use the 1st and 2nd laws of thermodynamics in the analysis of engines, and utilize ideal gas mixture, thermodynamics and combustion principles to determine adiabatic flame temperature and chemical equilibrium. Enroll Info: Admission to Master of Engineering in Engine Systems Degree Program and B.S. in Engineering or equiv

**Requisites:** None

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2019

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**E P D 643 — ANALYSIS OF TRENDS IN ENGINES - LEGISLATIVE DRIVERS AND ALTERNATIVE FUELS**

1 credit.

With a scientifically-based approach, this course will consider trends in energy availability, emission control and regulation, and technological advances for assessing the future of engines and powertrain systems in vehicle applications throughout the world. Enroll Info: Admission to Master of Engineering in Engine Systems Degree Program and B.S. in Engineering or equivalent

**Requisites:** None

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2019

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**E P D 644 — ANALYSIS OF TRENDS IN ENGINES - POWERTRAIN TECHNOLOGIES AND MANUFACTURING**

1 credit.

Take a scientifically-based look at trends in technological advances to make an assessment of the future of engines and powertrain systems for vehicles throughout the world as well as manufacturing constraints on future development of engines. Enroll Info: Admission to Master of Engineering in Engine Systems Degree Program and B.S. in Engineering or equivalent.

**Requisites:** None

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2019

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**E P D 654 — TEACHING IN SCIENCE AND ENGINEERING**

2-3 credits.

Introduction to teaching and learning in science and engineering at the college level. Includes exploration of the learning process, teaching methodology, assessment strategies, course design, teaching philosophies, and careers in education, science, and engineering. Enroll Info: Grad stdt in sci or engr or cons inst

**Requisites:** None

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2020

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**E P D 660 — CORE COMPETENCIES OF SUSTAINABILITY**

3 credits.

Introduces real-world pragmatic skills and applications in sustainability competencies. Content reaches across engineering expertise, from chemical engineering to buildings to product design and energy. Modules cover ecological footprinting, lifecycle assessment, resource use and integrated engineering practice. Enroll Info: Junior standing

**Requisites:** None

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2018

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**E P D 661 — INDUSTRIAL ECOLOGY: SUSTAINABILITY TOOLS IN CONTEXT**

3 credits.

Introduces sustainability frameworks and addresses industrial ecology by learning how and when to use a range of tools that offer systems thinking perspectives (e.g. Mass Flow analysis, Footprinting, SLCA, SWOT, EIO-LCA, LCA, MIPS). Assist in constructing an evaluation matrix to evaluate tool application contexts, and discuss the relationship between optimizing systems through the use of tools and larger sustainability issues/goals. Enroll Info: Acceptance in the ME-Sustainable Systems Engineering program

**Requisites:** None

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2017
E P D 663 — ENGINEERING SUSTAINABILITY AND SOCIETY SEMINAR AND CONFERENCE
1 credit.

Each April, the University of Wisconsin Nelson Institute for Environmental Studies hosts an Earth Day Conference in Madison, Wisconsin. The conference provides a forum for a diverse community of academia, industry and the community to discuss environmental, social, and economic aspects of sustainability. This online course prepares students in the Master of Engineering Sustainable Systems Engineering program to attend this conference through research projects and classroom discussion prior to Earth Day on the conference theme and its relationship with engineering practice. Students then travel to Madison, Wisconsin for the conference and discussion with faculty before and after the conference (travel expenses not included with tuition). Additional discussion and student presentations follow in the weeks after the conference. Enroll Info: Admission into the Sustainable Systems Engineering program is required
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2015

E P D 669 — SUSTAINABLE SYSTEMS ENGINEERING CAPSTONE
3 credits.

The Sustainable Systems Engineering (SSE) Capstone gives teams of students the opportunity to demonstrate their ability to think globally, sustainably, and creatively. Throughout this course, students will gain real-world experience by applying theory, tools, and research to conceptualize, analyze, and design a solution to a real-world problem within a social and environmental context. Projects should showcase the knowledge and analytical skills acquired during the SSE program, and integrate tools, science and communication to address a community or industry need. Students will also work with an industry mentor and customer throughout their project. Enroll Info: Completion of at least 21 credits in the SSE program
Requisites: None
Repeatable for Credit: No
Last Taught: Spring 2020

E P D 690 — SPECIAL TOPICS IN ENGINEERING PROFESSIONAL DEVELOPMENT
1-3 credits.

Enroll Info: None
Requisites: None
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2020

E P D 699 — INDEPENDENT STUDY
1-3 credits.

Enroll Info: None
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2019

E P D 700 — CONNECTED LEARNING ESSENTIALS
1 credit.

The course is designed to provide students with the knowledge, skills and abilities needed to be efficient and effective learners in a networked environment. The course recognizes that the role of "learner" is only one of many roles that you must play in your busy life. It strives to help you become easily adaptable to digital tools and technologies. The course cannot address all network and computing situations required by a student or professional, but will focus on key concepts, orientation, and critical skills that have been identified as key professional competencies of a digitally literate professional. You will learn key concepts to be an effective online learner and connected professional. This includes: tools and strategies for online learning; efficient time and attention management; tools and best practices for online collaboration and communication; and techniques for the continuous improvement of skills in all applicable facets of digital professional work. The goals of the course are to teach a strategic approach to learning online and to impart critical professional competencies for future success. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019

E P D 701 — WRITING FOR PROFESSIONALS
1 credit.

Professional Writing is an online course in the Professional Literacy Course suite. The goal of this 1-credit, 8-week course is to prepare students to produce effective written communication that is suitable for inter-professional and inter-disciplinary audiences in a variety of workplaces. Assignments apply strategies and tools introduced in live web conferences and readings to common informal and formal workplace writing, including email, memos, proposals and executive summaries. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Summer 2019

E P D 702 — PROFESSIONAL PRESENTATIONS
1 credit.

In this course, you will sharpen your ability to create, edit, review, and present information in an efficient, clear, and effective way for your audiences. The course will develop your presentation skills through a series of presentations related to your professional interests and work. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019
E P D/L I S 703 — MANAGING DIGITAL INFORMATION
1 credit.
Helps professionals to effectively and ethically protect and organize the information that they collect, create, and manage. It also presents collaboration tools and techniques for information creation and management. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

E P D 704 — ORGANIZATIONAL COMMUNICATION AND PROBLEM SOLVING
1 credit.
One of the most important processes in complex organizations is judgment, problem-solving, and decision-making. This course aims to help people improve their problem solving within complex organizations with a special emphasis on case studies and improving communication. The material will be from cross-discipline sources (organizational behavior, organizational communication, social psychology). The first part of the course will focus on different theories of how people solve problems and how to communicate problems effectively. The second part of the course will focus on using empirical science to learn how to effectively use groups and teams to communicate, innovate, and make decisions. The third part of the course will focus more on applied decision-making and communication at the organizational level with an emphasis on networks of communication, nudging ethical behavior, and conflict. Case studies are used that incorporate organizational communication within workplace scenarios. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

E P D 706 — CHANGE MANAGEMENT
1 credit.
Provides emerging and practicing professionals foundational knowledge sufficient to develop a change management strategy and implement it using proven processes and tools. Through this course, students will be better prepared to deliver effective organizational performance. The course applies contemporary concepts and methods in change management through student selected projects. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

E P D 708 — CREATING BREAKTHROUGH INNOVATIONS
1 credit.
Innovation needs processes and methods. Innovation needs tools and frameworks. But, there is no ONE right process, method, tool, or framework. Those are very context sensitive to things such as company, industry, and culture. This course is not about those things. We need to be able to be problem definers and insight generators that can apply what we learn in the real world, creating solutions and processes not seen before. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

E P D 710 — FOUNDATIONS OF ENGINEERING LEADERSHIP
2 credits.
Build the foundations for developing, refining and strengthening your effectiveness as a leader of engineering teams, projects, and organizations. Enhance your understanding of how to match your leadership style to a team’s focus, organization and culture. Grow your understanding of your strengths and weaknesses as a leader using proven assessment tools. Develop your plan for growing your leadership competency through the rest of the Master of Engineering Management program and beyond. Enroll Info: Declared in Master of Engineering Management program
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Summer 2019

E P D 712 — ETHICS FOR PROFESSIONALS
1 credit.
Explores how our actions affect others and influence the choices we make within the workplace. This course will enhance ethical competencies by giving students opportunities to discuss challenges to behavior and decision-making in different professional contexts. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2018
E P D 713 — KEY LEGAL CONCEPTS FOR PROFESSIONALS
1 credit.

An introduction to basic legal concepts, sources, and reasoning. Laws affect all aspects of our lives. For people without legal training, though, the legal language, procedure, and argumentation is a bit bewildering. This course aims to demystify law by providing an introduction to basic legal concepts, an overview of several key substantive areas of law, and an explanation of ways in which law functions in professional practices. The course will be grounded in U.S. and closely related common law jurisdictions, but it will consider other legal systems and international law as well. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019

E P D 720 — ENGINE NOISE AND VIBRATION
2 credits.

Introduces the engineer to fundamental NVH (Noise, Vibration, and Harshness) concepts with an emphasis on how NVH can be integrated throughout the engine development process from initial concept inception through to validation testing for production. Enroll Info: None
Requisites: Declared in Master of Engineering, Engine Systems program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Summer 2018

E P D 730 — SUSTAINABLE FACILITIES
3 credits.

Explore the environmental impacts of commercial and residential buildings, including energy, water, materials, transportation, waste, human health, and land use. All phases of a building’s life cycle will be considered, along with relevant case studies, benchmarking tools, public policies and emerging concepts. Enroll Info: Declared in Master of Engineering in Sustainable Systems Engineering
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2018

E P D/ACCT I S/GEN BUS 781 — FINANCIAL AND BUSINESS ACUMEN
1 credit.

This course is designed with a keen awareness for the needs of the non-financial student or professional. For this class, no previous financial training is required. The intent is to equip you with the essential concepts used to develop financial literacy. Content will cover basic financial terms and reports, analytical tools to help interpret financial data and using financial data in budgets and forecasts. Enroll Info: None
Requisites: Graduate/professional standing. Not open to students declared in an MBA program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

E P D/GEN BUS/MARKETNG 782 — MARKETING FOR NON-MARKETING PROFESSIONALS
1 credit.

An overview of marketing’s role within an organization, the key elements of a marketing plan, and how the plan is implemented. Students will learn about buyer demographic, psychographic and purchasing decision behavior. A thorough understanding of the customer enables students to develop a coordinated marketing mix (product, price promotion and place) that will satisfy the customer better than the competition and at the required margin. Students will leave the course understanding the degree to which all company functions must be coordinated and focused on the customer. This course will not apply toward fulfilling the MBA degree requirements. Enroll Info: None
Requisites: Graduate/professional standing or member of Business Exchange program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

E P D/GEN BUS/M HR 783 — LEADING TEAMS
1 credit.

Students will gain the knowledge and skills to continuously enhance their own team performance and productivity as well as the teams they are involved with. They will also be in a much better position to lead teams effectively. Enroll Info: None
Requisites: Graduate/professional standing or member of Business Exchange program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

E P D/GEN BUS/OTM 784 — PROJECT MANAGEMENT ESSENTIALS
1 credit.

Techniques that will help to plan, execute, and deliver projects with desired scope on time and on budget. Learn to document clear project objectives and goals, accurately estimate project time and costs, schedule and allocate time-critical resources, and establish feedback systems for optimal project control. Enroll Info: None
Requisites: Graduate/professional standing or member of Business Exchange program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

E P D/GEN BUS/M MARKETNG 785 — EFFECTIVE NEGOTIATION STRATEGIES
1 credit.

Improves students’ negotiating skills, doing so by providing a theoretical underpinning that will help them to understand the sources of effective and ineffective approaches to negotiations. Enroll Info: None
Requisites: Graduate/professional standing or member of Business Exchange program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Summer 2019