EPOM (EPOM)

EPOM 400. Leadership and Interpersonal Skills. 3 Units.
This course is designed as an experience based process to increase understanding of Communication, Emotional Intelligence and behavioral based communication needs in the work environment. To increase understanding, students will learn to recognize, manage and leverage these in business relationships as well as in team and group processes to develop effective Leadership style. Students will work in teams to examine the topics from the perspective of team members and leaders and will formulate strategies to reach desired goals or outcomes.

EPOM 400C. Engineering Professionalism: Professional Development. 1 Unit.
The goals of the course are to help students learn methods for assessing their knowledge, abilities, and values relevant to their engineering careers, and for acquiring new professional knowledge and skills throughout their career. Students will initially assess their own values, personality style, and organizational competencies. After learning about emotional intelligence at work, each student will solicit and receive feedback from people at different levels in their organization about their work effectiveness.

EPOM 401. Introduction to Business for Engineers. 3 Units.
This course provides an introduction to the business environment for practicing engineers. The course emphasizes the interplay between business and engineering in the context of the competitive marketplace (economics), how engineering proposals are evaluated (finance), the relationship between product and customer (marketing), making effective use of micro-disciplinary teams (organizational behavior), and the manufacturing and production process (operations).

EPOM 403. Product and Process Design and Implementation. 3 Units.
The course is taught through a series of lectures, class discussions, group projects and case studies. The course aim is to provide a solid understanding of the many aspects of the engineering design process and the management of technology. The course focuses on the engineering and management activities used to develop and bring to market new products and processes. The first part of the course focuses on the techniques used to develop new ideas, the second part focuses on the management of technology and innovation. Recommended preparation: EPOM 401.

EPOM 405. Applied Engineering Statistics. 3 Units.
In this course a combination of lectures, demonstrations, case studies, and individual and group computer problems provides an intensive introduction to fundamental concepts, applications and the practice of contemporary engineering statistics. Each topic is introduced through realistic sample problems to be solved first by using standard spreadsheet programs and then using more sophisticated software packages. Primary attention is given to teaching the fundamental concepts underlying standard analysis methods. Offered as EPOM 405 and EECS 411.

In this course, money and profit as measures of “goodness” in engineering design are studied. Methods for economic analysis of capital investments are developed and the financial evaluation of machinery, manufacturing processes, buildings, R&D personnel development, and other long-lived investments is emphasized. Optimization methods and decision analysis techniques are examined to identify economically attractive alternatives. Basic concepts of cost accounting are also covered. Topics include: economics criteria for comparing projects: present worth, annual worth analysis; depreciation and taxation; retirement and replacement; effect of inflation and escalation on economic evaluations; case studies; use of optimization methods to evaluate many alternatives; decision analysis; accounting fundamentals: income and balance sheets; cost accounting. Offered as EECS 407 and EPOM 407.

EPOM 409. Master of Engineering Capstone Project. 3 Units.
This is the capstone course for the Master of Engineering Program providing students with the opportunity to integrate the Program’s topics through an intensive case study project. Interdisciplinary teams are assigned a major engineering project that covers the stages from design concept through development to final manufacture, including business and engineering decision making to maximize market penetration. Topics also include safety, environmental issues, ethics, intellectual property, product liability and societal issues. Recommended preparation: EPOM 401, EPOM 403, EPOM 405, and EPOM 407.

EPOM 410. Intellectual Property Management and Opportunity Assessment. 3 Units.
The goal of this course is to address issues relating to the commercialization of scientific inventions by exposing graduate students to the challenges and opportunities encountered when attempting to develop meaningful intellectual property from the point of early discovery to the clinic and market. Specifically, this course seeks to provide students with the ability to value a given technological advance or invention holistically, focusing on issues that extend beyond scientific efficacy and include patient and practitioner value propositions, legal and intellectual property protection, business modeling, potential market impacts, market competition, and ethical, social, and healthcare practitioner acceptance. These issues transcend disciplinary boundaries, requiring the integration of expertise in the fields of law, business, and biomedical research disciplines. For instance, comprehending the intricacies involved in the evolution of an upstream product from the lab to the marketplace requires an understanding of intellectual property management, namely the identification of optimal appropriability mechanisms, constructing an intellectual property portfolio (e.g., patents, trademarks, and trade secrets), and leveraging this portfolio in a competitive fashion. An emphasis of this course is to help students understand that intellectual property strategy is business strategy, and that IP is a strategic business asset that can be leveraged to create value and intellectual asset formation in the marketplace.

EPOM 411. Innovation - the Confluence of Need, Requirements and Creativity. 3 Units.
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The Purpose of this course is to familiarize students with tools and methods of facilitation necessary to move from a simple idea, to a validated development concept with commercial potential. Drawing from fundamentals of a range of programs, including Stanford’s BioDesign, Lean Launch, Requirements by Design and others, the course will lead students through the process of developing detailed perspectives on unmet need, validated design requirements, intellectual property analysis and commercialization fundamentals.
EPOM 412. Technology Transfer and Collaboration. 3 Units.
The overall goal of this course is to address the process of technology transfer. Mantras and slogans related to the process of transferring intellectual property between two parties are abundant. Whether translational research, bench-to-bedside or industry-friendly research drives a particular framework, the objective is the same: to capture and convey intellectual property rights in support of a commercial outcome (e.g., a product). Building on an understanding of IP Management and Commercialization activities that follow a new discovery (see, e.g., EPOM 410), this course examines specific approaches to commercializing technology through the process of technology transfer both in the context of academic research and industry research and development. Over recent decades, industry standard approaches to transferring technology from an intellectual property rights holder to another party have matured considerably. At the same time, approaches to complying with regulation and internal policy have been explored both legally and strategically through the process of successful collaboration and commercialization. This course will provide an overview of the drivers governing relevant industry standards, while reviewing and contrasting specific tools and strategies that can support robust approaches to collaborative commercialization. Specific tools examined will include sponsored research, licensing, and startup formation. Additional perspectives will include patent monetization, industry partnering and interfaces with economic development and other public drivers. The course three credit hours. During the semester, students will work individually, focusing on issues of the process of structuring innovation, applying tools and methodologies presented during the course. Course leaders and presenters will be drawn from the law school, business school, medical school, and industry. The skill set will be enhanced by hands-on assessments of two case studies that present applications of law and policy in the context of collaborative technology development. The goal of each student team is provide a critique and overview of how they would handle the circumstances of the given case. The ultimate objective is to deliver a working understanding the strategic options available when building a collaborative approach to commercializing technology. Prereq: EPOM 410.