INDUSTRIAL TECHNOLOGY AND PACKAGING (ITP)

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ITP Courses

ITP 1100 Student Orientation, College Success, and Career Readiness (1 unit)
Term Typically Offered: F
Prerequisite: Industrial Technology and Packaging major.

Orientation to ITP major and its concentrations. Development of a personalized graduation plan. Skills for academic success: goal setting, time management, study skills, registration strategies, overall adjustment to college life, including connection to a social peer network, and career readiness. This is intended for first-time first year students. Field trip required. 1 activity. Formerly ITP 100.

ITP 1125 Introduction to Industrial Technology and Packaging (1 unit)
Term Typically Offered: F
Prerequisite: Industrial Technology and Packaging major.

Comprehensive overview of concepts and opportunities in Industrial Technology and Packaging. Discusses fundamentals of product development, packaging systems, and supply chain and operations management. Focus on innovation and sustainability. Includes practical application of tools to address real-world challenges. 1 lecture. Formerly ITP 125.

ITP 1150 Power Systems and Renewable Energy (3 units)
Term Typically Offered: SP
Sustainability Related
Prerequisite: Industrial Technology and Packaging major or Industrial Technology minor.

An overview of industrial power generation/transmission methods and renewable energy sources, including solar, wind, and fuel cell technologies. Laboratory activities include electrical and electronic circuits fundamentals, conventional power, and renewable energy experimentation. 2 lectures, 1 laboratory. Formerly ITP 150.

ITP 2203 Personal Leadership - 7 Habits (3 units)
Term Typically Offered: SP

Learn and practice the what, why, and how of personal leadership. Uses the 7 Habits of Highly Effective People framework to provide students with skills they will use repeatedly in their careers and life. Course offered in hybrid format with classroom-based and online learning. 3 lectures. Formerly ITP 203.

ITP 2208 Shipping and Port Management (3 units)
Term Typically Offered: F, SP
Prerequisite: ECON 201 or ECON 2001.

Examination of operational, economic, managerial, and policy issues in global shipping and port management. Current maritime industry practices emphasized through field trips, guest lectures, contemporary examples, and practical applications. Field trip may be required. Course may be offered in classroom-based, online, or hybrid format. 3 lectures. Crosslisted as BUS/ITP 2208.

ITP 2211 Industrial Safety and Maintenance (3 units)
Term Typically Offered: TBD

Introduction to occupational health, safety and plant maintenance. Topics include job hazard analysis, hazard control/communication, OSHA standards, product safety, ergonomics, ethics in safety and maintenance of mechanical systems. 2 lectures, 1 activity. Formerly ITP 211.

ITP 2233 Product Modeling and Communication (3 units)
Term Typically Offered: F, SP

Fundamental theory and practice of digital modeling with two-dimensional and three-dimensional modeling software commonly used in industry. Includes part/assembly modeling, geometric dimensioning/tolerancing, and fundamental skills in communicating product design data in accordance with industry standards. 2 lectures, 1 laboratory. Formerly ITP 233.

ITP 2234 Packaging Design Fundamentals (3 units)
Term Typically Offered: F

Overview of structural and graphic concepts for package design. Introduction to packaging development and design thinking. Focus on design for manufacturing, two and three-dimensional form creation, branding, and user experience. Laboratory focuses on computer-aided design, photo-realistic rendering, and rapid prototyping. 2 lectures, 1 laboratory. Formerly ITP 234.

ITP 2241 Industrial and Packaging Materials (3 units)
Term Typically Offered: F
Prerequisite: One of the following: CHEM 124, CHEM 127, or CHEM 1120.

Overview of organic materials and applied materials chemistry utilized across various industrial sectors. Molecules, macromolecules, structure-property relationship, compatibility, polymer chemistry, elastomers, polymer-composites, paper chemistry, surface and chemical treatments, wettability, coatings, hydrophobicity, hydrophilicity, advances in biomolecules and sustainable materials, end-of-life scenarios. 2 lectures, 1 laboratory.

ITP 2260 Materials and Manufacturing Technology (3 units)
Term Typically Offered: F
Prerequisite: One of the following: CHEM 124 , CHEM 127, or CHEM 1120.

Introduction to materials and manufacturing with emphasis on metals. Analysis of relationships among materials, product design, and manufacturing. Provides experiential learning on manufacturing equipment operation. 2 lectures, 1 laboratory. Formerly ITP 260.

ITP 2270 Special Topics (1-4 units)
Term Typically Offered: TBD
Prerequisite: Consent of instructor.

Directed group study of special topics. The Class Schedule will list topic selected. Repeatable up to 8 units. Course may be offered in a classroom-based, online, or hybrid format. 1 to 4 lectures. Formerly ITP 270.

ITP 2275 Industrial Facilities Management (3 units)
Term Typically Offered: TBD
Prerequisite: ITP 150 or ITP 1150. Corequisite: ITP 211 or ITP 2211.

Overview of modern industrial facilities, considering digitalization, sustainability and lean practices. Emphasis on support systems such as heating and cooling; material handling and energy management, warehouse management, and communication systems. 2 lectures, 1 activity. Formerly ITP 275.

ITP 3303 Lean Six Sigma Green Belt (3 units)
Term Typically Offered: F, SP, SU
Prerequisite: One of the following: STAT 218, STAT 251, STAT 301, STAT 312, STAT 1110, STAT 1210, STAT 1510, or STAT 3210.

Develop skills to function as a lean six sigma leader. Discussion and problem sessions cover lean six sigma green belt body of knowledge: define, measure, analyze, improve, and control. Team skills necessary to complete projects. Course may be offered in classroom-based or online format. 3 lectures. Formerly ITP 303.

ITP 3304 International Supply Chains (3 units)
Term Typically Offered: F
Prerequisite: Consent of instructor.

Design and development of global supply chain networks. Focus on product value chain, coordination, sourcing, packaging systems, transportation, and sustainability. Analysis of target country history, culture, geography, economy, and infrastructure. Study tour to target country is an essential course activity. Field trip required. The Class Schedule will list country selected. 2 lectures, 1 activity. Crosslisted as BUS/ITP 3304. Formerly BUS 304.

ITP 3308 Logistics and Intermodal Transportation (3 units)
Term Typically Offered: F, SP
Prerequisite: ITP 371 or ITP 3371.

Examination of intermodal transportation as a core component of modern logistics systems. Emphasis on integration of truck, rail, maritime, and air modes. Global trade flows, seaport operations, container terminal operations, truck transport, rail, air operations, intermediaries, shippers, and environmental impact. Course may be offered in classroom-based, online, or hybrid format. 3 lectures. Crosslisted as BUS/ITP 3308.

ITP 3326 Product Design and Development (3 units)
Term Typically Offered: F, SP
Prerequisite: One of the following: ITP 233, BUS 310, ITP 2233, or BUS 3310.

User-centered product design with an emphasis on innovation, inclusion, and sustainability. Design thinking, identification of user needs, concept generation/selection/testing, industrial design, ergonomics, inclusive design, sustainable product design, product architecture, intellectual property, sketching, and quick prototyping techniques. 2 lectures, 1 laboratory. Formerly ITP 326.

ITP 3330 Packaging Fundamentals (3 units)
Term Typically Offered: F, SP, SU
2026-28 or later: Upper-Div GE Area 2/5
2020-26 catalogs: Upper-Div GE Area B
Prerequisite: Junior standing or Industrial Technology and Packaging major; completion of GE Area 1 with grades of C- or better (GE Area A for the 2020-26 catalogs); completion of GE Area 2 with a grade of C- or better (GE Area B4 for the 2020-26 catalogs); and completion of GE Area 5A (GE Area B1 for the 2020-26 catalogs).

Overview of packaging functions, materials, and processes. Discuss value addition to product-package systems via various packaging materials, processes, design, and protective packaging for global distribution. Illustrates the impact of packaging on the environment. Course may be offered in classroom-based, online, or hybrid format. 2 lectures, 1 laboratory. Fulfills GE Areas Upper-Division 2 or Upper-Division 5 (GE Area Upper-Division B for students on the 2020-26 catalogs). Formerly ITP 330.

ITP 3334 Structural Packaging Design (3 units)
Term Typically Offered: SP
Prerequisite: ITP 234 or ITP 2234.

Advanced concepts for structural package design with emphasis on inclusive and sustainable design. Two-dimensional and three-dimensional form creation. Focus on design strategies, design for manufacturing, branding, and user experience. Laboratory focuses on computer-aided design, photo-realistic rendering, and rapid prototyping. 2 lectures, 1 laboratory.

ITP 3341 Packaging Polymers and Processing (3 units)
Term Typically Offered: F, SP
2026-28 or later: Upper-Div GE Area 2/5
2020-26 catalogs: Upper-Div GE Area B
Sustainability Related
Prerequisite: Junior standing or Industrial Technology and Packaging major; completion of GE Area 1 with grades of C- or better (GE Area A for the 2020-26 catalogs); completion of GE Area 2 with a grade of C- or better (GE Area B4 for the 2020-26 catalogs); and a CHEM course in GE Area 5A (GE Area B1 for the 2020-26 catalogs).

Physical and chemical properties of plastic materials and processing techniques. Evaluation of current materials and technologies to reduce waste and to improve reuse and recycling. Applied laboratory using common industry processes with emphasis on relationships among processing, structure, properties, and consumer response. Course may be offered in classroom-based or hybrid format. 2 lectures, 1 laboratory. Fulfills GE Areas Upper-Division 2 or Upper-Division 5 (GE Area Upper-Division B for students on the 2020-26 catalogs). Formerly ITP 341.

ITP 3371 Supply Chain Management in Manufacturing and Services (3 units)
Term Typically Offered: F, SP, SU
Prerequisite: One of the following: STAT 218, STAT 251, STAT 301, STAT 312, STAT 1110, STAT 1210, STAT 1510, or STAT 3210; and one of the following: MATH 121, MATH 141, MATH 221, MATH 1261, MATH 1264, or MATH 1267 with a grade of C- or better, or consent of instructor.

Introduction to supply chain management and performance metrics. Supply or value chains dealing with hard goods and services from design to daily management. Project management techniques and technology for making and implementing decisions. 3 lectures. Formerly ITP 371.

ITP 3390 Industrial Automation (3 units)
Term Typically Offered: SP
Prerequisite: ITP 260 or ITP 2260.

Programming and setup of computer-controlled manufacturing/assembly machinery. Includes an introduction to Smart Manufacturing and the Industrial Internet of Things (IIoT). Computer numerically controlled (CNC) machines, robots, programmable logic controllers, and online data monitoring. 2 lectures, 1 laboratory. Formerly ITP 390.

ITP 4400 Special Problems for Advanced Undergraduates (1-4 units)
Term Typically Offered: F, SP
Prerequisite: Junior standing and consent of instructor.

Individual or group investigation, research, project, studies, or surveys of special problems. Repeatable up to 8 units. Formerly ITP 400.

ITP 4403 Lean and Quality Systems Management (3 units)
Term Typically Offered: F, SP
Prerequisite: ITP 303 or ITP 3303.

Process improvement and quality assurance viewed from a systems perspective. Lean thinking and tools as a problem solving approach to achieve continuous improvement through waste elimination and variability reduction. Projects improve processes in manufacturing, supply chain, or service. 3 lectures. Formerly ITP 403.

ITP 4404 Lean Six Sigma Green Belt Certification Project (3 units)
Term Typically Offered: TBD
Prerequisite: ITP 303 or ITP 3303.

Tools and concepts required to complete a Lean Six Sigma Green Belt Certification project (LSSGB). Supervised independent completion of an LSSGB project for a client selected by the student. Written and verbal presentation of process and results. Formerly ITP 404.

ITP 4406 Business-to-Business Complex Solutions Selling (3 units)
Term Typically Offered: F, SP
Prerequisite: One of the following: BUS 310, BUS 346, BUS 3310, or BUS 3346.

Complex business-to-business sales: understanding customer needs, customizing solutions, providing extended product-service solutions, and communicating value propositions. Selling through cross-functional project sales teams to customer buying committees. Individual mock sales presentations and team case study presentations. 3 lectures. Formerly ITP 406.

ITP 4408 Fiber-Based Packaging (3 units)
Term Typically Offered: F, SP
Prerequisite: ITP 330 or ITP 3330; or Graphics Communication major and GRC 337 or GRC 2070; or Consumer Packaging concentration and ITP 234 or ITP 3334.

Design of packaging systems using paper, paperboard, corrugated fiberboard, and other fiber-based materials. Physical and chemical properties, manufacturing, converting operations, commercial applications, and sustainability. Tests and procedures for fiber-based packaging materials and packaging products following ASTM, TAPPI, and ISO standards. 2 lectures, 1 laboratory. Formerly ITP 408.

ITP 4409 Packaging Machinery and Processes (3 units)
Term Typically Offered: SP
Prerequisite: ITP 330 or ITP 3330.

Integrated study of packaging machinery and processes from a practical and operational viewpoint. Understanding basic processes and interrelationship between packaging machinery and product type, production layout, efficiency, material handling and distribution equipment, quality control, and ancillary systems. 2 lectures, 1 activity. Formerly ITP 409.

ITP 4410 Operations Planning and Control (3 units)
Term Typically Offered: F, SP
Prerequisite: BUS 391 or BUS 3391; and one of the following: ITP 303, ITP 371, ITP 3303, or ITP 3371.

Linking supply chain operations to deliver value to the end customer. Contrasting of advanced manufacturing concepts, such as pull systems, sales and operations planning, mixed model manufacturing, level production, and theory of constraints to traditional materials requirements planning systems. 2 lectures, 1 activity. Formerly ITP 410.

ITP 4411 Packaging Sustainability (3 units)
Term Typically Offered: F, SP
Sustainability Focused
Prerequisite: ITP 330 or ITP 3330.

Comprehensive overview of cradle-to-cradle sustainability topics that apply to the packaging life cycle. Tools for measuring, reporting, and communicating sustainability initiatives. Exploration of current trends and technologies in packaging sustainability. 2 lectures, 1 laboratory. Formerly ITP 411.

ITP 4412 Instrumental Analysis of Packaging Polymers (3 units)
Term Typically Offered: TBD
Prerequisite: ITP 341 or ITP 3341.

Overview of various analytical methods and tools used to evaluate polymers and other packaging materials, including thermal characterization, spectroscopy, and chromatography. Qualitative and quantitative analysis of the matter. Identification of polymeric materials and morphology. Mass transfer measurement. 2 lectures, 1 laboratory. Formerly ITP 412.

ITP 4413 Quality Evaluation of Packaged Products (3 units)
Term Typically Offered: TBD
Prerequisite: One of the following: CHEM 124, CHEM 127, or ITP 2241. Corequisite: ITP 341 or ITP 3341.

Overview of the role that packaging quality plays in perishable and consumer-packaged goods. Instrumental analysis and techniques used for testing and evaluating the quality of packaged products, material quality, and product-package interaction. 2 lectures, 1 laboratory. Formerly ITP 413.

ITP 4414 Packaging Laws and Regulations (3 units)
Term Typically Offered: F
Prerequisite: ITP 330 or ITP 3330.

Comprehensive overview of the United States laws and regulations applicable to packaging of different types of consumer products and related government organizations. Legal and regulatory requirements related to packaging solutions. Course offered online only. 3 lectures. Formerly ITP 414.

ITP 4415 Supply Chain and Logistics (3 units)
Term Typically Offered: F, SP
Prerequisite: ITP 371 or ITP 3371.

Key concepts, tools, and approaches for making effective supply chain and logistics decisions that support business goals. Focus on practical management issues and applications. Use of business cases and simulations to illustrate and explore best practices. 3 lectures. Formerly ITP 415.

ITP 4416 Strategic Sourcing and Procurement Management (3 units)
Term Typically Offered: F, SP
Prerequisite: ITP 371 or ITP 3371.

Strategic sourcing and procurement within the context of supply chain operations. Purchasing and sourcing strategies, contract management, supplier selection and evaluation, e-procurement, global sourcing, outsourcing, supplier relationships, pricing, negotiation, risk management, and warehouse operations. Field trip may be required. Course may be offered in classroom-based, online, or hybrid format. 3 lectures. Crosslisted as BUS/ITP 4416.

ITP 4417 Supply Chain Analytics (3 units)
Term Typically Offered: F, SP
Prerequisite: BUS 391 or BUS 3391; ITP 371 or ITP 3371; and STAT 252 or STAT 1220.

Application of quantitative methods (e.g., regression, linear programming) to optimize decisions in transportation, inventory, and demand. Use of software and business intelligence tools to analyze and interpret supply chain data. Course may be offered in classroom-based, online, or hybrid format. 3 lectures. Crosslisted as BUS/ITP 4417.

ITP 4419 Internship/Cooperative Education (1-3 units)
Term Typically Offered: F, SP
Prerequisite: Approval of area chair, junior standing, and a CPSLO cumulative GPA of at least 2.5 without being on academic probation.

Work experience in business, industry, government and other areas of student career interest. Periodic written progress reports, final report, and evaluation by work supervisor required. Repeatable up to 9 units. Formerly ITP 419.

ITP 4428 Commercialization of Innovation (3 units)
Term Typically Offered: F, SP
Prerequisite: One of the following: BUS 310, BUS 3310, BUS 346, BUS 3346, ITP 326, or ITP 3326.

Concepts, frameworks, and experiences necessary to understand the business potential of innovations and determine if sustainable market opportunities can be identified to exploit them. Overview of intellectual property and licensing. Hands-on exercises with companies or inventors to illustrate concepts. 3 lectures. Formerly ITP 428.

ITP 4430 Healthcare Packaging (3 units)
Term Typically Offered: SP
Prerequisite: ITP 330 or ITP 3330.

Packaging systems for pharmaceuticals, nutraceuticals, and medical devices. Characteristics and properties of packaging materials, packaging forms, and sterilization technology. Design principles for healthcare products. Laboratory exercises on standard test methods and evaluation methods. International and federal regulations and standards. 2 lectures, 1 laboratory. Formerly ITP 430.

ITP 4464 Senior Project (3 units)
Term Typically Offered: F, SP
Prerequisite: Senior standing and consent of instructor.

Selection and completion of an individual or group project under faculty supervision. Project topics must be related to problems graduates could encounter in their fields of employment. Project results are presented in a formal report. Course may be offered in classroom-based, online, or hybrid format. 3 seminars. Formerly ITP 464.

ITP 4468 Blockchain in Finance (3 units)
Term Typically Offered: TBD
Prerequisite: BUS 441 or BUS 3441. Recommended: One of the following: CSC 101, CSC 232, CSC 1001, CSC 1032, ECON 395, or ECON 3015.

Blockchain technology in finance with application examples, including stock trading, real estate transactions, and peer-to-peer (P2P) payment systems. Smart contract basics and solidity programming. 3 lectures. Formerly BUS/ITP 468.

ITP 4470 Special Advanced Topics (1-4 units)
Term Typically Offered: TBD
Prerequisite: Junior standing and consent of instructor.

Directed group study of advanced special topics. The Class Schedule will list topic selected. Repeatable up to 8 units. Course may be offered in classroom-based, online, or hybrid format. 1 to 4 lectures. Formerly ITP 470.

ITP 4471 Special Advanced Laboratory (1-4 units)
Term Typically Offered: TBD
Prerequisite: Consent of instructor.

Directed group laboratory study of special topics for advanced students. The Class Schedule will list topic selected. Repeatable up to 8 units. Course may be offered in classroom-based, online, or hybrid format. 1 to 4 laboratories. Formerly ITP 471.

ITP 4475 Distribution Packaging Dynamics (3 units)
Term Typically Offered: SP
Prerequisite: ITP 330 or ITP 3330.

Survey of tests and procedures for packaging materials and packaging products following ASTM and ISTA standards. Tests for shock, vibration, drop, and impact as prescribed for shipment by truck, rail, sea, and air. Hands-on product packaging testing for quality control. 2 lectures, 1 laboratory. Formerly ITP 475.

ITP 4496 Product Development and Manufacturing I (3 units)
Term Typically Offered: F
Prerequisite: ITP 233 or ITP 2233; ITP 260 or ITP 2260; ITP 326 or ITP 3326; and BUS 346 or BUS 3346.

Integrative product development experience emphasizing morphological, technological, and functional innovation. Business strategy, inclusive design, sustainable product design, prototyping, cost control, design for manufacturing, and technical documentation. Team project reflects the real-world, dynamic environment of product development and production. 1 lecture, 2 laboratories. Formerly ITP 467.

ITP 4497 Product Development and Manufacturing II (3 units)
Term Typically Offered: SP
Prerequisite: ITP 467 or ITP 4496.

Integrative manufacturing business and production systems experience, including design, prototyping, processing, quality control, resource management, cost control, marketing, sales, packaging, and technical documentation. Team project reflects the real-world, dynamic environment of product development and production. 1 lecture, 2 laboratories.

ITP 4498 Packaging Development (3 units)
Term Typically Offered: F
Prerequisite: ITP 341 or ITP 3341; ITP 408 or ITP 4408; and ITP 475 or ITP 4475.

Holistic approach to developing new packaging systems by balancing the needs of value chain stakeholders. Business strategy, design thinking, disruptive innovation, cross-disciplinary collaboration, user experience, inclusive and sustainable design, design for manufacturing, distribution, disposal, and emerging trends. 2 lectures, 1 laboratory. Formerly ITP 485.