

# DEPARTMENT OF INDUSTRIAL TECHNOLOGY

## Department Objectives

The Industrial Technology Department is dedicated to the preparation of professionals who compete and excel in dynamic, technological, and global careers.

## College of Business and Technology Graduation Requirements

- All students graduating with a degree from the College of Business and Technology must take at least 50% of their major area credit hour requirements from the College of Business and Technology at the University of Nebraska at Kearney.
- All students graduating with a degree from the College of Business and Technology must take a minimum of 30 of their last 36 hours of credit needed for their degree from the University of Nebraska at Kearney.
- All students graduating with a degree from the College of Business and Technology are required to complete 3 credit hours of designated Experiential Learning (EL) coursework.

## Safety Center

Ryo Suzuki, Director

### Program Objective

The Nebraska Safety Center was established at the University of Nebraska at Kearney by the Nebraska Legislature, in 1978, to provide " . . . increased training and research activity in fields of traffic safety, home safety, industrial safety, fire safety, and recreational safety . . ."

## Industrial Technology Major

Five options are available in this major:

1. Aviation Comprehensive (<http://catalog.unk.edu/undergraduate/departments-programs/industrial-technology/aviation-systems-management-comprehensive-bs/>) - Bachelor of Science Degree
2. Construction Management Comprehensive (<http://catalog.unk.edu/undergraduate/departments-programs/industrial-technology/construction-management-comprehensive-bs/>) - Bachelor of Science Degree
3. Industrial Distribution Comprehensive (<http://catalog.unk.edu/undergraduate/departments-programs/industrial-technology/industrial-distribution-comprehensive-bs/>) - Bachelor of Science Degree
4. Industrial Technology (<http://catalog.unk.edu/undergraduate/departments-programs/industrial-technology/industrial-technology-bs/>) - Bachelor of Science Degree
5. Interior and Product Design Comprehensive (<http://catalog.unk.edu/undergraduate/departments-programs/industrial-technology/interior-product-design-comprehensive-bs/>) - Bachelor of Science Degree

Minors in Construction Management (<http://catalog.unk.edu/undergraduate/departments-programs/industrial-technology/construction-management-minor/>), Industrial Distribution (<http://catalog.unk.edu/undergraduate/departments-programs/industrial-technology/industrial-distribution-minor/>), Industrial Safety (<http://catalog.unk.edu/undergraduate/departments-programs/industrial-technology/industrial-safety-minor/>), Industrial Technology (<http://catalog.unk.edu/undergraduate/departments-programs/industrial-technology/industrial-technology-minor/>), and are available for students pursuing majors in other disciplines.

technology/industrial-distribution-minor/), Industrial Safety (<http://catalog.unk.edu/undergraduate/departments-programs/industrial-technology/industrial-safety-minor/>), Industrial Technology (<http://catalog.unk.edu/undergraduate/departments-programs/industrial-technology/industrial-technology-minor/>), and are available for students pursuing majors in other disciplines.

## Interior and Product Design (IPD)

### IPD 109 – Introduction to Design 3 credit hours

An introduction to the field of design with an emphasis on design thinking and problem solving.

Additional Course Fee Required

### IPD 120 – Foundation Studio I 3 credit hours

Introduces foundational methods for organizing abstract relationships in both 2D and 3D contexts.

Additional Course Fee Required

### IPD 125 – Design Drawing 3 credit hours

An introduction to perceptual drawing and visual thinking.

Additional Course Fee Required

### IPD 206 – Foundation Studio II 3 credit hours

Advanced foundational methods for organizing abstract relationships in both 2D and 3D contexts.

Additional Course Fee Required

### IPD 207 – History of Design I 3 credit hours

A survey of design as it pertains to architecture, interiors, furniture, and product from antiquity through 1900. In addition; a contextualization via seminal theory and modern application.

### IPD 209 – History of Design II 3 credit hours

A survey of design as it pertains to architecture, interiors, furniture, and product from 1900 to present. In addition; to a contextualization via theory and modern application.

### IPD 210 – Design Studio I 3 credit hours

Introduction to the design process with an emphasis on design problem-solving and the application of design principles to interior environments and products.

Prerequisite: IPD 260

Additional Course Fee Required

### IPD 260 – Foundation Technology for Design 3 credit hours

Foundational design visualization and fabrication technologies and processes.

Additional Course Fee Required

### IPD 265 – Design Technology I 3 credit hours

Intermediate design visualization and fabrication technologies relevant to design problem solving.

Prerequisite: IPD 260

Additional Course Fee Required

### IPD 275 – Interior Staging & Trends 1-3 credit hours

Aspects of interior decoration as it pertains to the homeowner, real-estate industry, and interior design student. This course will discuss the placement of furnishings, how to create a focal point, decorating suggestions, using the items that you already own and other basic information needed to properly stage a home for sale.

**IPD 305 – Residential Kitchen and Bath Design 3 credit hours**

The study and application of the National Kitchen and Bath Association's Guidelines of Planning Standards and Safety Criteria for residential kitchens and bathrooms including Universal Design concepts. Includes the study and selection of kitchen and bath materials, equipment, and cabinetry. Computer aided Kitchen and Bath design software is introduced.

Prerequisite: IPD 206 and IPD 260

**IPD 306 – Lighting in Interior and Product Design 3 credit hours**

The study of the theory and application of electric light sources in interior and product design. Includes a study of light and color theories, and the selection, evaluation, and design of lighting solutions.

Prerequisite: IPD 210 and IPD 265

**IPD 307 – Furniture, Finishes, Materials and Components of Interior Architecture 3 credit hours**

Study of selection, care, and use of furniture, finishes, materials, and components of residential and contract interior architecture to solve design problems. Includes environmental, economic, and universal design concerns, testing standards, and cost estimating. Computer spreadsheet software is used.

Additional Course Fee Required

**IPD 308 – Comparative Studies in Housing and Families 3 credit hours**

Housing requirements of today's families, housing laws, the housing industry and home ownership.

**IPD 310 – Design Studio II 3 credit hours**

Intermediate design problem-solving related to environment-behavior, spatial, and organizational theories.

Prerequisite: IPD 210

Additional Course Fee Required

**IPD 312 – Housing Interiors for Special Needs Populations 1-3 credit hours**

Principles and elements of interior design as it applies to special needs populations with emphasis on the elderly, handicapped and ADA regulations.

Prerequisite: IPD 305

**IPD 313 – Renovation and Restoration of Interiors 3 credit hours**

Principles and elements of design for renovation of existing residential structures for better utilization of existing space and/or plan for additional space based on requirements of restoration and preservation of furnishings of historically significant interiors.

Prerequisite: ITEC 122

**IPD 318 – Design Studio III 3 credit hours**

Application of design problem-solving in a global context in order to understand the role of design as it examines culture and universality within large problems.

Prerequisite: IPD 310

Additional Course Fee Required

**IPD 320 – Design Technology II 3 credit hours**

Advanced design visualization and fabrication technologies relevant to design problem solving.

Prerequisite: IPD 265

Additional Course Fee Required

**IPD 325 – Design Technology Applications 3 credit hours**

Application of design visualization and fabrication techniques through research, design, prototype construction, evaluation, and redesign.

Prerequisite: IPD 310 and IPD 320.

Corequisite: IPD 318.

Additional Course Fee Required

**IPD 399 – Individual Studies in Interior and Product Design 1-3 credit hours**

Independent study of topics in Interior and Product Design to meet the needs of the student. For majors only.

Department Consent Required

Total Credits Allowed: 18.00

**IPD 403 – Design Studio IV 3 credit hours**

Advanced design problem-solving in the context of complex commercial and residential environments.

Prerequisite: IPD 318.

Corequisite: IPD 405.

Additional Course Fee Required

**IPD 405 – Design Research Methods 3 credit hours**

The study of research for design problem solving including theory, methods, and contexts. Students will develop a research thesis that will direct their final senior project.

Prerequisite: IPD 318

Additional Course Fee Required

**IPD 407 – Design Senior Project 3 credit hours**

Self-directed design thesis project based on research and review. The student will develop unique and applicable design solutions with clear research methodology and theoretical groundings.

Prerequisite: IPD 403 and IPD 405

Additional Course Fee Required

**IPD 440 – Experiential Design Projects 3 credit hours**

This class will provide an opportunity to engage in live, local and regional projects. Students will interface with home owners, end users, contractors, builders, developers, real-estate agents and other local professionals as they navigate and follow projects from start to finish.

Prerequisite: IPD 318 and IPD 305 and IPD 446

**IPD 446 – Professional Practice for Design 2 credit hours**

Study of ethics and principles of design professional practice and the management of design projects. Includes Final Portfolio Review.

Prerequisite: IPD 310 and IPD 320

**IPD 475 – Internship 1-9 credit hours**

Internship is defined as a set of work-related experiences in the context of professional settings. The purpose of this course is to provide a work experience program for students preparing for employment in Interior and Product Design. It provides students with opportunities for broader experience and enables them to develop competencies which meet requirements of professional licensing. Work experience must involve design applications and provide opportunities for students to develop competencies in areas related to professional licensing. Students should contact their program coordinator prior to enrolling in this course.

Total Credits Allowed: 12.00

Prerequisite: IPD 310

**IPD 490 – Special Problems in Interior and Product Design 3 credit hours**

Special topics in design for Interior and Product Design majors.

## Industrial Technology (ITEC)

**ITEC 110 – Introduction to Technology 1 credit hour**

Students will be introduced to career opportunities, and encouraged to explore career options. Once students are familiar with various degree programs they will develop long range plans for achieving their career goal(s).

**ITEC 114 – Introduction to Industrial Distribution 3 credit hours**

Students will be introduced to Industrial Distribution as an academic program and as an industry. The history of Industrial Distribution, its types of businesses and range of products will be discussed. The class will also cover the different lines of distribution, the various functions of manufacturers and distributors, and current industry trends. Students will also learn about current industry professionalism standards as well as the various employment and advancement opportunities it offers.

**ITEC 116 – Introduction to Construction Management 3 credit hours**

An introduction to the construction industry; and overview of the construction industry sectors and the industry's impact on the economy; and a brief overview of the construction process. The course will preview the construction management degree curriculum with an overview of policies, procedures and resources of the Industrial Technology Department on the University of Nebraska at Kearney campus.

**ITEC 118 – Aviation History 3 credit hours**

This course in Aviation History explores international aviation from 1783 to present. Personal profiles of aviation pioneers describe their significant contributions to the aviation profession. Historical evidence permits students to understand the evolution and applications of aviation aircraft and equipment. Events are viewed in historical context of the economic, political, social, and cultural impact.

**ITEC 120 – Interpretation of Technical Documents 3 credit hours**

This course is designed as a beginning college level introduction to the comprehension and use of design graphics in 2-dimensional form for the purpose of solving technical problems related to the industries of construction, industrial distribution, aviation, and information networking. Additional Course Fee Required

**ITEC 122 – Architectural Drafting & Design 3 credit hours**

This course is designed to meet the needs of the Family and Consumer Science major with an emphasis in Interior Design. Specific methods applicable to the major's degree program and an introduction to computer aided drafting and design are included.

**ITEC 126 – First Year Seminar 1 credit hour**

The First-Year Seminar provides students with a multidisciplinary experience in which they approach an issue or problem from the perspective of three different academic differences. The First-Year Seminar will consist of three 1-credit hour courses taken as co-requisites in a single semester. The successful completion of all three courses satisfies the General Studies LOPER 1 course requirement. Students may take the First-Year Seminar in any discipline, irrespective of their major or minor. Students admitted as readmit students or transfer students who transfer 18 or more hours of General Studies credit to UNK are exempt from taking a LOPER 1 course.

**ITEC 130 – Technology Today 3 credit hours**

This course presents a conceptual approach to computer aided communication systems typically applied in industrial environments. Emphasis will be placed on utilizing computer technology to integrate text and graphics in the preparation of documents and presentation materials.

**ITEC 168 – Introduction to Flight 2 credit hours**

This course serves as Stage 1 of the Private Pilot Certification Course. The course includes both ground and flight instruction. During this course, the student is introduced to pilot training, aviation opportunities, and human factors in aviation. The student will also learn about the safety of flight, operating at airports, interpreting aeronautical charts, and airspace requirements. In addition, the student will gain knowledge about ATC services, radio procedures, and how to locate and use sources of flight information. Successful completion of this course is defined by the student conducting the first Solo Flight and Stage 1 of the Private Pilot Certification Course.

Additional Course Fee Required

**ITEC 170 – Private Pilot Theory 3 credit hours**

This course serves as preparation for the FAA Private Pilot Airplane Knowledge Exam which may be taken upon successful completion of this course. The student will obtain the aeronautical knowledge required by 14 CFR Part 141 and Part 61 for private pilot certification.

Department Consent Required

Prerequisite: ITEC 170

Additional Course Fee Required

**ITEC 172 – Professional Flight 1 Private Pilot 3 credit hours**

The student will obtain the aeronautical skill and experience necessary to meet the requirements for a private pilot certificate with an airplane category rating and single engine land class rating. Successful completion of this course will be predicated on issuance of the FAA Private Pilot (Airplane Single Engine Land) Certificate. Corequisite: ITEC 170.

Additional Course Fee Required

**ITEC 205 – Virtual Design & Construction 3 credit hours**

This is a beginning design course to develop a working knowledge of computer added design and drafting (CADD) skills, design thinking process and principles, while teaching 3D Design CADD software skills. Prerequisite: ITEC 110 and ITEC 120

Additional Course Fee Required

**ITEC 208 – Heavy Civil Construction Management 3 credit hours**

Heavy civil construction management will cover construction equipment types, capabilities, costs, productivity, and the selection, planning, and use of equipment needed for the construction of roads. General estimating procedures and costing will be included. Soil characteristics, quantity analysis, and movement on construction sites will also be introduced.

Prerequisite: ITEC 240

**ITEC 210 – Society and Technology 3 credit hours**

The course will introduce students to the impact that technology has had on society, the economy and politics. Historical development of technology will be developed in an effort to provide information on the importance of technology.

**ITEC 212 – Construction Estimating I 3 credit hours**

Estimating fundamental, concepts, and strategies used in the process of construction cost estimating. Quantity take off, unit pricing, estimate development, drawing and interpretation, resource pricing, and bidding procedures. Computer applications are introduced

Prerequisite: ITEC 240

Additional Course Fee Required

**ITEC 220 – Electricity/Electronics 3 credit hours**

This course will provide an overview of the fundamentals of electricity/electronics. This is a foundation course for students entering the field of Industrial Technology and will provide the necessary working knowledge required for automation systems, telecommunications, residential/commercial wiring, and computer based electronics.

Additional Course Fee Required

**ITEC 225 – The Influence of Technology on Democracy 3 credit hours**

Students in this course will examine technology in the areas of telecommunications, construction, distribution, public safety and its impact and influence upon a democratic society. Varied technologies create complex situations that impact the processes and ideals of democracy. Advances in technology have created future benefits as well as consequences relative to the ideas afforded and provided by a democracy. Various forms of democracies will be examined to see how each adapts to incursion or open implementation of various technologies. Are the leaders of tomorrow, our current students, prepared to address the technological challenges of the future?

**ITEC 230 – Statics and Strength of Materials 3 credit hours**

This course is an introductory exposure to the engineering principles relative to static design and their application to primary construction materials and structures. Through problem solving and application, students will develop an appreciation for the vital importance of engineering to the stability and resulting safety of structures.

Additional Course Fee Required

**ITEC 240 – Construction Materials & Methods 3 credit hours**

This course will explore the design and construction methods of light commercial/residential structures. The construction industry is constantly changing as new materials, technologies, and processes evolve. These concepts will be presented and applied in the class. The fundamentals of these construction methods and techniques will be reinforced with various lab activities, e.g. concrete, framing, and roofing.

Prerequisite: ITEC 120 or IPD 210

Additional Course Fee Required

**ITEC 250 – Construction Surveying 3 credit hours**

Methods and equipment utilization in layout and control of building projects and construction site development. Includes horizontal and vertical control methods using manual and electronic surveying equipment (Theodolite).

Prerequisite: MATH 103

Additional Course Fee Required

**ITEC 251 – Machine Tool Products and Applications 3 credit hours**

A study of modern manufacturing based on the production of parts and assemblies by means of various processes and methods.

Prerequisite: ITEC 114

**ITEC 271 – Industrial Products & Applications I 3 credit hours**

This course is designed to provide specific product knowledge and applications skills required of today's industrial sales professionals in the construction industry. New technologies are included in the course as they become available.

Prerequisite: ITEC 114

**ITEC 272 – Industrial Products & Applications II 3 credit hours**

This course is designed to provide specific product knowledge and applications skills required of today's industrial sales professionals in the manufacturing industry. New technologies are included in the course as they become available.

Prerequisite: ITEC 271

**ITEC 280H – Special Topics 1 credit hour****ITEC 283 – Fluid Power 3 credit hours**

The course is designed to cover the nature of fluids and gas under pressure, the transmission of power by fluid and gas, the design of hydraulic and pneumatic systems and automatic control of these systems.

Prerequisite: MATH 102

Additional Course Fee Required

**ITEC 290 – Communicating Through Technology 3 credit hours**

Utilizing traditional, computer, and internet presentation technology, the course will address how to communicate effectively utilizing verbal and nonverbal communication techniques. Evaluating, listening, presenting, body language, and technology based presentation programs are a few of the main topics.

**ITEC 291 – Instrument Pilot Theory 3 credit hours**

This course serves as a preparation for the FAA Instrument Pilot written exam which will be taken upon successful completion of the course. The student will obtain the aeronautical knowledge necessary to meet the requirements for an instrument rating (airplane).

Prerequisite: ITEC 172 or permission

Additional Course Fee Required

**ITEC 292 – Professional Flight 2 Commercial Pilot Stage 1 3 credit hours**

This course serves as Stage 1 of the Commercial Pilot Certification Course. The course includes flight instruction only. During this course, the student increases proficiency in cross-country procedures by planning and performing extended cross country flights. The student also increases proficiency in performing night operations. Successful completion of this course is defined by the student successfully completing the Stage 1 Check Flight of the Commercial Pilot Certification Course.

Department Consent Required

Additional Course Fee Required

**ITEC 293 – Professional Flight 3 3 credit hours**

The student will obtain the aeronautical skill and experience required by FAR Part 141 and Part 61 for an instrument rating. Successful completion of this course will be predicated on issuance of the FAA Instrument Rating (Airplane).

Corequisite: ITEC 291

Additional Course Fee Required

**ITEC 295 – Aviation Meteorology 3 credit hours**

This course in Aviation Meteorology is designed to help aviation students understand the environment in which they operate. This course covers in detail the latest METAR, FA, and graphic weather products, aviation weather services, international weather, and accident/incident information. Aspects of icing, weather hazards and flight planning are explored in detail. Examples of available weather products are discussed to reflect the shift toward electronic access to weather reports and forecasts. Real-world scenarios demonstrate how weather information can be applied during flight planning.

**ITEC 308 – Industrial Management 3 credit hours**

Designed to present specific functions, resources, techniques and responsibilities associated with the various phases of industrial management.

**ITEC 312 – Construction Estimating II 3 credit hours**

Designed to meet the individual needs of students requiring additional specialization in the construction field of study with emphasis in computer and manual estimating.

Prerequisite: ITEC 130 and ITEC 240 and ITEC 212

Additional Course Fee Required



**ITEC 320 – Applied Electronics 3 credit hours**

This course is designed to provide specific product knowledge and applications skills required of today's industrial sales professional in the electrical and electronic controls industry. New technologies are included in the course as they become available.

Prerequisite: ITEC 220

Additional Course Fee Required

**ITEC 341 – Mechanical and Electrical Systems 3 credit hours**

The course will include the basic construction practices included in all phases of the industry dealing with the electro and mechanical systems of structures. Specifically electrical systems, heating systems, cooling systems, and plumbing systems.

Prerequisite: ITEC 240

Additional Course Fee Required

**ITEC 353 – Industrial Distribution Branch Operations 3 credit hours**

A study of the basic functions of an industrial distributor and how to manage each area of branch operations for a single or multi-level branch organization through the utilization of various financial reporting metrics, operational practices, and distribution management technology applications.

Prerequisite: ACCT 240 or ACCT 250

**ITEC 360 – Building Codes and Inspections 3 credit hours**

This course will provide the student with a working understanding of the elements associated with all phases of completing a structure in compliance with current building codes. Topics included are permitting, occupancy permits, trades, inspections, and the role of the general contractor in insuring codes are observed. The experiences will be gained through a classroom and on-site environment.

Prerequisite: ITEC 240

Additional Course Fee Required

**ITEC 365 – Crew Resource Management 3 credit hours**

This course in Crew Resource Management (CRM) reflects advancements made in the conceptual foundation as well as the methods and approaches of applying CRM in the aviation industry. Because CRM training has the practical goal of enhancing flight safety through more effective flight crew performance, this course explores the users, the task, and operational and regulatory environments of aviation, all of which continually evolve. This course explores the history and research foundation of CRM and also stresses the importance of making adaptive changes and advancements. Topics include CRM and Individual Resilience; Flight and Cabin Crew Teamwork: Improving Safety in Aviation: CRM and Risk Management/Safety Management Systems; and MRM for Technical Operations.

**ITEC 370 – Construction Scheduling 3 credit hours**

Students will be exposed to the area of construction scheduling and the importance of this area to the successful completion of a project. This course emphasizes professional application grounded in accepted theory and techniques.

Prerequisite: ITEC 212

Additional Course Fee Required

**ITEC 375 – Commercial Pilot Theory 3 credit hours**

This course serves as a preparation for the FAA Commercial Pilot knowledge exam which may be taken upon successful completion of this course. The course includes instruction in FAA regulations, weather, air and radio navigation, flight safety and emergency procedures necessary for successful completion of the FAA exam. In addition, specific information regarding the privileges and limitations on the holder of the Commercial Pilot Certificate are discussed in detail.

Prerequisite: ITEC 171 or permission

Additional Course Fee Required

**ITEC 376 – Professional Flight 4 Commercial Pilot Stage 4 credit hours**

The student will obtain the aeronautical skill and experience required by FAR Part 141 and Part 61 for a commercial pilot certificate with an airplane category rating and single-engine class rating. Successful completion of this course will be predicated on issuance of the FAA Commercial Pilot Certificate (Airplane Single-Engine Land).

Prerequisite: ITEC 292 and ITEC 293.

Corequisite: ITEC 375.

Additional Course Fee Required

**ITEC 377 – Professional Flight 5 2 credit hours**

This course provides the student with the aeronautical experiences required to add the FAA Multi-Engine rating to an existing Pilot Certificate.

Prerequisite: ITEC 172 or permission

Additional Course Fee Required

**ITEC 378 – Professional Flight 6 3 credit hours**

This course is designed to meet the requirements of 14 CFR Part 61 for a flight instructor certificate course. This course will consist of ground and flight training.

Department Consent Required

Prerequisite: ITEC 376 and permission

Additional Course Fee Required

**ITEC 379 – Professional Flight 7 2 credit hours**

This course provides the student with the aeronautical experiences required to qualify for the FAA Instrument Flight Instructor Certificate. Professional Flight 6 Certified Flight Instructor (CFI) rating required prior to enrollment.

Department Consent Required

Prerequisite: ITEC 378 and permission

Additional Course Fee Required

**ITEC 380 – Professional Flight 8 2 credit hours**

This course provides the student with the aeronautical experiences required to qualify for the FAA Multi-Engine Flight Instructor Certificate.

Department Consent Required

Prerequisite: ITEC 376 and ITEC 377 and permission

Additional Course Fee Required

**ITEC 383 – Mechanical Power 3 credit hours**

The course is specifically designed to provide extensive study and understanding of the power transmission and motion control industry. In addition, the course is holistically designed to integrate the extensive technical studies with current manufacturing, management, sales, and industry news and events.

Prerequisite: MATH 102

**ITEC 391 – Aviation Law 3 credit hours**

This course covers the interpretation and application of the statutes, related acts, and federal regulations, and common law aviation issues.

**ITEC 392 – Aviation Airport Management 3 credit hours**

This course is primarily directed toward the planning and complete development of an airport including the economic, social, political, and operation requirements. Federal Aviation Regulations as well as Environmental Protection Act requirements are addressed.

**ITEC 393 – Aviation Safety 3 credit hours**

The primary goal of this course is to thoroughly indoctrinate the student pilot with safety consciousness including awareness of physical limitations, effects of flight on the human body, severe weather, and in flight emergencies. Although advanced placement is not mandatory, beginning college students are not encouraged to enroll.

**ITEC 394 – Air Traffic Control 3 credit hours**

This course is a survey of the National Airspace System, air traffic control procedures, the control environment and the airport environment. The content of this course includes instruction on: 1. The role of the air traffic control in commercial aviation; 2. The procedures and tools used by the air traffic controller; and 3. How these tools and procedures can be utilized by the pilot in the airspace of the United States.

**ITEC 398 – Advanced Virtual Design and Construction 3 credit hours**

This course is an introduction to Building Information Modeling (BIM) and Virtual Design & Construction (VDC), and how the process is transforming the design, construction, management, operation, and maintenance of buildings. Through a series of lectures, discussion of case studies, and hands-on demonstrations of software, students will explore topics including BIM principles, concepts, and tools, and the business case for BIM.

Prerequisite: ITEC 212

Additional Course Fee Required

**ITEC 399 – Independent Study 1-3 credit hours**

Permission of the instructor is required. The course provides independent investigation of problems in Industrial Technology. Topics to be researched may be tailored to meet the needs of the student. Individual research, under the direct supervision of a faculty member of the department, will utilize problem-solving applications.

Department Consent Required

Total Credits Allowed: 4.00

**ITEC 408 – Leadership in Business and Technology 3 credit hours**

This course will present information and provide skills needed by managers who will be required to cope with an ever-increasing rate of change. Creative long range planning coupled with the ability to lead people will be of utmost importance. Leadership styles will be studied by review of characteristics of successful leaders past and present.

**ITEC 416 – Advanced Aerodynamics/Aircraft Performance 3 credit hours**

This course is designed to develop a sound understanding of the concepts of aerodynamics relevant to flight, and the impact of the natural environment upon the performance of modern aircraft.

**ITEC 417 – Advanced Aircraft Systems 3 credit hours**

This course will acquaint the student with various aircraft types and sophisticated aircraft systems, as well as pilot requirements and responsibilities within these systems.

**ITEC 420 – Individual Problems in Computer-Aided Drafting Technology 3 credit hours**

Designed to meet the individual needs of the student who desires additional specialization in the computer aided drafting and design area.

Prerequisite: ITEC 205

**ITEC 445 – Human Factors & Productivity 3 credit hours**

Students will be exposed to the influence that human factors have on productivity on a construction site. The importance of understanding and effective management will be studied and how this can improve the budget, quality, and time objectives of a project. This course emphasizes strategy development and practical application grounded in accepted theory and techniques.

Prerequisite: ITEC 475 and senior standing

**ITEC 451 – Manufacturing/Distribution Relationships 3 credit hours**

The study of the dynamic relationship between manufacturer and distributor and the alignment of goals between organizations for profitable optimization. This course is designed to help students become familiar with the design and development of products and services emphasizing the quantitative aspects and the interlocking factors affecting human performance and the utilization of facilities, machines, and materials in the Manufacturer/Distributor relationship.

Prerequisite: ITEC 475B

**ITEC 453 – Purchasing for Wholesale Distribution 3 credit hours**

A study of purchasing fundamentals performed by personnel who have the responsibility for procurement of materials, equipment, and/or services in a wholesale distribution environment.

**ITEC 458 – Materials: Properties and Processing 3 credit hours**

This course is designed to help students become familiar with mechanical properties, industrial processes and treatments of engineered materials, including metals, ceramics, polymers, and composites during the manufacturing process.

Prerequisite: ITEC 272

**ITEC 472 – Airline Operations 3 credit hours**

This course presents an overall introduction to the field of airline operations and management with a focus on the aspects of managing air transportation companies, and the integration of technical, environmental, market and regulatory considerations in the decision-making process in airline management.

**ITEC 475 – Management Technology Internship 3-12 credit hours**

A work experience program planned for students preparing for employment in business and industry. The learning situation is organized and supervised cooperatively by the Department internship coordinator. Work experience must involve management training and supervisory responsibilities. Students are to contact their program coordinator prior to registering for this course.

Total Credits Allowed: 12.00

Prerequisite: ITEC 250 and ITEC 312 and ITEC 370 and MGT 301 and minimum GPA of 2.5 and junior standing

**ITEC 475B – Industrial Distribution Internship 3 credit hours**

An Industrial Distribution Internship is an industry focused learning experience in a professional environment that provides the student with a practical work experience that will help develop the students professional skills and critical thinking ability, allows for career decision-making, and offers the employer valuable assistance in accelerating its business objectives. This internship experience is expected to provide a diverse professional experience to each student and is required to be approved by the Industrial Distribution Faculty.

Prerequisite: ITEC 271 and ITEC 272 and ITEC 308 and ITEC 353 and a minimum GPA of 2.5

**ITEC 482 – Digital Electronics 3 credit hours**

Study of basic digital logic circuitry, computer languages, binary math, Boolean algebra, industrial control systems and current integrated circuitry technology will be included. Digital logic training systems of various manufacturers will be available for experimental work.  
Prerequisite: ITEC 220 or PHYS 206 and PHYS 206L

**ITEC 485 – Information Networking Seminar 3 credit hours**

A review of the information networking and telecommunications industry of today. Students will be required to research various current information networking and telecommunications issues and be prepared for discussion.

Prerequisite: ITEC 390 and Senior standing

**ITEC 490 – Industrial Distribution Seminar 3 credit hours**

A review of industrial distribution today as it relates to management and sales of industrial products and services.

Prerequisite: ITEC 475B

Additional Course Fee Required

**ITEC 492 – Aviation Human Factors 3 credit hours**

Through the study of aviation accidents, most of the risks of flying have been identified and the threats they pose to safety can be managed. However, aircraft accidents, such as controlled flight into terrain, loss of control, runway excursions and incursions, and midair collisions still occur, and the hazards of flight remain. Some accidents happen due to mechanical failure, improper maintenance, or hazardous weather, but the vast majority are caused by pilot action (or inaction). Pilots can commit errors and make decisions that lead to tragic outcomes. Most accidents are not intentional; inadvertent errors made by flight crews arise from normal human physiological, psychological, and psychosocial limitations. Drawing upon the latest scientific research, aviation safety studies, and accident findings, this course thoroughly explores the nature of these human limitations and how they affect flight. Most importantly, this course provides best practice countermeasures designed to help pilots minimize their influence on flight performance.

**ITEC 494 – Special Topics in Industrial Distribution 3 credit hours**

Selected topics and problems of current interest considered in depth. The course format will vary depending upon the topic, the instructor, and student needs. Topics vary based upon current industry issues.

**ITEC 495 – Special Topics in Construction Management 3 credit hours**

Selected topics and problems of current interest considered in depth. The course format will vary depending upon the topic, the instructor, and student needs. Topics vary based upon current industry issues.

**ITEC 496 – Special Topics in Information Networking 3 credit hours**

Selected topics and problems of current interest considered in depth. The course format will vary depending upon the topic, the instructor, and student needs. Topics vary based upon current industry issues.

Total Credits Allowed: 6.00

**ITEC 497 – Special Topics in Aviation 3 credit hours**

Selected topics and problems of current interest considered in depth. Class discussion and course projects. Topics vary each semester depending upon instructor.

Total Credits Allowed: 6.00

**ITEC 498 – Seminar in Construction Management 3 credit hours**

Students will study the construction development process and the integral role of project management in meeting goals of a successful project. The emphasis of the course will be on application of project management tools, techniques, and concepts utilized in pre-construction, bid assembly, presentation, and award of the bid, and through the construction of a project.

Prerequisite: ITEC 370 and ITEC 475 and Senior standing

Additional Course Fee Required

**ITEC 499 – Independent Study and Research in Industrial Technology 1-6 credit hours**

Concentrated work in specialized areas of industrial technology.  
Total Credits Allowed: 6.00

## Safety Education (SFED)

**SFED 299 – Independent Studies in Safety 1-3 credit hours**

There are many opportunities for independent study in the safety area. These opportunities could benefit UNK, the community, the Nebraska Safety Center and most important the student engaging in the independent study. Examples of independent studies include consumer product safety regulations, OSHA and traffic safety. This course would benefit the comparative novice in safety.

Department Consent Required

Total Credits Allowed: 3.00

**SFED 310 – Driving Task Analysis 3 credit hours**

This course gives an introduction to the content of driver education and driver improvement for the driver education instructor. This course provides the basis for the classroom and BTW instruction.

**SFED 335 – General Safety Education 3 credit hours**

This course includes a study of the philosophy of safety and safety education, the use of accident data, and the causes of accidents. Areas emphasized are: traffic, home, occupations, farm and recreational. Disaster readiness and fire prevention are included.

**SFED 420 – Teaching Safety in Elementary Schools 3 credit hours**

Designed to provide elementary teachers and safety education students with information, methods, techniques, and skills necessary to integrate school safety programs with core elementary classroom subjects and activities.

**SFED 425 – Ergonomics 3 credit hours**

This course will introduce the study of ergonomics in the workplace, human variability, human/machine interfacing, human factors in designing equipment and work station layout. Federal and state regulations and guidelines will be examined.

**SFED 430 – Developing Driver Education Classroom Skills 3 credit hours**

A study of the automobile and its impact on American society. Topics include: accident prevention, materials and methods used in the classroom, effects of alcohol and drugs, and psychological and sociological factors. Required for teaching driver education. Driver's license is required.

**SFED 431 – Developing Driver Education Vehicle Skills 3 credit hours**

Effective principles, methods, techniques and materials for use in organizing safety programs, including the teaching and administration of high school driver education. Students are given the opportunity to acquire, through supervised teaching experience, competence in developing and teaching skills and techniques, as well as transferring driver knowledge, driving skills and inspiring satisfactory driving attitudes in students.

**SFED 435 – Occupation Safety/Health 3 credit hours**

The study of safety and health administration, accident prevention, and the control of health hazards as related to occupations. Includes a study of current safety and health requirements. Suitable for industrial education teachers and managers in industry.

**SFED 438 – Teaching the Use of the Multiple Vehicle Range 1 credit hour**

Provides the student with basic and advanced techniques and methods in teaching the use of the multiple vehicle range facility and programs.

**SFED 439 – Teaching Simulator Instruction 1 credit hour**

Students will analyze curriculum, design instructional materials, and develop techniques for teaching with driver simulators.

**SFED 440 – Competency-Based Curriculum in Traffic Safety 3 credit hours**

This course will prepare driver education teachers to efficiently teach competency-based driver education courses that follow the guidelines outlined by the Nebraska Department of Education.

**SFED 450 – Driver Performance Measurement 3 credit hours**

This course teaches principles designed to develop and administer a valid and reliable road test.

**SFED 460 – Organization and Administration of Safety Programs 1 credit hour**

This course examines the organizational and administrative, theory, structure, and practices of safety programs. Students will evaluate, plan, and develop a safety program.

Corequisite: SFED 461 or SFED 462.

**SFED 461 – Supervision of Industrial Safety 2 credit hours**

This course examines the supervisory theory, structure, and practices of safety programs in general industry. Students will complete the OSHA 30 hour General Industry certification.

Corequisite: SFED 460.

**SFED 462 – Supervision of Construction Safety Programs 2 credit hours**

This course examines the organizational and administrative, theory, structure, and practices of safety programs in the construction industry. Students will complete the OSHA 30 hour Construction Industry certification.

Corequisite: SFED 460.

Additional Course Fee Required

**SFED 472 – Fire Prevention, Protection and Control 3 credit hours**

This is an introductory fire science course. The student will be provided an overview of fire science and loss prevention. This would include the equipment and techniques available to detect and suppress fires, recognition of hazards, and fire countermeasures.

**SFED 477 – Accident/Incident Investigation and Analysis 3 credit hours**

This course provides the student with knowledge into the accident and incidents investigation methods, procedures, and techniques used for prevention of future problems.

**SFED 478 – Behavior Based Safety Systems 3 credit hours**

Students in this course will explore the human dynamics of safety operations within the work environment and examine how tasks can be managed to significantly improve safety performance. Human practices are identified which create safety risks and analytical resolutions of those risks are determined.

**SFED 496 – Advanced Safety Program in Driver and Traffic Safety Education 1-3 credit hours**

Designed to help teachers become better acquainted with the problems and techniques of teaching driver and traffic safety education.

Total Credits Allowed: 3.00

**SFED 498 – Special Topics in Safety 3 credit hours**

Selected topics and problems of current interest considered in depth.

The course format will vary depending upon the topic, the instructor, and student needs. Topics vary based upon current industry issues.

**SFED 499 – Individual Research in Safety 1-3 credit hours**

Total Credits Allowed: 3.00

Prerequisite: 9 credit hours of SFED courses or permission