

# College of Design, Engineering and Commerce

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Philadelphia University's College of Design, Engineering and Commerce (C-DEC) provides a multi-dimensional understanding of design, engineering and business by bringing together these rapidly evolving fields in an innovative, integrated educational experience that prepares students to think critically about the world.

The schools of Business Administration and Design and Engineering comprise the College of Design, Engineering, and Commerce and its programs provide students with strong disciplinary skills, a balanced grounding in the liberal arts and an understanding of the relationship of their fields to each other and the spectrum of professional careers and opportunities. Faculty from each discipline collaborate to promote in students a heightened self-awareness, the ability to work in multi-disciplinary teams and to use methods for innovating in order to secure the job opportunities of today and to adapt to the emerging fields of tomorrow.

The goals of the College are to create a dynamic educational platform for students

- to become professionals who can adapt to the changing work place,
- to navigate complexity and understand its underlying frameworks,
- to integrate knowledge domains,
- to work effectively in teams and value diverse perspectives, and
- to find new ways of adding value to the world.

## **C-DEC Core Curriculum**

The College's core curriculum provides students majoring in design, engineering and business the ability to collaborate effectively across disciplines. In addition to studies in each major, four courses and an integrative capstone experience

provide skills and knowledge that are relevant to today's careers, transferable to other fields and practices and applicable to emerging opportunities. By gaining insights into creative processes, business models, systems thinking and tools for empathy and human understanding, students learn effective strategies for innovating. The DEC Core Curriculum broadens the expertise of any one area, adds educational value to each major and ultimately, prepares students for strategic leadership in their fields. With this foundation, C-DEC graduates will be informed and versatile professionals with knowledge and skills that are transferrable across increasingly dynamic professional boundaries.

## *C-DEC Core Curriculum Learning Outcomes*

Through the DEC Core Curriculum, students will demonstrate an ability to:

- Collaborate on multi-disciplinary teams
- Identify different learning styles and disciplinary perspectives
- Gain insights from people, their behaviors and cultural practices to inform a project
- Evaluate the ways natural and human-made (political, social, cultural, economic) systems both shape and are influenced by new products, services or enterprises
- Adapt to continually changing professional challenges
- Pursue opportunities to leverage knowledge and skills in emerging opportunities
- Integrate knowledge to find new ways of creating value

The College offers academic programs in the following degrees, majors and minors:

## **Bachelor of Science degrees in these business majors:**

- Accounting
- Fashion Industry Management
- Fashion Merchandising
- Finance
- International Business
- Management
- Marketing

## **Bachelor of Science in Engineering degrees in these engineering majors:**

- Engineering (with minor tracks in Mechanical, Industrial and Systems, Composites, Environmental or Textile Engineering)
- Industrial and Systems Engineering
- Mechanical Engineering

## **Bachelor of Science degrees in these design majors:**

- Animation
- Fashion Design
- Graphic Design Communication
- Industrial Design
- Interactive Design and Media

- Textile Design
- Textile Materials Technology

### Graduate Degrees

For more information about the masters degrees see “Graduate Programs” in the Academic Catalog:

- Master of Business Administration (M.B.A.)
- M.S. and Ph.D. in Textile Engineering
- M.S. Fashion Apparel Studies
- M.S. Industrial Design
- M.S. Interactive Design & Media
- M.S. Taxation
- M.S. Textile Design

Joint degrees are offered in the following areas:

- B.S. Business/M.B.A.
- B.S./M.S. Taxation
- B.S. Business (Fashion Industry Management)/M.S. Fashion Apparel Studies
- B.S. /M.S. Textile Design
- B.S. Textile Materials Technology/M.B.A.

### Minors

The following minors are offered through the College.

For more information about the minors see “Minors and Concentration” section of the Academic Catalog:

- Accounting
- Business (for non-business major)
- E-Commerce
- Economics
- Fashion Industry Management
- Finance
- Foundation Design
- Graphic Design Communication
- Human Resource Management
- Information Systems
- International Business
- Management
- Marketing
- Multimedia and Visualization Minor (offered with C-ABE)
- Organizational Behavior
- Pre-M.B.A.
- Textile Materials Technology

## School of Business Administration

The School of Business Administration focuses on preparing students to become leaders in the 21st century business world. In addition to traditional business skills in accounting, marketing, finance, management, economics, etc., students gain the communication, teamwork, and problem solving skills that employers value and that allow students to advance their careers. Through experiential, collaborative, and real world experiences, students learn about business by working on actual problems and interacting with business executives.

Internships connect students to the world of business. These experiences allow students to link concepts discussed in class to real business contexts and to gain hands-on experience in a particular job, industry or company. Increasingly, employers expect college graduates to have work experience and use internships as a way to recruit talented graduates to their companies. Business students are strongly encouraged to work closely with Career Services to secure at least one internship experience as part of their educational program.

With extensive backgrounds in the world of commerce, faculty bring their deep knowledge of business to inform their teaching and to support and advise students in the wide range of career opportunities in the field. The faculty are committed to helping students learn and advance in order to achieve their career aspirations.

Business majors are strongly encouraged to participate in the University’s study abroad programs and experience the culture, language and business practices of a different country or region. All students in our full-time MBA program have an international experience that exposes them to companies and business culture of countries such as China and India.

The School of Business Administration is a member of AACSB International – The Association to Advance Collegiate Schools of Business – and the curricula are designed to be consistent with the guidelines set forth by AACSB International. We are also committed to becoming fully accredited by AACSB.

### Mission

The School of Business Administration (SBA) prepares students to be leaders in the 21st century business world by developing the skills that employers value through our nexus learning approach that offers students experiential, collaborative and real world education.

### School Goals

In addition to providing students with the technical expertise and foundation knowledge in business, the School of Business delivers learning-centered programs that prepare students to be successful in their careers and to adapt to challenges they may face in the future. Graduates of the SBA will:

- Demonstrate effective communication skills
- Demonstrate a global awareness and international perspective of business practices

- Effectively use technology and data for decision-making
- Demonstrate the ability to weigh ethical decisions as business professionals
- Demonstrate and integrate knowledge of core concepts in business functions

### Business Core

The center of business education, the business core, provides an understanding of the functional areas of business such as accounting, economics, management and finance, and imparts a set of skills that are critical to professional success, such as communication, technology, quantitative/analytical analysis, professionalism, global perspectives and business ethics. All business students, regardless of major, complete the business core.

### Core Learning Outcomes

Graduates of the majors in business will demonstrate the ability to:

- Communicate business-related content verbally and in writing in ways that are logical, clear, concise and appropriate for audience and purpose.
- Effectively use technology and software applications to make appropriate decisions and to effectively document results.
- Access, analyze and interpret economic, market and financial data from library, internet and other sources.
- Recognize ethical dilemmas and articulate the consequences of unethical behavior.
- Propose and defend solutions to ethical dilemmas in practical business situations.
- Understand core business concepts in the areas of: accounting, economics, finance, management and marketing.
- Integrate knowledge gained from core courses and major courses to develop and write a strategic business plan.
- Critically apply the knowledge necessary to conduct business in a global environment by identifying differences among various cultures and their business practices.
- Demonstrate how differences in the legal, social, political, and economic environments in various regions of the world impact decisions made by managers in multinational corporations.

The required core courses within the business curriculum (36 credits) are as follows:

ACCT-101	Financial Accounting
ACCT-102	Managerial Accounting
BLAW-301	Business Law I
ECON-205	Macroeconomics
ECON-206	Microeconomics
FINC-301	Financial Management
MGMT-301	Principles of Management
MGMT-401	Operations Management
MGMT-490	Business Policy and Strategy (Fashion Merchandising majors substitute MGMT-491)
MKTG-102	Principles of Marketing
STAT-201	Statistics I

STAT-202      Statistics II

### Minors Within Business for Business Majors

Business majors may choose to minor in any of the business areas. Certain majors require a minor in one of the other functional areas. For other majors, students may elect to take a minor. More information can be found in the "Minors" section of the Academic Catalog.

### Non-Business Minor for Business Majors

Business majors, not required to minor in a "functional business area," may choose to minor in areas outside of business. More information about non-business minors available can be found in the "Minors" section of the Academic Catalog.

### Business Minor for Non-Business Majors

Since the focus of Philadelphia University is on professional education, many graduates, whether architects, textile engineers or biologists, are interested in developing a firm foundation in business in preparation for work in an organization or to gain additional useful and marketable skills upon graduation. The business minor for non-business students provides a foundation in a broad range of business subjects. Additionally, since all of the courses in the minor are required foundation courses for the M.B.A. program, students completing the minor may be able to waive some pre-M.B.A. coursework. This information is also in the "Minors" section of the Academic Catalog.

The business minor is a total of 12 credit hours of study in business selected from the following courses:

Required (6 to 9 credit hours):

ACCT-101	Financial Accounting
ECON-205	Macroeconomics and/or
ECON-206	Microeconomics

Choose additional courses to total 12 credits hours from:

BLAW-301	Business Law I
ACCT-102	Managerial Accounting (prerequisite ACCT-101)
FINC-301	Financial Management (prerequisites ACCT-101, and STAT-201 or MATH-321)

### Joint Degree Programs in School of Business Administration

*B.S. Business/M.B.A.*

*B.S./M.S. Taxation*

*B.S. Business (Fashion Industry Management)/M.S. Fashion Apparel Studies*

Undergraduates who qualify may apply to enter one of the above joint-degree programs that allow students to earn both a bachelor's and master's degree. Accepted students are permitted to take some graduate-level courses in their fourth year of undergraduate study that also count toward graduate program requirements. Typically, a fifth year is required to complete the graduate requirements. For more information about entrance requirements and program specifications, students should seek the assistance of the Director of Graduate Studies.

## Accounting

### Mission

The mission of Accounting major is to prepare undergraduate students to pursue successful careers in public accounting firms, government organizations and private firms. The curriculum provides sound foundation in accounting theory and practice, decision making and analytical skills, and is delivered in an environment that fosters experiential, collaborative and real world learning. Students also develop technological skills, communication skills, problem solving skills and global awareness in the core courses of the business curriculum.

### Program Learning Outcomes

Students graduating with a major in accounting will be able to:

- Demonstrate an awareness of the common body of knowledge in accounting and managerial accounting and the recognized sources of that knowledge
- Apply this theoretical knowledge in practical business situations, including financial statement preparation and analysis, auditing, and federal taxation that require decision-making based on financial information.

### Program Description

Accountants are skilled professionals who develop and examine the financial reporting and control systems used by business organizations, agencies and individuals to keep track of money, goods and services. A Bachelor of Science in Accounting can lead to careers in public, private or government accounting; as well as banking, finance and other management specialties.

Industry sources agree that the future of the accounting profession is bright. Today's accountants are more technologically sophisticated. In addition, government regulations, the dynamics of the economy, public demands for improved government performance and global business competition all increase the need for liberally educated accountants.

A sequence of business and general education courses prepares accounting graduates for all facets of the business world. Electives in specialties within the profession, such as tax accounting, are offered. Many students obtain C.P.A. (Certified Public Accountant) accreditation after graduation.

Accounting majors may also pursue joint-degree programs (B.S./M.B.A. or B.S./M.S. Taxation). For more information about these five-year joint degree programs, please contact the Director of Graduate Studies.

The Accounting check sheet can be found on page 95.

## Fashion Industry Management

### Mission

The mission of the Fashion Industry Management (FIM) program is to cultivate intellectually and globally curious students with a working knowledge of the entire fashion products value chain and an ability to apply the fashion business model to a wide range of consumer product areas. The FIM major is geared towards providing high quality

interdisciplinary education regarding the fashion value chain in an environment that fosters experiential, collaborative and real world learning. Students graduating with a major in FIM are expected to possess the knowledge and skills critical to succeed in a broad array of career opportunities in the fashion and consumer products fields or to pursue graduate studies. The program is designed to provide disciplinary competence and problem solving skills while developing technological skills, communication skills, problem solving skills, and global awareness that are addressed in the core courses.

### Program Learning Outcomes:

Students graduating with a major in fashion industry management will:

- Demonstrate foundational knowledge in the theory and practice of fashion value chain.
- Demonstrate competence as integrative thinkers.
- Be ethical and competent in professional skills.

### Program Description:

The billion-dollar fashion and apparel industry needs bright, talented executives to guide the rapid pace of today's technological revolution. Skilled managers are required to deal with an increasingly complex variety of products and manufacturing techniques and tasks, such as planning product lines months before they will appear in the stores. Once developed, new products must be sourced globally and then delivered to the consumer within a very short period of time.

The Bachelor of Science in Fashion Industry Management is uniquely designed to educate this type of executive. The curriculum combines the fundamentals of business, including accounting, economics, marketing, finance and management, with textile and apparel courses. Students learn the process of apparel design and manufacture from fiber to final apparel product, and become familiar with the application of computers in information retrieval, integrated apparel manufacture and design. Graduates earn the respect of employers who are familiar with the University's expertise in fashion industry management. The program is one of a select few endorsed by the American Apparel and Footwear Association.

Students have the opportunity to earn a B.S. and M.S. degree in five years. For more information about the joint degree in B.S. Business (Fashion Industry Management)/M.S. Fashion Apparel Studies please see the Director of Graduate Studies.

For Fashion Industry Management core courses, view the program check sheet. The Fashion Industry Management check sheet can be found on page 97.

## Fashion Merchandising

### Mission

The mission of the Fashion Merchandising major is to prepare students to assume leadership roles in a wide range of careers in fashion merchandising and retail industry. The curriculum provides students with a strong business education while developing technological competence,

communication skills, problem solving skills and global awareness of the business of fashion. Students are trained in a learning environment that fosters experiential, collaborative and real world learning.

#### *Program Learning Outcomes*

Students graduating with a major in fashion merchandising will be able to:

- Demonstrate a sound foundation of business of fashion, fashion merchandising concepts and the operation of the retail industry.
- Demonstrate critical thinking and analytical skills to make value maximizing decisions.

#### *Program Description*

The Bachelor of Science in Fashion Merchandising prepares students for many exciting careers in the fashion industry. Advancements in technology and globalization of the marketplace make this industry an ever-changing, challenging place to work. These changes, and the fast pace of fashion, require bright, talented and highly motivated people to ensure the success of its businesses.

Students studying Fashion Merchandising take courses in marketing, management, economics, business law and accounting. Students also take courses related to the fashion process from creation of fabrics, through the production of apparel, to the marketing and selling of fashion to the consumer. Fashion Merchandising students have the opportunity to study abroad. They also have the opportunity to gain fashion-industry work experience through participation in the Internship Program. The Fashion Merchandising program develops and reinforces basic marketable skills like written and verbal communication, technology and information literacy, ethical discernment and professional etiquette.

Beginning with the first year, students have the opportunity to participate in professional networking opportunities such as industry forums and trips. These experiences are geared toward helping students learn about the various career opportunities available to them upon graduation. Graduates of the Fashion Merchandising program pursue careers in areas including retail buying, product development, store management and public relations.

The Fashion Merchandising check sheet can be found on page 101.

## **Finance**

#### *Mission*

The mission of the Finance major is to provide high quality student education in an environment that fosters experiential, collaborative and real world learning. Students graduating with a major in Finance are expected to possess the financial knowledge and analytical skills critical to succeed in a broad array of career opportunities in the finance field in the corporate and public sector or to pursue graduate studies. The program is designed to provide disciplinary competence and problem solving skills while developing technological skills, communication skills, problem solving skills and

global awareness that are addressed in the core courses of the business curriculum.

#### *Program Learning Outcomes:*

Students graduating with a major in finance will be able to:

- Demonstrate competence in fundamental finance knowledge
- Integrate finance with other related business disciplines
- Demonstrate effective problem solving skills to assess and solve financial problems faced by domestic and international businesses

#### *Program Description:*

The importance of the finance function is reflected in the fact that the majority of chief executive officers (CEOs) in the top 1,000 U.S. companies started their careers in finance.

The Bachelor of Science in Finance includes three inter-related areas of finance needed for success: money and capital markets, investments and financial management. Globalization of business was undoubtedly the most important development of the 90s and it has continued into the 21st century. Therefore, throughout the finance curriculum there is emphasis on global aspects of business and financial management. Students are encouraged to think, analyze and solve business problems in a global environment. Keeping in mind that the next generation of financial managers will need stronger computer and quantitative skills, there is increased emphasis throughout the curriculum on developing and reinforcing computer, quantitative and analytical skills.

*The Finance check sheet can be found on page 99.*

## **International Business**

#### *Mission*

The mission of the international business major is to provide students an understanding of the global environment and international business theories and practices in preparation for entry level international business positions that progress to successful careers in the corporate or public sector. Students are taught in an environment that fosters experiential, collaborative and real world learning. The program trains students to acquire disciplinary competence in a major functional area (accounting, finance, management or marketing) while developing technological proficiency, communication skills, problem solving skills and inter-cultural awareness.

#### *Program Learning Outcomes*

Students graduating with a major in international business will be able to:

- Demonstrate a competence in a chosen secondary major area in business
- Demonstrate proficiency in an appropriate second language
- Demonstrate an understanding of the inherent risks of doing business in foreign countries and how to manage such risks

### *Program Description*

To strengthen their competitive edge in a global economy, U.S. and foreign firms must attract managers who possess a strong functional background, area training and comprehensive international business skills. The Bachelor of Science in International Business is designed specifically to meet these industry needs. This program enables students to combine an international business major with a traditional functional area such as accounting, finance, management or marketing.

The International Business major is unique because it consists of seven highly integrated components, providing our graduates with the skills and the training expected in industry:

1. College studies
2. Foreign language
3. Area studies
4. Business core courses
5. International Business
6. Functional Business competence and
7. Study or work abroad

Graduates traditionally have a sense of adventure, are adaptive to new environments and join global U.S. firms or foreign companies operating in the United States.

*The International Business check sheet can be found on page 103.*

## **Management**

### *Mission*

The mission of the management major is to equip students with the skills necessary to assume entry level leadership positions and quickly progress to senior level leadership positions in public and private corporations. Students at Philadelphia University are trained in an environment that fosters collaborative, experiential and real world learning. The management major equips students with the knowledge and skills necessary to enhance the global competitiveness of organizations by improving quality, increasing motivation, designing systems for worker-management cooperation, promoting business ethics and planning for sustainable growth.

### *Program Learning Outcomes*

Students graduating with a major in management will be able to:

- Demonstrate an understanding of management theory and practice.
- Be effective team leaders and decision makers.

### *Program Description*

Management skills are essential for every individual in every organization — from the entry-level employee in a small start-up to the vice president of a large international conglomerate — or from the program director of a local nonprofit agency to the executive director of a federal government agency. In today's flatter, more team-centered organizations, both managers and non-managers share the responsibility for increasing productivity and achieving global competitiveness.

The Bachelor of Science in Management equips students with the skills necessary to be valuable contributors in today's complex and demanding organizations. Their understanding of topics including total-quality management, management information systems, human resources management, international management and organizational communication allows them to use technology and state-of-the-art approaches to problem solving and decision making. Management majors can help organizations of all sizes and types become more productive and competitive in a variety of different ways, including helping individuals and departments to work together in teams, helping manage linkages in the organizational supply chain, helping manage information flows and helping address issues such as recruiting, hiring and diversity.

Management majors must specialize in another business area through a double major or the minor program. In that way, students broaden their expertise by combining management courses with other career areas, such as accounting, finance, fashion industry management, marketing, management information systems, international business or psychology.

Philadelphia University graduates are using management skills in a wide variety of settings: in small, mid-size and large organizations; and in areas including retailing, banking and finance, insurance, global manufacturing and service firms and public agencies.

*The Management check sheet can be found on page 105.*

## **Marketing**

### *Mission*

The mission of the marketing program is to provide students the skills and knowledge to succeed in the business world by working in cross disciplinary teams that will integrate design, engineering, social science and business. The project based collaborative learning experiences will equip students to be competitive in the team-based, interdisciplinary business world of today and tomorrow. Students are trained in an environment that fosters collaborative, experiential and real world learning.

### *Program Learning Outcomes:*

Students graduating with a major in marketing will:

- Demonstrate an understanding of the implementation of the 'marketing mix.'
- Demonstrate the ability to develop comprehensive marketing plans.

### *Program Description:*

Marketing is the cornerstone of all successful organizations. Businesses and non-profit organizations alike must identify the domestic and international demand for goods and services and tailor a marketing mix to meet the needs of consumers. A successful marketing executive meets this challenge by drawing on a broad knowledge of economics, finance, management, social sciences, computer skills and other disciplines that provide an understanding of consumer behavior.

Through the Bachelor of Science in Marketing, students develop skills to analyze demand and market segments, design marketing and advertising budgets and campaigns and formulate a comprehensive marketing plan. Students will develop a conceptual understanding of the complex and changing environmental factors that affect the marketing decision-making process.

At Philadelphia University, students can take a general approach to marketing or specialize in such areas as retailing, fashion merchandising or international business. Graduates of the Marketing program are employed in sales, new-product development, market research, advertising, public relations and sales management.

*The Marketing check sheet can be found on page 107.*

## Joint B.S. Business/M.B.A. Program

The School of Business Administration offers a joint Bachelor of Science in Business and Master of Business Administration (B.S./M.B.A.) program to qualifying students. Accepted students are permitted to take some graduate-level courses in their fourth year of undergraduate study that also count toward graduate program requirements. Typically, a fifth year is required to complete the graduate requirements, depending on the major.

A similar joint B.S./M.S. in Taxation program is available.

The joint program provides a valuable option to students who may wish to further strengthen their business competencies, credentials, and marketability. Students may plan to follow this program as early as the freshman year and no later than the start of the senior year. Application should be made through Philadelphia University's Graduate Admissions Office after consultation with the Director of Graduate Studies.

Transfer students may also apply. Currently enrolled students will be considered for admission if they have maintained a 3.0 grade point average. The Graduate Management Admission Test® (GMAT®) is required for full acceptance to the program and must be taken before the end of the senior year.

Non-business majors interested in the Joint B.S./M.B.A. Program should obtain a copy of the "Pre-M.B.A. Requirements for Non-Business Majors: Planning Guide." The planning guide should be used in combination with the Academic Catalog and the check sheet for the student's undergraduate major. The guide describes the requirements for admission and the application process, as well as the Pre-M.B.A. course requirements. Planning guides are available at the DEC Graduate Studies Office.

## School of Design and Engineering

The School of Design and Engineering provides both in-depth exploration of the individual design and engineering disciplines and interdisciplinary collaboration opportunities that frequently involve real clients. Through curricular integration of design, engineering and business disciplines, students develop a thorough understanding of the professional dynamics that exist between these fields. Areas of study within the School of Design and Engineering include animation, engineering, fashion design, graphic design, industrial design, interactive design and media, textiles and textile design.

Designers track changes in science, technology and in society. Through their work, they express the meaning of these changes and they maximize the opportunities these changes bring to our lives. In the process of interpreting change for the benefit of people, designers are shaping contemporary culture. Engineers apply the principles of mathematics and the laws of natural science to analyze, design, develop and devise improvements that benefit humanity. The engineering major provides for flexibility to address the unknown technical challenges that will confront society.

As change continues to accelerate, design and engineering influence delivers an unparalleled value to clients and employers. Designers are sought-after collaborators because of their ability to create synergy between the objectives of many other professions.

Our graduates are multi-dimensional professionals with a broad-based skill set and solid critical thinking abilities. The faculty of practicing professionals, state-of-the-art facilities, study abroad opportunities and our collaborative approach to learning all contribute to creating a unique, nurturing, exciting and creative environment within our school.

### *Retention of Student Work*

Projects completed by students in studio, laboratory or engineering courses may be selected to become part of the University's collection for purposes of exhibition review or accreditation. Student work not selected for that purpose will be stored for only 30 days into the following semester.

## B.S.E. Engineering Programs

### *Mission*

The mission of the undergraduate engineering programs is to continue the legacy of providing excellence in engineering education by developing creative problem solving, technical skills, and opportunities for collaborative learning among engineering, design and business disciplines. The Engineering programs provide students the necessary knowledge and analytical skills for professional engineering practice or for successful graduate studies.

### *Engineering Programs Learning Outcomes:*

As graduates of the undergraduate engineering programs, students will demonstrate:

- An ability to apply knowledge of mathematics, science and engineering.
  - An ability to design and conduct experiments, as well as to analyze and interpret data.
  - An ability to design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
  - An ability to function on multi-disciplinary teams.
  - An ability to identify, formulate and solve engineering problems.
  - An understanding of professional and ethical responsibility.
  - An ability to communicate effectively.
  - An understanding of the impact of engineering solutions in a global, economic, environmental and societal context.
  - A recognition of the need for, and an ability to engage in lifelong learning.
  - A knowledge of contemporary issues.
  - An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
- Program descriptions of each engineering major follow.

## Engineering B.S.E.

### *Program Description*

Because of its general nature, the general degree in engineering is characterized by breadth and permits study in depth, of a minor field, such as mechanical engineering, architectural engineering, environmental engineering, industrial and systems engineering or textile engineering. Students choose their minor engineering track in their sophomore year. This engineering major provides flexibility to address the unknown technical challenges that will confront society.

The B.S.E. Engineering program incorporates the contemporary thinking related to engineering education that has been studied in the National Academy of Engineering publication "The Engineer of 2020 – Visions of Engineering in the New Century."

The B.S.E. Engineering program prepares graduates who will have the ability:

- To pursue a career in engineering closely related to their minor discipline.
- To pursue advanced studies in a wide variety of engineering disciplines, including but not limited to textile, mechanical, environmental, architectural or industrial and systems engineering.
- To pursue life-long learning in their chosen field and remain active in professional societies.
- To make scholarly contributions to their field through publications, technical reports and technical presentations.
- To conduct applied research and development across disciplines to advance engineering.

The B.S.E. in Engineering check sheet can be found on page 89.

## Industrial and Systems Engineering B.S.E.

### *Program Description:*

Industrial and Systems Engineers are responsible for organizing, and often managing, the processes through which products are made. They design the machines that make the machines. They organize the production processes, materials, information and people engaged in the manufacturing of goods or the development of systems. Industrial and Systems Engineers are concerned with the efficiency, safety and economy of the manufacturing environment. They work closely with other engineering professionals and management to develop, implement and manage quality control and human factors standards. Many Industrial and Systems Engineers are responsible for management systems, applying their training in business planning, analysis – both financial and organizational – and operations and project management.

Industrial and systems engineers are team members who apply their engineering skills and business knowledge to finding the best solutions to issues affecting productivity, profits and people. Not only are industrial and systems engineers employed across the spectrum of the for-profit sector, they also help to advance society in such areas as science, health and social services.

Within the first few years following graduation from the industrial and systems engineering program, graduates are expected to:

- Pursue a career in industrial and systems engineering or a related field
- Pursue advanced studies in Industrial and Systems Engineering or related technical areas such as operations research, logistics and supply chain modeling
- Have the ability to analyze, improve, and manage integrated systems of people, technology, and materials in the fields of service, retailing, manufacturing and distribution
- Function in teams, communicate effectively in a professional manner, and uphold the ethical standards of the engineering profession
- Engage in life-long learning, continuing education and professional growth within the field of Industrial Engineering

The B.S.E. in Industrial and Systems Engineering check sheet can be found on page 91.

## Mechanical Engineering (ME) B.S.E.

### *Program Description*

The B.S.E. in Mechanical Engineering Program provides a broad-based education with a concentration on fundamentals and basic laws in mechanical, thermal and fluid sciences. The development of math, science and engineering skills

in students are adequately addressed in the choice of courses. Engineering design is part of many of the courses from the very first semester. Further emphasis on design is placed in courses such as machine design, design for manufacturability and the two-semester senior design project. Students are given ample opportunity to use modern computer-aided design and mathematical modeling tools. Students also develop skills to apply the theory to design experiments that demonstrate their understanding of fundamental laws in thermodynamics, fluid mechanics and mechatronics.

Within the first few years following graduation from the mechanical engineering program, graduates may pursue graduate degrees or work as professionals in an area closely related to mechanical engineering, pursuing licensure and advancing professionally with confidence and experience in one or more of the engineering disciplines of mechanical, mechatronics, thermal and fluid systems.

The Mechanical Engineering program prepares graduates to achieve one or more of the following:

- Pursue a career in mechanical engineering or a related field.
- Pursue advanced studies in mechanical engineering or related technical areas such as systems control, biomedical, robotics, fluids and other engineering disciplines.
- Successfully pursue life-long learning in areas relevant to their long-term goals and engage in contributing to professional societies.
- Make scholarly contributions by publishing papers and/or technical reports, delivering presentations in conferences, or contributing to engineering publications.
- Conduct applied research and development across disciplines to advance technology and foster innovative techniques.

*The B.S.E. in Mechanical Engineering check sheet can be found on page 93.*

## Animation

### *Mission*

The mission of the Animation program is to instruct students to become professionals who produce animation for broadcast, feature films, simulations, and interactive venues such as the web, video games and museum exhibits. Through a mix of projects ranging from abstract music-based compositions to fully articulated 3D characters, students combine their foundation in design with in-depth studies of motion, storytelling and the history of the medium.

### *Program Learning Outcomes*

Students who graduate from the animation program will:

- Develop a rich and rigorous creative process for animated work
- Apply robust technical knowledge, a firm grasp of narrative and principles of design to the execution of animated work
- Demonstrate professionalism and entrepreneurialism in the course of their animation careers

- Analyze animated work with an informed understanding of history and culture

### *Program Description*

First-year students in Animation are quickly immersed in the Philadelphia University design community, taking foundation classes with graphic designers, interactive designers, fashion designers and architects. In their second year, students begin their studies in animation with introductory courses in animation production and storytelling. They also continue to improve their design and communication skills with advanced foundation classes covering typography, hierarchy and image making. One focus for third-year students is basic animated filmmaking. Using industry standard software, students learn to design, model and animate compelling 3D characters and environments. They also use 3D imagery as an element in their study of motion graphics, combining them with video and 2D imagery to create uniquely designed visual narratives. Both areas of study are infused with a thorough understanding of the principles of animation design and regular screenings of historic and contemporary examples.

Several electives allow students to focus on areas of particular interest, including animation history, video and animation for gaming and interactivity. Students are encouraged to supplement their education by taking advantage of internships, design job fairs, study abroad opportunities and memberships in professional organizations. Students also pursue studies that integrate their knowledge of animation with other aspects of contemporary culture and the needs of the modern marketplace.

Students in their final year continue in their advanced 3D and 2D studies as they plan and implement short films. These films encompass every phase of production and serve as the capstone to their animation education. At the end of the year, students publicly exhibit their films alongside the work of their fellow design colleagues.

*The Animation check sheet can be found on page 109.*

## Fashion Design

### *Mission*

The mission of the Fashion Design program is to provide students professional skills and creativity supported by a base of the liberal arts and to promote student expression of personal design philosophy in consideration of client and societal needs. The Fashion Design program supports inventiveness and excellence, cultivates critical thinking and the application of theoretical knowledge in the resolution of design problems. The curriculum promotes an aesthetic understanding that is confluent with the technical aspects of the discipline. It enables students to build on existing artistic concepts and the ability to adapt to consumer needs. In addition, the mission is to train student designers to have vision for the future, to problem solve, to communicate with a vast world requiring quick response and to contribute to the global marketplace.

**Program Learning Outcomes:**

Graduates of the Fashion Design program will:

- Understand theoretical foundations of the profession and its application to interdisciplinary collaboration
- Perform technical skills and use technology as required of the profession
- Use quantitative reasoning, reading, writing, verbal and oral skills effectively and use communication skills to acquire, develop and convey ideas and information
- Demonstrate understanding of sound business practices and ethics
- Possess leadership qualities and the skills to make valuable contributions to the global marketplace
- Gain an international perspective and examine cultural issues as they affect the world in which they live

**Program Description:**

The world of fashion is fast-paced, energetic, creative and exciting. Innovative designers who know the potential of the materials they use in the contemporary marketplace have a dynamic impact on the retail industry.

The Bachelor of Science in Fashion Design includes art and design foundation courses, specialized fashion courses and studies in merchandising management, giving students a strong foundation in both design and business.

Future designers begin at the University with traditional studies of line and form. Our proven curriculum in apparel management and production includes hands-on experience with the latest computerized design and production

equipment. In addition, our unique understanding of textile materials makes this program one of the best in the country.

Fashion Design students have an opportunity to add an international dimension to their education by participating in the Study Abroad Program during their third year of study. Students studying overseas gain a cross-cultural experience while broadening their design skills, enabling them to strengthen their competitive edge in the global marketplace. Students can also choose to participate in the Internship Program designed to enrich their education while gaining work experience.

Fashion Design graduates may begin as fashion design assistants, working under the supervision of a designer; or work as a fashion adapter, altering trend-setting designs to fit the need of the average customer. Some designers start their own firms, working with production houses and retailers to produce and distribute under their own label.

*The Fashion Design check sheet can be found on page 111.*

**Graphic Design Communication****Mission**

The mission of the Graphic Design Communication program is to instruct learners to become graphic design professionals and design strategists with innovative spirits and superior critical thinking skills applicable to a diversity of human needs.

Consistent with the overall mission of Philadelphia University to provide professional training with a rigorous



Liberal Arts and Business core, the Graphic Design Communication curriculum fosters an appreciation for design as a cultural craft with a relevant historical background and a rapidly evolving future that includes multiple disciplines. The program seeks to develop students who can contribute intelligently and responsibly at a global level to further the common good.

*Program Learning Outcomes:*

Graduates of Graphic Design Communication will:

- Demonstrate ability to solve complex communication design problems including identifying a problem, conducting research and analysis, generating multiple solutions, prototyping and outcome evaluation.
- Demonstrate exceptional critical thinking skills with the ability to create and develop visual and verbal responses to communication design problems including understanding of message, intended audience, hierarchy, typography, aesthetics, composition and construction of meaningful images.
- Demonstrate highly effective written and oral communication skills with ability to successfully communicate intentions and messages.
- Demonstrate broad understanding of the role that design can play in larger contexts of contemporary and historical culture including issues related to social, cultural, technological and economic contexts for design.
- Demonstrate proficiency, technical expertise and understanding of tools and technology related to discipline, with the ability to be nimble and agile learners to adapt to changing technology.
- Demonstrate ability to collaborate productively in interdisciplinary teams.
- Demonstrate ability to contribute intelligently and responsibly at a global level to further the common good with a sense of personal and social responsibility.

*Program Description:*

Graphic design is one of the most ubiquitous of all art forms; quite literally, it is all around us. From logos to branding and identity; from websites to interactive media of all forms; from marketing and promotional materials to advertising and packaging, graphic design is about visual communication. Graphic designers specialize in communicating a message to an audience on behalf of a client through a variety of media and forms and outcomes. This often includes collaborating with professionals in such disciplines as Business, Communications, Marketing, Interactive/Web Design, Industrial Design, Social Sciences, Liberal Arts and others.

The Graphic Design Communication curriculum culminates with a Bachelors of Science degree. The program is conceptually based. We firmly believe that a designers' highest value is to be able to generate ideas and that a designers' intellectual property is his/her creative capital. The faculty strive to train today's designers to enter the wonderfully diverse and ever-changing profession of Graphic Design.

The Graphic Design curriculum embraces design thinking and strategic planning as we view design as a powerful strategic tool to be used to help solve problems in society and business. We fully expect our students to understand the role that design can play in the larger context of contemporary and historical culture. Our curriculum features real-world projects that are pragmatic and practical, and is based on active, hands-on learning through doing and making with critique-based feedback.

The curriculum emphasizes traditional design skills and focuses on the ability to create and develop visual and verbal responses to complex visual communication problems across a variety of media. We stress the ability to articulate these responses both orally and written. We encourage the creation of original image making through illustrative and photographic means. We also stress the importance of the narrative: illuminating information and telling stories that resonate with an audience. As graphic designers, we create and manage messages that tell a story.

We emphasize the ability to solve communication problems by exploring the design process of identifying the problem; conducting research, information gathering and analysis; the generation and iteration of alternative solutions and multiple ideas; prototyping and user testing and evaluation of outcomes.

We stress the ability to collaborate productively in interdisciplinary teams, and we expect our students to be nimble and agile learners with the ability to change and adapt with technology and to fully embrace the concept of life-long learning.

The Graphic Design Communication program is located within the College of Design, Engineering and Commerce (C-DEC), alongside other design disciplines such as Animation, Industrial Design, Interactive Design, Textile Design and Fashion Design. Together with Business and Engineering and other disciplines across the University, there is tremendous potential for interdisciplinary collaboration.

The work produced by our students regularly wins awards and recognition in international, national and regional design competitions, exhibitions and publications, such as: the Adobe Design Achievement Awards, AIGA, Creative Quarterly Magazine, Graphis New Talent Design Annual, How Magazine Self-Promotion, Society of Publication Designers, The One Show College Design Competition and the University and College Designers Association.

*The Graphic Design Communication check sheet can be found on page 113.*

## **Industrial Design**

*Mission*

The Industrial Design program delivers a broad education and the requisite professional skills, competencies and knowledge to enter into the industrial design profession. It crafts an environment that fosters critical discourse, enables personal discovery and promotes creativity and excellence.

The faculty of the Industrial Design program instills in the students a responsibility towards the user, the environment and the business interests of the client. The students and the faculty seek to join the design profession in the ongoing discourse concerning the profession's role in society.

#### *Program Learning Outcomes*

Graduates of the Industrial Design Program will demonstrate the ability to:

- Interpret changes in society and technology and ideas in the humanities and the arts through discussion, verbal, visual and written communication
- Develop personal knowledge and methods needed to engage the discourse about design in different geographic and cultural contexts
- Develop creative solutions to complex problems, relying on ideation techniques, open-ended explorations, systematic information gathering, analysis and creative resolution
- Understand the priorities of other professions and stakeholders and collaborate with these in a productive, empathic manner.
- Seek to influence their own and other professions to adopt better practices and will continually strive to improve the human condition
- Approach their work with independence, the ability to continually assess and develop their methods and they will lead efforts to achieve better results

#### *Program Description:*

The four-year Bachelor of Science in Industrial Design program equips students to create attractive, meaningful and practical products and systems, that serve the needs of the end-user and supports the objectives of other stakeholders. The program prepares students to respond thoughtfully and creatively to challenges and opportunities presented by technological advances, by social development and by cultural change. The strengths of the program are derived from its interdisciplinary structure, its collaboration with industry and its engagement of the design community. Insights and unique collaborative project opportunities offer themselves to design students on a campus that hosts programs in related professions. Studio life is characterized by the simulation of work dynamics found in design consultancies and in corporate design departments.

*The Industrial Design check sheet can be found on page 117.*

## **Interactive Design and Media**

Formerly known as the Digital Design program, the Bachelor of Science in Interactive Design and Media prepares students to work in the rapidly developing field of interactive design and media.

#### *Mission*

The Bachelor of Science in Interactive Design and Media prepares students to work effectively in the rapidly moving field of interactive design and media. The program provides

a diverse combination of skills, including the understanding of basic design principles, the capacity to plan and develop a great strategy, the ability to harness the latest digital technologies and techniques and experience in working in a collaborative interdisciplinary environment.

#### *Program Learning Outcomes:*

Graduates of the B.S. in Interactive Design and Media program will:

- Demonstrate the process involved in planning and executing an interactive visual design
- Demonstrate the use of critical thinking skills to solve complex design problems on a formal level
- Demonstrate the ability to analyze and organize information and create effective archetypes, systems and prototypes that can address complex usability, web thinking and navigational problems
- Demonstrate a broad understanding and proficiency in the role that current media, technology and development can play on solving Design problems and changing the way we use, interact and communicate
- Demonstrate collaborative learning by working in teams and on interdisciplinary design projects
- Appreciate cultural diversity and demonstrate the ability to serve society in a responsible and ethical way
- Have an understanding of the major accomplishments in the history of interactive design, including the works and intentions of leading visionaries, developers and designers in the past and present

#### *Program Description:*

Digital technology has changed the way designers visualize, conceptualize and express their ideas. The curriculum in interactive design and media features a foundation based on establishing strong visual thinking and conceptual skills common to most art and design fields. In advanced courses, students develop the ability to visualize and produce work for rich information environments. They explore complex aspects of time-based, interactive design, web-based media, user experience, user interface, game design and mobile communications. Additional emphasis is placed on motion graphics, type motion and animation techniques, principles of effective story development and interactive narrative structure through rich media experiences.

A particular strength of the program lies in its collaborations with other departments and its integration with the University's courses in business, engineering and the liberal arts. Students study basic business practices and how characteristics of new technologies relate to various aspects of the networked economy. Students will have the opportunity to work in multidisciplinary environments in teams with other majors, to understand team dynamics, leadership and to gain real-world experience.

In the first two years of study, interactive design and media students concentrate on developing basic skills necessary for visual literacy in the modern communication landscape. Basic design, expertise in typography, strategic planning, skill in electronic imaging, basic code and navigation

and the principles of hierarchy in communication are all addressed.

The final four semesters include a combination of required studios designed to develop the ability to complete complex interactive projects, with consideration of social and economic factors as they apply to communication strategies. Elective courses allow study in areas of particular interest or the opportunity to explore specific digital skills or software more extensively.

Students are encouraged to participate in our internship program and to experience the richness that comes with one of our many study abroad opportunities. In the final semester, interactive design and media students are required to complete a culmination capstone course where they partner with an outside “client” to plan and produce a major project. Many of these projects have been accepted for use in actual commercial or educational enterprises.

Graduating students are required to demonstrate expertise in software manipulation and code development, an understanding of the social implications of the emerging technologies and an ability to produce aesthetically pleasing products that can inform and delight while serving the needs of a variety of commercial environments.

*The Interactive Design and Media check sheet can be found on page 115.*

## Textile Design

### Mission

The mission of the Textile Design program is to provide an integrated, collaborative curriculum that blends experiential learning in aesthetic, creative and integrative design thinking and skills with emerging global technologies. The program emphasizes supportive relationships with faculty and peers, together with cross disciplinary knowledge, to turn innovative ideas into actual products – preparing students for successful careers establishing the trends in design, color and pattern.

### Program Learning Outcomes

Graduates of the textile design program will have the ability to:

- Apply conceptual and critical thinking skills that illustrate an understanding of the theoretical foundations of textile design.
- Demonstrate skills required of the textile design industry
- Apply a base of liberal arts knowledge to examine textile design issues rationally, logically and coherently; they use these skills to acquire, develop and convey design ideas and information
- Demonstrate an understanding of sound textile design business practices, including ethics and law
- Develop strong textile design industry marketability due to successful completion of the program
- Express international perspectives and are prepared for a global marketplace

### Program Description

With expanding international markets, the billion-dollar textile industry cuts across a multiplicity of products and commerce – fashion, home furnishings, medical, performance, retail and technical. This provides a world of opportunity for talented textile designers. Our program puts you on the fast track to an exciting career in this field. Textile majors range from those that are design and trend oriented, to those focused on textile science, engineering and product development – enabling specialization in the area most suited to individual interests and strengths.

Each year, our students win awards in prestigious, international design competitions sponsored by textile associations and industry corporations.

Textile designers begin their education in the studio to develop a sense of color, light, shape, texture and form. Next, they explore properties of fibers, yarns and dyes, and study the ways that fabrics are constructed. Advanced courses allow students to concentrate in a breadth of fabrication technology, including woven, knit and printed textiles.

The University invites designers, artists, industry leaders, and experts onto campus. These weekly presentations create an opportunity for students to interact with and explore the range of career possibilities in the textile design field. Additionally, frequent field trips provide exposure to design studios, textile manufacturing facilities and product development firms.

*The Textile Design check sheet can be found on page 119.*

## Joint B.S./M.S. Textile Design

The School of Design and Engineering offers a five-year Bachelor of Science/Master of Science (B.S./M.S.) program to qualifying students majoring in textile design. Students follow the B.S. in Textile Design program for the first three years. Graduate courses taken in the fourth year of undergraduate study are applied toward both the B.S. and M.S. degrees. The fifth year includes a summer session in addition to the fall and spring semesters.

The five-year program offers an opportunity for students wishing to further their design education through a year of graduate-level work. They are given the opportunity to work on design development on a more concentrated basis, and therefore extend their design skills and portfolio work (within their chosen undergraduate specialization) to a level not attainable through the undergraduate program.

Application should be made through the Graduate Admissions Office during the junior year. Currently enrolled students will be considered for admission if they have maintained a 3.0 GPA. The GRE is required for full acceptance to the program and must be taken before the end of the senior year.

## Textile Materials Technology

### Mission

The mission of the Textile Materials Technology (TMT) curriculum is to present students with distinctive educational

opportunities to demonstrate creativity and intellectual curiosity while at the same time applying time-tested principles and mixing them with a dose of cutting-edge innovation. The TMT degree develops a breadth and depth of professional skills that are infused by elements of design, engineering and commerce and are informed by the liberal arts and sciences.

*Program Learning Outcomes:*

The intent of the TMT program is to educate and graduate individuals who possess the technical and social competence and confidence to succeed in professional practice and advanced education. Students will be lifelong learners who will exercise responsible stewardship.

Graduates of the TMT program will be able to:

- Integrate theory and practice with research and practice, and guide creative decision-making in the textile field
- Effectively communicate to multiple audiences using oral, written, numerical and visual methods
- Establish a set of skills, competencies and attitudes that lead them to be a wise information consumers and a self-motivated life-long learners
- Recognize the societal and environmental impact dominating sustainable practices within the textile industry
- Analyze how global, societal, political and cultural practices interact and impact the textile field
- Demonstrate experience working with and learning from others in a collaborative environment

*Program Description:*

The interdisciplinary and collaborative nature of the TMT courses creates sufficient flexibility to empower students to incorporate inventive solutions into advanced courses taken within one of five concentrations.

1. Sports and High Performance Materials involves the selection, specification and design of equipment and clothing materials for the enhancement of human performance.
2. Product Safety & Materials Evaluation is a natural out-growth of the research activities of the Institute for Textile and Apparel Product Safety (ITAPS) and the Laboratory for Engineered Human Protection (LEHP) at the Philadelphia University Research Center.
3. The Commerce concentration is designed to collaborate with the School of Business Administration. Students may select courses that focus on international marketing and management or select courses that enable a pre-MBA concentration that leads to the completion of a BS/MBA in five-years of study.
4. Textile Conservation & Forensics evolved through collaboration with the faculty in the College of Science, Health and the Liberal Arts on course development and research, e.g. forensic chemistry. Utilization of the textile and costume collection at the Design Center and the museums and conservation laboratories in and around Philadelphia will enable a new focus for research and internships using textiles and related materials.

5. Sustainability allows an in-depth analysis of textile processes that are distinct to the industry and provide students with sufficient depth of knowledge to make informed decisions about the future of textile related businesses. Students could conceivably double-major with the Environmental Sustainability major offered in the College of Science, Health and the Liberal Arts. Qualified TMT students could complete two graduate-level courses to facilitate a transition into the M.S. Sustainable Design program.

Qualified TMT students could complete two graduate-level courses to facilitate a transition into the M.S. Textile Engineering program.

*The Textile Material Technology check sheet can be found on page 121.*