

Sustainable Technologies Certificate (18 Hours)

Curriculum

To earn the Sustainable Technologies Certificate through Engineering Technology, students must successfully complete 18 credit hours of coursework with a grade of “C” or higher in all classes and submit an Application for Graduation prior to enrollment in their final semester in the program. **The first five classes in the following list are required, students can chose one of the last *two courses to complete the certificate.** English Composition **ENG W-131** is the only prerequisite required for students earning this Certificate.

OLS 20000 Introduction to Sustainable Principles and Practices (3 cr.)

This course will introduce students to sustainability and its principles; it focuses on how and why sustainability is important. The course covers: principles, history, definitions, and historical economic aspects of sustainability. It also covers principles of sustainability to design, building, energy, and commerce.

TECH 30100 Renewable Energies Systems (3 cr.)

This course provides the student with an introduction to renewable energy. Topics include photovoltaic, solar thermal systems, fuel-cells, hydrogen, wind power, waste heat, bio-fuels, wave/tidal power, geothermal power and hydroelectric. Discussions of economics, environment, politics and social policy are integral components of the course.

TECH 30300 Energy Efficiency and Auditing (3 cr.)

This course provides an introduction to energy audits and methods to improve energy usage in commercial/industrial systems. Topics include energy audit process, energy bill analysis, economic analysis, survey instrumentation, building envelop, electrical system, HVAC system, waste heat recovery, lighting, cogeneration, and other prevalent industrial systems.

OLS 30200 Leadership and Economic Aspects of Sustainability (3 cr.)

The main focus of this course is to learn how organizations make sustainability function in their organizations. Students learn about the triple bottom line (environment, social and economic aspects of business decisions) and how to make “sustainability” thrive in an organization.

TECH 40200 Emerging Technologies (3 cr.)

This course will examine, discuss, and investigate new emergent green technologies in renewable energy, green building, sustainable design, and other green technology emerging in the marketplace.

****TECH 30200 Introduction to Green Building Technologies (3 cr.)***

This course examines, discusses and analyzes buildings. Building systems and assemblies (both residential and commercial) will be discussed and will include topics such as the principles of: thermal efficiency and comfort, climate, shading, site design, day lighting, efficient building envelopes and mechanical equipment.

****TECH 30400 Green Building: Information Modeling (3 cr.)***

This course examines the Building Information Modeling or BIM approach to the design and construction of buildings. Topics include: parametric modeling, interoperability, clash detection and BIM implications for architects, engineers, interior designers, managers and contractors.

* Only one of these courses required TECH 30200 or TECH 30400.

Purpose

In the United States, sustainability has gained importance in business, industry, government, government agencies, higher education, and in the general public’s consciousness. The goal of meeting today’s needs without harming future generations’ ability to realize their potential is a hallmark of sustainable practices, and there is widespread interest from many disciplines and sectors in developing, enhancing, and integrating sustainability into aspects of products, services, and solutions. Thus, the need to equip students with the knowledge, skills, and perspectives to make contributions to sustainability initiatives has never been greater. Green jobs are rapidly being created as the economy begins embracing sustainable, energy efficiency, and low-carbon practices. The driving forces behind the development of green jobs are businesses wishing to maintain cutting edge technology, become more energy efficient, while lowering their carbon footprint, or becoming entirely carbon neutral. This certificate is designed to address a growing need for professionals who can contribute to the green global workforce with knowledge in sustainable practices in current technologies. The Sustainable Technologies Certificate will be beneficial to students who want to acquire knowledge in areas of renewable energies, green building, and sustainable design, and who may want to pursue a career in a sustainable technology. **All of the Sustainable Technologies Certificate courses are offered online.**

Admission

Candidates for this Certificate are required to be formally admitted by the IUPUI Office of Admissions, but are not required to be a student in the Purdue School of Engineering and Technology. **For more information about the Sustainable Technologies Certificate please contact Professor Pat Fox, at psfox@iupui.edu.**

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DEPARTMENT OF ENGINEERING TECHNOLOGY

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