TU/E BACHELOR COLLEGE

Eindhoven University of Technology (TU/e) combines its bachelor education in the Bachelor College. As a student of the TU/e Bachelor College, you have the freedom to define your study program based on your own interests and ambitions. A large part of your Bachelor’s program is made up of your major, in which you choose the specialized field that you want to work in later as an engineer. This forms the basis of your study program.

First-year courses in the Sustainable Innovation major*

TU/E
EINDHOVEN UNIVERSITY OF TECHNOLOGY

Major Sustainable Innovation
Half of the three-year Bachelor’s program is made up by your major, which forms the basis of your study program. If you choose the Sustainable Innovation major you’ll combine courses in technology and social sciences. The technology courses are in Sustainable Energy or Sustainability in the Built Environment. On average you’ll spend a third of your time on technology subjects, a third on social sciences subjects and a third on research methods and practical assignments. The language of communication of this major is English.

Free electives
A quarter of the Bachelor’s program consists of elective courses that you can choose yourself. These allow you to change the emphasis in your program. You can opt to broaden your knowledge by following courses in a different specialization, or alternatively you can gain more in-depth knowledge in your own specialization.

* This major is formally part of the Innovation Sciences Bachelor’s program
Compulsory basic courses
As well as your major you’ll follow a number of basic courses such as mathematics and natural sciences. You’ll also learn technological design, and you’ll gain professional skills like teamworking and organization. These courses will give you the sound basis that you’ll need as an engineer.

Electives - USE
Finally you choose USE (User, Society and Enterprise) courses. These show you that technology always functions in a broader context. Engineers develop technology for users, to contribute to solving societal problems and to create economic opportunities for enterprises.

The Bachelor’s program Sustainable Innovation has the following structure:

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Technology courses
The technology courses are in Sustainable Energy or Sustainability in the Built Environment.

Obligatory technology courses for the Sustainable Energy specialization:
- Introduction Transport Phenomena
- Thermodynamics
- DBL Combustion Engine
- Heat and Flow

Obligatory technology courses for the Sustainability in the Built Environment specialization:
- Statics of Structures
- Dimensioning of Structures
- Designing based in Building Physics and Materials
- Built Environment Project for SI

FIRST-YEAR COURSES IN THE SUSTAINABLE INNOVATION MAJOR

In the first year of your Sustainable Innovation major you’ll follow technology courses together with social sciences courses such as economics and sociology. The obligatory technology courses are in Sustainable Energy or Sustainability in the Built Environment. At the start of your major you can choose which specialization you prefer. You’ll find a list of the first-year courses in the Sustainable Innovation major below.

Sustainable Development in a Global Context
This introductory course provides you with knowledge about sustainable development, globalization and the interrelationship between ecological and social aspects. During the lectures you will learn about sustainable development on rich and poor countries. In tutorials you’ll work on a range of case studies that help you to understand the complexity and future challenges of sustainable development. This includes for example debating a documentary about the (un)sustainability of the food system and negotiating in a role-playing game about global climate change.
The Bachelor’s program Sustainable Innovation has the following structure:

Built Environment Project for SI
- Designing based in Building Physics and Materials
  - Dimensioning of Structures
  - Statics of Structures

Specialization:
- Obligatory technology courses for the Sustainability in the Built Environment.

The technology courses you follow are in Sustainable Energy or Sustainability in the Built Environment. At the start of your major, you can choose which specialization you prefer. You’ll find a list of the first-year courses in the Bachelor’s Thesis.

Electives
- USE
- Economic Policy

Quarter 4
- Quarter 3
- Quarter 2
- Quarter 1

Economics of Innovation: Introduction
This course focuses on economic theories relating to innovation. Important aspects covered include the creation, protection, and distribution of innovations. You’ll learn to apply economic theories to issues in the field of innovation policy and innovation management.

Sustainable Technology in Society: Introduction
This course focuses on the interrelationships between technology and society, and the challenges these present for sustainable innovation. You’ll study and analyze a range of cases using the most important theories from this multidisciplinary specialization.

Research Methods
In this course, you learn about scientific research and the method used in empirical research. You learn how to formulate a research question, which forms of research you can use to answer it, and how to process and interpret the results of a simple research project. You also develop the skills needed to carry out research yourself.

Industrial Ecology
What is the relationship between mass trends, everyday life, and the economy? That’s the central question in the Industrial Ecology course, which takes a cradle-to-grave approach to studying mass trends. You’ll learn about the pros and cons of aspects like life-cycle analysis, ecological footprint, and input-output analysis. And you’ll also learn to argue with specialists in the field about these concepts.

The technology courses you follow are in Sustainable Energy or Sustainability in the Built Environment. In the first year, you follow one course from your chosen technology specialization in quarter 3.

Technology course for the Sustainable Energy specialization
The technology course for the Sustainable Energy specialization is Introduction to Transport Phenomena, taught by the Mechanical Engineering department. This course focuses on the basic principles for fluid dynamics and heat and mass transfer and consists of four main themes: hydrostatics, hydrodynamics, diffusion processes, and heat and mass transfer.

Technology course for the Sustainability in the Built Environment specialization
The technology course for the Sustainability in the Built Environment specialization is Statics of Structures, taught by the Built Environment department. This course introduces applied mechanics and structural design within the field of the Built Environment, e.g., reaction forces on and the magnitude of the forces (normal forces, shear forces, bending, and torsion) in statically determinate structures, using equilibrium conditions, both 2- and 3-dimensional.
ELECTIVES AND COACHING

Free electives
As well as the Sustainable Innovation courses, the Bachelor’s program includes electives to match the program to your own interests. You can choose to broaden your knowledge by following courses in another field, or you can choose to gain extra in-depth knowledge within Sustainable Innovation. For example you can choose electives in the following areas:

- Smart buildings and Cities
- Innovation Management
- Psychology & Technology
- Energy
- Building Physics: Building and Environment

Intensive coaching
You’re not on your own while you’re studying. At TU/e, experienced coaches help you right through your program with personal advice. That starts from day one, when together with your coach you decide on the right courses to choose in the elective part of your program. That means you define your own study program, to match your own interests and ambitions. And if you discover in your first year that you’d prefer to do a different major, your coach will help you find a way to change during the year.

As well as a personal coach, you’ll receive support from your student counselor and students in later years – they act as mentors to your first-year group, and will help you to make a good start on your studies.

LIKE TO KNOW MORE ABOUT SUSTAINABLE INNOVATION?

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