TU/e Bachelor College
At Eindhoven University of Technology (TU/e), all bachelor's degree programs are part of the Bachelor College. As a student of the TU/e Bachelor College, you will be able to put together your own course program, based on your interests, skills and ambitions. Your major will take up the largest part of your bachelor's degree program. Through your major, you pick the field you want to study and that you will be working in later as an engineer. It is the foundation of your degree program. If you choose Industrial Engineering as your major, your bachelor's degree program will look as follows:

Industrial Engineering major
Your major constitutes half of your bachelor's degree program. It is the foundation of your degree program. In the Industrial Engineering major, you will take courses in math, industrial engineering and integration - a combination of the different industrial engineering disciplines. On average, you will spend half your time on industrial engineering topics and half on math and integration. The major is taught in English.

Free electives
Free electives take up a quarter of your bachelor's degree program. You can use your electives to emphasize certain topics in your degree program. You can broaden your perspectives by selecting courses from another major or gain more in-depth knowledge in your own field.

TU/e Bachelor College
First-year courses in the Industrial Engineering major

Where innovation starts
**Basic courses**

In addition to the courses that are part of your major, you will also take basic courses, such as mathematics and physics, and you will learn design. You will practice your professional skills, such as teamwork and organization. These courses will give you a solid foundation as an engineer.

The full course schedule for the Industrial Engineering bachelor’s degree program is as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Quarter 1</th>
<th>Quarter 2</th>
<th>Quarter 3</th>
<th>Quarter 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Calculus</td>
<td>Physics</td>
<td>Data Engineering</td>
<td>USE</td>
</tr>
<tr>
<td></td>
<td>Deterministic Operations Mgt</td>
<td>Organization, Strategy and Innovation</td>
<td>Mathematics 1</td>
<td>Statistics</td>
</tr>
<tr>
<td></td>
<td>Work &amp; Organization Psychology 1</td>
<td>Electives</td>
<td>Business Modeling</td>
<td>Electives</td>
</tr>
</tbody>
</table>

**Year 2**

<table>
<thead>
<tr>
<th></th>
<th>Design</th>
<th>Research Methods</th>
<th>Buying Behavior &amp; Innovation</th>
<th>Design of Business Information Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro to Financial and Management Accounting</td>
<td>Mathematics 2</td>
<td>Stochastic Operations Management</td>
<td>Product Innovation Processes</td>
<td></td>
</tr>
<tr>
<td>Electives USE</td>
<td>Electives USE</td>
<td>Electives USE</td>
<td>Electives USE</td>
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</tbody>
</table>

**Year 3**

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<thead>
<tr>
<th></th>
<th>Business Information Systems Mgt</th>
<th>Work &amp; Organization Psychology 2</th>
<th>Final project</th>
<th>Final project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Chain Mgt</td>
<td>Reliability</td>
<td>Electives</td>
<td>Electives</td>
<td>Electives</td>
</tr>
<tr>
<td>Electives USE</td>
<td>Electives USE</td>
<td>Electives USE</td>
<td>Electives USE</td>
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</tbody>
</table>

**Electives - USE**

Finally, you will select your so-called USE courses. USE stands for User, Society and Enterprise. In these courses, you will learn that technology is always part of a broader context. Engineers develop technology for users, to contribute to solutions to societal problems and to create economic opportunities for companies.

**First-year major courses for Industrial Engineering**

Right from the start, you will have lectures, seminars, group assignments and projects. In addition to your basic courses, which mostly deal with theory, you and your fellow students will collaborate on projects. In one project, you may look at a company’s purchasing approach, while another project may ask you to view the process from a marketing or logistics perspective. Below, you will find an overview of the first-year courses of the Industrial Engineering major.

**Deterministic Operations Management**

In this course, you will learn the basic skills of operations management: managing a company’s logistics. For instance, you will be looking at how to model a company’s logistics and then how to improve it. To make a good production schedule and to meet customer demand, it is important to be able to make reliable demand forecasts. The course will also deal with general concepts of transport management, inventory control and project management. The Netherlands has one of the most complicated infrastructures on earth. Through this infrastructure, goods need to be delivered to customers as quickly as possible, for instance when transporting milk from the factory to the supermarket.

To make a company run efficiently, it is important to pay attention to good inventory control. Minimizing stocks can lead to big profits. Finally, it is important to manage projects well logistically. New product launches, for instance, can cause a lot of changes: in the manufacturing line, transport and customer contact. Product launches also need a thorough planning.

**Business Modeling**

Modern organizations can no longer function without the support of information systems. Both internally and externally - for contact with suppliers, customers, competitors and the government. Company processes and information systems are tightly linked: changes in an organizational process lead to changes in the information system and the other way around. For this reason, it is important to thoroughly map this complex relationship between operational processes and information systems. In Business Modeling, you will learn to neatly and clearly visualize operational processes. This is done through a modeling method (the so-called Petri net) that is also suited to create the specifications for supporting information systems.
Mathematics 1
In this course, you will learn mathematical techniques that are common in Industrial Engineering. The course is a continuation of the basic course Calculus, with emphasis on the topics that are important in Industrial Engineering. One of the topics you will learn is logic. We will discuss matrix operations and solving a system of linear equations (multiple equations with multiple variables). In many Industrial Engineering models, probability plays a role. Mathematics 1 will introduce you to the kind of probability calculations you will use later on. We will also discuss elementary probability theory and the set theory you will need to understand it. The course will introduce distributions such as the uniform, binomial and geometric distributions and the underlying math of sequences and series.

Organization, Strategy and Innovation
This course looks at the influence of strategy and organizational characteristics on business processes, especially innovation processes. Organizations are viewed as open, dynamic systems. That is why strategy and characteristics are examined in a wider context: what is the influence of an organization’s environment? Topics addressed in the course are strategic development, environment and innovation, organizational structures, organizational processes and organizational culture.

Statistics
In Statistics, you will learn about continuous probability distribution, estimation theory, regression models and confidence intervals. You will apply this new knowledge directly in assignments. You will learn, for instance, how to test hypotheses and will immediately do so when analyzing real-life questions. After you learn the theory about continuous distributions, you will be able to recognize which distribution you need to use in which situation.

Work & Organizational Psychology
In this course, you will dive deeper into the fields of organizational psychology, human decision-making, work psychology and personnel psychology. Topics addressed in the course are:

- Individual differences and staff selection
- Work performance, function analysis and performance assessment
- Occupational motivation
- Attitudes, emotions, stress and health
- Leadership and decision-making
- Teams and diversity
- Organizational structure
- Organizational culture
- Organizational change
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**Electives and coaching**

**Free electives**
You can broaden your perspectives by selecting courses from another major or use your electives to gain more in-depth knowledge of Industrial Engineering. You can already start thinking about your electives in the first year. Of course, you do not have to make your decisions all by yourself. Experienced TU/e coaches will give you personalized advice throughout your studies and will help you choose your electives.

**Going deeper**
If you want to develop your in-depth knowledge of Industrial Engineering, you can choose electives packages around healthcare, economics, entrepreneurship, logistics, work and organizational psychology and information systems. You can also do a practical internship. In your first year, for example, you can choose from the following Industrial Engineering courses: Transport and Distribution, Leadership and Self-Management in Organizations, Healthcare Information Systems and Introduction to Industrial Engineering.

**Going broader**
If you want to broaden your perspective, you can choose an electives package from another major, for instance on the topic of Sustainable Energy, Smart Mobility or Psychology and Technology.

**Coaching**
Experienced TU/e coaches will give you personalized advice throughout your studies and will help you choose your electives. This way, you will put together a program that matches your interests and ambitions. If you find out in the first year that another TU/e major suits you better, you and your coach will look into changing majors the same year. In addition to a personal coach, your study advisor and senior students will guide you. These students are also the mentors for the group of first-year students you are assigned to. They will help you find your way around your degree program.

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