I’m developing an innovative cradle to calm babies
Undergraduate program

Electrical Engineering

TU/e Bachelor College

Eindhoven University of Technology (TU/e) clusters its Bachelor’s programs in the Bachelor College. As a student of the TU/e Bachelor College you have the scope to shape your study on the basis of your interests and ambitions. The Bachelor’s program is largely made up of your major, that field in which you later intend to work as an engineer. It is the foundation of your study program. This folder tells you more about the contents of the Electrical Engineering major in relation to the Bachelor’s program so that you can find out if Electrical Engineering appeals to you.

This is Electrical Engineering

Electrical Engineering plays a role in everything involving electricity and magnetism. For instance, in the design of electrical chips for cell phones or the development of electrical motors for cars. Electrical Engineering is crucial in almost every modern technology: from reading information on a DVD to signal processing in medical equipment. At TU/e, for instance, we focus on wireless energy transfer. What does that mean for the future? Suppose the battery of your cell phone or tablet is always fully charged, then you won’t need a separate charger. And you can use your TV anywhere because you won’t have to plug it in!

Working on the future

Electrical Engineering is working on the future and this is evident in the field’s applications. This is why the study is geared to three societal themes that you become familiar with in the first year:
- Communication (The Connected World): such as a chip that works using light rather than electric signals, Bluetooth or WiFi.
- Healthcare (Care and Cure): medical applications such as an MRI scanner or treating cancer cells using electromagnetic waves.
- Environment (Smart and Sustainable Society): finite resources like oil and gas will eventually become exhausted. Alternatives are sun and wind. But the wind does not blow constantly. How can you store energy? How can you store electricity?

Typically Electrical Engineering In Eindhoven

Electrical Engineering in Eindhoven, with over 200 first-year students, is the largest electrical engineering study in the Netherlands. Yet Electrical Engineering remains a relatively small study with a stimulating environment in which you can create a good relationship with lecturers and fellow students. The department has not only got a range of international relations but also good contacts with leading engineering companies and research institutes in the Brainport Eindhoven Region. This means that the many part-time professors, inspiring guest lectures, internships and excursions provide that little bit extra. The electrical engineering student association Thor makes sure that in addition to your studies, there are plenty of other activities you can engage in with your fellow students.

A study for you?

Is your main interest science subjects? Are you inquisitive about the world around you and do you see things that are needed for improvement? Do you want to wander off the beaten path, are you ambitious and do you become inspired by the thought that your efforts can help make a positive change in people’s daily lives? Then Electrical Engineering is something for you!
LIRONG ZHANG
Bachelor’s degree student

“A responsive environment is critical for the development of babies’ brains. I’m working on a cradle that responds to the voice and heartbeat of a baby. It rocks when the baby is upset. I developed the sensors of the prototype, and it was very satisfying to see that it worked. I really feel that I’ve chosen the right technical university. The professors are helpful and patient. I couldn’t have found similar English-language education with this level of quality elsewhere in Europe. Brainport Eindhoven region is the best place to learn engineering – you can get in touch with advanced technology and amazing innovations here. Also, The Netherlands is a good, safe country to live in; people are friendly and helpful.”

The Bachelor’s program

Major
Your major makes up half of the three-year Bachelor’s program and is thus the basis of your study. In the Electrical Engineering major you do theory subjects like becoming familiar with electrical engineering, signals, networks, electrical switches and transistor switches, systems, electromagnetism and telecommunication. In DBL (Design-Based Learning) projects you learn how to put this theory into practice as part of a team. You are taught by lecturers who have earned their spurs in research and by part-time professors that also work in industry.

Basic subjects
In addition to your major, you follow a number of basic subjects like mathematics and physics, and you learn engineering design. Professional skills like cooperation and organization become part of your character. These subjects give you the solid foundation you need as an engineer.

Free electives
A quarter of your Bachelor’s program comprises elective subjects that enable you to accentuate aspects of your study. You may opt to broaden your knowledge with subjects from another field or penetrate deeper in your own field. The Energy Challenge, Venus Exploration and Wireless Charging assignments are examples of what you could choose for your free electives.

Electives - USE
Finally, you choose USE subjects. USE stands for User, Society and Enterprise. These subjects show how technology always operates in a broader context. Engineers develop technology for users to contribute to solutions for societal problems and to create business opportunities for industry.

The first year in concrete terms
In the first year you learn the basics of Electrical Engineering. In addition to the basic subjects, you have electrical engineering subjects (signals, transistor circuits and systems) and projects. Theory is explained in lectures. During exercise sessions, supervised self-study, you exercise with the material. If you opt for a project in your electives, you apply the theory to that project. You spend a day and a half each week on a project. Each academic year consists of 60 credits (ECTS) and each credit is equivalent to 28 hours of study. The first academic year is divided into 2 semesters of 4 periods of 8 weeks that you complete with 2 weeks of exams.

Intensive coaching
Experienced TU/e coaches offer you personalized advice from the start to the finish of your study, beginning during your enrollment, when you and your coach look at the major that best suits you and at the best ways of filling in your electives. In this way you shape your
study program in line with the interests and ambitions you have. And should you realize during the first year that a different major suits you better, then you and your coach look at how you might be able to switch major during the year. In addition to a personal coach, you also get help from a study counselor and senior students who mentor groups of first-year students of which you are a member. During your initial period of study, they can help show you the ropes.

On to a master’s degree

After completing your Bachelor’s program, you can move on to the Electrical Engineering Master’s program or one of the tracks within Electrical Engineering: Broadband Telecommunications or Care and Cure. Also you can choose one of the many other connecting master’s degree programs at a university in the Netherlands or abroad. At TU/e these are Automotive Technology, Embedded Systems, Science and Technology of Nuclear Fusion, Sustainable Energy Technology and Systems and Control.

What next after graduation?

After your Master’s graduation, you are ready to take up an attractive position. Research institutes and companies are very keen on university educated electrical engineers, so you should be able to quite easily find a well paid job working, for example, in a corporate Research & Development department or as a consultant at a consultancy firm. After a few years’ experience, there is a good chance that you will be head of a team of researchers or manage a team of product developers. In fact, you will come across university educated electrical engineers at many industrial companies. Finally, you can specialize in research at TU/e as a PhD student (by writing a dissertation) or as a technological designer.
TU/e: Your path to success starts here

- Leading in Engineering, Science & Technology
- High-quality research and education
- Excellent modern student facilities
- Scholarships available
- International community of more than 70 nationalities
- Friendly, open culture
- International network with prominent universities and institutes
- TU/e alumni in high demand among employers
- Strong position in Brainport Eindhoven, the Dutch high-tech region

MING DING
Alumnus

“The nice thing about TU/e? It’s a really top technology university and as for living there, both on and off campus, everything is small-scale and at your finger tips. That personal touch is there in the study: the supervision of students, contacts with the lecturers and other students. The contact is really intensive and enjoyable. I’ve been in the Netherlands for five years now and want to stay for some time yet. Especially because I have already found a great job as a researcher at Holst Center/Imec at the High Tech Campus in Eindhoven. This is a region full of opportunity. My dream? To have my own company and products to make life more fun and easy. That is, after all, the core of Electrical Engineering.”

www.tue.nl/explore
Major
Electrical Engineering

Length of study
3 years

Language
English

Admission requirements
for international students
See our website for the admission requirements for international students: www.tue.nl/admission

The deadline for applications is May 1.

Study structure 1st year

Lectures and exercises:
- Mathematics
- Physics
- Modeling
- Circuits
- Transistor circuits
- Signals
- Systems
  Design-Based Learning

Student satisfaction on a scale of 1 to 5 4.1

Number of first-year students 213

Contact hours in first year number of clock hours scheduled per week 18-24

Advancement to second year on the program 74%

Bachelor's degree obtained within 4 years of university education 35%

This information is based on the Bachelor's program of Electrical Engineering. The major Automotive is formally part of this Bachelor's program.

More information: www.tue.nl/studyinfigures

Information Days 2015-2016

- Friday 16 and Saturday 17 October 2015
- Friday 8 and Saturday 9 January 2016
- Friday 11 and Saturday 12 March 2016

More information and registration:
www.tue.nl/informationdays

Orientation Days

Register for an orientation day via
www.tue.nl/orientation-days