The Energy and Process Technology (EPT) master’s track provides students with the theoretical knowledge, numerical and experimental skills, and practical hands-on experience they need to develop the next generation of energy and process technologies.

The EPT curriculum surrounds a small set of core courses with a large number of electives. The result is a flexible program that students can tailor to emphasize their personal interests in energy engineering, process engineering, or fluid mechanics. In addition, an internship and research project in the second year provides practical experience applying theoretical knowledge in an industrially-relevant setting.

Energy Technology
EPT students who focus on energy technologies develop a thorough understanding of energy conversion and utilization. Students learn state-of-the-art analysis tools and apply them to study efficient, environmentally friendly and integrated processes for the production and utilization of heat, power and secondary fuels. Students gain skills to apply their knowledge in sustainable next-generation processes at both the system- and component level.

Process Technology
EPT students who focus on process technology learn to define, design and optimize the processes and equipment that transform raw goods into consumer products. Graduates can systematically define, design and optimize a variety of sustainable processes and equipment. Students learn the state-of-the-art in process intensification, thermodynamics, fluid dynamics and process control.

Fluid Mechanics
EPT students who focus on fluid mechanics receive training in the fundamentals of fluid flow. Particular attention is paid to turbulence and multi-phase flow, since these are relevant to many industrial and environmental applications. Students are trained in all aspects of modern fluid mechanics in both classroom and research environments, with emphasis on computational fluid dynamics (CFD), measurement techniques, and their use in solving various practical problems.
Program Structure

Students in the Energy and Process Technology (EPT) track follow a combination of compulsory and elective courses in their first year. The second year consists of an internship and thesis project.

First year

Course requirements for the first year of the EPT track are divided in several categories. The first is a core group of four courses (18 ECTS total) common to all Mechanical Engineering Master tracks at TU Delft, along with a "social course" of 3-6 ECTS.

- Physics and Measurement (6 ECTS)
- Control Theory for Mechanical Engineering (3 ECTS)
- Advanced Heat Transfer (3 ECTS)
- Advanced Nonlinear Mechanics (4 ECTS)

The second category (16 ECTS total) comprises compulsory courses for all students in the EPT track. These courses train the student in key basic disciplines such as fluid dynamics, thermodynamics, process modeling and simulation, and process equipment design. All EPT students also attend a colloquium series (1 ECTS) that exposes them to the very latest academic and industrial research in mechanical engineering.

- Advanced Applied Thermodynamics (5 ECTS)
- Equipment for Heat and Mass Transfer (5 ECTS)
- Advanced Fluid Dynamics (5 ECTS)

In the third category, students begin to tailor their degree program by selecting two courses from a list of four:

- Process Plant Design (5 ECTS)
- Modeling of Thermodynamic and Hydrodynamic Systems (5 ECTS)
- Advanced Reaction and Separation Systems (5 ECTS)
- Turbulence (5 ECTS)

Finally there is a fourth category (15 ECTS total) containing a long list of electives, examples of which are given below. Other choices from the full TU Delft course catalog are also possible, in consultation with the EPT Master’s Coordinator.

- Energy from Biomass
- Indoor Climate Control Fundamentals
- Process Dynamics & Control
- Multiphase Reactor Engineering
- Fluid-Structure Interaction
- Gas Dynamics
- Molecular Thermodynamics
- Computational Materials Science
- Product & Process Design
- Nonlinear Differential Equations
- Numerical Analysis
- Gas Turbine Simulation/Application

Second Year

Second year students in the EPT track complete an industrial internship (15 ECTS) and a research project (30 ECTS) under the supervision of a TU Delft researcher. Internships can be completed in the Netherlands and abroad.

Recent graduation research project topics include:

- Research Design and analysis of a heat pump applied to apartment buildings
- Numerical modeling of heat transfer in flameless and conventional combustion
- Power systems combining Solid Oxide Fuel Cells and gas turbines
- Ultrasonic irradiation and its mixing and crystal nucleation consequences
- Experimental Validation of a New Ammonia/Water Absorption Model
- Eco-efficiency of biomass co-firing with coal
- Cooling crystallization under influence of a strong DC electric field for controlling polymorphism
After my bachelor in Mechanical Engineering I chose for the master track EPT. This is a decision with which I am still very pleased. The first thing I noticed was the great ambiance within EPT. The ‘Dispuut Process & Energy’ has a huge share in this, with monthly activities and traditions that go way back in time. They make sure that the EPT students get to know each other, the professors and PhD’s within the Process & Energy Department, but also the companies in the process & energy field.

From the beginning I have always worked together with my fellow master students. The courses are challenging, but since everybody within the department knows each other and works in the same building, it is easy to find the right people when you have a problem.

For me, the great international reputation of the Process & Energy Department and its staff was also a plus; thanks to this I had the chance to do my internship at a highly innovative project in Italy. My task focused on the development of an air-conditioning system driven by the heat of the sun. This system has the potential to provide the world with sustainable air conditioning, how “cool” is that?

Irene de Sera (The Netherlands)
Admission requirements and application procedure

Dutch BSc degree
In most cases, if you hold a BSc degree and the Master’s programme is closely related to your Bachelor’s programme, you will be admitted directly into the programme. However, if the Master’s programme does not follow directly from your undergraduate programme, you will be required to take additional courses in what is called a bridging programme. This may be a standard programme, or it may be tailored to your specific situation.

To see which Master’s programmes are open to you on completion of your Bachelor’s degree Dutch university, go to www.doorstroommatrix.nl.

Application goes through Studielink: tudelft.studielink.nl

Dutch HBO degree
An HBO Bachelor's degree does not qualify you for direct admission to a TU Delft Master's degree programme. To start a Master's degree programme, you will first need to complete a supplementary programme in order to bring your knowledge to the required level. You can do this during your HBO programme by completing a bridging minor or by means of a bridging programme after securing your HBO diploma.

Entrance requirements for mathematics and English (some exceptions) apply for both the bridging minor and the bridging programme. See www.hbodoorstroom.tudelft.nl for detailed information.

Application goes through Studielink: tudelft.studielink.nl

International applicants
To be considered for admission to a MSc Programme you’ll need to meet TU Delft’s general admission requirements.

1. A BSc degree (or a proof that you have nearly completed a BSc programme) in a field closely related to the MSc programme.
2. A BSc Cumulative Grade Point Average (CGPA) of at least 75% of the scale maximum.
3. Proof of English language proficiency:
   - TOEFL with a minimum score of 21 for each section and an overall band score of at least 90 (internet-based test). Please note that we only accept the TOEFL internet-based test.
   - or IELTS (academic version) with a minimum score 6.0 for each section and an overall Band score of at least 6.5.
   - or proof that you have passed the University of Cambridge ‘Certificate in Advanced English’ with a minimum grade B or the University of Cambridge ‘Certificate of Proficiency in English’.

For international students, the application period starts in October and closes on 1 April. To start an MSc application, fill in the online application and pay the refundable application fee of €100. Then send hard copies of the application documents to TU Delft's International Office. Please note that you should apply early when you want to be considered for a scholarship as well!

For more information about the application procedure and studying at TU Delft in general, go to: www.admissions.tudelft.nl.

Further information
Please visit the webpage for all details, complete requirements, deadlines and contact information: www.me.msc.tudelft.nl.

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