Master’s and PhD studies

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Director China Relations

KTH web site  Facts about KTH  Study at KTH
KTH Royal Institute of Technology

One of the top technical universities in Europe
Short facts about KTH

- Established 1827 in Stockholm, Sweden
- People from more than one hundred nations

Some numbers:
- 13,500 full time students
- 1,600 PhD students (with at least 50% activity)
- 2,200 new students in master programs each year
- 300 new PhD students each year
- 600 members of faculty
### Engineering and Science rankings

<table>
<thead>
<tr>
<th>Comparison of QS rankings by subject 2024</th>
<th>KTH</th>
<th>ZJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>General rankings for 2024</td>
<td>73</td>
<td>44</td>
</tr>
<tr>
<td>Electrical &amp; Electronic Engineering</td>
<td>23</td>
<td>51</td>
</tr>
<tr>
<td>Architecture &amp; Built Environment</td>
<td>26</td>
<td>49</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>23</td>
<td>49</td>
</tr>
<tr>
<td>Materials Science</td>
<td>23</td>
<td>38</td>
</tr>
<tr>
<td>Civil and Structural Engineering</td>
<td>44</td>
<td>51-100</td>
</tr>
<tr>
<td>Computer Science and Information Systems</td>
<td>62</td>
<td>36</td>
</tr>
<tr>
<td>Mathematics</td>
<td>48</td>
<td>76</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>58</td>
<td>36</td>
</tr>
<tr>
<td>Physics and Astronomy</td>
<td>64</td>
<td>87</td>
</tr>
<tr>
<td>Chemistry</td>
<td>87</td>
<td>37</td>
</tr>
</tbody>
</table>

- **Yellow shading**: higher rank than KTH
- **Red shading**: lower rank than KTH

KTH ranking in Times Higher Education 2023: 97
The Kingdom of Sweden

• About 10 million inhabitants, 2 million of whom live in the capital of Stockholm

• Has a pleasant climate thanks to the warm Gulf stream in the north Atlantic sea

• Combines a beautiful natural setting with modern technology and vibrant cities

• Home of the Nobel Prize, and many famous export companies, such as the examples on the next slide:
Sweden makes a lasting impression

Swedish entrepreneurship and ingenuity has helped shape the worlds of communication, furniture, fashion, music and much more. And no matter what the industry, there always seems to be that engineering approach.
Stockholm – a city of islands
Stockholm: a dynamic environment, modern, historic, clean air and water
Stockholm: an international city

• A multi-cultural European capital, communities from China, India and other countries

• A city with very clean air and water

• Quick access to city, campus and nature with excellent transportation: public, by bicycle or even by boat

• Swedes speak good English, very limited need to learn Swedish while studying in Stockholm
KTH main campus
Five campuses close to industry
Structure of education at KTH

- High school
- 3-year Bachelor of Engineering (In Swedish, ICT also in English)
- 2-year Master’s (In English)
- 4-year PhD
Structure of MSc education at KTH

Time

1 semester

Research

3 semesters

Courses

BSc
MSc programmes for entry in 2024

More than 60 programmes in several subject areas:

- Architecture and the Built Environment
- Computer Science
- Electrical Engineering
- Engineering Physics and Mathematics
- Energy and Sustainable Development
- Industrial Management and Innovation
- Information and Communication Technology
- Life Science Technology, Chemistry and Chemical Engineering
- Materials Science and Engineering
- Mechanical Engineering
Fees and Scholarships

There are application and tuition fees for non-EU/EEA/Swiss citizens for 1st and 2nd cycle studies (bachelor and master).

The tuition fee is SEK171k (about RMB114k*) for one year of full-time master’s study, architecture 70% higher and bachelor 20% lower.

Scholarships are available, for example:
- KTH Scholarship (covering the tuition fee), very competitive: 8% of applicants got offers in 2023
- Joint programs: Erasmus Mundus and EIT (European Institute of Innovation and Technology)

* Assuming exchange rate RMB 1.0 = SEK 1.5
Living in Sweden

When applying for a residence permit, you must prove to the Swedish Migration Board that you will have a guaranteed sum of money at your disposal throughout the entire period of your studies. The amount is SEK 9450*, about RMB 6300**, per month for ten months of the year.

Breakdown of budget per month, approximately:
- Food: RMB 1650
- Accommodation: RMB 3000 (for about 19 m²)
- Local travel: RMB 500
- Phone/internet: RMB 350
- Other: RMB 800

* This sum was valid on 1 January 2023, subject to changes
** Assuming exchange rate RMB 1.0 = SEK 1.5
Joint MSc programs: two degrees from European universities

European Institute of Innovation and Technology (EIT)
- Combines education, research and business
- Master programs in ICT, energy and electrical systems
- Studies in two European countries
- Scholarships available

Erasmus+
- EU program at master and PhD levels
- Studies in (at least) two European countries
- Scholarships available

Nordic Five Tech
- Studies in two Nordic countries
Application requirements and process

- Completed Bachelor’s degree is required except for 3+2 applicants, see following slides for terms

- English proficiency has to be shown (TOEFL 90 with writing 20, IELTS 6.5 with no subscore below 5.5 etc)

- There are programme-specific requirements (see www.kth.se/en/studies/master)

- Apply at www.universityadmissions.se

- Online application period: October 16 to January 15

- Results of admission distributed March 27
Application for KTH scholarship

- Applications for KTH scholarships are open from December 1, 2023, to January 15, 2024
- Applications are entered via the KTH web page:
  - Go to master studies: www.kth.se/en/studies/master/
  - Select “Scholarships” in the left menu and then “KTH scholarship”

- Scholarship opportunities: KTH Scholarship:

  ![QR Code for Master Studies](#)

  ![QR Code for Scholarships](#)
3+2 program

KTH MSc in 5 years from start of bachelor studies

Admission to KTH MSc after 3 years
3+2 program

KTH and ZJU have a very successful 3+2 agreement since 2012

Students can apply during the 3rd year of 4-year bachelor studies. These applicants must contact their home university administration.

Applications should follow the mapping agreed between bachelor majors and master programs. Applications outside of the mapping have a low likelihood of admission. Joint programs and programs at other Swedish universities are NOT included in 3+2.

Applications are made at universityadmissions.se, deadline January 15, 2024.
3+2 applications

Include a table of this type in your application, including what courses you will take during the 6th semester, example for KTH master program in Engineering Physics:

<table>
<thead>
<tr>
<th>KTH master program prerequisites, see &quot;Entry requirements&quot;</th>
<th>Corresponding bachelor level courses at your home university</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics (including classical mechanics, thermodynamics, electromagnetism, waves, geometrical optics and quantum mechanics) equivalent to at least 45 ECTS</td>
<td>List courses and briefly describe contents</td>
</tr>
<tr>
<td>Mathematics (including differential and integral calculus, linear algebra, differential equations and transforms, and statistics) equivalent to at least 35 ECTS</td>
<td>List courses and briefly describe contents</td>
</tr>
</tbody>
</table>

60 ECTS credits is one full academic year of studies. At bachelor level, the credits from a Chinese university can usually be multiplied by 1.5 to get the corresponding number of ECTS credits, i.e. 1 credit at a Chinese university corresponds to approximately 1.5 ECTS credits

ECTS= European Credit Transfer System
### 3+2 applications

**Example of a table suggested to be included when applying for KTH Computer Science:**

<table>
<thead>
<tr>
<th>KTH master program prerequisites, see “Entry requirements”</th>
<th>Corresponding bachelor level courses at your home university</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics equivalent to at least 28,5 ECTS, there must be:</td>
<td>List courses and briefly describe contents:</td>
</tr>
<tr>
<td>1. a course in one-variable calculus,</td>
<td>1. ...</td>
</tr>
<tr>
<td>2. a course in linear algebra and</td>
<td>2. ...</td>
</tr>
<tr>
<td>3. a course in probability theory and statistics</td>
<td>3. ...</td>
</tr>
<tr>
<td>4. a course in discrete structures</td>
<td>4. ...</td>
</tr>
<tr>
<td>Computer Science/Information Technology equivalent to at least 22,5 ECTS, there must be</td>
<td>List courses and briefly describe contents:</td>
</tr>
<tr>
<td>1. a course in object oriented programming,</td>
<td>1. ...</td>
</tr>
<tr>
<td>2. a course in algorithms and data structures</td>
<td>2. ...</td>
</tr>
<tr>
<td>3. a course in computational complexity</td>
<td>3. ...</td>
</tr>
<tr>
<td>A course in calculus in several variable is required for some of the tracks</td>
<td>Course and brief description</td>
</tr>
</tbody>
</table>

60 ECTS credits is one full academic year of studies. At bachelor level, the credits from a Chinese university can usually be multiplied by 1.5 to get the corresponding number of ECTS credits, i.e. 1 credit at a Chinese university corresponds to approximately 1.5 ECTS credits

ECTS = European Credit Transfer System
| ZJU School of Biomedical Engineering and Instrument Science, major: Biomedical Engineering | KTH Medical Engineering |
| ZJU College of Biosystems Eng. & Food Science, major: Bioengineering | KTH Sustainable Technology  
KTH Industrial and Environmental Biotechnology  
KTH Medical Biotechnology |
| ZJU College of Chemical and Biological Engineering, major: Chemical Engineering and Technology | KTH Sustainable Technology  
KTH Chemical Engineering for Energy and Environment  
KTH Macromolecular Materials  
KTH Molecular Science and Engineering  
KTH Nanotechnology |
| ZJU College of Chemical and Biological Engineering, major: Pharmaceutical Engineering | KTH Sustainable Technology |
| ZJU College of Civil Engineering & Architecture, major: Civil Engineering | KTH Civil and Architectural Engineering  
KTH Real Estate and Construction Management (Students must have completed Engineering Economics, 2 credits; Engineering Project Management, 2 credits; Real Estate Economics and Evaluation, 2 credits; Civil Engineering Construction 3 credits or equivalent)  
KTH Environmental Engineering and Sustainable Infrastructure  
KTH Sustainable Technology  
KTH Transport and Geoinformation Technology  
KTH Engineering Mechanics |
## ZJU – KTH 3+2 mapping

### Possible transitions

| ZJU College of Computer Science & Technology, major: Computer Science and Technology | KTH Transport and Geoinformation Technology  
KTH Communication Systems  
KTH Computer Science  
KTH Embedded Systems  
KTH Interactive Media Technology |
|---|---|
| ZJU College of Control Science and Engineering, major: Automation | KTH Electric Power Engineering  
KTH Engineering Design (students only eligible for track Mechatronics)  
KTH Systems, Control and Robotics  
KTH Information and Network Engineering (students must have completed courses in Signals & Systems, Digital Signal Processing and Fundamentals of Programming) |
| ZJU College of Electrical Engineering, major: Automation | KTH Electromagnetics, Fusion and Space Engineering (Eligibility depending on student’s course selection, see prerequisites of the master program at www.kth.se)  
KTH Electric Power Engineering  
KTH Embedded Systems |
| ZJU College of Electrical Engineering, major: Electrical Engineering and its Automation | KTH Embedded Systems |
| ZJU College of Electrical Engineering, major: Electronic Information Engineering | KTH Nanotechnology  
KTH Information and Network Engineering (students must have completed a course in Fundamentals of Programming)  
KTH Communication Systems  
KTH Embedded Systems |
| ZJU College of Energy Engineering, major: Energy and Environmental System Engineering | KTH Sustainable Technology  
| KTH Electromagnetics, Fusion and Space Engineering (Eligibility depending on student's course selection)  
| KTH Sustainable Energy Engineering |
|---|---|
| ZJU College of Energy Engineering, major: Mechanical Design, Manufacturing and Automation | KTH Sustainable Energy Engineering  
| KTH Production Engineering and Management  
| KTH Engineering Design  
| KTH Integrated Product Design  
| KTH Vehicle Engineering  
| KTH Engineering Mechanics (Students only eligible for track Fluid Mechanics) |
|---|---|
| ZJU College of Energy Engineering, major: Renewable Energy Science and Engineering | KTH Sustainable Technology  
| KTH Electromagnetics, Fusion and Space Engineering (Eligibility depending on student's course selection)  
| KTH Sustainable Energy Engineering |
|---|---|
| ZJU College of Energy Engineering, major Vehicle Engineering | KTH Production Engineering and Management  
| KTH Engineering Design  
| KTH Integrated Product Design (students only eligible to track: Innovation Management and Product Development-IPDE)  
| KTH Engineering Mechanics |
### ZJU – KTH 3+2 mapping Possible transitions

| ZJU College of Information Science and Electronic Engineering, major: Electronic Science and Technology | KTH Communication Systems  
KTH Electric Power Engineering  
KTH Embedded Systems  
KTH Information and Network Engineering  
KTH Engineering Mechanics |
| --- | --- |
| ZJU College of Information Science and Electronic Engineering, major: Information Engineering | KTH Information and Network Engineering  
KTH Communication Systems  
KTH Embedded Systems |
| ZJU College of Information Science and Electronic Engineering, major: Microelectronic Science and Engineering | KTH Embedded Systems/Inbyggda system (Students only eligible to tracks Embedded Platform/Embedded Electronics & SoC Design)  
KTH Nanotechnology |
| ZJU School of Material Science and Engineering, major: Material Science and Engineering | KTH Nanotechnology  
KTH Engineering Materials Science |
| ZJU College of Mechanical Engineering, major: Industrial Engineering | KTH Engineering Design  
KTH Production Engineering and Management |
## ZJU – KTH 3+2 mapping
### Possible transitions

| ZJU College of Mechanical Engineering, major: Mechatronics Engineering | KTH Engineering Design (Students only eligible for track Mechatronics)  
| KTH Integrated Product Design (Students only eligible to track: Innovation Management and Product Development-IPDE)  
| KTH Production Engineering and Management  
| KTH Embedded Systems |
| ZJU Ocean College, major: Marine Science | KTH Sustainable Technology |
| ZJU Ocean College, major: Ocean Engineering and Technology | KTH Sustainable Technology |
| ZJU College of Optical Science and Engineering, major: Opto-Electronics Information Science and Engineering | KTH Engineering Physics (Students eligible if elective courses in Electromagnetic Field & Waves and Quantum Optics: Fundaments and Applications have been taken at ZJU)  
| KTH Nanotechnology |
| ZJU Department of Polymer Science and Engineering, major: Macromolecular Materials and Engineering | KTH Sustainable Technology  
| KTH Macromolecular Materials  
| KTH Nanotechnology |
Comments on the 3+2 applications

General comments

Most 3+2 applicants will see the status “unqualified” in universityadmissions.se during the admissions process: Ignore this! It usually only means that your transcripts indicate that you will not have a bachelor degree before entering KTH. If your name is on the list KTH has received, KTH will mark your 3+2 application so that it is processed anyway.

Instead check carefully that you have uploaded all documents that are compulsory for each master program for which you are applying before February 1.

Do not wait until January 31 to start uploading documents! Something may go wrong and then your application is considered LATE and is only evaluated if there is time left at the end of the evaluations. That is unusual since each master program may receive more than 1000 applications.
Comments on the 3+2 applications

Acceptance rates, numbers available on the KTH website

Most popular master programs 2023 (≤10%):
- ICT Innovation: <8% for 4 of 6 tracks
- Cybersecurity: 8%
- Computer Science: 8%
- Systems, Control and Robotics: 9%
- Machine Learning: 10%

Average acceptance rate for all master programs: 32%

Easier programs to be admitted to (≥50%):
- Sports Technology: 73%
- Technology, Work and Health: 71%
- Chemical Engineering for Energy and Environment: 59%
- Medical Biotechnology: 57%
- Macromolecular Materials: 52%
Languages: English or Swedish?

- **Good knowledge of English** is fundamental for successful education at KTH.
- Sweden has a local language but there is **very limited need to learn Swedish** when studying since people in Sweden speak good English.
- All KTH students who do not have Swedish as their first language are invited to an introductory course in Swedish language and culture. The course is free of charge for all students.
- **Good advice: focus on English in the beginning!**
Career prospects after a KTH degree

• Statistics for master’s programmes:

- 50% had a job even before graduation

- >90% had a job within 6 months of graduation

- >30% became PhD students
PhD studies

- Three years of full-time research, one year of courses
- Engages around 2,000 people
- A large proportion international PhD students
- A candidate has to apply for a position
- All PhD student positions are announced on the KTH web site: https://www.kth.se/en/studies/phd
- Employment with a salary if admitted, but competition for positions
Things you can do after finishing education at KTH...

- Employed at IT company in Sweden
- KTH master program in Communication Systems, KTH-HUST 3+2 Program, KTH Scholarship holder, 2018-2020
- Bachelor: HUST, Telecommunications Engineering, ranked #1 of 200 students
Things you can do after finishing education at KTH...

- Ph.D. student at the Division of Decision and Control Systems, KTH, since July 2018
- M.Sc. degree in Embedded systems from KTH in 2018
- B.E. degree in Control Science and Engineering from the Honors School, Harbin Institute of Technology (Harbin, China), 2017
Things you can do after finishing education at KTH...

- PhD in Electronic and Computer Engineering, Hong Kong University of Science and Technology, expected degree in 2023
- Master of Science in Systems, Control and Robotics, KTH, 2019 (KTH-UM-SJTU-JI 3+2)
- Exchange Student, ETH Zurich, 2019
- Bachelor of Science in Electrical and Computer Engineering, University of Michigan-Shanghai Jiao Tong University Joint Institute, 2018
Permanent researcher, KTH. Consultant at the company EPS AB.

- Researcher at Energy Technology Department. KTH, Sweden, 2018-2020.
- Postdoctor at Energy Technology Department. KTH, Sweden, 2016-2018.
- MSc in Engineering Thermophysics. Zhejiang University, China, 2010
Things you can do after finishing education at KTH... go into space!

Professor Christer Fuglesang
Professor in Space Physics, KTH

- Mission crew STS-116 & STS-128
  Shuttle Discovery, NASA-ESA
  2006 & 2009
- Astronaut at European Space Agency
  1992-present
- PhD in Experimental Particle Physics
  Stockholm University, 1986
- Master in Engineering Physics
  KTH, 1981
Things you can do after research at KTH... collect the Nobel prize!

Professor Hannes Alfvén

- Nobel Prize in Physics, 1970 for Magnetohydrodynamics
- Professor in Electrical Engineering University of California, 1967-1991
- Professor in Electromagnetic Theory and Electrical Measurements KTH, 1940-1991
- PhD in Electromagnetic Waves Uppsala University, 1934
Nobel Prize ceremony in Stockholm on December 10 every year

... may take a few years after graduation...
International students from KTH attended the Nobel Banquett in, the Stockholm City Hall, dressed in traditional costumes.
Welcome to KTH: launch your career!
Videos about KTH

https://space.bilibili.com/12838896/video
https://www.bilibili.com/video/BV1C5411j78Y?spm_id_from=333.999.0.0