



# KTH Royal Institute of Technology

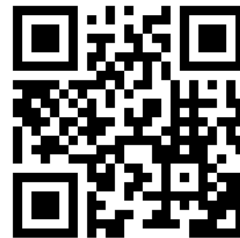


## Master's and PhD studies

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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:
    - 13,000 full time students
    - 1,800 PhD students
    - 2,500 new students in master programs
    - 300 new PhD students each year
    - 600 members of faculty
-





# Short facts about KTH

- QS ranking: Global World ranking 98 (2020) but many engineering areas are much stronger:
    - Electrical Engineering: 17
    - Architecture / Built Environment: 20
    - Materials Science: 27
    - Mechanical Engineering: 29
    - Statistics & Operational Research: 37
    - Mathematics: 38
    - Civil & Structural Engineering: 42
    - Computer Science & Info Systems: 43
    - Chemical Engineering: 51-100
    - Physics & Astronomy: 51-100
-

# Is KTH a good choice for ZJU students? Yes!

Comparison of QS rankings by subject 2020		
	KTH	ZJU
General ranking	98	54
Electrical and Electronic Engineering	17	47
Architecture	20	51-100
Mechanical Engineering	29	51-100
Materials Science	27	35
Statistics and Operational Analysis	37	51-100
Computer Science and Information Systems	43	51-100
Civil and Structural Engineering	42	51-100
Mathematics	38	51-100
Chemical Engineering	51-100	51-100
Physics and Astronomy	51-100	51-100
Chemistry	101-150	36
Yellow shading: higher rank than KTH		
Red shading: lower rank than KTH		

# 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.





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# 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 clean and safe city
  - 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
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# Stockholm student life, part of the city







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# KTH main campus





# Five campuses close to industry



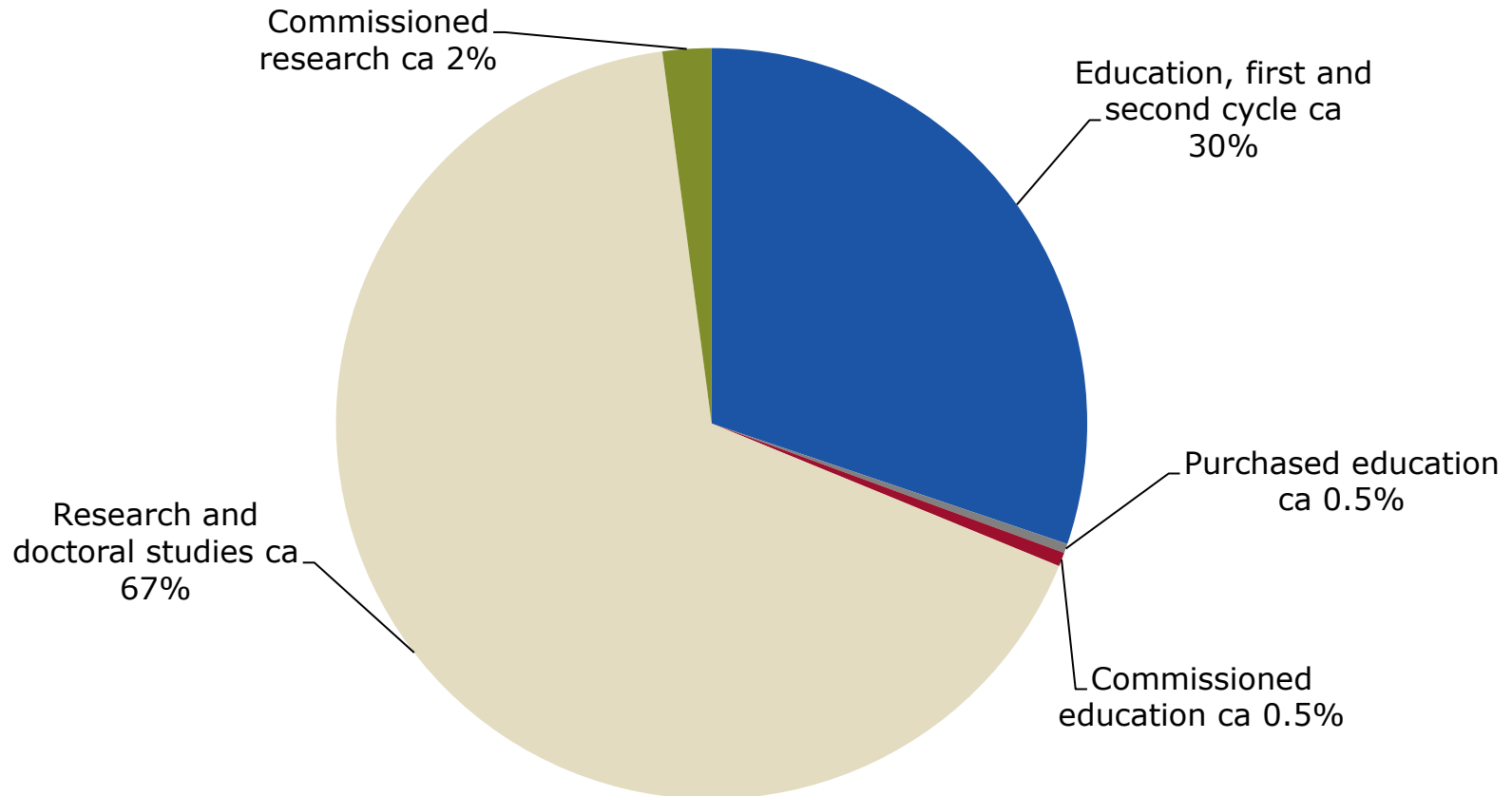


# Education in close collaboration with industry

- KTH has five campuses in and around Stockholm city
  - Each campus closely integrated with local industry
  - Example: the campus in Kista is surrounded by the world's largest collection of ICT businesses, more than 1000 companies, such as Ericsson, IBM, Intel, Sun, Compaq, Huawei, ZTE, and many more
  - Master thesis can be written at a company, often leading to the first job after graduation
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# KTH - Research-based operations

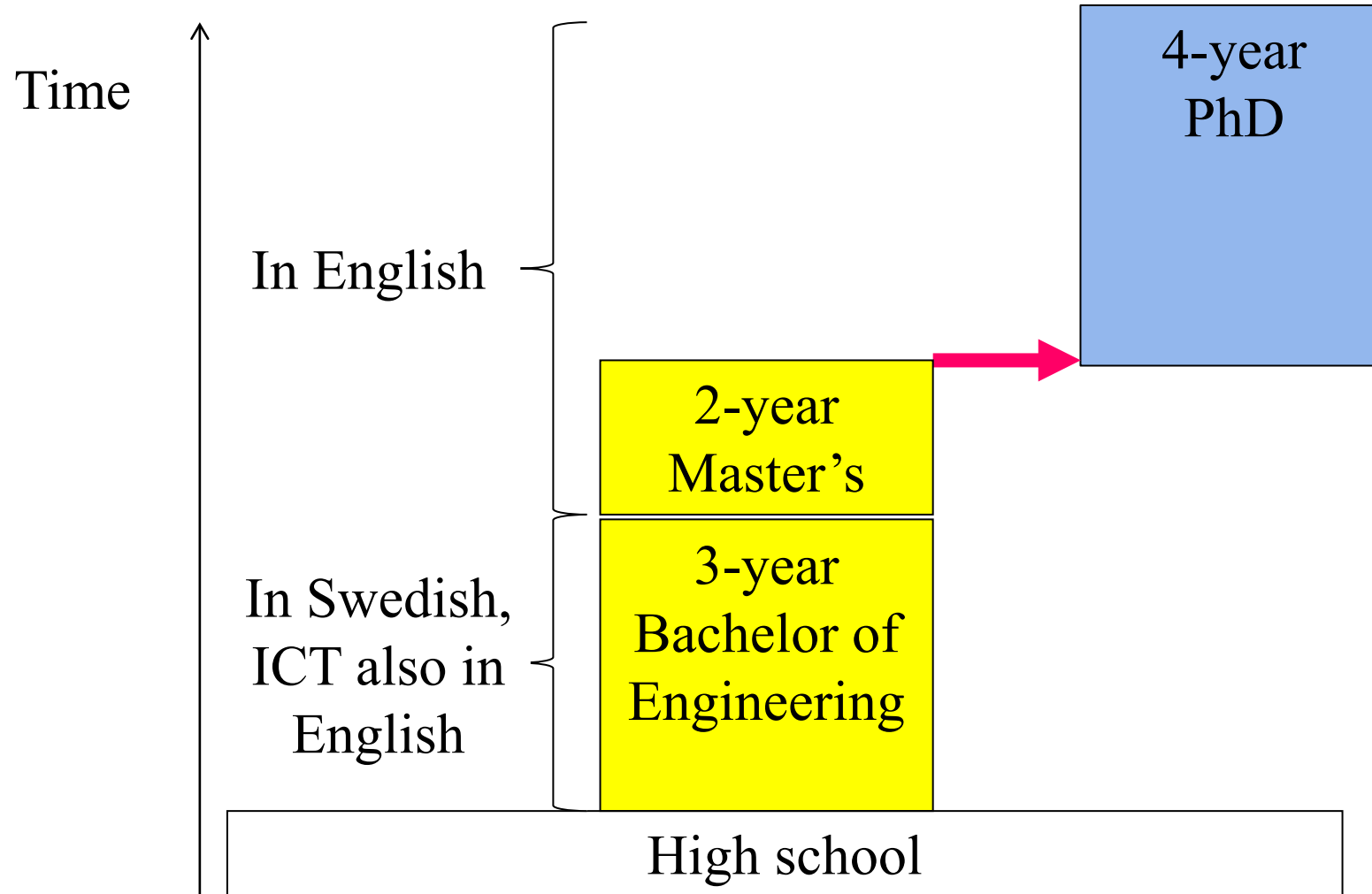
- Total Revenue SEK 4,9 billion (ca RMB 3,8 billion)\*



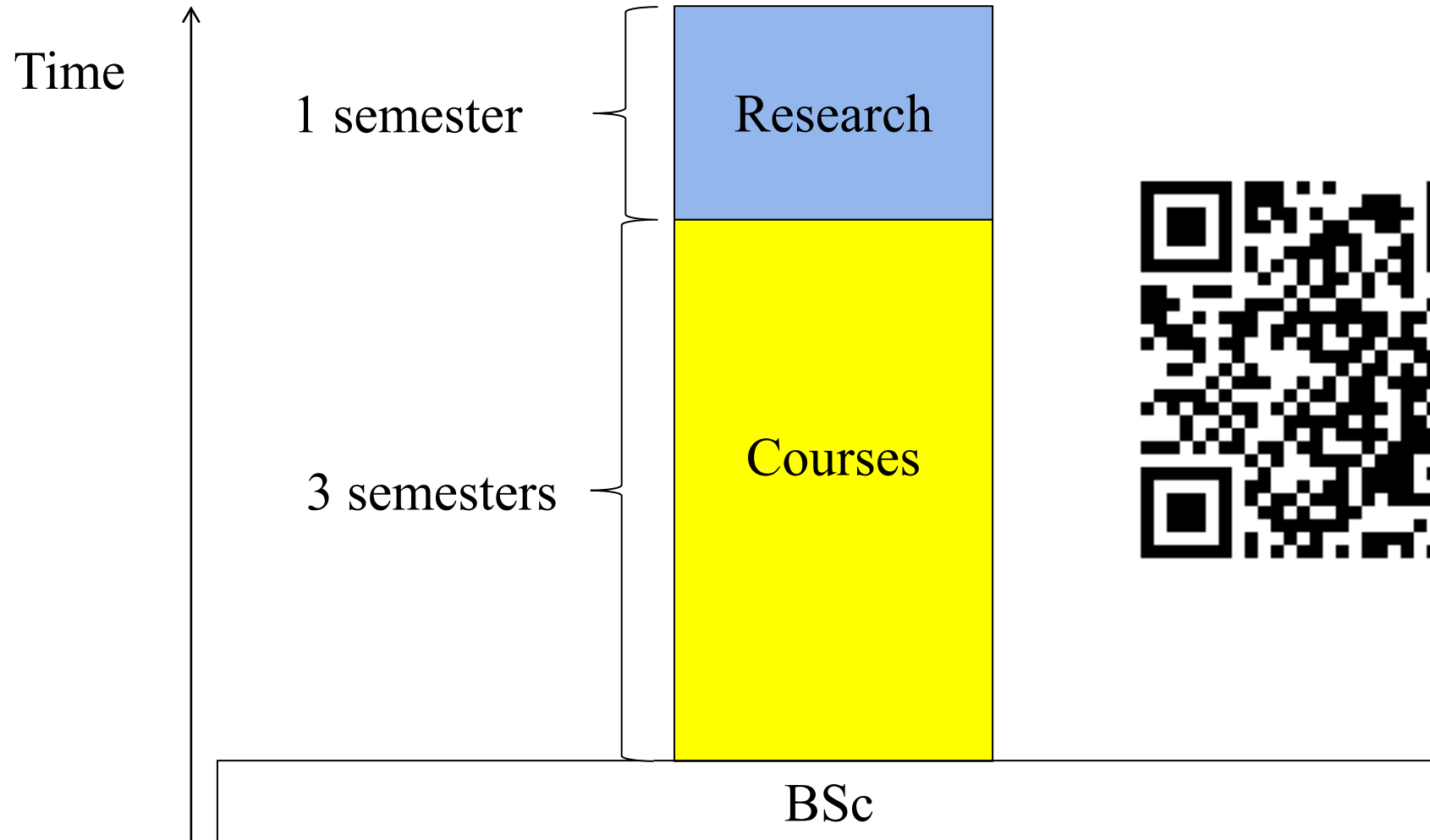
- Figure for 2016, exchange rate 1RMB = 1.3 SEK



# Structure of education at KTH



# Structure of MSc education at KTH





# MSc programmes for entry in 2021

## **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 SEK155k (about RMB120k\*) 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)
- SI: the Swedish Institute
- Joint programs: Erasmus Mundus and EIT (European Institute of Innovation and Technology)

\* Assuming exchange rate RMB 1.0 = SEK 1.3



# 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 8514, about RMB 6550\*, per month for ten months of the year.

Breakdown of budget per month, approximately:

- Food: RMB 1700
- Accommodation: RMB 3000
- Local travel: RMB 500
- Phone/internet: RMB 350
- Other: RMB 1000

\* Assuming exchange rate RMB 1.0 = SEK 1.3



# 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](http://www.kth.se/en/studies/master))
  - Apply at [www.universityadmissions.se](http://www.universityadmissions.se)
  - Online application period: October 16 to January 15
  - Results of admission distributed on April 9
-

# Application for KTH scholarship

- Applications for KTH scholarships are open from December 1 to January 15
- Applications are entered via the KTH web page:
  - Go to master studies: [www.kth.se/en/studies/master/](http://www.kth.se/en/studies/master/)
  - Select "Scholarships" in the left menu and then "KTH scholarship"
- Scholarship opportunities: KTH Scholarship:







# Application for KTH scholarship

An assessment of applicants for the scholarship is made based on the following criteria:

- The applicant's grades (GPA or equivalent)
  - The ranking of the university where the applicant studied at bachelor level
  - An overall assessment of the application by the professor in charge of the master program based on aspects relevant for the program. See "entry requirements; specific documents" for each master program.
  - The applicant's motivation how a future master degree from KTH will contribute to the sustainable development goals
-

# Application for KTH scholarship

- Sustainable development goals



# Application for KTH scholarship

- The motivation on sustainable development should at least show that the applicant has read the information on sustainability found in each master program description on the KTH web site. Example from a program: (scroll down to “Sustainable development”):

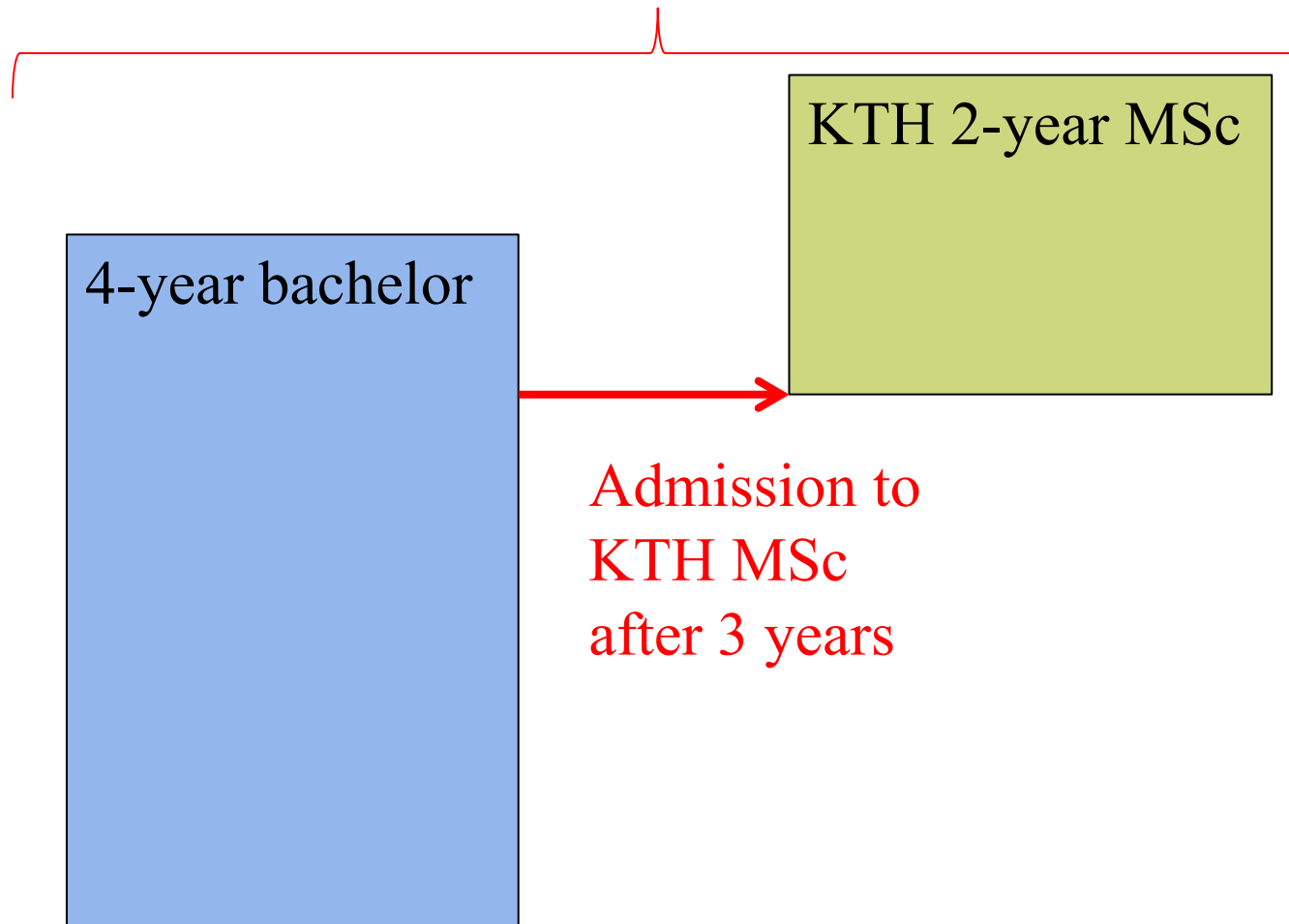


- Do NOT copy&paste from anything on the web! The motivation will be checked for plagiarism.
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# 3+2 program

KTH MSc in 5 years from start of bachelor studies





## 3+2 program

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

**Students can apply during the 3<sup>rd</sup> 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 lower likelihood of admission.

Applications are made at [universityadmissions.se](http://universityadmissions.se) , deadline January 15, 2021

## 3+2 applications

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

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

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 for KTH master program in Computer Science:

KTH master program prerequisites, see "Entry requirements"	Corresponding bachelor level courses at your home university
Mathematics equivalent to at least 22,5 ECTS, there must be: <ol style="list-style-type: none"> <li>1. a course in one-variable calculus,</li> <li>2. a course in linear algebra and</li> <li>3. a course in discrete structures</li> </ol>	List courses and briefly describe contents: <ol style="list-style-type: none"> <li>1. ...</li> <li>2. ...</li> <li>3. ...</li> </ol>
Computer Science/Information Technology equivalent to at least 22,5 ECTS, there must be <ol style="list-style-type: none"> <li>1. a course in object oriented programming,</li> <li>2. a course in algorithms and data structures and</li> <li>3. a course in computational complexity</li> </ol>	List courses and briefly describe contents: <ol style="list-style-type: none"> <li>1. ...</li> <li>2. ...</li> <li>3. ...</li> </ol>

Note: Computer Science is one of the most attractive programs at KTH with typically >10 applicants per position which makes the table above crucial for admission. Examples of other programs with typically >10 applicants per position are Machine Learning, Electric Power Engineering, Systems Control and Robotics, Civil and Architectural Engineering



# ZJU – KTH 3+2 mapping

## Possible transitions

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	<p>KTH Transport and Geoinformation Technology</p> <p>KTH Communication Systems</p> <p>KTH Computer Science</p> <p>KTH Embedded Systems</p> <p>KTH Interactive Media Technology</p>
ZJU College of Control Science and Engineering, major: Automation	<p>KTH Electric Power Engineering (Maximum of 5 students )</p> <p>KTH Engineering Design (students only eligible for track Mechatronics)</p> <p>KTH Systems, Control and Robotics (Maximum of 3 students)</p> <p>KTH Information and Network Engineering (students must have completed 68190130 Signals &amp; Systems, 11191240 Digital Signal Processing and 211G0250 Fundamentals of Programming)</p>
ZJU College of Electrical Engineering, major: Automation	<p>KTH Electromagnetics, Fusion and Space Engineering (Eligibility depending on student's course selection, see prerequisites of the master program at <a href="http://www.kth.se">www.kth.se</a>)</p> <p>KTH Electric Power Engineering (Maximum of 5 students)</p> <p>KTH Embedded Systems</p>
ZJU College of Electrical Engineering, major: Electrical Engineering and its Automation	<p>KTH Embedded Systems</p>
ZJU College of Electrical Engineering, major: Electronic Information Engineering	<p>KTH Nanotechnology</p> <p>KTH Information and Network Engineering (students must have completed 211G0250 Fundamentals of Programming)</p> <p>KTH Communication Systems</p> <p>KTH Embedded Systems</p>





# ZJU – KTH 3+2 mapping

## Possible transitions

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. Total maximum of 4 students)
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 (Total maximum of 4 students)



# 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 (Maximum of 3 students) 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	<p>KTH Engineering Design (Students only eligible for track Mechatronics)</p> <p>KTH Integrated Product Design (Students only eligible to track: Innovation Management and Product Development-IPDE)</p> <p>KTH Production Engineering and Management</p> <p>KTH Embedded Systems</p>
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	<p>KTH Engineering Physics (Students eligible if the elective courses 66120011 Electromagnetic Field &amp; Waves and 84190030 Quantum Optics: Fundamentals and Applications have been taken at ZJU)</p> <p>KTH Nanotechnology</p>
ZJU Department of Polymer Science and Engineering, major: Macromolecular Materials and Engineering	<p>KTH Sustainable Technology</p> <p>KTH Macromolecular Materials</p> <p>KTH Nanotechnology</p>





# Dual-degree master's programmes: two degrees from KTH and ZJU

Study one year at KTH and the remaining part at ZJU

Tuition fees at KTH are waived

Subjects:

- Energy Engineering since 2016
- Optical Engineering from 2021

Contact your study administration for application instructions and program details

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# KTH exchange program

Partner university students can apply for exchange studies at KTH. Deadlines: April 15 and October 15, see: **KTH** ([www.kth.se/en/](http://www.kth.se/en/)) / **Study at KTH / Exchange studies**

Students can study for up to 1 year and do not have to pay tuition fees for exchange studies which do not result in a degree

During or after exchange studies, it is possible to apply, in competition, for admission to a KTH master program which results in a degree

Contact your study administration for details



# After graduation with master degree

- After a KTH master degree: 1 year residence permit to look for a job or a PhD student position
    - KTH PhD student positions are publically announced at the web site, KTH MSc students may have an advantage
    - Many former KTH MSc students from enrol as KTH PhD students
  - After a KTH PhD degree: permanent residence permit in Sweden
  - KTH graduates find positions all over the world
-





# 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...



Thermal design engineer at Zhejiang Dahua Technology Co. Ltd, China, 2018

- Master in Sustainable Energy Engineering KTH, Sweden, 2017
- Bachelor in Energy and Environment System Engineering (KTH-ZJU 3+2) Zhejiang University, 2016



# Things you can do after finishing education at KTH...



## Engineer at Vector Informatik, China

- Master in Sustainable Energy Engineering KTH, 2018
- Bachelor in Energy and Environment System Engineering, Zhejiang University, 2016

# Things you can do after finishing education at KTH...



## Project Engineer, Marvel-tech Shanghai

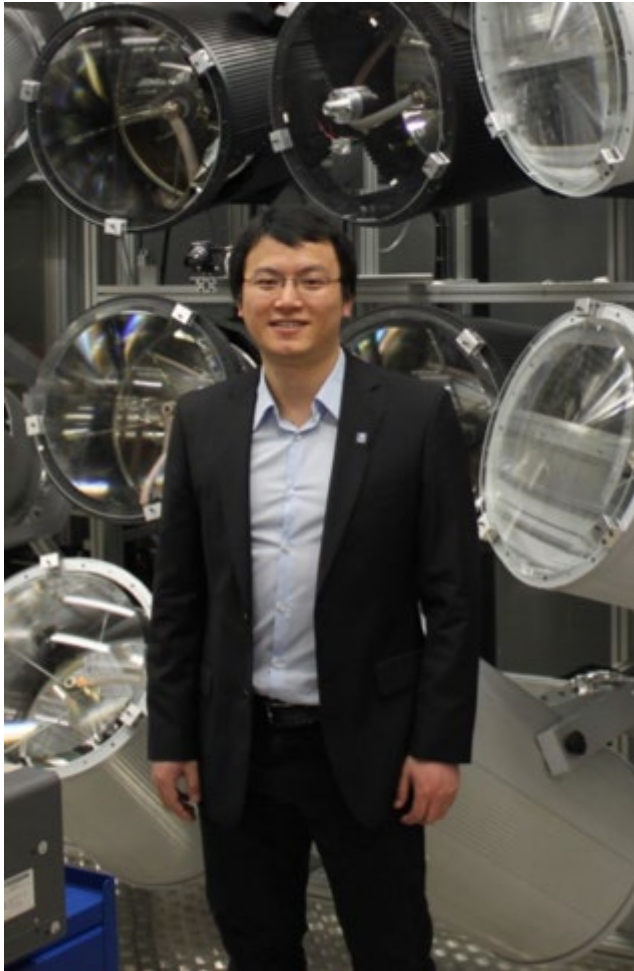
- Master degree in Sustainable Energy. KTH, Sweden, 2016.
- Dipl. Ing. In Energy Engineering ZheJiang University, China, 2014.

# Things you can do after finishing education at KTH...



- PhD candidate in systems and networking at University of Pennsylvania, USA
  - Wireless Systems (Now Information and Network Engineering), Master of Science, KTH, 2016-2018
  - Automatic Control, Bachelor of Engineering, Zhejiang University, 2013-2017 (KTH-ZJU 3+2)
-

# Things you can do after finishing education at KTH...



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.
- PhD in Concentrating Solar Power. KTH, Sweden, 2015.
- MSc in Engineering Thermophysics. Zhejiang University, China, 2010



# Things you can do after research at KTH...



Professor & Vice Dean  
School of Energy Engineering  
Zhejiang University

- Postdoc in Energy Technology, KTH, 2009
- PhD in Engineering Thermal Physics, ZJU, 2005
- Bachelor & Master in Thermal Engineering ZJU, 1995 & 2000

# 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

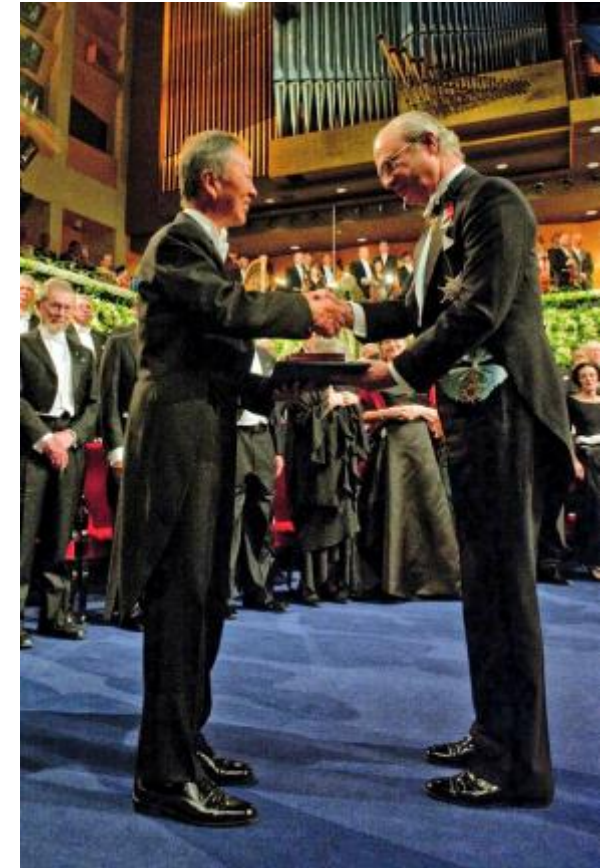
# Things you can do after research at KTH... **collect the Nobel prize!**

## 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...



# The Nobel Banquett



International students from KTH attended the Nobel Banquett in, the Stockholm City Hall, dressed in traditional costumes.





# Welcome to KTH: launch your career!

