KTH Royal Institute of Technology

Master’s and PhD studies

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KTH web site **Facts about KTH** **Study at KTH**

KTH Royal Institute of Technology

One of the top technical universities in Europe

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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 89 (2021) but many engineering areas are much stronger:

  - Electrical and Electronic Engineering: 18
  - Architecture / Built Environment: 19
  - Mechanical Engineering: 25
  - Materials Science: 38
  - Civil & Structural Engineering: 38
  - Computer Science & Info Systems: 42
  - Mathematics: 49
  - Chemical Engineering: 78
  - Physics & Astronomy: 90
  - Chemistry: 109

Is KTH a good choice for ZJU students? Yes!

Comparison of QS rankings by subject 2021		
	KTH	ZJU
General ranking	**89**	**45**
Electrical and Electronic Engineering	18	39
Architecture	19	51-100
Mechanical Engineering	25	35
Materials Science	38	27
Civil and Structural Engineering	38	41
Computer Science and Information Systems	42	47
Mathematics	49	66
Chemical Engineering	78	30
Physics and Astronomy	90	66
Chemistry	109	22
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

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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

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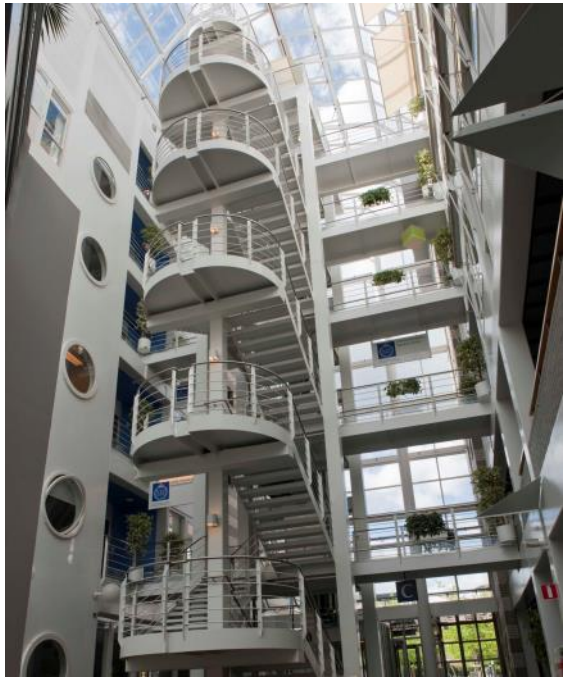
Five campuses close to industry

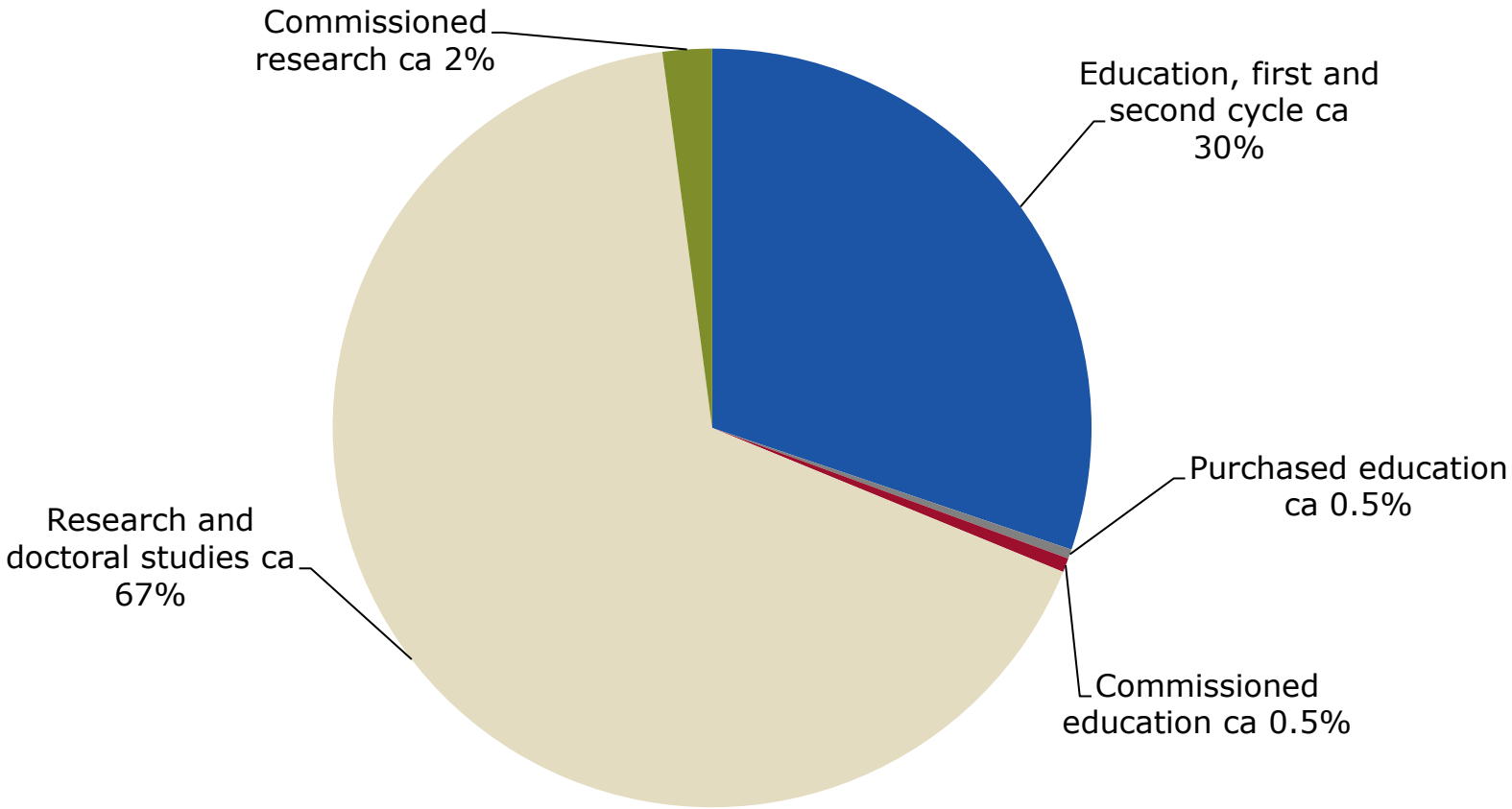


Education in close collaboration with industry

- 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

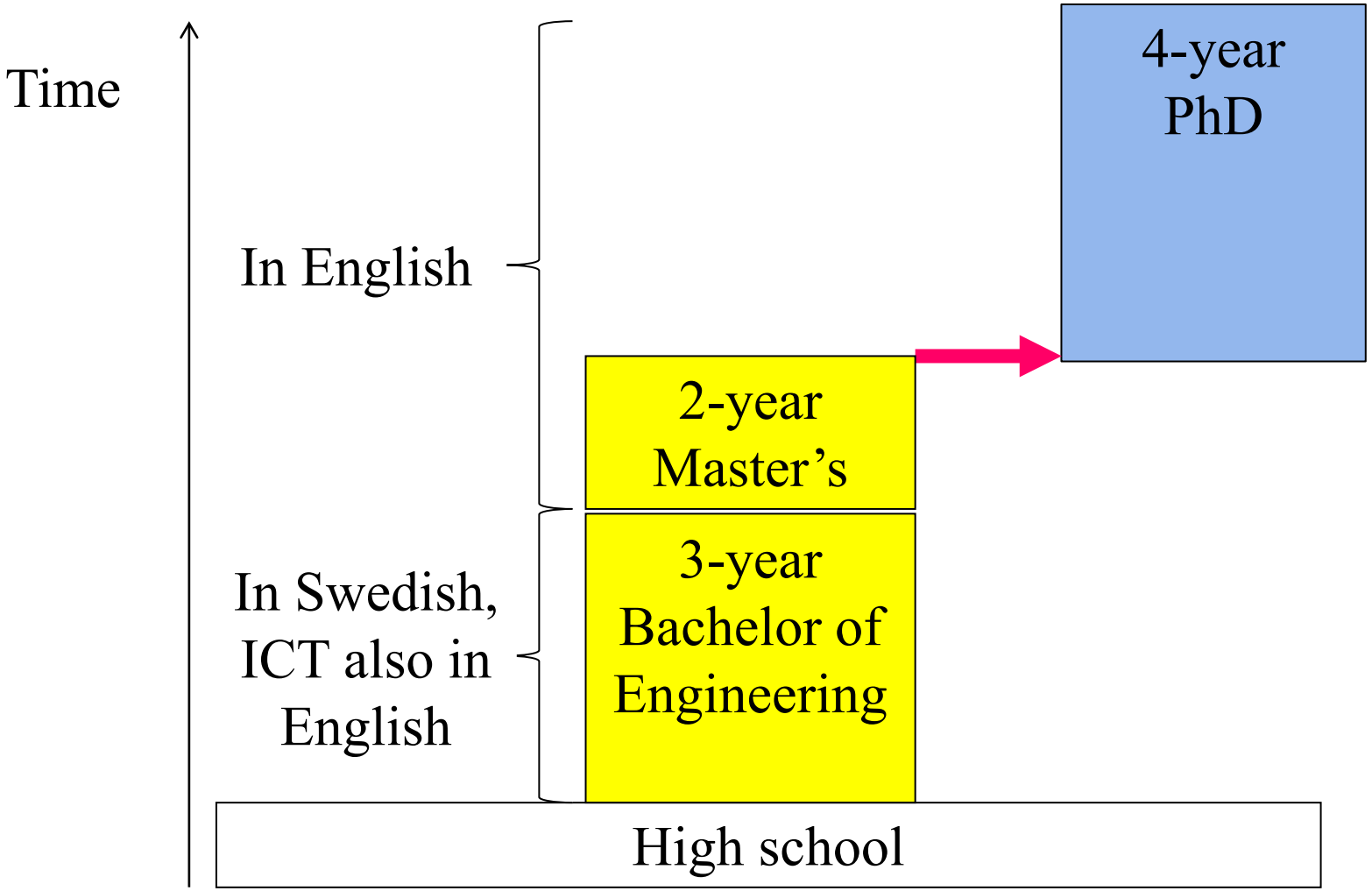
KTH - Research-based operations

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

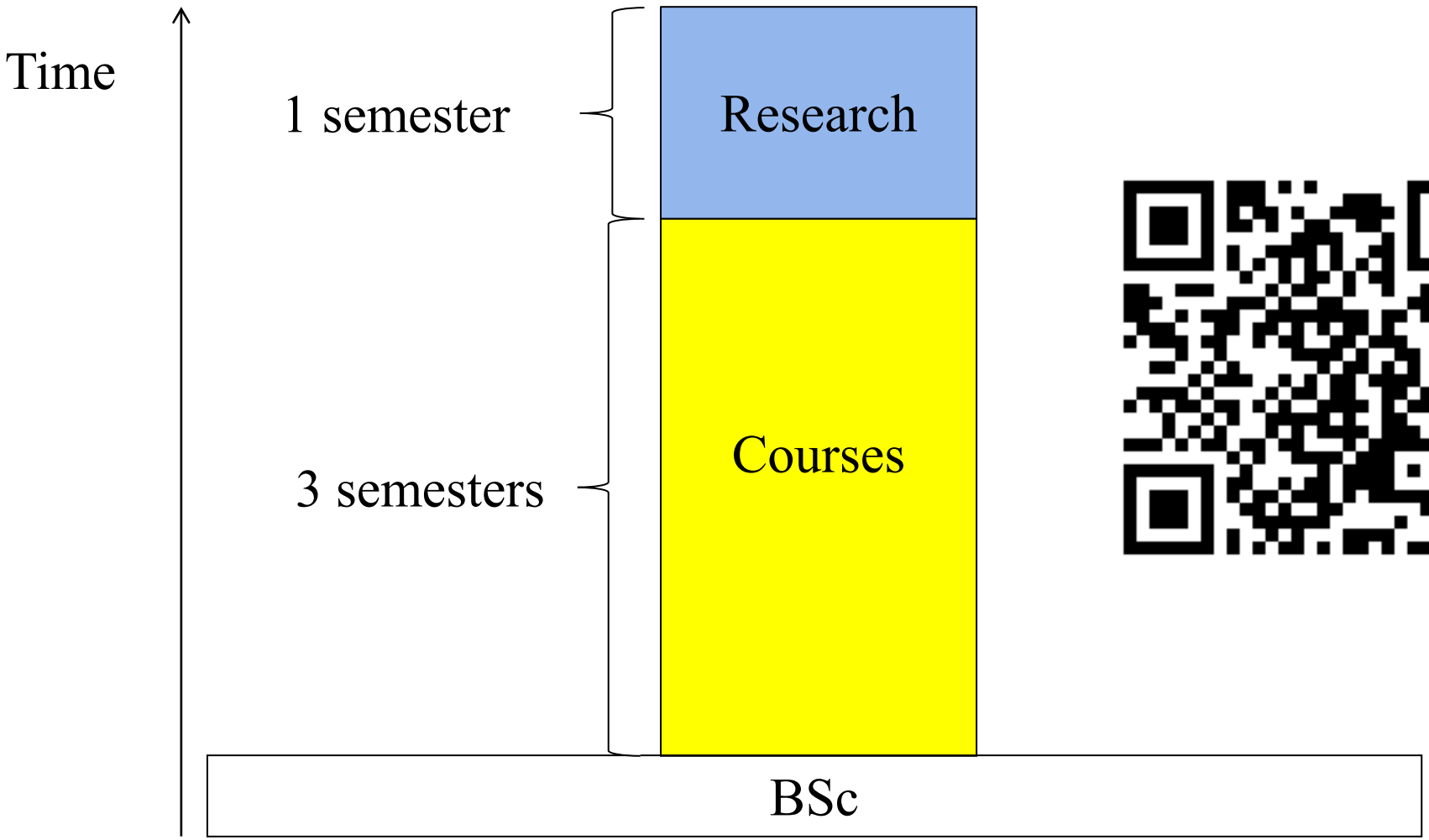


- Figure for 2016, exchange rate 1RMB = 1.3 SEK

Structure of education at KTH



Structure of MSc education at KTH



MSc programmes for entry in 2022

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 8568, 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

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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 18 to January 17
- Results of admission distributed on April 7

Application for KTH scholarship

- Applications for KTH scholarships are open from December 1 to January 15 (preliminary dates)
- 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:

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

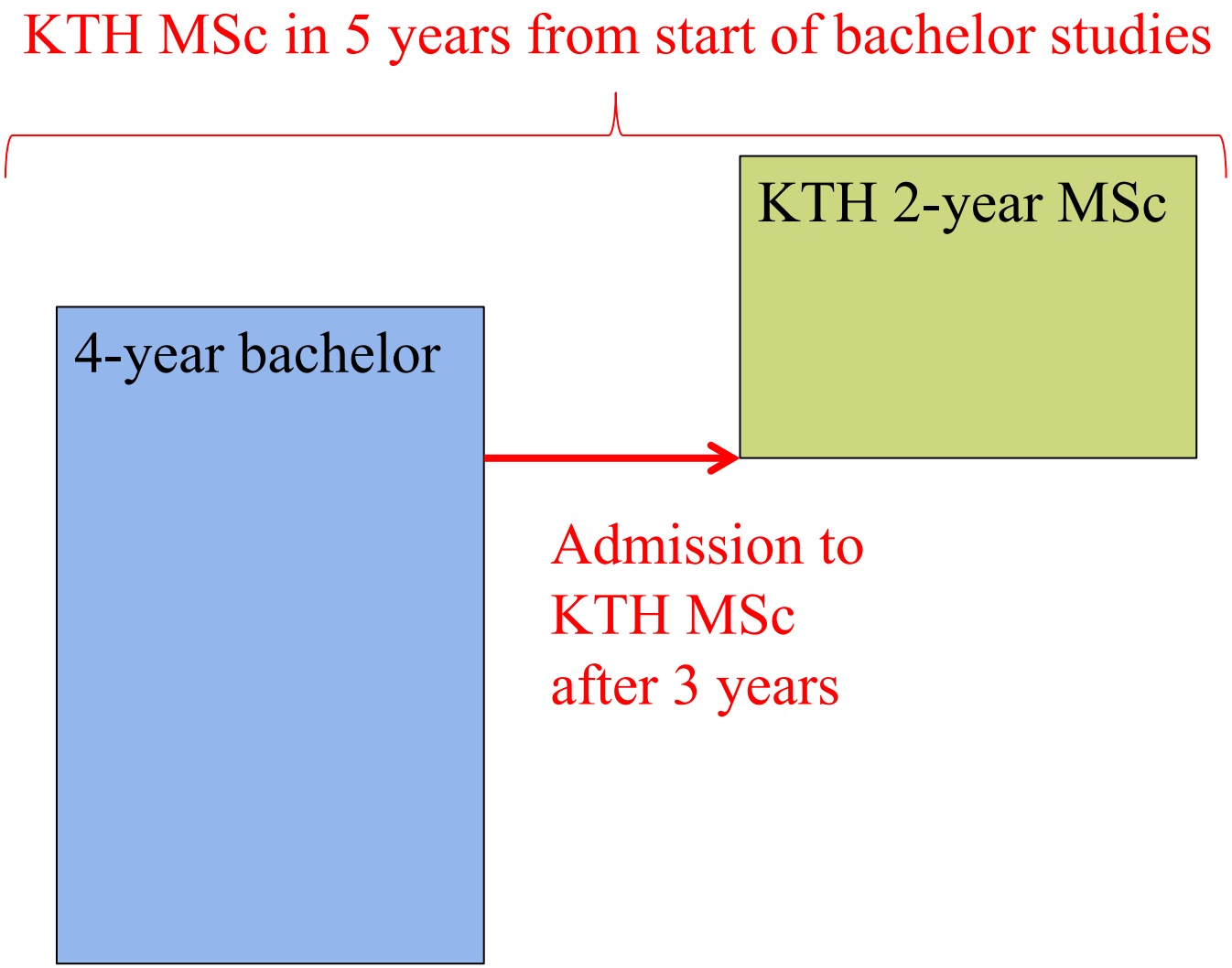
- Sustainable development goals

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.

3+2 program


KTH MSc in 5 years from start of bachelor studies
KTH 2-year MSc
4-year bachelor
Admission to
KTH MSc
after 3 years

3+2 program

KTH and ZJU has 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.

Applications are made at universityadmissions.se, deadline January 17, 2022

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:

KTH master program prerequisites, see "Entry requirements"	**Corresponding bachelor level courses at your home university**
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

Application advice

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: 1. a course in one-variable calculus, 2. a course in linear algebra and 3. a course in discrete structures	List courses and briefly describe contents: 1. ... 2. ... 3. ...
Computer Science/Information Technology equivalent to at least 22,5 ECTS, there must be 1. a course in object oriented programming, 2. a course in algorithms and data structures and 3. a course in computational complexity	List courses and briefly describe contents: 1. ... 2. ... 3. ...

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 – 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	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 – 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)
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 ony eligble 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 (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 eligble 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

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

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/) **/ 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

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…

DI QI

Project Engineer, Marvel-tech Shanghai

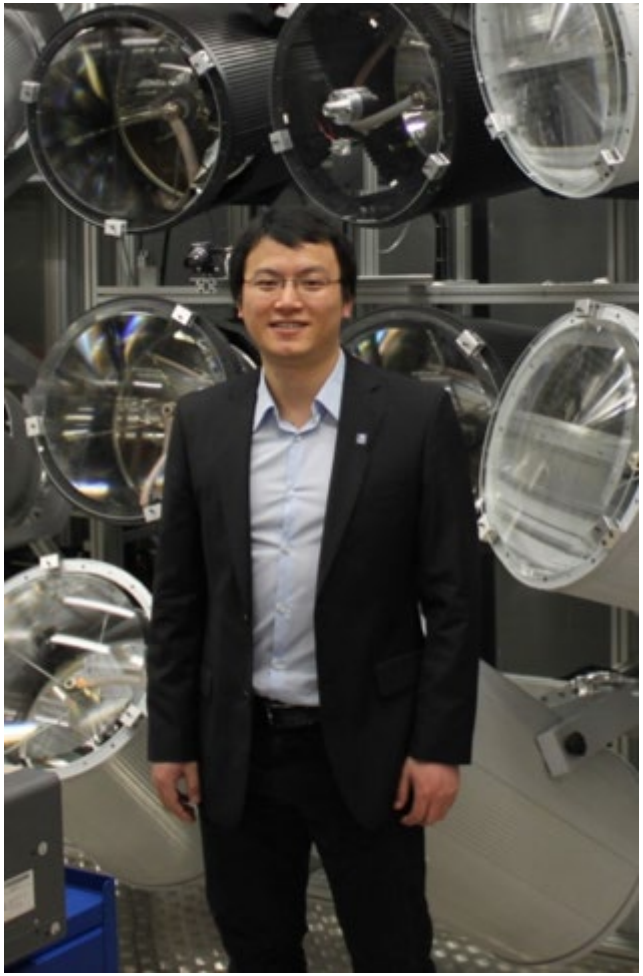
- Master degree in Sustainable Energy. KTH, Sweden, 2016.
- Dipl. Ing. In Energy Engineering ZheJiang University,China, 2014.

Things you can do after finishing education at KTH…

Consultant, Ramboll Energy, Singapore

- Ph.D. in Thermal Energy Storage
  Nanyang Technological University, Singapore, 2020
- MSc in Sustainable Energy Engineering, KTH, Sweden, 2013
- BEng in Energy Engineering, Zhejiang University, China, 2011

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

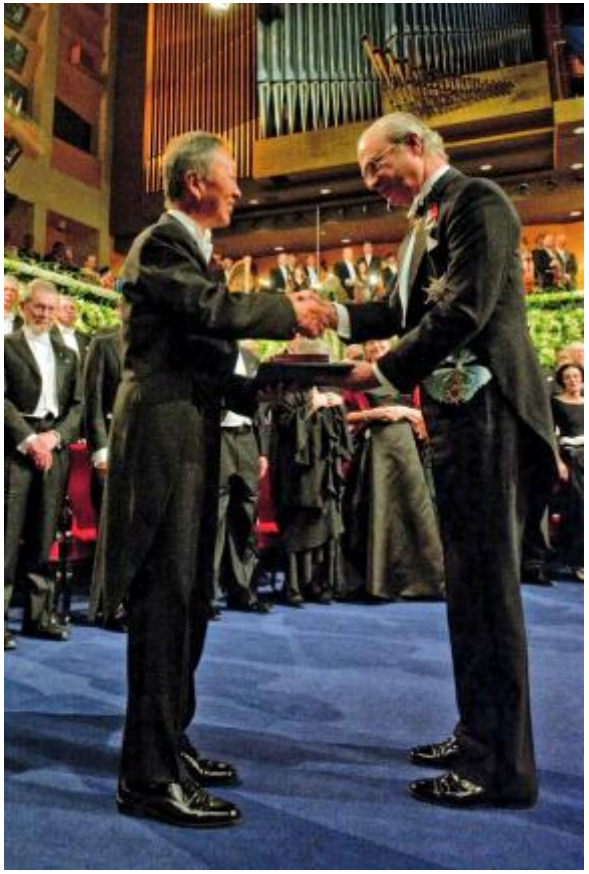
- PhD in Experimental Particle Physics Stockholm University, 1986
- Master in Engineering Physics KTH, 1981

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...

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The Nobel Banquett

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

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Welcome to KTH: launch your career!