KTH Royal Institute of Technology

Information about master studies at KTH:

KTH Royal Institute of Technology

Introduction presented by:

Urban Westergren, professor
School of Engineering Sciences

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: 19
  - Architecture / Built Environment: 23
  - Mechanical Engineering: 26
  - Materials Science: 26
  - Statistics & Operational Research: 39
  - Computer Science & Info Systems: 41
  - Civil & Structural Engineering: 43
  - Mathematics: 44
  - Chemical Engineering: 51-100
  - Physics & Astronomy: 51-100

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

Do you know which?

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.
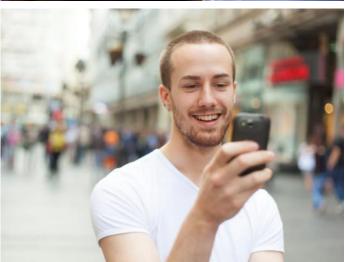
Stockholm – a city of islands

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 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

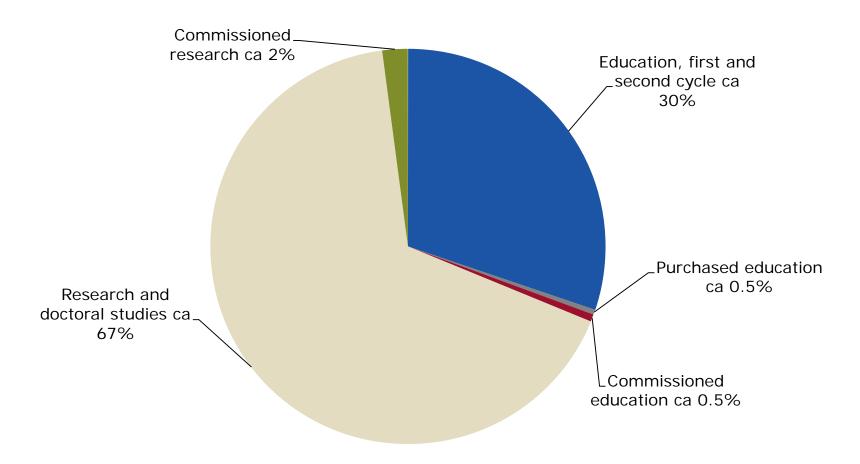# Stockholm student life, part of the city

KTH - Research-based operations

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

Commissioned research ca 2%

Education, first and second cycle ca 30%

Purchased education ca 0.5%

Commissioned education ca 0.5%

Research and doctoral studies ca 67%

- Figure for 2016, exchange rate 1RMB = 1.3 SEK
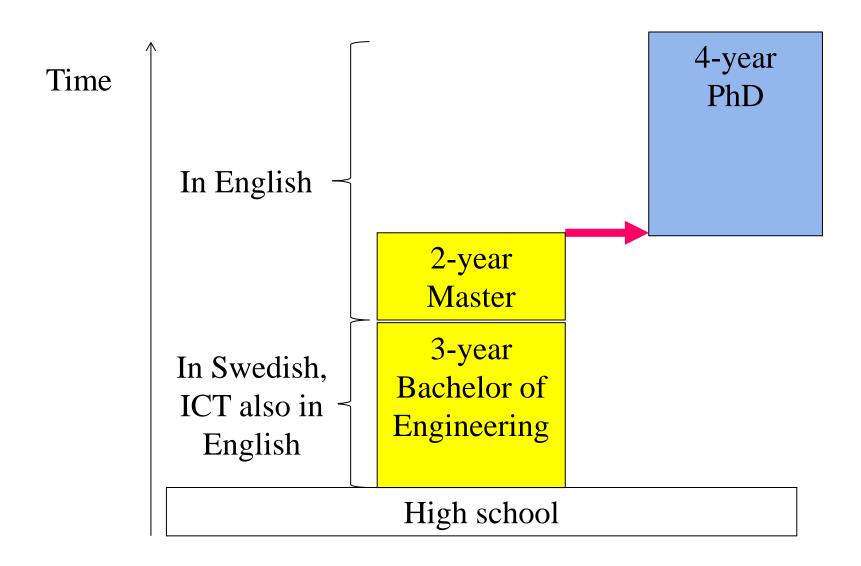
Five campuses close to industry

Education in close collaboration with industry

- KTH has five campuses in and around Stockholm city

- Each campus closely integrated with local industry

- 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

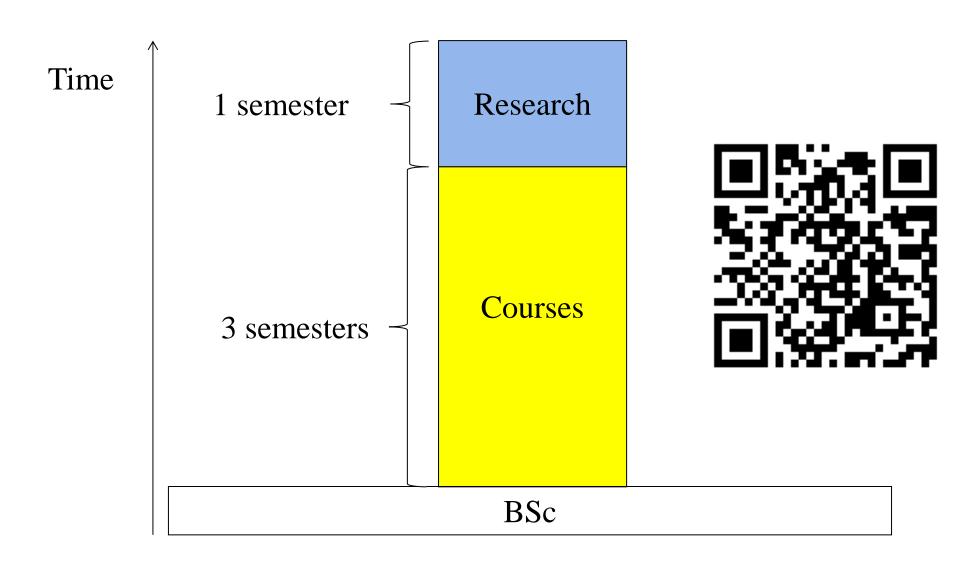- Final thesis can be written at a company, often leading to the first job after graduation

Structure of education at KTH

Structure of MSc education at KTH

MSc programmes for entry in 2020

9 subject areas, >60 programmes:

- Architecture and Civil Engineering, 9 programmes

- Electrical Engineering, 10 programmes

- Engineering Physics and Mathematics, 6 programmes

- Energy and Sustainable Development, 10 programmes

- Industrial Management and Innovation, 3 programmes

- Information and Communication Technology, 9 programmes

- Life Science Technology, Chemistry and Chemical Engineering, 7 programmes

- Materials Science and Engineering, 3 programmes

- Mechanical Engineering, 10 programmes

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*, 12万人民) for one year of full-time master 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

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	19	39
Architecture	23	51-100
Mechanical Engineering	26	51-100
Materials Science	26	36
Statistics and Operational Analysis	39	51-100
Computer Science and Information Systems	41	51-100
Civil and Structural Engineering	43	51-100
Mathematics	44	51-100
Chemical Engineering	51-100	39
Physics and Astronomy	51-100	51-100
Chemistry	101-150	35
Yellow shading: higher rank than KTH		
Red shading: lower rank than KTH		

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 8190, about RMB 6200*, per month for ten months of the year.

Minimum budget per month:
- Food: RMB 1600
- Accommodation: RMB 2900
- Local travel: RMB 450
- Phone/internet: RMB 250
- Other: RMB 1000

* Assuming exchange rate RMB 1.0 = SEK 1.3

Joint MSc programs: two degrees

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

- English proficiency has to be shown (TOEFL 90, IELTS 6.5 etc), but there is flexibility regarding **the scores** for interviewed students from partner universities

- 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
- **Applications for admission and scholarship are only processed if the application fee is paid**
- Results of admission distributed on April 3, 2020

KTH partner program ("4+2")

Partner university students can apply during the last year of their bachelor studies

Language requirements may be slightly lowered after an interview in December each year but a language test (TOEFL, IELTS etc) is still required. Application fee must be paid before the interview.

The applications can be directed to all KTH master programs (but not joint programs), the normal prerequisites are required for each program

Applications are made at universityadmissions.se, deadline in mid January, admissions announced in the beginning of April

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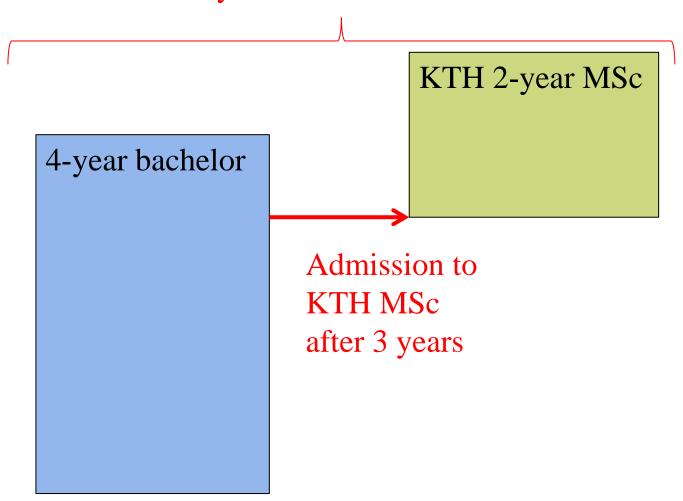
During exchange studies, it is possible to apply, in competition, for admission to a KTH master program which results in a degree

Contact your study administration for details

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

Students can apply during the 3rd year of 4-year bachelor studies. These applicants **must contact the ZJU 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.

Language requirements may be slightly lowered after a successful interview by KTH in December 2019 but a TOEFL or IELTS test is still required

Applications are made at universityadmissions.se , deadline January 15, 2020

3+2 applications

Please 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

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 (Maximum of 5 students) KTH Engineering Design (students only eligible for track Mechatronics) KTH Systems, Control and Robotics (Maximum of 3 students) KTH Information and Network Engineering (students must have completed 68190130 Signals & Systems, 11191240 Digital Signal Processing and 211G0250 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 (Maximum of 5 students) 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 211G0250 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. 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 ony eligble 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 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 the elective courses 66120011 Electromagnetic Field & Waves and 84190030 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

Arrival for admitted students 2020

- **Arrival Days: early August and mid August:**
  - Bus provided from the airport Arlanda to KTH campus
  - Student service, pick up service and arrival information at campus
  - Sign your housing contract and pick up your keys (if you have accommodation through KTH)
  - Activate your personal KTH IT-account

- **Pre-sessional course** about English and studies at KTH starts after the first arrival day in early August. The course is free of charge

- **The lectures begin August 24, 2020**

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 and take part in the pre-sessional course!**

After graduation

- 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 China 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 programs:

  - 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…

Public Relation & China Liaison
China Euro Vehicle Technology, Sweden
(沃尔沃-吉利 联合研究中心)

- Master in Industrial Management
  KTH, 2014

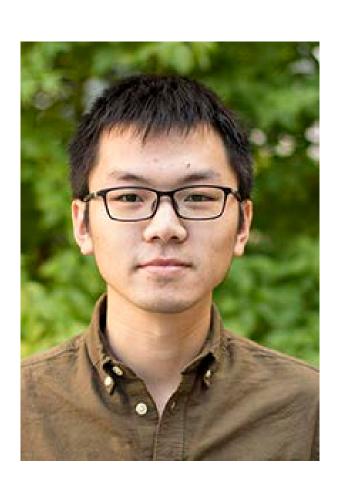- Bachelor in Industrial Engineering
  Zhejiang University, 2012

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

Founder and CEO of Sensory Media Ltd.
London, UK

- Master in ICT Innovation (EIT)
  University College London, 2014
  KTH, 2013

- Bachelor in Industrial Design
  Zhejiang University, 2012

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

- Currently research intern at UC Berkeley on network systems, 2018-2019

- 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...

- PhD Candidate in Human-Robot Collaboration
  KTH 公派博士生

- Master in System, Control and Robotics
  KTH, 2014

- Bachelor in Control Technology
  Southeast University, 2012

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

- PhD Candidate in Biomedical Engineering
  ETH Zurich, Switzerland

- Master in Medical Imaging
  KTH, 2012

- Bachelor in Biomedical Engineering
  Zhejiang University, 2010

Things you can do after research at KTH...

俞自涛 教授
Professor & Director
Institute of Thermal Science & Power Systems,
Zhejiang University

- Postdoc in Energy Technology
  KTH 公派博士后, 2009

- PhD in Engineering Thermal Physics
  ZJU, 2005

- Bachelor & Master in Thermal Engineering
  ZJU, 1995 & 2000

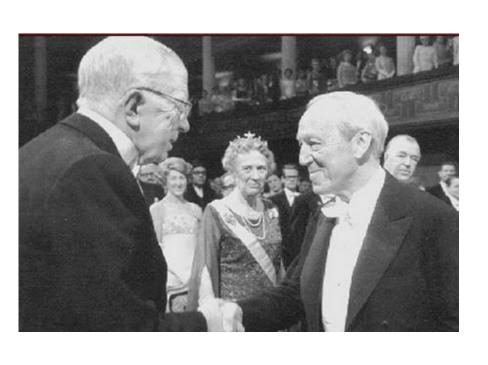# Things you can do after finishing education at KTH... go into space!

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!
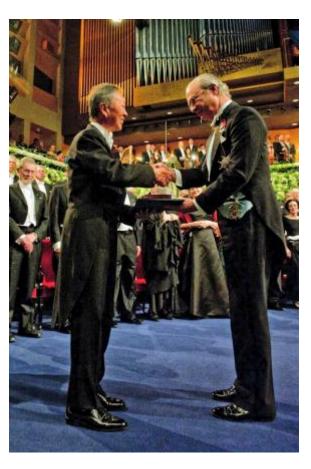
Professor Hannes Alfvén

- 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
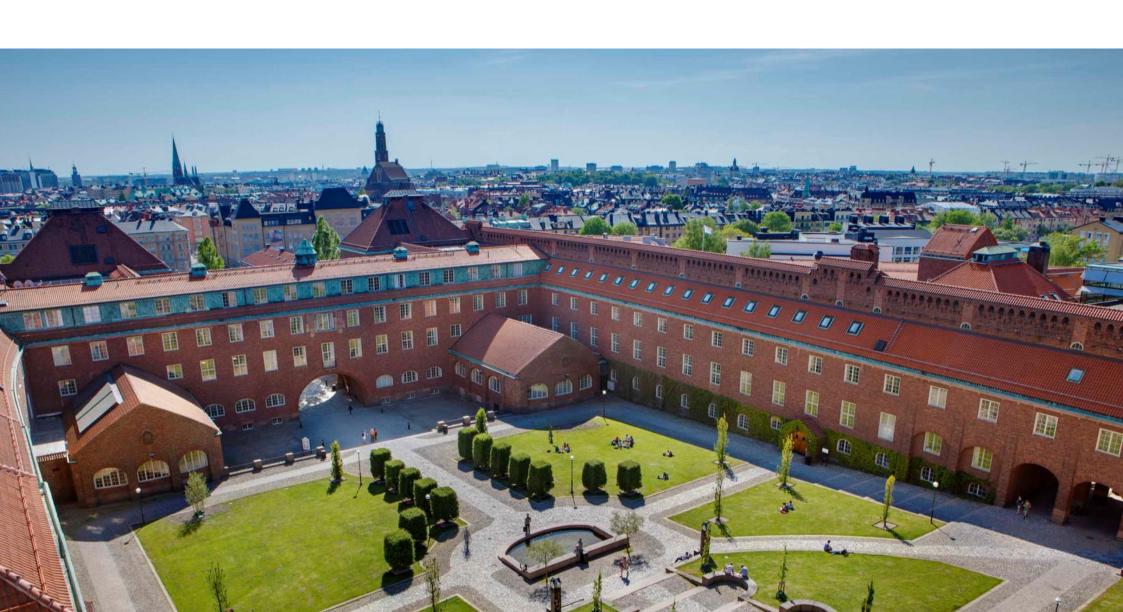

... may take a few years after graduation...

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!

KTH Royal Institute of Technology

Information about master studies at KTH: