

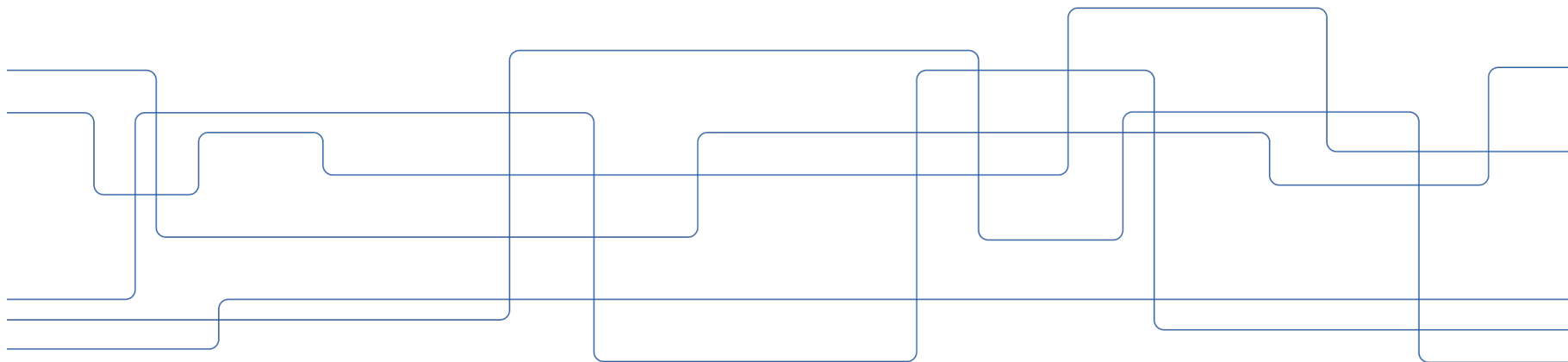


From Campus to Boot Camp and the Boondocks

University education for all

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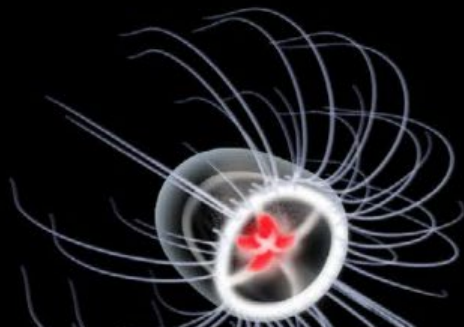




A vision perhaps



Education
2027/2028



Degrees are milestones

Superior instruction on the path to your dream job

New levels released in all subject

Updating: New specialist module in leadership

Admitted for life

A membership that starts early

Name: Sara Betner
Level: KTH Junior Academy
Next goal: KTH Learning for Life

Name: Sara Betner
Level: 4
Next goal: Certified civil engineer

On campus, online and at study centers

KTH Junior Academy
Thanks to a close collaboration with preschools throughout the country, we can offer a place at KTH Junior Academy as early as the age of three. The goal is to give children the chance to develop their technical and mathematical skills as early as possible. Through natural play, they are encouraged to find their own path to engineering and science.

KTH Junior Academy is based on a pedagogical model with uniquely developed digital tools, as well as access to individual instruction intelligence – students have their own AI mentor from day one. KTH Junior Academy also has winter

KTH Learning for Life
Early on at KTH, you will gain a quick overview of the different paths that could lead to your success. We know that your knowledge and experiences are unique – our goal is to supplement them the right way.

Accordingly, the first three months at KTH could look quite different for each person. What all students have in common is an intense period of mathematics, programming and data-driven methods. Once this period is completed, you take the next step based on what you have learnt and what you prefer. For some students, this means a first job at one of the companies or

field. A third group may take a first step on a multi-year journey toward the goal of obtaining internationally recognised certification as a civil engineer.

Study freely and with guidance
Your relationship with KTH provides you with a life-long, quality-assured and continuously updated range of knowledge.

All learning happens in small modules that can be completed flexibly in terms of time and space. All components are available via distance learning, for example in virtual study groups, as well as on-site at one of our international

On campus, online and at study centers

Constantly comparing your personal AI mentor is available with tips, advice and guidance.

We have merged some courses into goal-oriented combinations, and you can read more about them on pages 22-25. Each combination is designed in partnership with Swedish and international companies and

ship
th you choose, your
p will be with you
It serves as the
of our relationship
national journey.
membership, you will
unique programme
possible to achieve.

All programmes require membership in KTH. You become a member after passing the entrance exam, which verifies your prior knowledge. If you need to sharpen your skills before the exam, we offer preparatory courses. Membership is life-long and you are welcome to continuously update your knowledge.

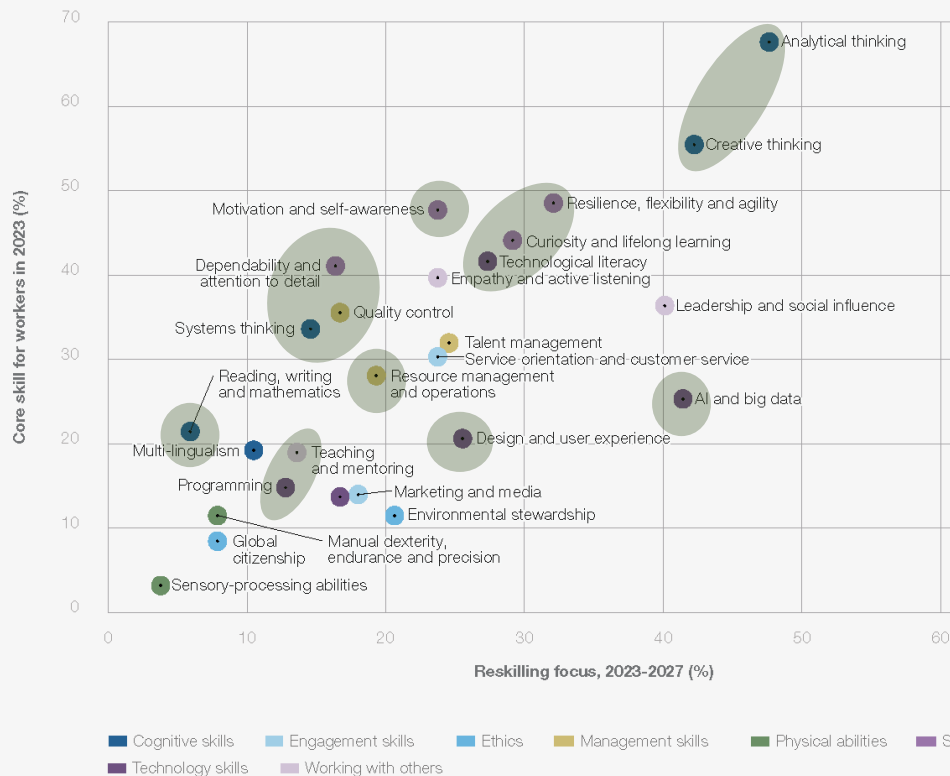
Your KTH membership provides you with a place in an international community for developing a humane technological society, with colleagues in broadly related technology fields. Thanks to your KTH membership, you will always be newly qualified and in good company. You will have life-long access to our programmes and your personal AI mentor, and you will be covered by KTH's unique job security solutions when between jobs or in the event of illness.

Changing the university (it's like ...)

FIGURE 4.6

What an engineering university could contribute

- Too much education for the young
 - Give them agency to work
 - Three months to two years on campus
 - From then on, continued learning
- Continuous education
 - Staying up-to-date
 - Acquiring new skills
 - Changing profession
- What to offer
 - Subject and level
 - Scope and format
 - Pedagogics and activities
 - Example of process
- How to educating working persons
 - Efficiency – no time to waste
 - No access to campus
 - Lost study habits
 - Motivation
 - Balance time for work, study, private life





MOOCs to the rescue?

- Masochist... obtuse... otiose... courses
 - It is material, not teaching
 - And it does not work as education!
- Time for education for human beings
 - Boot camp for deep learning
 - Study circles for continuous learning

Virtual classrooms: How online college courses affect student success

students in online courses
perform substantially worse
than students in traditional in-
person courses

Citation:

Bettinger, Eric P., Lindsay Fox, Susanna Loeb, and Eric S. Taylor. 2017. "Virtual classrooms: How online college courses affect student success". American Economic Review 107 (9):2855-2875.

Boot camp – case: cybersoldier training

- A focus on essentials with clear priorities of contents
- Integral design of activities towards a clear goal
- Scheduled, structured work time
- Provided workspace for the class

Networks

Computer systems

Computer security

Academic 30 credits

Ethical hacking



From campus to bootcamp

- Challenge driven
 - Define task
 - Provide necessary resources
 - Set high expectations
- Highly intensive
 - No competing course work
 - Scheduled work time
- Students organize work
 - Responsible for their own and peers' learning
 - Discussion, reflection and feedback

Project 1: Boolean logic and arithmetic

Skicka

Inlämningsdatum Inget inlämningsdatum Poäng 5 Lämna in en filuppladdning

Objective

The purpose of this assignment is to get acquainted with the hardware description language and the hardware simulator, and to design all the logic gates and combinational chips that are needed for the Hack computer architecture.

You should *practice modular design* by using the most advanced parts for your design. You may use *all chips* in the Hack architecture for your design, even chips that you do not make yourself (see *Hardware Survival Guide* for a listing of the available chips).

Contract

Implement the following chips starting from the given NAND chip and the defined input *false*. Verify your implementations with the HDL hardware tool and given test files. Discuss your implementations when each set of chips (ordered numerically by row) are done.

1. Not, And, Or, Mux, Dmux
2. And16, Or8Way, Mux16, Mux4Way16, DMux4Way
3. HalfAdder, FullAdder, Add16, Inc16
4. ALU

Resources

You will need the HardwareSimulator tool of the software package, which can be downloaded from the link provided in the *Preparation of this document*. The HDL templates and test files are provided in a folder with this project. To learn more about the project, see the *Hardware Survival Guide*.

Study circle – learning as a social activity

- Historically the system for public adult education
 - Trained for civic, union and political roles
 - Starting from six year of schooling
 - Structured, social, supportive
- Peer learning with mix of participants
 - Informal with five to ten persons
 - Self-administered and managed
 - A leader, if any, not an expert
 - Commitment and scheduled
- Spaces suitable for study
 - Local study centers
 - Libraries
 - Inside workplaces
 - ...
- University role
 - Provide structured material and activities
 - Team up persons in same place; reserve space
 - Coaching and interesting talks
 - Examination
 - KTH trial fall 2023!





Summary

- Society needs continuous education on a large scale
 - Professional training up to ten percent of work time
 - Coping with societal changes: climate, immigration, security, ...
 - Keeping up democracy
- Universities need to provide education in new formats
 - Boot camp for in-depth training
 - Study circles for continuous education
 - In collaboration with study centers and external instructors
 - Suitable for all types of course participants
- Educate to give agency!
 - Efficiency and clear structure
 - Social and supportive
 - Be humane!



Links to background material for the talk

- [KTH Education 2027/2028](#), Karlsson and Janson (Eds)
- [Agile Education Imagined](#), Karlsson and Lundén
- [Prompt learning](#), Karlsson and Janson
- [What do higher education students want from online learning?](#), McKinsey & Company
- [The Future of Jobs Report 2023](#), World Economic Forum
- [Organizing Study Circles](#), Community Tool Box

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