

Summer School Learning Plan

„Teknikkollo“

The purpose of Teknikkollo is to inspire young people to technology, give technical self-confidence and, in the longer term, contribute to a well-thought-out high school choice. Sweden needs a lot of manpower with technical skills going forward and we must all contribute to this! In addition, Sweden needs to level the gender-segregated labour market.

The participants will be on camp at Upptech in 4 days, Monday - Friday at 10-15. Upptech is a Science Center in Jönköping and is in cooperation with Jönköping University in several ways. A total of 20 participants. We mainly target girls between 13-15 years, but boys are also welcome, subject to availability.

At our technology college, we will design cool things that shine, program robots and single-card computers, design in CAD programs and then print or cut out with lasers. We will build with our hands and use the tools that are suitable and we will hopefully have a lot of fun together.

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Coordination: Prof. Dr. Katja Maaß, UNIVERSITY OF EDUCATION FREIBURG, Germany. Partners: UNIVERSITEIT UTRECHT, Netherlands; UNIVERSITA TA MALTA, Malta; UNIVERZITA KONSTANTINA FILOZOFA V NITRE, Slovakia; UNIVERSIDAD DE JAEN, Spain; ETHNIKO KAI KAPODISTRIAKO PANEPISTIMIO ATHINON, Greece; UNIVERZITA KARLOVA, Czech Republic; SCHOOL OF EDUCATION AND COMMUNICATION, Jonkoping; EDEX – EDUCATIONAL EXCELLENCE CORPORATION LIMITED, Cyprus; VILNIAUS UNIVERSITETAS, Lithuania.



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Jönköping University and Uptech GEM Summer School



Target Group:

Girls (and boys) born in 2007 – 2008, with priority for girls and specific advertisement directed to girls.

Venue:

We arrange our Summer camp at Jönköping Science Center, named Uptech. There is located 1 km from Jönköping University.

Transportation to the venue / digital access to the Summer School:

Uptech is in the middle of Jönköping and it's easy to walk, bicycle or take a bus to join the Summer Camp.

Subsistence:

The Summer camp is inside at the Science Center daytime in 4 days. The participants receive lunch.

Contact person for girls and their guardians:

Linda Samuelsson, Business manager KomTek, Uptech

+46761198463

Linda.samuelsson@jonkoping.se



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Schedule

Day 1

10:00 – 12:15	<ul style="list-style-type: none"> • Introduction in the theater - Teknikkollo presentation around of the students and you (rules, peace of mind, mobiles, times, lunch, illness) • Talk I: What is technology really? Interactive part with participants • Maker I: learn to connect and solder, luminous pen compartment / cap / lamp or LED board
12:15 – 13:00	Lunch
13:00 – 15:00	Programming I <ul style="list-style-type: none"> • basics in Microbit • simple assignments

Day 2

10:00 – 12:15	3D printing I: introduction to Tinkercad, 3D-print, the laser cutter
12:15 – 13:00	Lunch
13:00 – 15:00	<ul style="list-style-type: none"> • Talk 2: Entrepreneurs make their idea a reality! • Intro of own project: (Maker, Microbit, 3D) + working time

Day 3

10:00 – 12:15	Working on own projects
12:15 – 13:00	Lunch
13:00 – 15:00	Working on own projects. <i>/Optional extra tasks: Thermoplastic, pins</i>

Day 4

10:00 – 12:15	Film / make ready own projects
12:15 – 13:00	Lunch
13:00 – 14:30	Programming II: working on own projects
14.30-15.00	Closing and summary



Learning Activities

Learning Activities	STEM/ICT subject knowledge	Knowledge of inspiring role models and their meaning	Knowledge about the STEM/digital world of work	Entrepreneurial mind-sets	Transversal skills
Maker 1: learn to connect and solder	x				x
Programming 1: Basics in Microbit + simple assignments	x				x
3D I: Introduction to Tinkercad, 3D-Print, the laser cutter	x				x
Talk of the week (different topics)	x	x	x	x	x
EP - Own Project	x	x	x	x	x
Presentation of project	x	x	x	x	x



In Teknikkollo programming, 3D modelling, 3D printing and use laser cutters will be taught as well as several maker moments with electronics as well as programming robots. Our idea is that we teach basics, show possible prototypes they can try to make but that their interest and curiosity will make them later develop their own products based on their own ideas. The working on own products is continuous process during the summer school.

The whole process is accompanied by young instructors working at the Science Center on the evening courses and they are leading the participants to progress and positive learning experiences. We will program with Microbits and build products controlled by Microbits. The participants are encouraged to create complex products where they use knowledge from several different new technologies they learned during the week. To work more with microbit, 3D, connect, build and combine, design own decals that are cut out in the vinyl cutter.

We have a lot of materials, tools, and knowledge so there are great opportunities to pursue their production ideas. The instructors also serve as good role models for choosing technology and science education. They talk about their experiences, feelings and thoughts about the technology and contexts they have come in contact. In the end of the week they are going to create a simple video to show what they accomplished during the week.

Teknikkollo is free for the participants, and they are all allowed to bring a lot of thing home in the end of the camp, for example, Microbit. This camp is a unique experience of science and technology with other young people and the involvement with STEM does not end with the camp but a genuine interest in technology develops.

Presenting entrepreneurs and bringing the participants to entrepreneurial thinking is an important component of the summer school. The participants are encouraged to see a need and find solutions, think new and creative. The participants are asked to name entrepreneurs from the world and from the neighborhood. The idea of the whole summer school is to become an entrepreneur by thinking of an idea and making this idea a reality. This involves daring to test, improve, test again until one is satisfied with the product. The participants are encouraged to make failures and searching new solutions.

After a review on the creation process and what were the failures as well as moments of learning, participants can present their products on the big screen with popcorn and then take their products back home.



Lecturers and mentors

Jesper Boesen, Associate Professor Mathematics education, Associate Dean Cooperation

Director of the Research Environment, Practice based Educational Research

School of Education and Communication

JÖNKÖPING UNIVERSITY

PHONE +46 (0)36 10 15 30

SMS +46 (0)709 70 69 68

• Researcher in mathematics education with a long history of CPD for teachers. Worked at the National Centre for mathematics education with several national developmental programs for math teachers.

Adam Starck,

Operations manager, Upptech

+46 (0)3610 66 78

adam.starck@jonkoping.se

• Adam has a background as an engineer and as a musician with many years of experience in the cultural area. Works with inspiring youth for further careers in STEM.

Linda Samuelsson

Business manager KomTek, Upptech

+46(0)761198463

Linda.samuelsson@jonkoping.se

and

University Lecturer, Jönköping University

Linda.samuelsson@ju.se

Linda is an experienced educator with many years of expertise in Science centre and works with pupils and society's engagement in STEM, especially withing technology.

Additional student lecturers may be involved from Jönköping university's Teacher education programs.



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Jönköping University and Uptech GEM Summer School Support Site

You can find more information about the Summer School in the national language by following this link:

<https://ju.se/samarbeta/samarbeta-med-forskare/gem.html>

<https://uptech.se/komteks-fritidskurser/teknikkollo-2021-pa-upptech.html>



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