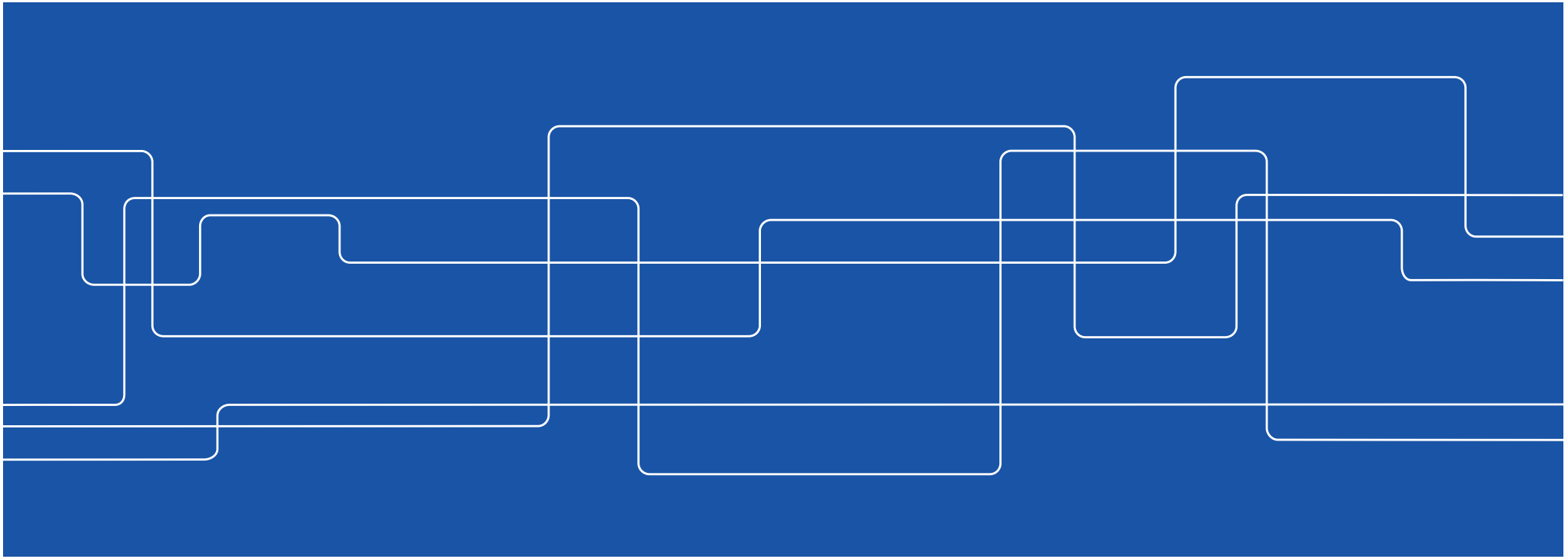
Systems, Control and Robotics Program information meeting

2020-08-20

Petter Ögren



Welcome meeting 20 August 2020

- **Covid-19 information**
- Who is who
- Courses
  - Academic year with periods
  - Curriculum and requirements
  - Course selection
- Thesis Project work
- Mixed Information
  - Plagiarism, Grading ...

Covid-19 Information

Policy objectives (my interpretation):

- Comply with national regulations
- **Prioritize 1st year students**
  - Physical presence important at start
  - At least 50% required for visa/immigration
    - (no visa for online education)
- 2nd and 3rd year students mostly online
  - To increase distancing on campus

- Details here:
  - https://www.kth.se/en/student/hostterminen-2020-med-anledning-av-covid-19-1.996757

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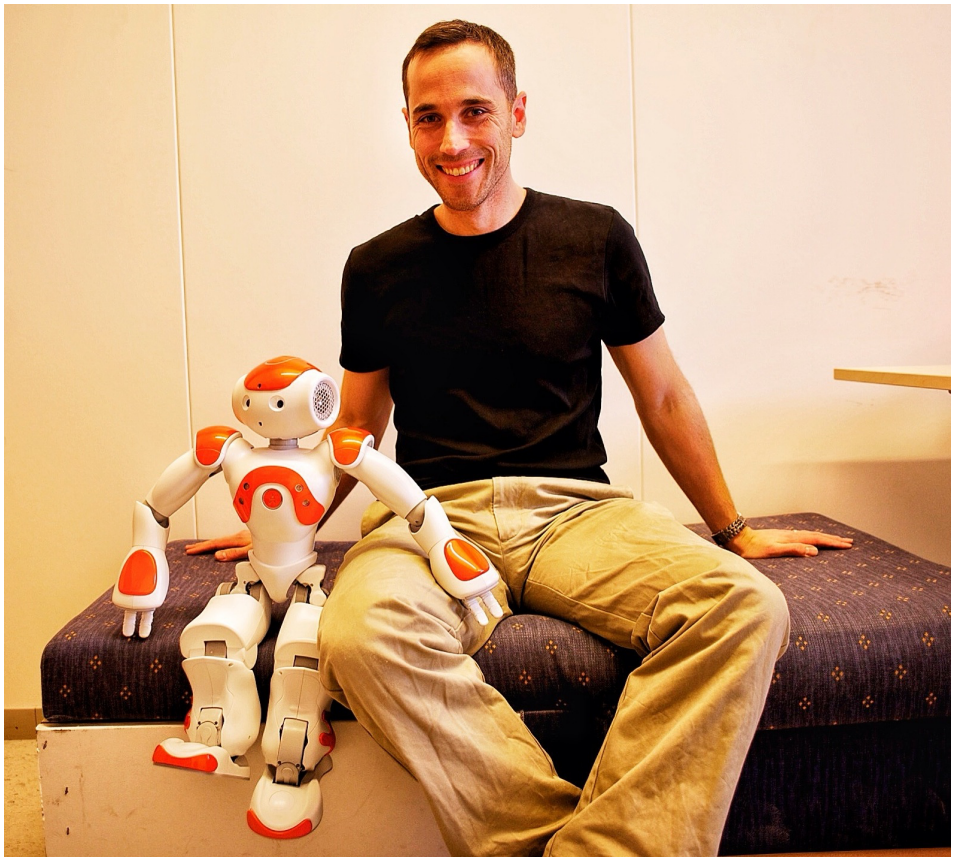
Master Program Director: Petter Ögren

- Professor at
  - Department of Robotics Perception and Learning (RPL)
  - School of Electrical Engineering and Computer Science (EECS)
- petter@kth.se
- Lindstedsvägen 24, floor 4
- Email to make appointment



Co-Program director

- Elling Jacobsen
- Professor in Automatic Control
- https://www.kth.se/profile/jacobsen/
- jacobsen@kth.se
- Malvinas väg 10, floor 6
- Email for appointment

Master Coordinators for SCR

- Cristina La Verde and Sofia Norlander
- Lindstedsvägen 3
- ee-master@kth.se
- Ask all questions to Cristina and Sofia!

Who are you?

Quick round of presentations

- Your name
- Where you come from (Country)

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Program web page

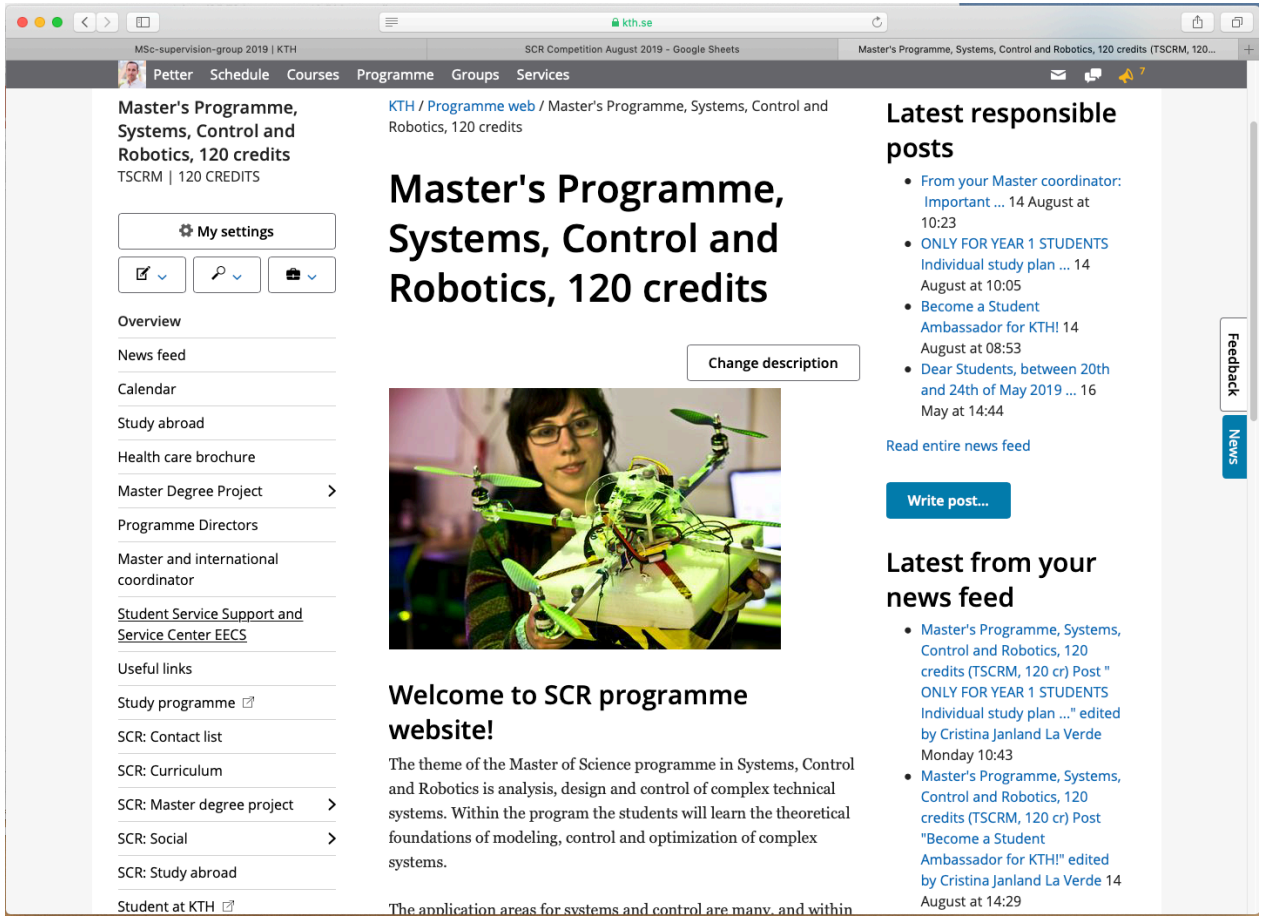
Go to kth.se

Log in (top right corner)

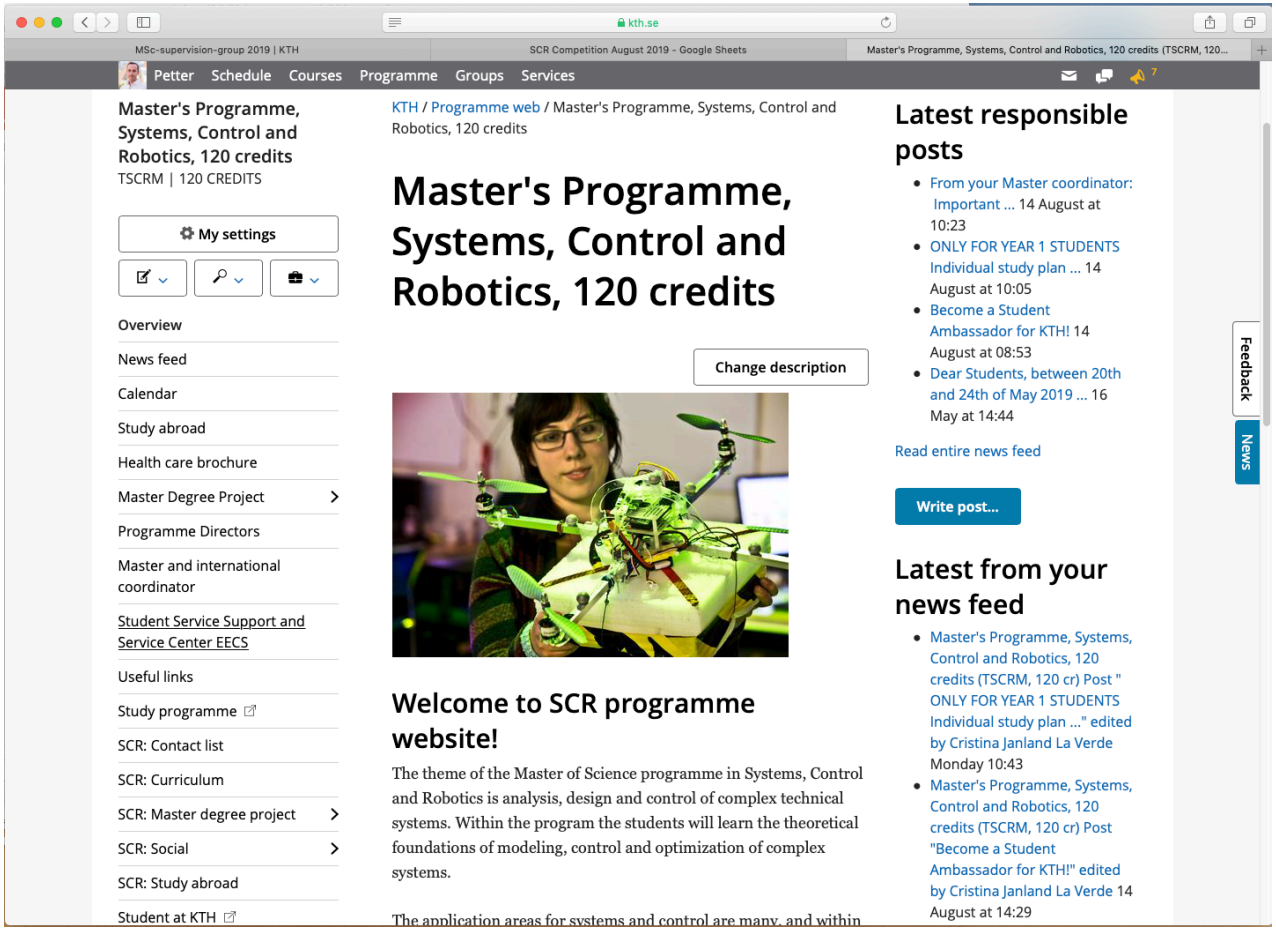
Click on Programme

You will see (or will see when you are registered)

Master's Programme, Systems, Control and Robotics, 120 credits (TSCRM, 120 cr)



More details on courses on website



Academic year at KTH

Today

First Exams

	Week	Mo	Tu	We	Th	Fr	Sa	Su
	33	I/R	I/R	I/R	I/R	I/R	I/R	16 Aug
					I/R	I/R	I/R	23 Aug
	35	1	1	1	1	1	S	30 Aug
Sep	36	1	1	1	1	1	S	6 Sep
	37	1	1	1	1	1	S	13 Sep
	38	1	1	1	1	1	S	20 Sep
	39	1	1	1	1	1	S	27 Sep
Oct	40	1	1	1	1	1	S	4 Oct
	41	1	1	1	1	1	S	11 Oct
		O	O	O	E	E	S	18 Oct
	43	E	E	E	E	E	S	25 Oct
Nov	44	2	2	2	2	2	H	1 Nov
	45	2	2	2	2	2	S	8 Nov
	46	2	2	2	2	2	S	15 nov
	47	2	2	2	2	2	S	22 Nov
	48	2	2	2	2	2	S	29 Nov
Dec	49	2	2	2	2	2	S	6 Dec
	50	2	2	2	2	2	S	13 Dec
	51	O/R	O/R	O/R	O/R	O	S	20 Dec
	52	O	O	O	S	H	H	27 Dec
Jan	53	O	O	O	S	H	S	3 Jan
	1	O	O	H	E	E	S	10 Jan
	2	E	E	E	E	E	S	17 Jan

	Week	Mo	Tu	We	Th	Fr	Sa	Su
	3	3	3	3	3	3	S	24 Jan
	4	3	3	3	3	3	S	31 Jan
Feb	5	3	3	3	3	3	S	7 Feb
	6	3	3	3	3	3	S	14 Feb
	7	3	3	3	3	3	S	21 Feb
	8	3	3	3	3	3	S	28 Feb
Mar	9	3	3	3	3	3	S	7 Mar
	10	O	O	O	E	E	S	14 Mar
	11	E	E	E	E	E	S	21 Mar
	12	4	4	4	4	4	S	28 Mar
Apr	13	4	4	4	4	H	S	4 Apr
	14	H	O/R	O/R	O/R	O/R	S	11 Apr
	15	4	4	4	4	4	S	18 Apr
	16	4	4	4	4	4	S	25 Apr
May	17	4	4	4	4	4	S	2 May
	18	4	4	4	4	4	S	9 May
	19	4	4	4	H	O	S	16 May
	20	4	4	4	4	4	S	23 May
	21	4	O	O	O	O	S	30 May
June	22	E	E	E	E	E	S	6 Jun
	23	E	E	O	O/R	O/R	O/R	13 Jun

I	Introductory weeks
H	National Holiday
S	Exam and tuition free day
1-4	Scheduled day within study period
E	Examinations
RE	Re-examinations
O	Own work

Academic year with periods

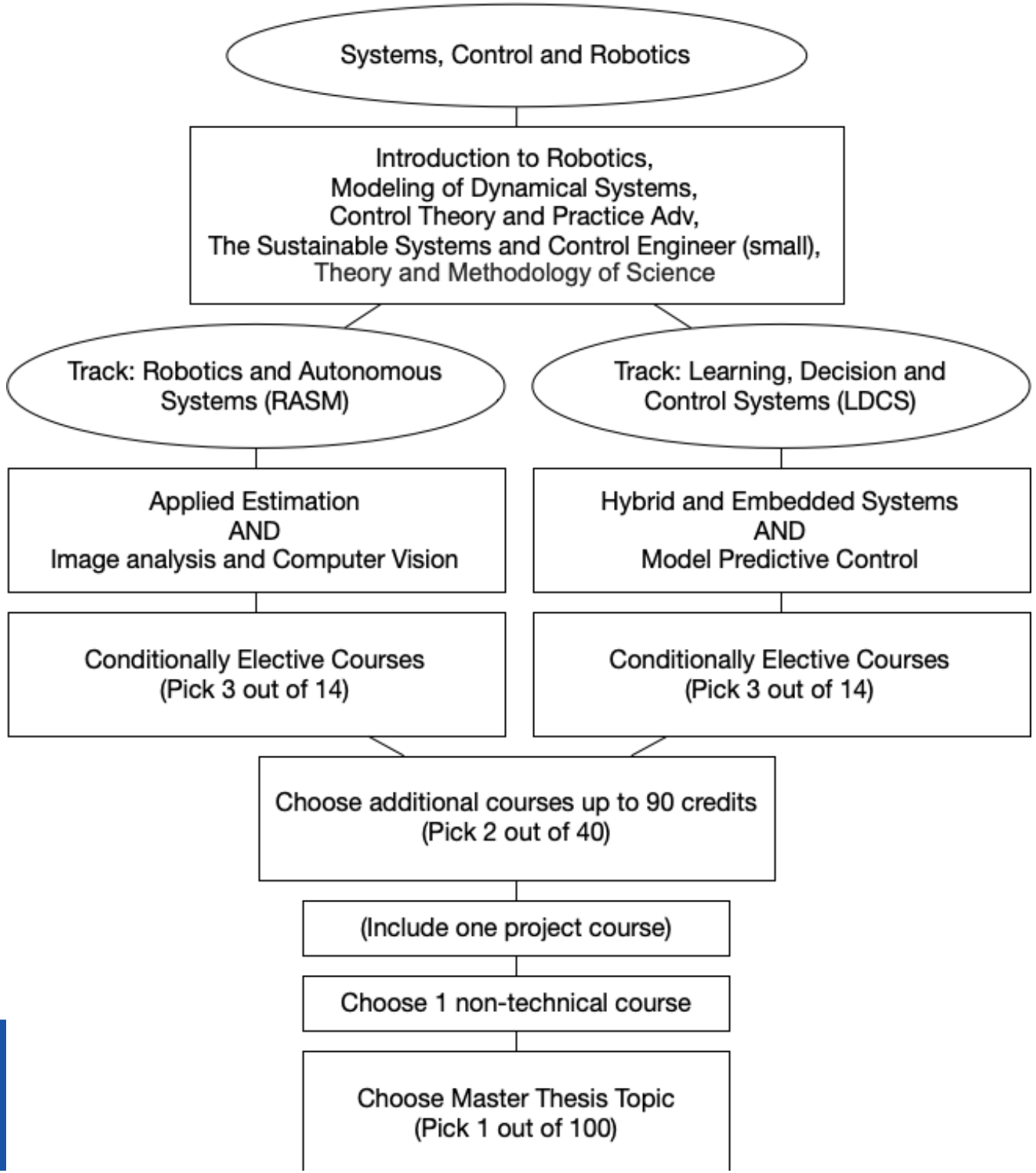
Year divided into 2 semesters
Autumn semester (“HT”)
Spring semester (“VT”)

Each semester has 2 periods/quarters
Periods 1 + 2 = Autumn semester
Periods 3 + 4 = Spring semester

Each period about 8-9 weeks
7-8 for studies + 1 week for exams

Most courses only run one period
Lots of new material in short time. Need to be alert all the time!

Program overview



Handout of Track Descriptions

Track: Robotics and Autonomous Systems (Example)

Course ID	Name	When	Credits	Type
EL2220	The Sustainable Systems and Control Engineer	Y1-Y2	3	Mandatory
Year 1				
EL2820	Modelling of Dynamical Systems	P1	7,5	Mandatory
DD2410	Introduction to Robotics	P1	7,5	Mandatory
DD2423	Image Analysis and Computer Vision	P2	7,5	Track mandatory
EL2320	Applied Estimation	P2	7,5	Track mandatory
DD2419	Project Course in Robotics and Autonomous Systems	P3-P4	9	Project course **and** Conditionally elective
EL2450	Hybrid and Embedded Control Sys.	P3	7,5	Conditionally elective
DD2421	Machine Learning	P3	7,5	Conditionally elective
EL2520	Control Theory and Practice, adv.	P4	7,5	Mandatory
Year 2				
AK2036	Theory and Methodology of Science	P1	7,5	Mandatory
DD2380	Artificial Intelligence	P1	6	Conditionally elective
XXYYYY	Non-Technical Course	P2	6-7.5	Mandatory
DD2434	Machine Learning, Adv. Course	P2	7,5	Recommended
XXYYYY	Master Thesis	P3-P4	30	Mandatory

https://www.kth.se/en/studies/master/systems-control-robotics

Track: Learning, Decision and Control Systems (Example)

Course ID	Name	When	Credits	Type
EL2220	The Sustainable Systems and Control Engineer	Y1-Y2	3	Mandatory
Year 1				
EL2820	Modelling of Dynamical Systems	P1	7,5	Mandatory
DD2410	Introduction to Robotics	P1	7,5	Mandatory
EL2620	Nonlinear Control	P2	7,5	Conditionally Elective
SF2832	Mathematical Systems Theory	P2	7,5	Conditionally Elective
XXYYYY	Non-Technical Course	P3	6	Mandatory
EL2450	Hybrid and Embedded Control Sys.	P3	7,5	Track Mandatory
DD2424	Deep Learning in Data Science	P4	7,5	Recommended
EL2520	Control Theory and Practice, adv.	P4	7,5	Mandatory
Year 2				
AK2036	Theory and Methodology of Science	P1	7,5	Mandatory
EL2700	Model Predictive Control	P1	7,5	Track Mandatory
EL2425	Automatic Control, Project Course, Smaller Course	P2	7,5	Conditionally Elective (and Project Course)
EL2805	Reinforcement Learning	P2	7,5	Conditionally Elective
XXYYYY	Master Thesis	P3-P4	30	Mandatory

https://www.kth.se/en/studies/master/systems-control-robotics

Requirements for Degree

Your Responsibility

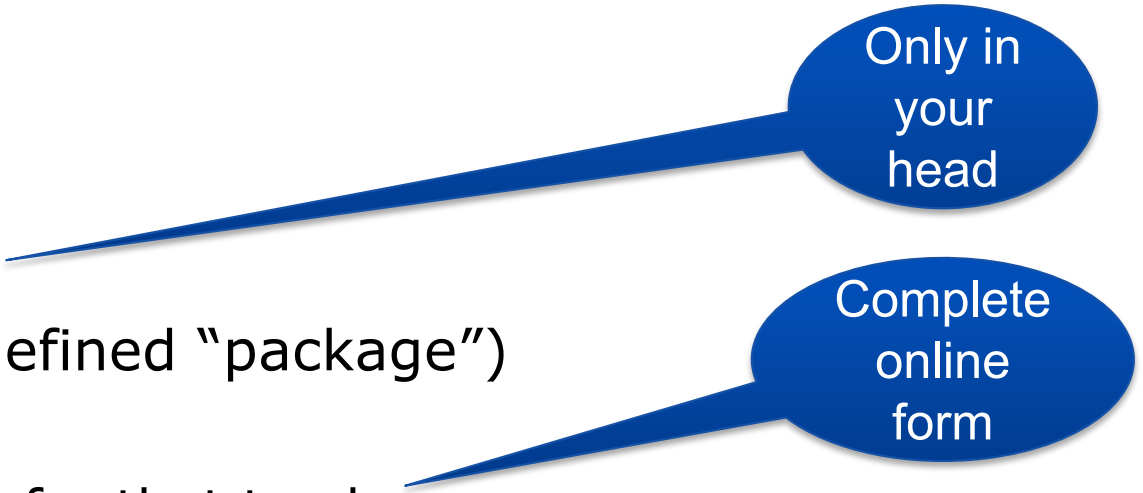
The students must have completed

- all of the **mandatory courses** depending on track
- at **least 3 conditionally elective** technical courses depending on the chosen track
- one or two elective **non-technical** courses
- one **project course** in the subject area
- other **recommended** courses for a total of 90 higher education credits
- **degree project** of 30 higher education credits.

Course selection

- Step 1
  - Choose track
  - (Track = predefined “package”)
- Step 2
  - Select courses for that track
- Can I Change Track?
  - Yes

- Important: After 2 years, **your courses must** satisfy requirements of at least 1 track



Understanding the course code

The courses have codes like EL2520 or DD2380

The first character tells what area, second what department/group

- E = Electrical engineering (EL = control)
- D = Computer science etc. (DD = computer science)

The first digit tells what level it is

- 1 – basic (“bachelor”)
- **2 – advanced (“master”)**
- 3 – doctoral (“phd”)

What Courses do I Choose?

- Fun
- Needed in Track
- makes Combined Schedule reasonable
- Is a prerequisite for future course

Practical approach to courses

1. Check out 2 example choices of the tracks (https://www.kth.se/social/program/tscrm/page/scr-curriculum/)
2. Pick one track
3. Look though all conditionally elective and recommended courses
4. Try to swap IN the ones you like and REMOVE ones you do not like

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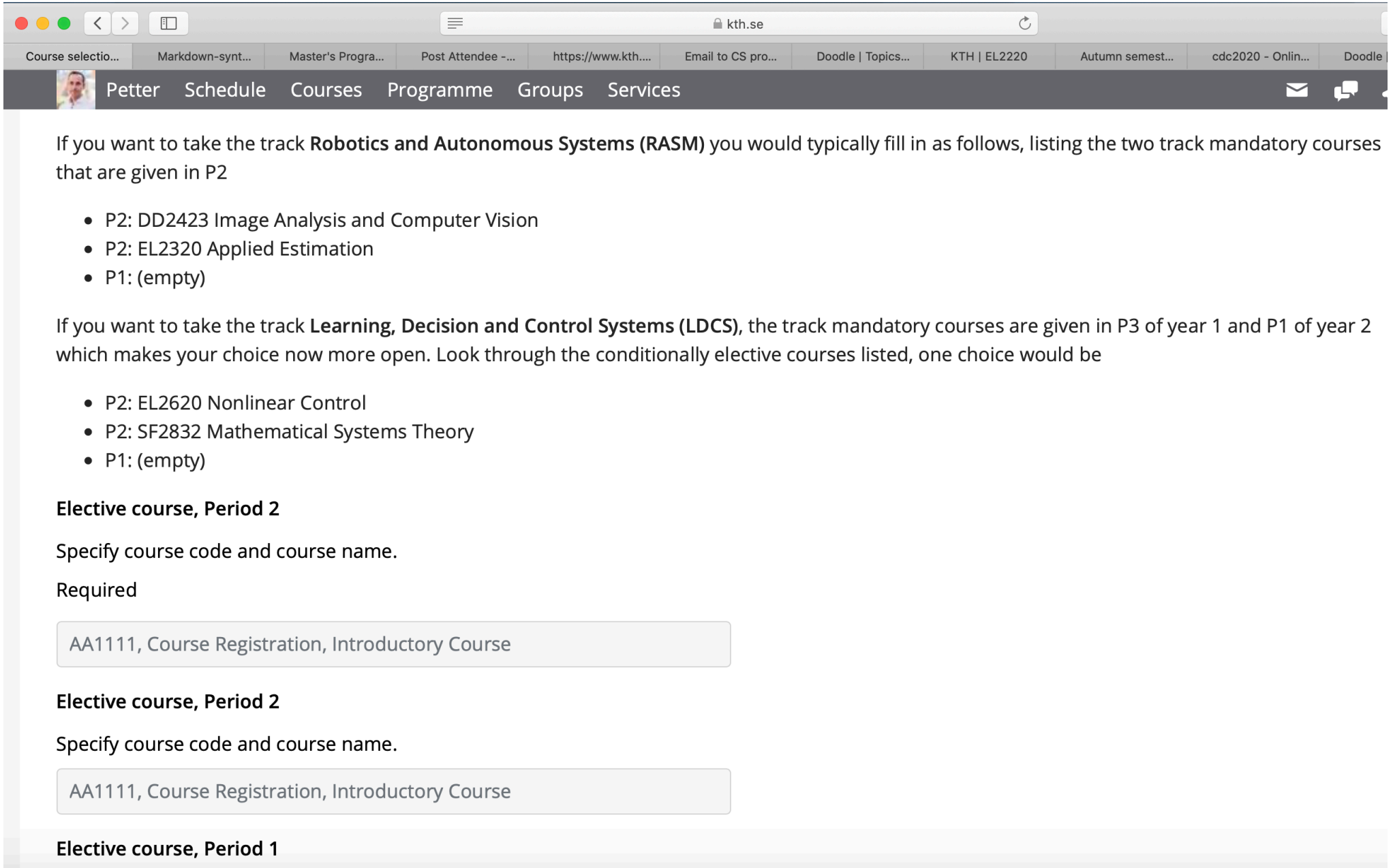
You can change these

and these

Where do I choose courses?

- First semester you use an online form
  - https://www.kth.se/form/courseselectiontscrmht20
  - Deadline, August 27th

- Then you use the Ladok-system (place where you can see what courses you completed etc)
  - Ladok.se (use your KTH login)



If you want to take the track **Robotics and Autonomous Systems (RASM)** you would typically fill in as follows, listing the two track mandatory courses that are given in P2

- P2: DD2423 Image Analysis and Computer Vision
- P2: EL2320 Applied Estimation
- P1: (empty)

If you want to take the track **Learning, Decision and Control Systems (LDCS)**, the track mandatory courses are given in P3 of year 1 and P1 of year 2 which makes your choice now more open. Look through the conditionally elective courses listed, one choice would be

- P2: EL2620 Nonlinear Control
- P2: SF2832 Mathematical Systems Theory
- P1: (empty)

Elective course, Period 2

Specify course code and course name.

Required

AA1111, Course Registration, Introductory Course

Elective course, Period 2

Specify course code and course name.

AA1111, Course Registration, Introductory Course

Elective course, Period 1

Stick to the curriculum

If you go outside please ask me first

Prio1: Make sure that you finish the mandatory courses.

KTH restrictive on taking extra courses

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- **Thesis Project work**
- Mixed Information
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Master thesis

- Typically started in January of the second year
- Need “most courses” (check details) completed **to start**
- This is where you **put everything you learned to use**
- **Where**? in industry, at a KTH department or at other technical university or research institute
- Your responsibility **to find one**
- Need a **supervisor and examiner at KTH** and a local supervisor if you are outside KTH.

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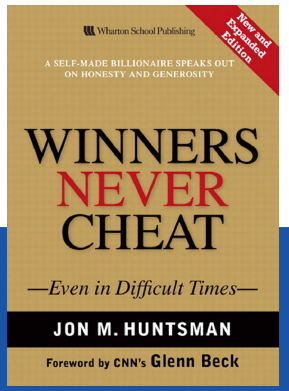
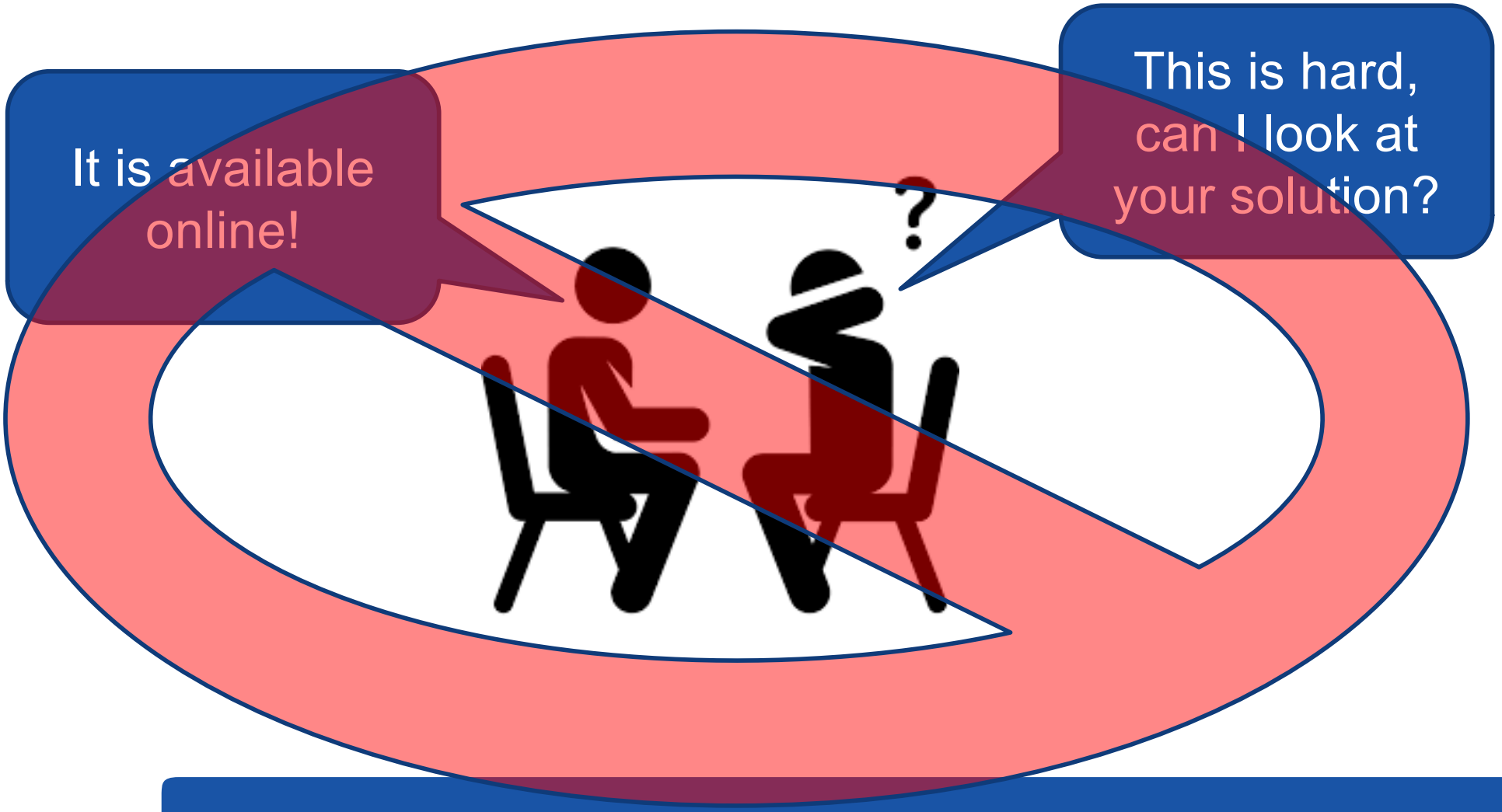
Reading/writing and Plagarism

- Technical reading and writing skills very important
- **Word by word copying is a big NO-NO**
- **Use your own words or use quotes and references.**
- **Do not share your solutions with others**
- It might not be explicitly stated but these rules are assumed
- If you are caught you will be reported and **can get suspended**

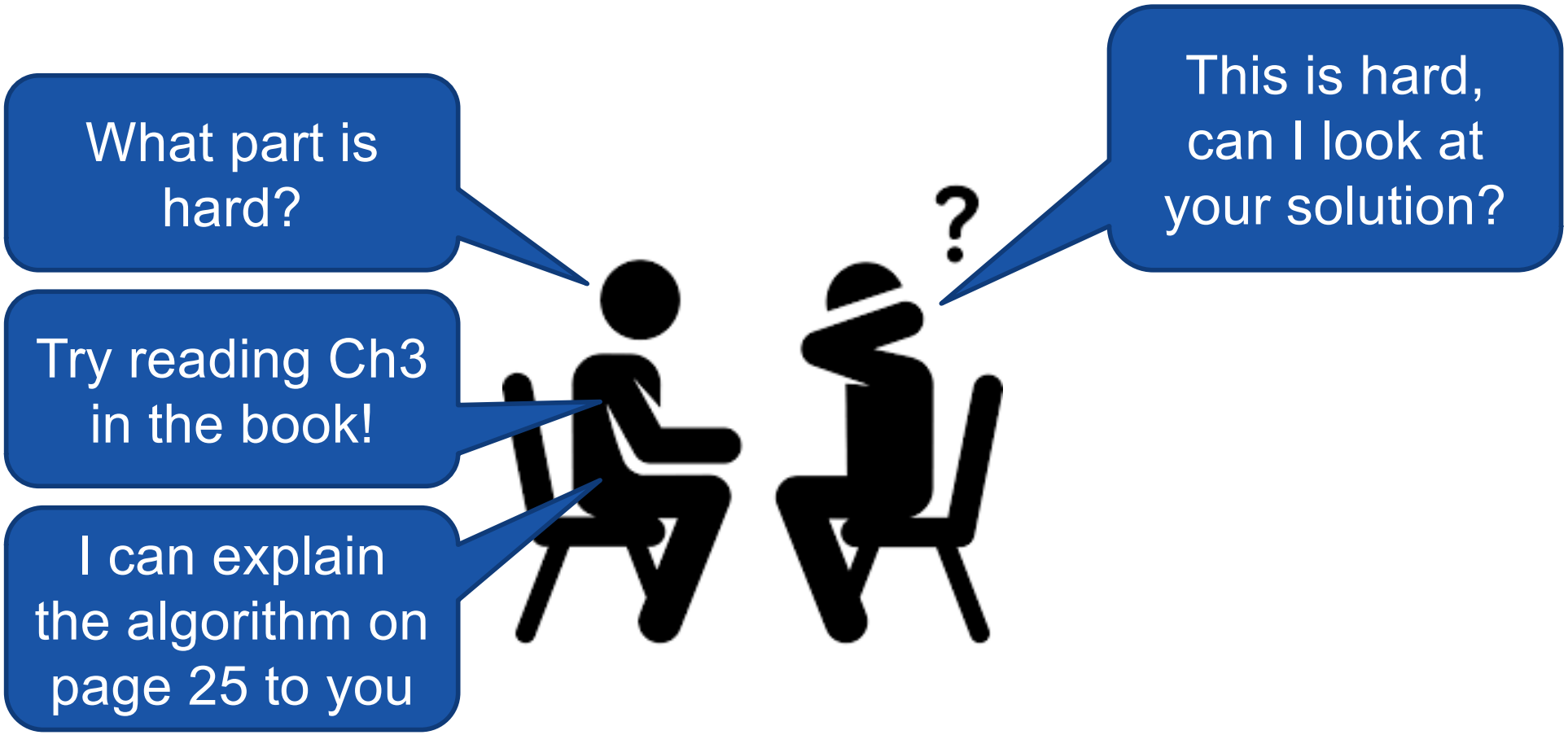


Word by word copying for a report (No!)

Sharing solutions with others (No!)



Sharing understanding with others (Yes!)



Code of Honour

- When studying at this level you will be given a lot of freedom.
- With freedom comes responsibility
- Think about this when working on homework assignments, projects, etc

- EECS Code of Honor
  - https://www.kth.se/en/eecs/utbildning/hederskodex/inledning-1.17237

Rules in Code of Honour

Rule 1: All members of a group are responsible for the group's work

Rule 2: In any assessment, every student shall honestly disclose any help received and sources used

Regulation 3: In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution

Rule 4: Do not copy from other people's solutions

Rule 5: Handle attendance lists correctly

Rule 6: Give help in the right way

Grading

- Grades A (excellent) – E (lowest passing grade)
- Grade Fx means you can get to E by some extra task(s)
- Goal oriented and absolute grading system at KTH (and not relative grades)
  - All can fail, **All can get an A**

- Failing an exam is not a total failure
  - re-exams are allowed

Going abroad

If you go abroad you can swap courses at KTH for courses in the other university. This way you do not have to “lose time” toward the degree.

It is mandatory to talk to the director/coordinator **before** going abroad to work out a curriculum.

All courses in the curriculum can be exchanged for courses in other universities but the requirements for the match are higher for compulsory courses.

Teacher student relation

- Ask for help if you need it!
- Ask other students
  - (no copying)
- Ask teachers
  - In brakes between lectures
  - Make appointment

Why do they keep referring to me as an “undergraduate student”???

At KTH

- Undergraduate = Bachelor + Master
- Graduate = PhD

Reading email

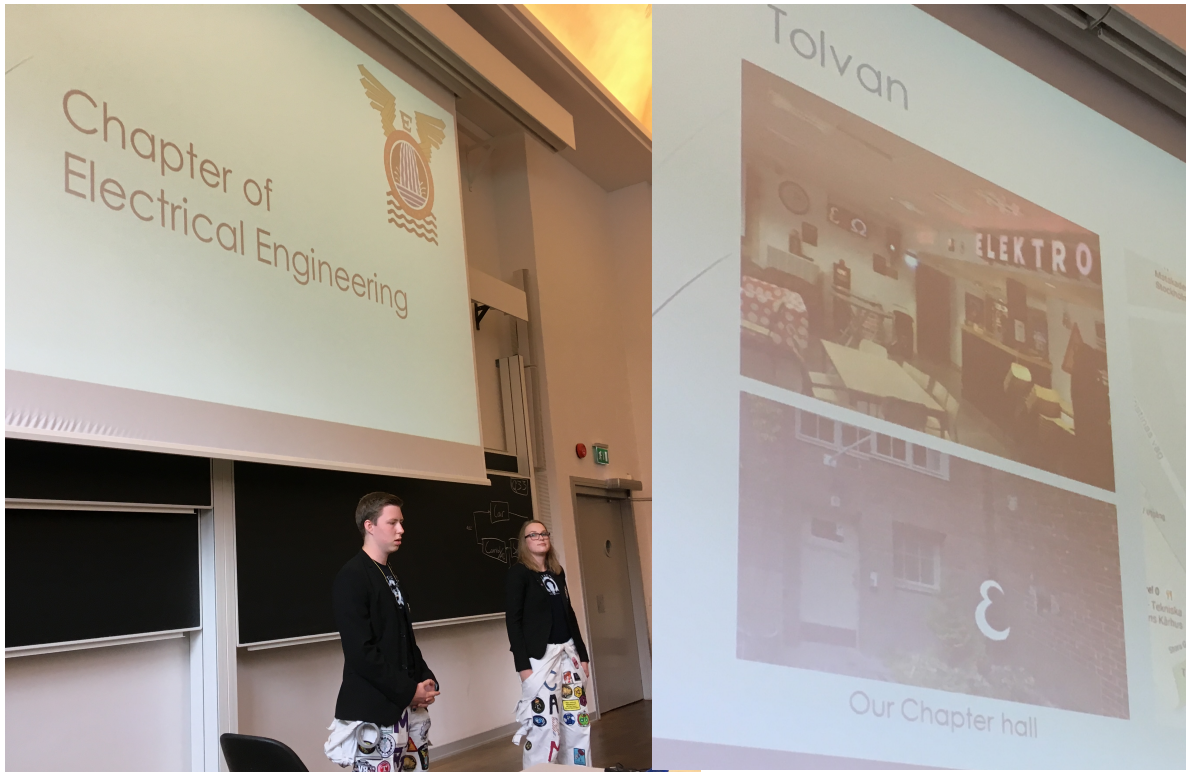
- People will **expect you to read your email**
  - **Check** your kth.se-address, or
  - **Forward it**

Electrical Engineering Student Chapter at KTH

- Sports
- Boardgames
- Parties

- Facebook: EMiTGlobal
- axelol@kth.se

- Excellent opportunity to get into Swedish student life!



BSc Program Welcoming at KTH

Did I tell you all you need to know?

NO!

If you want good answers, ask the right person!

- **Other students**: How are things done in practice
  - Swedish students at SCR
  - EE Student Chapter
- **Teachers**: specifics about a course
- Cristina (**ee-master@kth.se**): Admin, course selection, etc
- **Petter**: Curriculum, program wide Q's
- ...
- (contract info on Program website)

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Questions?