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## Report - MG2028 & MG2128 - 2020-05-04

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Respondents: 1  
Answer Count: 1  
Answer Frequency: 100.00%

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**Please note that there is only one respondent to this form: the person that performs the course analysis.**

**Course analysis carried out by (name, e-mail):**

Lasse Wingård, lw@kth.se; Per Johansson pj@kth.se

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**DESCRIPTION OF THE COURSE EVALUATION PROCESS**

**Describe the course evaluation process. Describe how all students have been given the possibility to give their opinions on the course. Describe how aspects regarding gender, and disabled students are investigated.**

Kursenkät skickades ut 2019-12-10 och låg ute fram till 2020-01-31. Totalt svarade 35 av 124 studenter i de två kursversionerna MG2028 & MG2128 på kursenkäten. Vi träffade dessutom varje student vid minst ett tiotal tillfällen under handledning och redovisning av datorövningar och handledning av inlämningsuppgifter, och vid dessa tillfällen fick vi också återkoppling kring hur kursen fungerat.

The course evaluation questionnaire was published on 2019-12-10 and was active until 2020-01-31. In total, 35 of 124 students in the two course versions MG2028 and MG2128 answered the questionnaire. Besides this, we met every student at least ten times for supervision and presentation of computer exercises and help with homework assignments. During these meetings, we also got feedback from the students on how the course has functioned.

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**DESCRIPTION OF MEETINGS WITH STUDENTS**

**Describe which meetings that has been arranged with students during the course and after its completion. (The outcomes of these meetings should be reported under 7, below.)**

Inga specifika möten för att inhämta studenternas synpunkter har arrangerats, utöver schemalagda övnings- och labbtillfällen.

No dedicated meetings with students have been arranged, besides the scheduled classes and exercises.

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## COURSE DESIGN

**Briefly describe the course design (learning activities, examinations) and any changes that have been implemented since the last course offering.**

Kursen är efter en inledande fas där vi repeterar och bygger på CAD-kunskaperna, indelad i olika teman, kring olika slags IT-verktyg som används i en industriell produktframtagningsprocess, där varje tema åtminstone innehåller en föreläsning med introduktion till temat eller en gästföreläsning med föreläsare från industri eller forskning, som presenterar sin syn på ämnet, samt en eller i något fall två lärarledda datorlaborationer. Utöver dessa schemalagda aktiviteter ingår ett antal obligatoriska och betygshöjande frivilliga inlämningsuppgifter som utförs självständigt utanför schemalagd tid. Mycket av arbetet i kursen är praktiskt arbete vid dator, och måste till största delen utföras i institutionens egna datorsalar.

Ändringar sedan föregående kursomgång: Nya versioner av en del programvaror och tillhörande labbinstruktioner. Dessutom lade vi till en kort introduktion till respektive datorövning, i direkt anslutning till motsvarande föreläsning. En ny gästföreläsare kring additiv tillverkning anlätades. Temat FEM/FEA har tills vidare tagits bort ur kursen, då vi inte lyckats få till meningsfulla studentaktiviteter under den tillgängliga schemalagda tiden, men ämnet tas fortfarande upp i någon eller några av gästföreläsningarna.

After an initial phase where CAD knowledge and skills are reviewed and extended, the course is divided into different topical themes, related to different IT tools used in industrial product realisation processes. Each theme includes at least one lecture with introduction to the theme or a guest lecture with invited speakers from industry and academia, talking about their views and experiences on the topic, and one or in some case two computer exercises with supervision from teachers and assistants. In addition to these scheduled activities, there are a number of compulsory and voluntary homework assignments, where the latter can be used to raise the final grade on the course, all of which have to be done outside scheduled classes. Much of the work in the course is practice in using different softwares, and these sessions mostly have to be carried out in our own computer labs, due to licensing issues.

Changes from previous course offering(s): New versions of various softwares and updated lab exercise instructions. We also added a short introduction to most exercises, following directly after the corresponding lecture. We had a new guest lecturer on additive manufacturing. The theme FEM/FEA has been removed from the course for the time being, as we haven't been able to design meaningful student activities that can be completed during scheduled hours. The topic is however still partly dealt with in one or two of the guest lectures.

## THE STUDENTS' WORKLOAD

**Does the students' workload correspond to the expected level (40 hours/1.5 credits)? If there is a significant deviation from the expected, what can be the reason?**

I snitt ca 8-10h/vecka, med ett snitt för MG2028 på ca 8h/vecka, medan MG2128 har ett snitt på drygt 10h/vecka. Detta innebär om man räknar med alla kursveckor en arbetsbelastning som ungefär motsvarar 40h/1,5 hp. För att få ett godkänt betyg på kursen, så krävs förmodligen mindre tid än dessa genomsnitt, medan de studenter som siktar mot ett högt slutbetyg (A eller B), oftast lägger ner betydligt mer tid på kursen än genomsnittet.

Skillnaden mellan de två kurserna kan med stor sannolikhet förklaras av de olika studentkategorierna i respektive kurs. Studenterna på MG2028 är mestadels svenska civilingenjörsstudenter som fäster mindre vikt vid betyg än de studenter som läser MG2128, som mestadels är direktantagna Master-studenter, ofta från andra länder, och för dem är betygen vanligen viktigare. Detta visar sig också i de genomsnittliga betygen på respektive kurs, där medelbetyget för MG2128 är högre än för MG2028.

In average, students spend 8-10h/week on the course, with about 8 h/week for MG2028 and just over 10h/week for MG2128. This means that the average workload, reasonably well correspond to 40h/1,5 cr. To pass the course with the lowest passing grade, you probably need less hours than the average, but students who aim at a high grade (A or B), typically have to spend much more time than the average for the course.

The difference between the two courses can most likely be explained by the different student categories in the courses. MG2028 students are typically Swedish 5 year engineering students, who are less concerned about grades than the students of MG2128 that are mostly students that were admitted directly to a 2 year Masters programme, and many of these students are international and the grades are usually more important for them. That is also shown in the average grades for the two courses, where students of MG2128 get higher grades than those in MG2028.



## THE STUDENTS' RESULTS

### How well have the students succeeded on the course? If there are significant differences compared to previous course offerings, what can be the reason?

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Examinationsgraden på de två kursvarianterna var totalt något högre än året innan (92,1% mot 90,1% av de registrerade studenterna på kursomgångarna). Prestationsgraden var också något högre (97,6% jämfört med 96,0%). Betygsfördelningen för de kombinerade kurserna är symmetrisk kring C, med A och E som de vanligaste slutbetygen. Detta är en liten ökning av de högsta och lägsta betygen jämfört med föregående år, men skillnaden är knappast signifikant.

The total number of students that passed this year's combined courses (MG2028 & MG2128) was fractionally higher than the year before (92.1% compared to 90.1% of the students registered to the course offerings). The total number of credits awarded to students this year were 97.6% of the possible 100%, compared to 96.0% the year before. The grades for the combined courses are showing a symmetric pattern around the C grade, with A and E being the most common grades. This is a slight shift towards the extremes compared to previous year(s), but the difference is hardly significant.

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## STUDENTS' ANSWERS TO OPEN QUESTIONS

### What do students say in response to the open questions?

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I stort sett är det positiva omdömen från studenterna. Man nämner att kursen är väl genomarbetad och välstrukturerad, att instruktionerna för labbar/övningar är välskrivna och tydliga och att kunskaperna/färdigheterna man får under kursen är nödvändiga och användbara. Flera studenter trycker på vikten att inte vänta med att ta itu med saker och att gå på föreläsningarna. Många uttrycker också att de tycker att kursen varit rolig och intressant, med stor bredd i innehållet. Någon efterlyser att de betygshöjande uppgifterna borde publiceras tidigare, men det håller vi inte med om, då man måste ha gjort den tillhörande obligatoriska övningen först, innan man kan ta itu med den betygshöjande uppgiften. Två studenter säger att detta är den bästa kurs de läst under hela sitt utbildningsprogram. En fullständig sammanställning av alla fritextsvar finns i enkätreporten.

Generally, the students are positive in their judgements. They mention that the course is well organised and well developed, that the lab exercises are well written and clear and that the knowledge/skills acquired in the course are necessary and useful. Several students emphasize that you should start working on the different tasks as soon as possible and that you should attend the lectures. Many students also say that the course has been both fun and interesting, with a wide variety in the contents. One student would like the voluntary assignments to be released earlier, but we do not agree, as the corresponding compulsory exercise has to be done before in order to have the required knowledge. Two students state that it has been the best course throughout their whole education programme. A complete listing of all answers to open questions can be found in the survey report.

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## SUMMARY OF STUDENTS' OPINIONS

### Summarize the outcome of the questionnaire, as well as opinions emerging at meetings with students.

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Generellt sett så instämmer studenterna i väldigt hög utsträckning i de givna påståendena i LEQ-enkäten (för de flesta påståenden är genomsnittsvärdet för instämmandegraden kring 6,5 på en skala från 1 till 7, och de lägsta värdena ligger strax under 5, men dessa punkter rör främst möjligheten att själv bestämma vad man arbetar med under kursen, och detta är inte prioriterat från vår sida). Det totala polärddiagrammet ser ut ungefär som under de senaste åren. Om man tittar på diagrammen för manliga respektive kvinnliga studenter så bedömer vi inte skillnaderna som signifikanta. Inte heller mellan de två kurserna kan vi se några påtagliga skillnader.

In general, the students agree with the statements in the LEQ questionnaire to a very high degree (for most of the statements, the average value is around 6 on a scale between 1 and 7, and the lowest values are around 4, but those statements relate to the possibilities to choose what to study yourself during the course, and that has not been a prioritised by us). The overall polar diagram is similar to that of previous course offerings. There are no significant differences between male and female students, nor between the two course versions.

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#### OVERALL IMPRESSION

**Summarize the teachers' overall impressions of the course offering in relation to students' results and their evaluation of the course, as well as in relation to the changes implemented since last course offering.**

Vi instämmer med studenternas åsikt att kursen fungerat bra, även om vi tvingats skicka tillbaka en stor del av de betygshöjande inlämningsuppgifterna för komplettering innan vi godkänt dem, och detta har orsakat mycket extraarbete både för oss och för studenterna. De nya korta introduktionerna till de obligatoriska datorövningarna har fungerat väl, och de kommer att bli ett permanent inslag i kommande kursomgångar. Studenterna har presterat ungefär som under tidigare år, både vad gäller examinationsgrad och deras betyg. En ändring som vi gjorde till detta år var att tidigarelägga den betygshöjande uppgiften i produktkonfigurering och senarelägga den i produktdatakommunikation för att få fler studenter att göra den förstnämnda, då den uppfattas som intressantare och mer givande för studenterna.

We agree with the students that the course has functioned well, even if a large number of voluntary assignments have been returned to the students for completion, before they were given a passing grade and that has required a lot of extra work for us as well as for the students. The new introductions to the labs following on the corresponding lecture have worked out well, and they will become a permanent part of the course in the future. Student results have been quite similar between course offerings, both when it comes to the proportion of students passing the course and their grades. One change that has been done this year, is to publish the voluntary assignment in product configuration earlier and postpone the publication of the one in product data communication. The aim has been to encourage more students to do the former, which is considered to be more interesting and relevant for the students.

#### ANALYSIS

**Is it possible to identify stronger and weaker areas in the learning environment based on the information you have gathered during the evaluation and analysis process? What can the reason for these be? Are there significant difference in experience between:**

- students identifying as female and male?
- international and national students?
- students with or without disabilities?

Vi tycker inte att det finns några direkta svagheter i lärmiljön, och som nämnts ovan, så har vi inte sett några påtagliga skillnader utifrån kön eller nationalitet. Under denna kursomgång har vi haft en student med omfattande fysiska funktionshinder (rullstolsbunden, utan händer, med stumpar till armar och ben, och beroende av personlig assistans) som deltog i alla aktiviteter i kursen och fick ett godkänt betyg, utan att vi gjorde några större anpassningar.

There seem to be no really weak areas, and as mentioned above, we have not noticed any significant differences related to gender or nationality. This year we had a student with severe physical disabilities (wheelchair bound, no hands, very short limbs, dependent on a personal assistant) that participated in all course activities and passed the course without major adaptations or problems.

#### PRIORITIZED COURSE DEVELOPMENT

**What aspects of the course should be developed primarily? How can these aspects be developed in short and long term?**

Uppgradering av CAM-programvaran till en aktuell version, vilket också innebär att helt skriva om de två tillhörande övningsinstruktionerna, vilket är ett stort jobb. Permanenta introduktionsföreläsningarna inför respektive datorövning. Revidera och uppdatera övriga programvaror och instruktioner (endast smärre ändringar). Hitta en eller flera nya gästföreläsare, för att få lite variation mellan kursomgångarna och stimulera vårt eget intresse.

Upgrade of CAM software to current version, which includes a complete rewriting of the two related exercise instructions, which is a major task. Make the introductory lectures for the computer exercises permanent. Revise and update all other software and instructions to current version (only minor changes). Invite one or more new guest lecturers, in order to have a bit of variation between course offerings and thereby stimulate our own interest.

#### OTHER INFORMATION

**Is there anything else you would like to add?**

Nej!  
No!



## MG2028 - 2019-12-06

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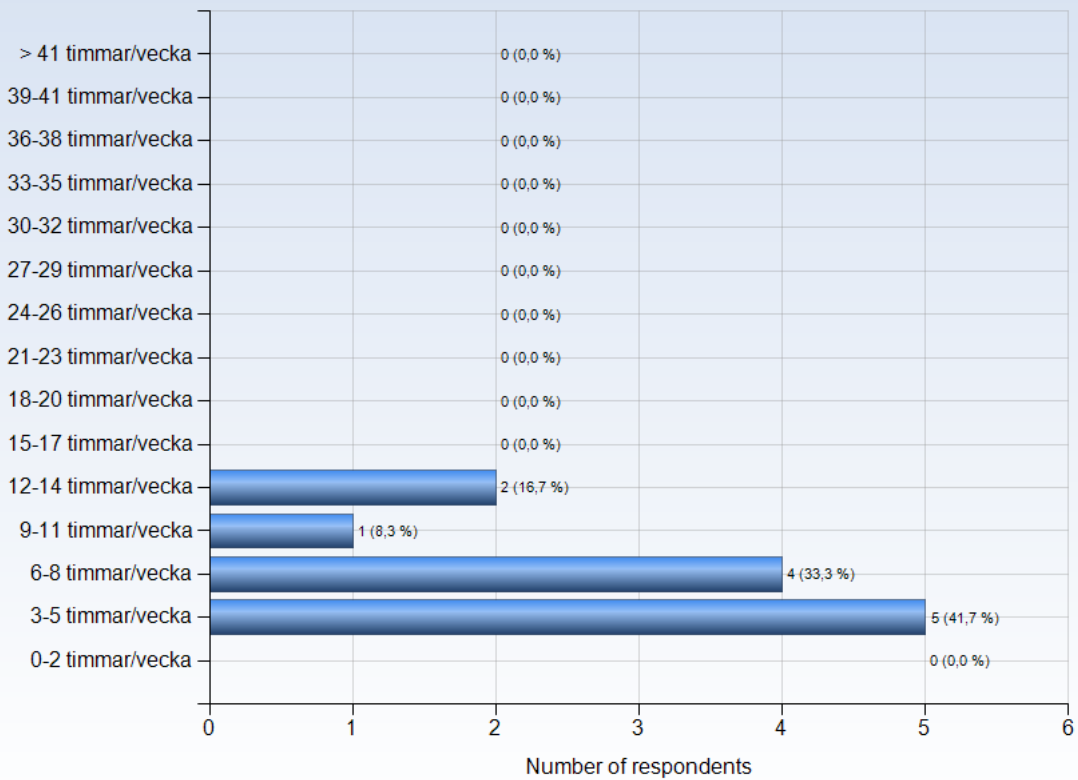
Antal respondenter: 64  
Antal svar: 12  
Svarsfrekvens: 18,75 %

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## ESTIMATED WORKLOAD

On average, how many hours/week did you work with the course (including scheduled hours)?



### Comments

Comments (I worked: 3-5 timmar/vecka)

Attending the scheduled activities was sufficient to complete the work.

The assignments were unevenly given throughout the course, which contributed to stress during some weeks and others were very calm instead. A solution to the problem would be to distribute the assignments more even throughout the course.

Comments (I worked: 6-8 timmar/vecka)

More when we had the mandatory assignments

Comments (I worked: 9-11 timmar/vecka)

Jag tycker att kursplanen är genomtänkt och rätt anpassningsbar eftersom man kan välja själv hur många av de frivilliga uppgifterna som man vill göra. Inlämningsuppgifterna tog en del tid, men det var ändå skönt att raska av dessa i början, trots att vi hade mycket i andra kurser samma period.



## LEARNING EXPERIENCE

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The polar diagrams below show the average response to the LEQ statements for different groups of respondents (only valid responses are included). The scale that is used in the diagrams is defined by:

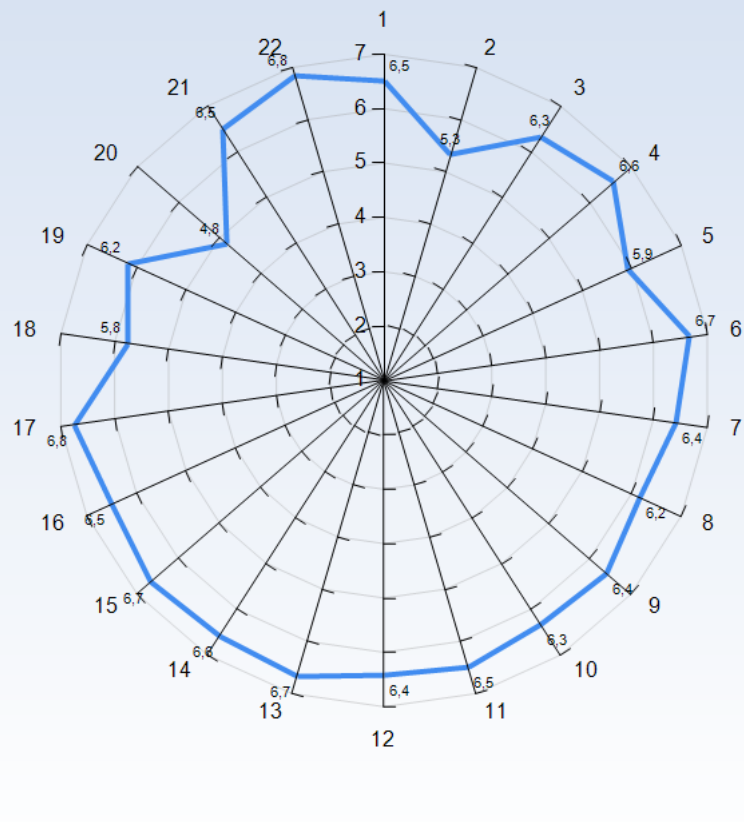
1 = No, I strongly disagree with the statement

4 = I am neutral to the statement

7 = Yes, I strongly agree with the statement

**Note! A group has to include at least 3 respondents in order to appear in a diagram.**

### Average response to LEQ statements - all respondents







## **KTH Learning Experience Questionnaire v3.1.4**

### **Meaningfulness - emotional level**

#### *Stimulating tasks*

1. I worked with interesting issues (a)

#### *Exploration and own experience*

2. I explored parts of the subject on my own (a)

3. I was able to learn by trying out my own ideas (b)

#### *Challenge*

4. The course was challenging in a stimulating way (c)

#### *Belonging*

5. I felt togetherness with others on the course (d)

6. The atmosphere on the course was open and inclusive (d)

### **Comprehensibility - cognitive level**

#### *Clear goals and organization*

7. The intended learning outcomes helped me to understand what I was expected to achieve (e)

8. The course was organized in a way that supported my learning (e)

#### *Understanding of subject matter*

9. I understood what the teachers were talking about (f)

10. I was able to learn from concrete examples that I could relate to (g)

11. Understanding of key concepts had high priority (h)



### *Constructive alignment*

- 12. The course activities helped me to achieve the intended learning outcomes efficiently (i)
- 13. I understood what I was expected to learn in order to obtain a certain grade (i)

### *Feedback and security*

- 14. I received regular feedback that helped me to see my progress (j)
- 15. I could practice and receive feedback without being graded (j)
- 16. The assessment on the course was fair and honest (k)

## **Manageability - instrumental level**

### *Sufficient background knowledge*

- 17. My background knowledge was sufficient to follow the course (f)

### *Time to reflect*

- 18. I regularly spent time to reflect on what I learned (l)

### *Variation and participation*

- 19. The course activities enabled me to learn in different ways (m)
- 20. I had opportunities to influence the course activities (m)

### *Collaboration*

- 21. I was able to learn by collaborating and discussing with others (n)

### *Support*

- 22. I was able to get support if I needed it (c)



## **Learning factors from the literature that LEQ intends to examine**

We tend to learn most effectively (in ways that make a sustained, substantial, and positive influence on the way we think, reflect, act or feel) when:

- a) We are trying to answer questions, solve problems or acquire skills that we find interesting, exciting or important
- b) We are able to speculate, test ideas (intellectually or practically) and learn from experience, even before we know much about the subject
- c) We are able to do so in a challenging and at the same time supportive environment
- d) We feel that we are part of a community and believe that other people have confidence in our ability to learn
- e) We understand the meaning of the intended learning outcomes, how the environment is organized, and what is expected of us
- f) We have adequate prior knowledge to deal with the current learning situation
- g) We are able to learn inductively by moving from concrete examples and experiences to general principles, rather than the reverse
- h) We are challenged to develop a true understanding of key concepts and gradually create a coherent whole from the content
- i) We believe that the work we are expected to do will help us to achieve the intended learning outcomes
- j) We are able to try, fail, and receive feedback before, and separate from, each summative assessment of our efforts
- k) We believe that our work will be considered in an honest and fair way
- l) We have sufficient time for learning and devote the time needed to do so



m) We believe that we have control over our own learning, and not that we are being manipulated

n) We are able to collaborate with other learners struggling with the same problems

## Literature

Bain, K. (2004). *What the Best College Teachers Do*, Chapter 5, pp. 98-134. Cambridge: Harvard University Press.

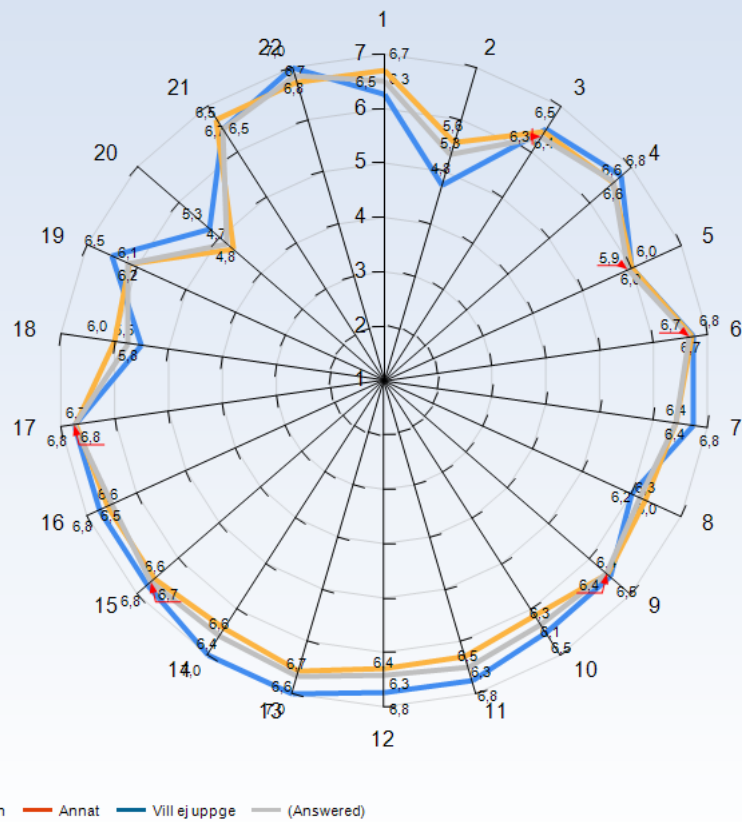
Biggs J. & Tang, C. (2011). *Teaching for Quality Learning at University*, Chapter 6, pp. 95-110. Maidenhead: McGraw Hill.

Elmgren, M. & Henriksson, A-S. (2014). *Academic Teaching*, Chapter 3, pp. 57-72. Lund: Studentlitteratur.

Kember, K. & McNaught, C. (2007). *Enhancing University Teaching: Lessons from Research into Award-Winning Teachers*, Chapter 5, pp. 31-40. Abingdon: Routledge.

Ramsden, P. (2003). *Learning to Teach in Higher Education*, Chapter 6, pp. 84-105. New York: RoutledgeFalmer.

### Average response to LEQ statements - per gender



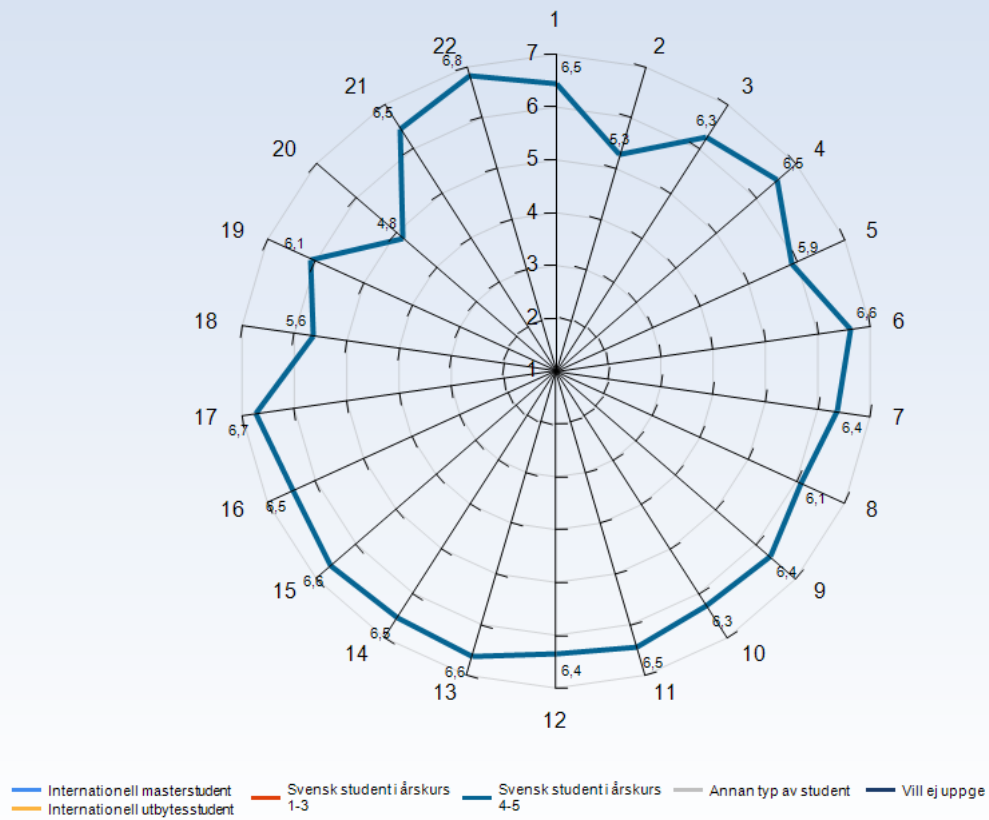
### Comments

Comments (I am: Kvinna)

Inom kurser där det är ganska få kvinnor tidigare har jag ibland känt att jag blivit behandlad på ett annat sätt än andra kursdeltagare, men i denna kursen tyckte jag att atmosfären var öppen och trevlig. Det uppskattade jag verkligen.

Even if it's a low amount of females in the course, it is highly appreciated that you invite female engineers to guest lectures. I didn't find it a problem to be a minority.

### Average response to LEQ statements - per type of student



#### Comments

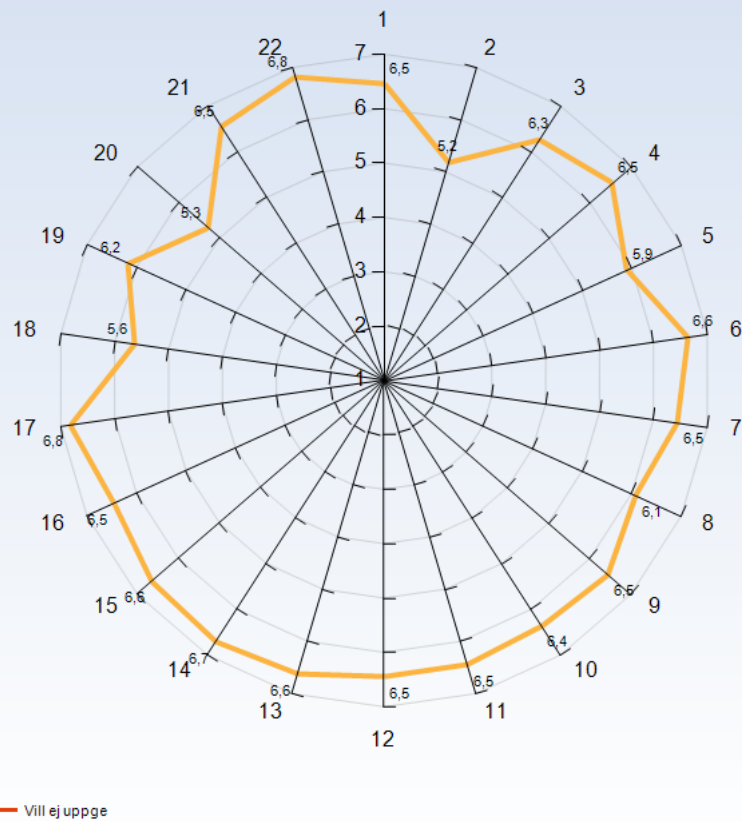
Comments (I am: Svensk student i årskurs 4-5)

Very easy to pass, but getting higher grades is time demanding

Om man läser mastern i industriell ekonomi och teknikprofil produktion så är denna kurs väl värd att läsa.

No comments

### Average response to LEQ statements - per disability



#### Comments

Comments (My response was: Ja)

Jag har en adhd-diagnos vilket gör det väldigt svårt för mig att tolka instruktioner ifall de är tvetydiga, otydliga eller inte tillräckligt detaljerade, men i denna kurs var det sällan några frågetecken på vad som skulle göras och i de fall dessa fanns så kunde hjälp fås väldigt snabbt och på ett sätt så att man förstod vad som var fel och därav lärde sig av feLEN man hade gjort.

Comments (My response was: Nej)

Nej, jag har ingen funktionsnedsättning men jag blir väldigt lätt uttråkad och jag är glad att jag slapp bli det i denna kurs.



## GENERAL QUESTIONS

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### What was the best aspect of the course?

What was the best aspect of the course? (I worked: 3-5 timmar/vecka)

Fun and interesting laborations.

Very interesting course! I learned very much from the laborations and the exercises.

I like that we had many computer labs. Although, if following the instructions you passed but that didn't mean you understood the deeper learning aspect of the lab. I would want some more background information about the computer labs, such as CAM modeling, to understand why we did as the instructions said. Maybe include some "info box" in the instructions or some readings to do before the lab.

What was the best aspect of the course? (I worked: 6-8 timmar/vecka)

Per and Lasse are great teachers, helpful and understanding

Det var en rolig kurs som var väldigt bra planerad och genomförd. Märks att det har lagts ner mycket tid i kursen samt att de kursansvariga lärarna har hållt kursen några gånger.

The labs, fun and giving

What was the best aspect of the course? (I worked: 9-11 timmar/vecka)

- Det var skönt att man fick jobba i sitt eget tempo och utefter sina egna ambitioner. T.ex. på labbarna, om man blev klar snabbt kunde man redovisa och gå hem, istället för att sitta av tiden. Samma sak med de frivilliga uppgifterna för högre betyg, man fick välja hur mycket man ville göra själv. För mig som är en person som tycker om eget arbete i eget tempo så var upplägget perfekt.

- Jag uppskattar att det gick att få hjälp på labbarna när man körde fast, och att man valde labbpartner själv.

- Snabba svar på mejl (specifikt från Per) uppskattas

### What would you suggest to improve?

What would you suggest to improve? (I worked: 3-5 timmar/vecka)

Maybe a few more assistants on "critical" labs.

I like that we had many computer labs. Although, if following the instructions you passed but that didn't mean you understood the deeper learning aspect of the lab. I would want some more background information about the computer labs, such as CAM modeling, to understand why we did as the instructions said. Maybe include some "info box" in the instructions or some readings to do before the lab.

What would you suggest to improve? (I worked: 6-8 timmar/vecka)

Release the voluntary assignments earlier

What would you suggest to improve? (I worked: 9-11 timmar/vecka)

Jag tycker det är ovanligt med en såhär väl genomtänkt och planerad kurs, så jag har inte så mycket klagomål.

### What advice would you like to give to future participants?

What advice would you like to give to future participants? (I worked: 3-5 timmar/vecka)

Try to keep up with all assignments.

Do the assignments on time, it will be stressful to leave them until the last week. Follow closely what's being expected at the computer labs and don't just do them - understand them as well!

What advice would you like to give to future participants? (I worked: 6-8 timmar/vecka)

Go to the lectures

What advice would you like to give to future participants? (I worked: 9-11 timmar/vecka)

- Börja med inlämningsuppgifterna i tid kan vara bra.

- Ibland är det skönt att komma kanske 20-30 min tidigare till labbarna för att komma igång snabbt. Ta med en egen dator till labbarna och läs instruktionerna på den, så slipper du byta fönster hela tiden. Stanna kvar på introduktionsföreläsningen om labben och skumma igenom instruktionerna kvällen innan, det ger mer än man tror att ha en viss aning om vad som ska hända.

- Du kan gå kursen även om du inte tycker att CAD är det roligaste i världen, kursen ger möjligheten att prova på flera olika program på ett lärorikt sätt.

### Is there anything else you would like to add?

Is there anything else you would like to add? (I worked: 3-5 timmar/vecka)

I appreciate the collaborations between the teachers during the lectures. It is clear that you like this course and are well prepared together!

Is there anything else you would like to add? (I worked: 6-8 timmar/vecka)

Fun and interesting course

Is there anything else you would like to add? (I worked: 9-11 timmar/vecka)

Ja, jag blev positivt förvånad av kursen. Det var lärorikt utan stress och press.





## MG2128 - 2019-12-06

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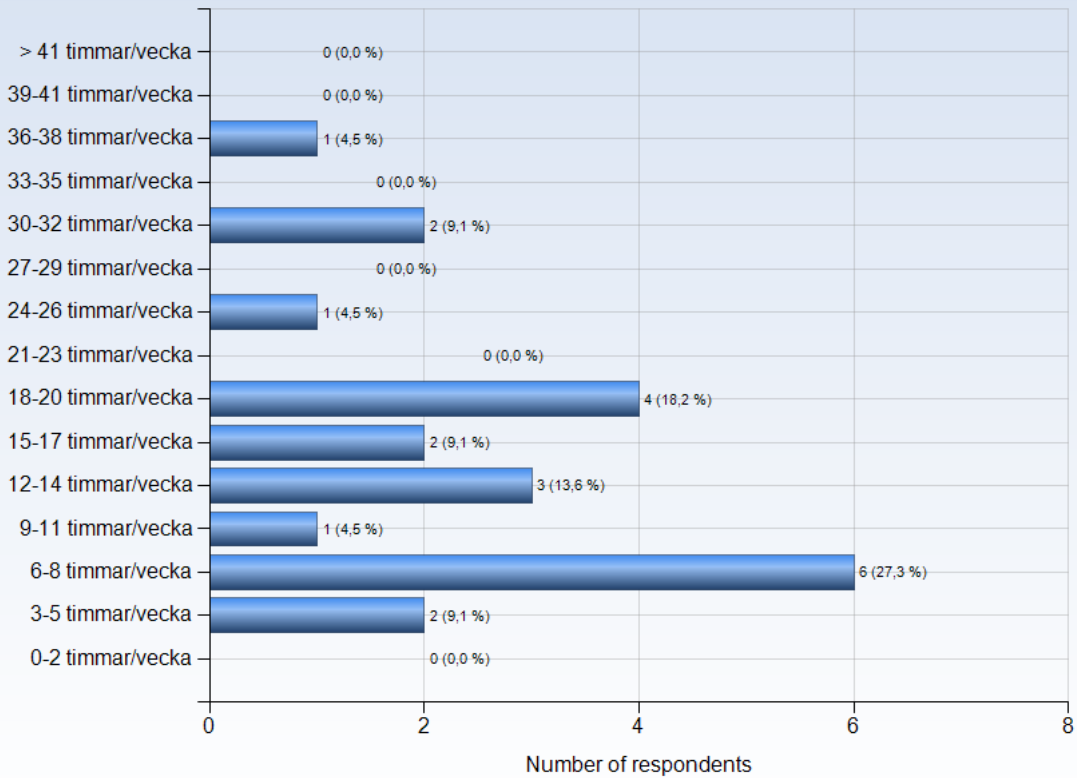
Antal respondenter: 60  
Antal svar: 23  
Svarsfrekvens: 38,33 %

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## ESTIMATED WORKLOAD

On average, how many hours/week did you work with the course (including scheduled hours)?



### Comments

Comments (I worked: 6-8 timmar/vecka)

Good workload distribution through out the course

Comments (I worked: 12-14 timmar/vecka)

Helpful programme in application, Clearly structured in theory lecture and exercise. Kindly help from Professors.

The workload wasn't very high and was adequately spread across the entire course duration.

Comments (I worked: 15-17 timmar/vecka)

The workload was bigger at the end of the semester when we had to send the non-compulsory assignments.

Comments (I worked: 18-20 timmar/vecka)

Really time taking for the voluntary assignments, but enjoyed doing them!

Comments (I worked: 30-32 timmar/vecka)

It took a lot of time to finish the voluntary assignments.

Comments (I worked: 36-38 timmar/vecka)

The course structure is not a stereotypical design course which made this course really interesting one. I had so many opportunities to establish myself from the production to the design field.



## LEARNING EXPERIENCE

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The polar diagrams below show the average response to the LEQ statements for different groups of respondents (only valid responses are included). The scale that is used in the diagrams is defined by:

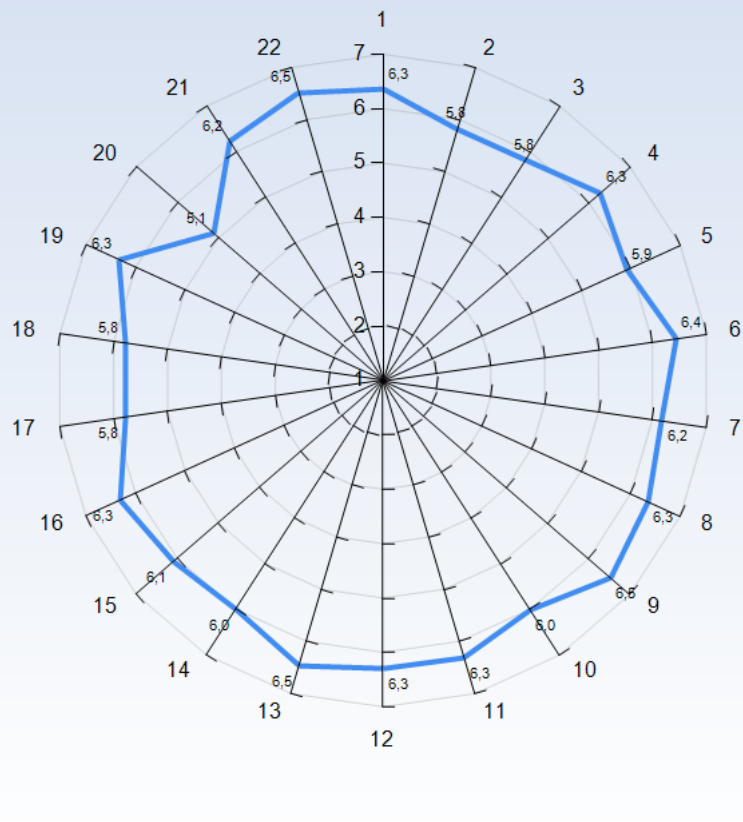
1 = No, I strongly disagree with the statement

4 = I am neutral to the statement

7 = Yes, I strongly agree with the statement

**Note! A group has to include at least 3 respondents in order to appear in a diagram.**

### Average response to LEQ statements - all respondents





## **KTH Learning Experience Questionnaire v3.1.4**

### **Meaningfulness - emotional level**

#### *Stimulating tasks*

1. I worked with interesting issues (a)

#### *Exploration and own experience*

2. I explored parts of the subject on my own (a)

3. I was able to learn by trying out my own ideas (b)

#### *Challenge*

4. The course was challenging in a stimulating way (c)

#### *Belonging*

5. I felt togetherness with others on the course (d)

6. The atmosphere on the course was open and inclusive (d)

### **Comprehensibility - cognitive level**

#### *Clear goals and organization*

7. The intended learning outcomes helped me to understand what I was expected to achieve (e)

8. The course was organized in a way that supported my learning (e)

#### *Understanding of subject matter*

9. I understood what the teachers were talking about (f)

10. I was able to learn from concrete examples that I could relate to (g)

11. Understanding of key concepts had high priority (h)



### *Constructive alignment*

- 12. The course activities helped me to achieve the intended learning outcomes efficiently (i)
- 13. I understood what I was expected to learn in order to obtain a certain grade (i)

### *Feedback and security*

- 14. I received regular feedback that helped me to see my progress (j)
- 15. I could practice and receive feedback without being graded (j)
- 16. The assessment on the course was fair and honest (k)

## **Manageability - instrumental level**

### *Sufficient background knowledge*

- 17. My background knowledge was sufficient to follow the course (f)

### *Time to reflect*

- 18. I regularly spent time to reflect on what I learned (l)

### *Variation and participation*

- 19. The course activities enabled me to learn in different ways (m)
- 20. I had opportunities to influence the course activities (m)

### *Collaboration*

- 21. I was able to learn by collaborating and discussing with others (n)

### *Support*

- 22. I was able to get support if I needed it (c)



## **Learning factors from the literature that LEQ intends to examine**

We tend to learn most effectively (in ways that make a sustained, substantial, and positive influence on the way we think, reflect, act or feel) when:

- a) We are trying to answer questions, solve problems or acquire skills that we find interesting, exciting or important
- b) We are able to speculate, test ideas (intellectually or practically) and learn from experience, even before we know much about the subject
- c) We are able to do so in a challenging and at the same time supportive environment
- d) We feel that we are part of a community and believe that other people have confidence in our ability to learn
- e) We understand the meaning of the intended learning outcomes, how the environment is organized, and what is expected of us
- f) We have adequate prior knowledge to deal with the current learning situation
- g) We are able to learn inductively by moving from concrete examples and experiences to general principles, rather than the reverse
- h) We are challenged to develop a true understanding of key concepts and gradually create a coherent whole from the content
- i) We believe that the work we are expected to do will help us to achieve the intended learning outcomes
- j) We are able to try, fail, and receive feedback before, and separate from, each summative assessment of our efforts
- k) We believe that our work will be considered in an honest and fair way
- l) We have sufficient time for learning and devote the time needed to do so



m) We believe that we have control over our own learning, and not that we are being manipulated

n) We are able to collaborate with other learners struggling with the same problems

## Literature

Bain, K. (2004). *What the Best College Teachers Do*, Chapter 5, pp. 98-134. Cambridge: Harvard University Press.

Biggs J. & Tang, C. (2011). *Teaching for Quality Learning at University*, Chapter 6, pp. 95-110. Maidenhead: McGraw Hill.

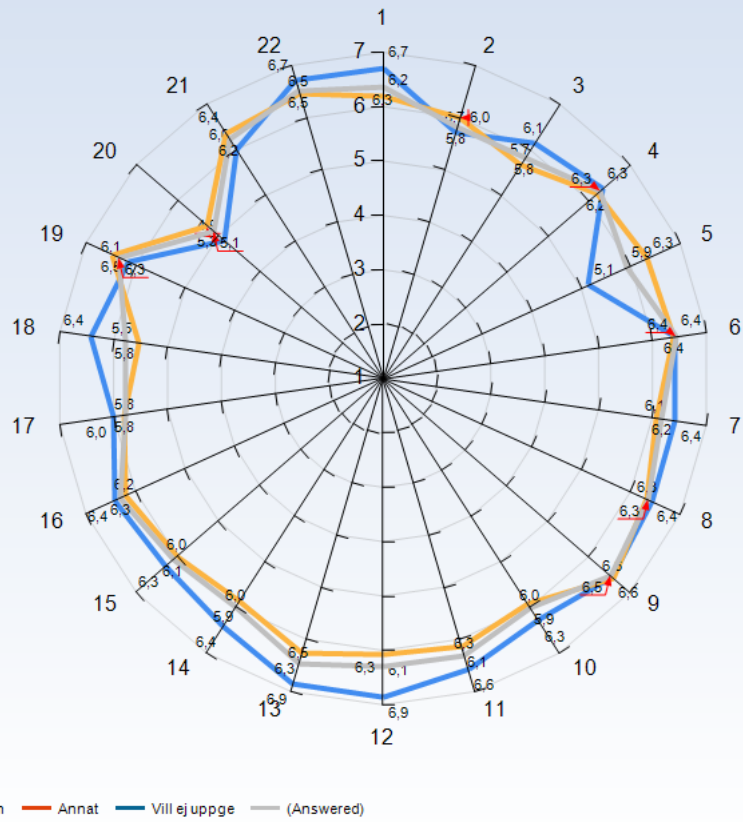
Elmgren, M. & Henriksson, A-S. (2014). *Academic Teaching*, Chapter 3, pp. 57-72. Lund: Studentlitteratur.

Kember, K. & McNaught, C. (2007). *Enhancing University Teaching: Lessons from Research into Award-Winning Teachers*, Chapter 5, pp. 31-40. Abingdon: Routledge.

Ramsden, P. (2003). *Learning to Teach in Higher Education*, Chapter 6, pp. 84-105. New York: RoutledgeFalmer.



### Average response to LEQ statements - per gender



#### Comments

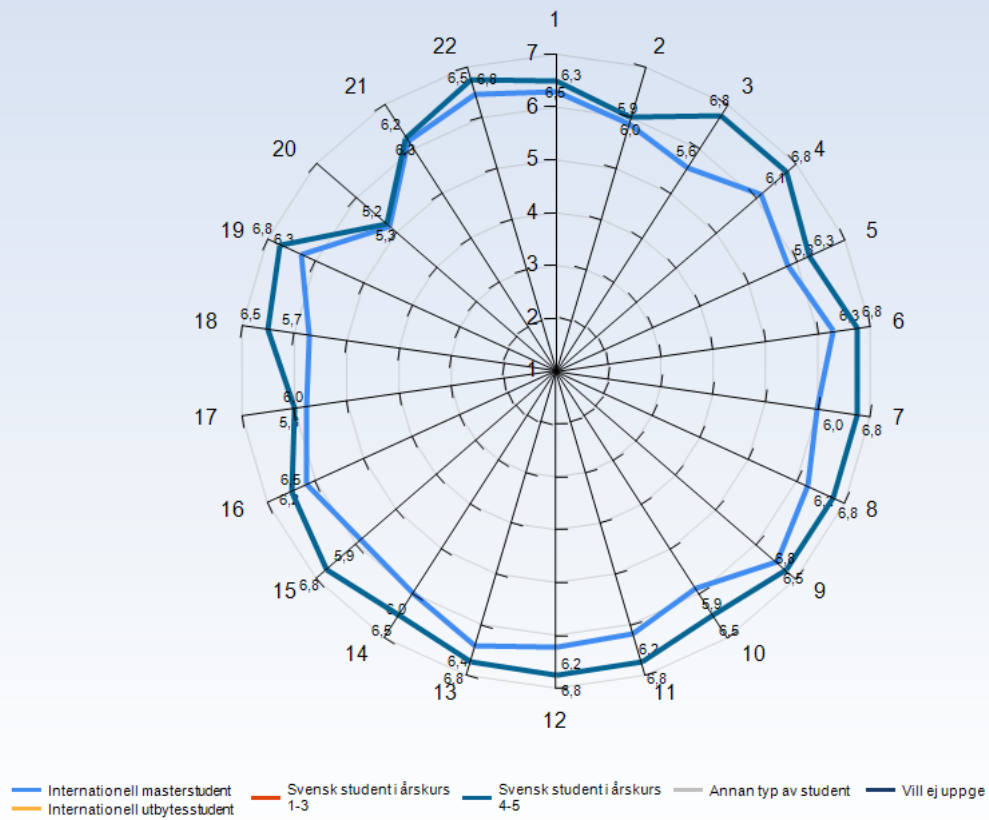
Comments (I am: Kvinna)

Nothing

Comments (I am: Man)

Märkte ingen skillnad.

### Average response to LEQ statements - per type of student



### Comments

Comments (I am: Internationell masterstudent)

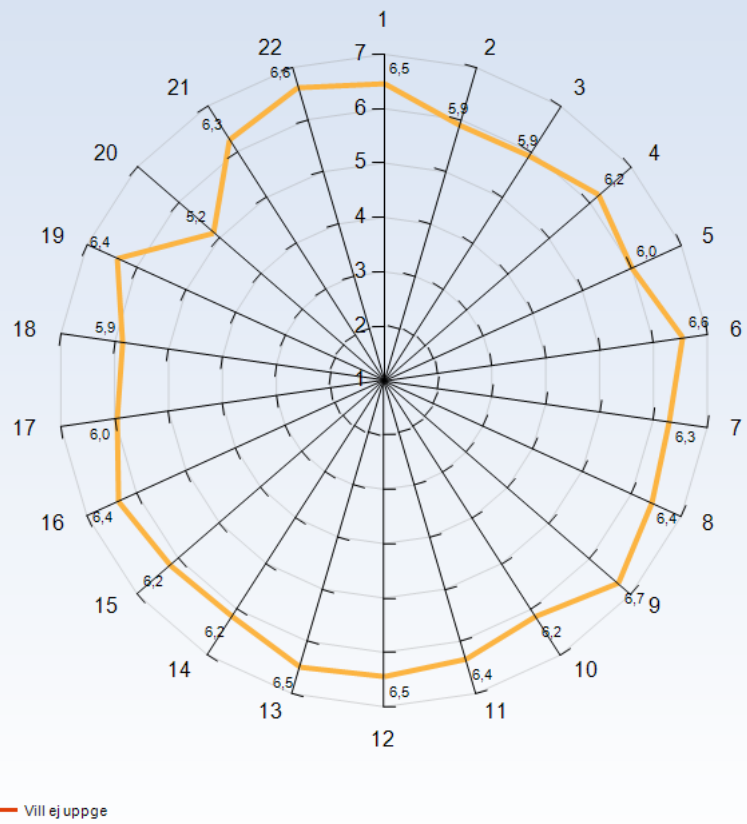
perfect

For me, it was really satisfactory. I have gained a lot.

Comments (I am: Svensk student i årskurs 4-5)

Jag hade inga problem med att följa kursen på engelska. Om det var något jag inte förstod kunde jag fråga på svenska så var det löst.

### Average response to LEQ statements - per disability



#### Comments

Comments (My response was: Nej)  
perfect



## GENERAL QUESTIONS

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### What was the best aspect of the course?

What was the best aspect of the course? (I worked: 6-8 timmar/vecka)

This was probably the best course at KTH that I had in five years that I have been studying here. Really happy that I had a chance to experience that. Great supporting teachers and TAs that help you to understand and grow in your knowledge. Well done!

The practical tasks we were able to try on our own. The good descriptions for each example.

Course materials are really organized

The assignments that helped us to be familiar with the learning subject

Compulsory labs

What was the best aspect of the course? (I worked: 12-14 timmar/vecka)

Instruction on each exercise is quite clear and it helps a lot for people who is not familiar with the software.

Using a technical tool for creative solutions!

The lab sessions in the beginning of the course helped immensely to understand the SolidEdge software since I hadn't worked with it before. Also the guest lectures were very enriching.

What was the best aspect of the course? (I worked: 15-17 timmar/vecka)

The availability of the teachers

Had a chance to learn a lot of new softwares

What was the best aspect of the course? (I worked: 18-20 timmar/vecka)

Covers all the aspects apart from CAD

You learn a very useful skill by doing it and not by listening to lectures.

What was the best aspect of the course? (I worked: 30-32 timmar/vecka)

The knowledge is necessary for students.

What was the best aspect of the course? (I worked: 36-38 timmar/vecka)

The assignments, in fact, are the best aspect I would say.

### What would you suggest to improve?

What would you suggest to improve? (I worked: 6-8 timmar/vecka)

The only thing could be is to somehow encourage people to work in pairs during labs.

The voluntary assignments (especially the CAM assignment) need more background information. In case of GibbsCAM it is try and error without deeper understanding of what each value in the MDD-file will change within the CAM assignment.

maybe one more assignment in the 1st period

Non compulsory lab in GibbsCam

What would you suggest to improve? (I worked: 12-14 timmar/vecka)

Nothing to improve, thanks.

Not much honestly.

The tacton lab activity could be improved by having a more complex exercise which will help while doing the voluntary assignment.

What would you suggest to improve? (I worked: 18-20 timmar/vecka)

Less number of voluntary assignments would be nice

It is the best course I had at KTH so far. Nothing to complain.

What would you suggest to improve? (I worked: 30-32 timmar/vecka)

I have no comment about it.

What would you suggest to improve? (I worked: 36-38 timmar/vecka)

It will be better if some software (Gibbscam) student version is available.



### What advice would you like to give to future participants?

What advice would you like to give to future participants? (I worked: 6-8 timmar/vecka)

Enjoy the course and don't hesitate if you need help :)

Start early with the voluntary assignments  
to practice on their owns in the lab exercises

What advice would you like to give to future participants? (I worked: 12-14 timmar/vecka)

Nothing

Make some coffee in the lunch room, your gonna be here for a while. And you will need coffee.

This is a great course for everyone whether you have prior CAD experience or not, since it starts from the basics and slowly increases the level where you can be comfortable in working with CAD and other IT software.

What advice would you like to give to future participants? (I worked: 18-20 timmar/vecka)

Understand and study the course :p

What advice would you like to give to future participants? (I worked: 30-32 timmar/vecka)

I have no comment about it.

What advice would you like to give to future participants? (I worked: 36-38 timmar/vecka)

Tardiness in the assignment will make feel stressed at the bay.

### Is there anything else you would like to add?

Is there anything else you would like to add? (I worked: 6-8 timmar/vecka)

It was amazing that you've learned all the names of the students! So impressive.

Thank you for this course, hope that you will remain it similarly for the years to come.

Is there anything else you would like to add? (I worked: 12-14 timmar/vecka)

Nothing

No

Is there anything else you would like to add? (I worked: 15-17 timmar/vecka)

Guest lectures are good to see different applications of CAD

Is there anything else you would like to add? (I worked: 30-32 timmar/vecka)

Nothing at this moment.

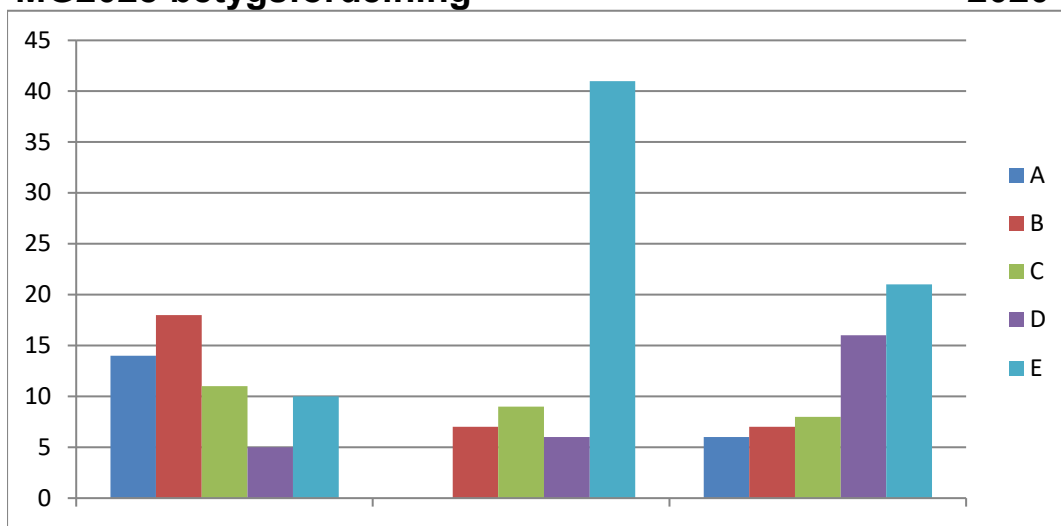
## SPECIFIC QUESTIONS

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# MG2028 betygsfördelning

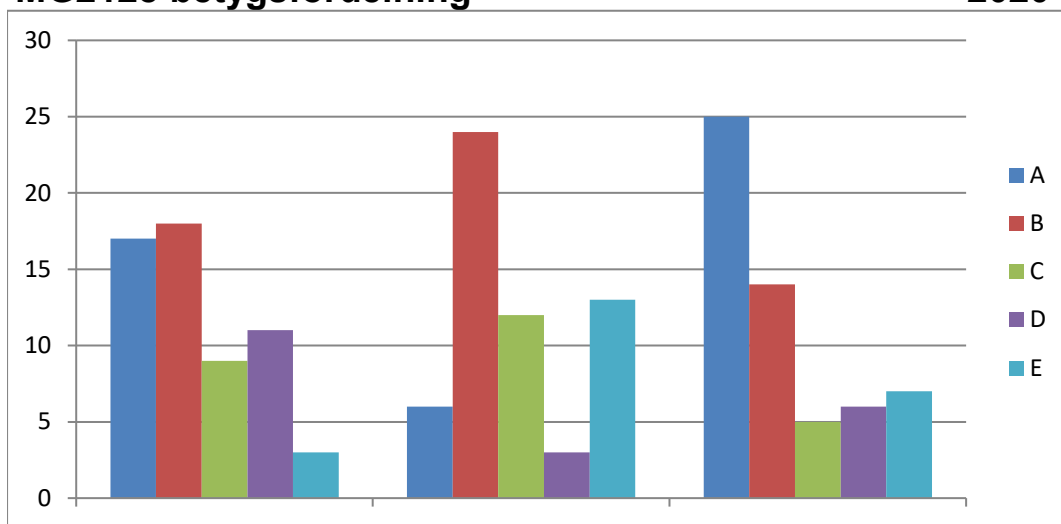
2020-04-30



	REG	LAB1	LAB2	LABA	INL1	INL2	Slutbetyg	
Antal stud	63			62	58	63	58	
	A				14	0	6	10,3%
	B				18	7	7	12,1%
	C				11	9	8	13,8%
	D				5	6	16	27,6%
	E				10	41	21	36,2%
	P			62				
Poäng				93	87	189	369	
Prestation				98,4%	92,1%	100,0%		<b>97,6%</b>
Examination							<b>92,1%</b>	

# MG2128 betygsfördelning

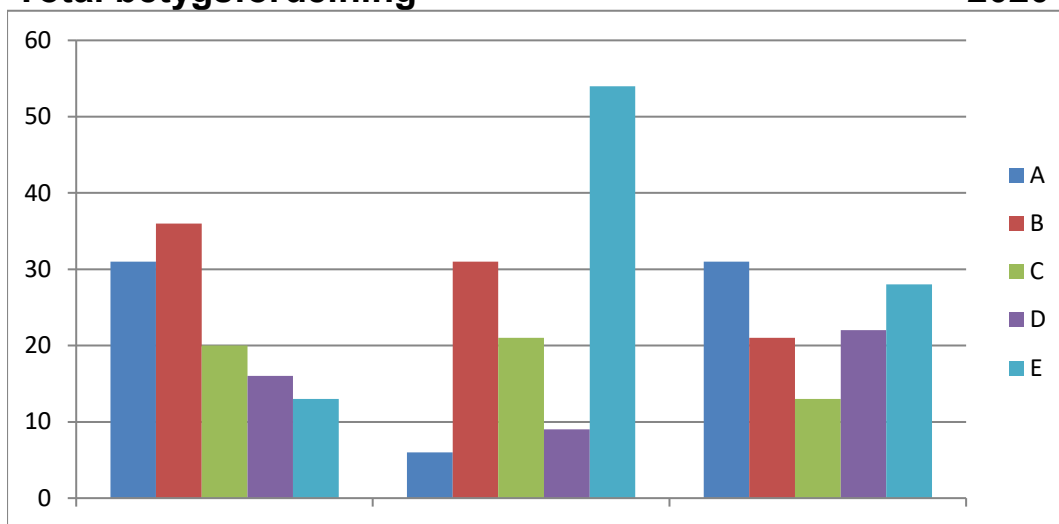
2020-04-30



	REG	LAB1	LAB2	LABA	INL1	INL2	Slutbetyg	
Antal stud	60	59	58		58	58	57	
	A				17	6	25	43,9%
	B				18	24	14	24,6%
	C				9	12	5	8,8%
	D				11	3	6	10,5%
	E				3	13	7	12,3%
	P	59	58					
Poäng		88,5	87		87	174	436,5	
Prestationsgrad		98,3%	96,7%		96,7%	96,7%		<b>97,0%</b>
Examinationsgrad							<b>95,0%</b>	

## Total betygsfördelning

2020-04-30



	REG	LAB1	LAB2	LABA	INL1	INL2	Slutbetyg	
Antal stud	123	59	58	62	116	121	115	
	A				31	6	31	27,0%
	B				36	31	21	18,3%
	C				20	21	13	11,3%
	D				16	9	22	19,1%
	E				13	54	28	24,3%
	P							
Poäng		88,5	87	93	174	363	805,5	
Prestationsgrad					94,3%	98,4%		<b>97,3%</b>
Examinationsgrad							<b>93,5%</b>	