# 28 responses
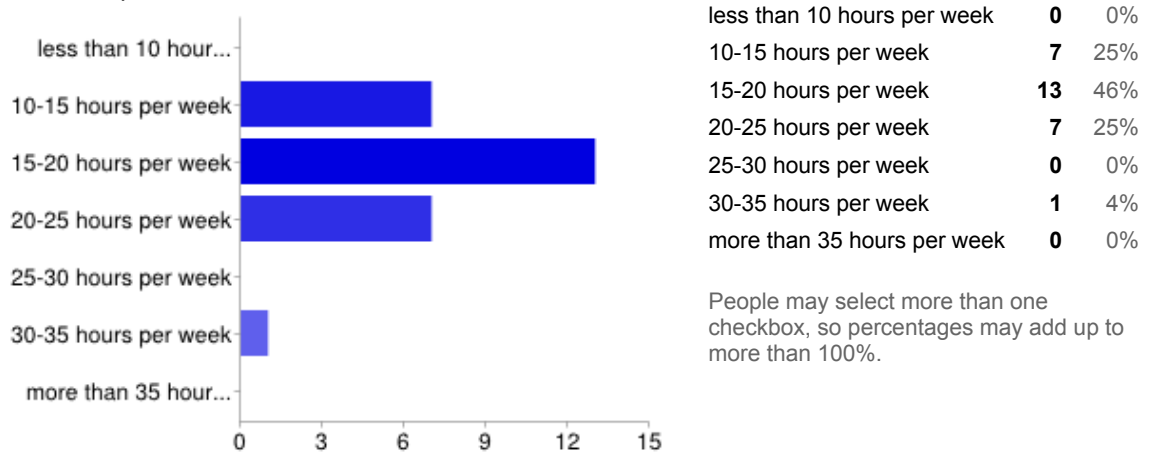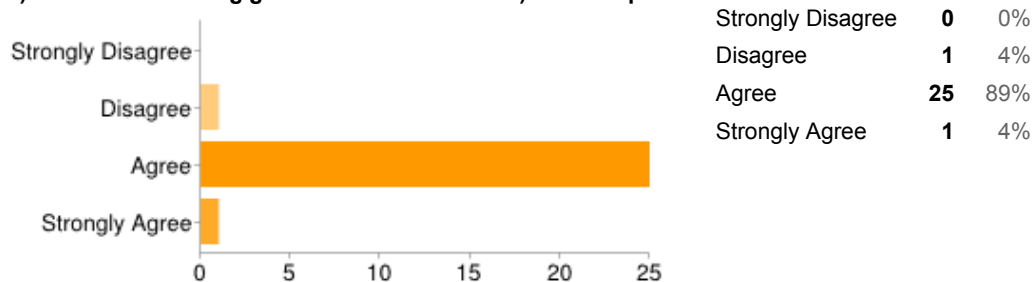
## Summary See complete responses

### Section 1: Overall Course Set-up

**1. Estimate how much time you spent PER WEEK on this course (including lectures, labs and homework).**



| | | |
|---|---|---|
| less than 10 hours per week | 0 | 0% |
| 10-15 hours per week | 7 | 25% |
| 15-20 hours per week | 13 | 46% |
| 20-25 hours per week | 7 | 25% |
| 25-30 hours per week | 0 | 0% |
| 30-35 hours per week | 1 | 4% |
| more than 35 hours per week | 0 | 0% |

People may select more than one checkbox, so percentages may add up to more than 100%.

**2) The stated learning goals for the course... - a) ... corresponded well to the course content**



| | | |
|---|---|---|
| Strongly Disagree | 0 | 0% |
| Disagree | 1 | 4% |
| Agree | 25 | 89% |
| Strongly Agree | 1 | 4% |

**2) The stated learning goals for the course... - b) ... were well supported by the course materials and handouts**

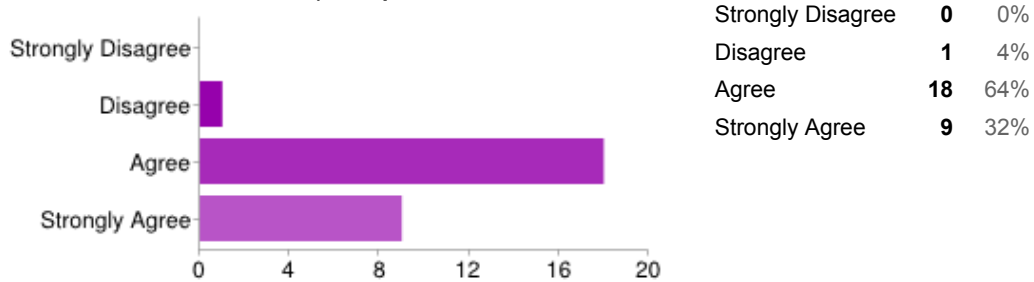| | | |
|---|---|---|
| Strongly Disagree | 0 | 0% |
| Disagree | 3 | 11% |
| Agree | 20 | 71% |
| Strongly Agree | 3 | 11% |
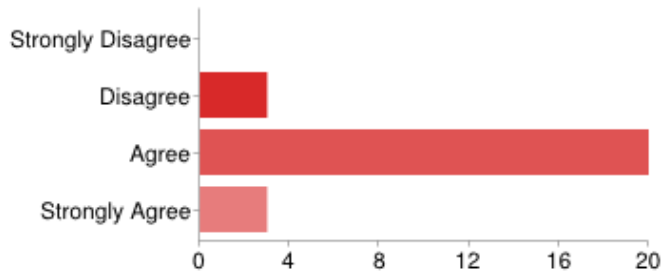
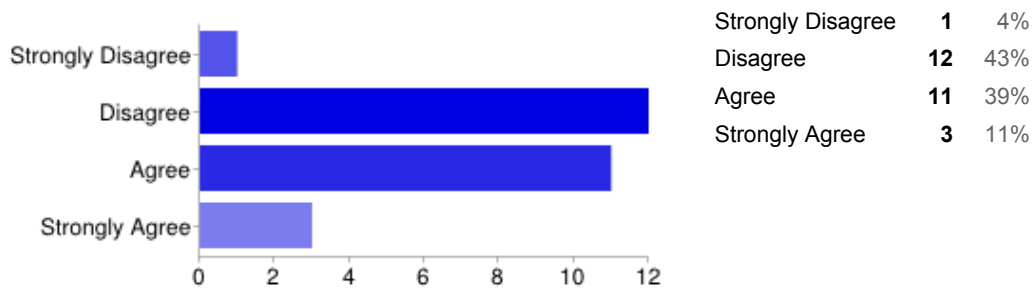**2) The stated learning goals for the course... - c) ... were well supported by the way the course was organised.**



| | | |
|---|---|---|
| Strongly Disagree | **0** | 0% |
| Disagree | **1** | 4% |
| Agree | **24** | 86% |
| Strongly Agree | **1** | 4% |
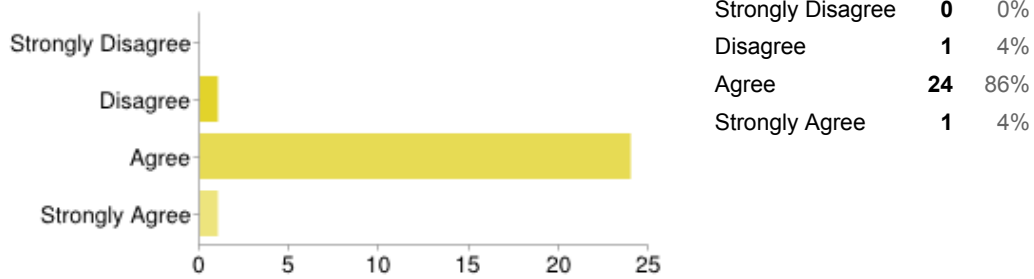
**3. The LAB content was... - a) ... relevant to the course and improved my understanding.**



| | | |
|---|---|---|
| Strongly Disagree | **0** | 0% |
| Disagree | **0** | 0% |
| Agree | **16** | 57% |
| Strongly Agree | **12** | 43% |
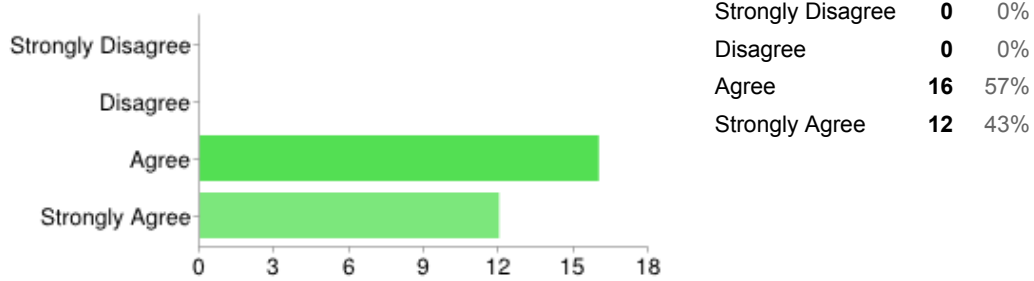
**3. The LAB content was... - b) ... in pace with the course material / lectures**



| | | |
|---|---|---|
| Strongly Disagree | **0** | 0% |
| Disagree | **1** | 4% |
| Agree | **18** | 64% |
| Strongly Agree | **9** | 32% |

**4. The course... - a) ... had a reasonable workload.**

| | | |
|---|---|---|
| Strongly Disagree | **1** | 4% |
| Disagree | **12** | 43% |
| Agree | **11** | 39% |
| Strongly Agree | **3** | 11% |

**4. The course... - b) ... was intellectually challenging.**

| | | |
|---|---|---|
| Strongly Disagree | **0** | 0% |
| Disagree | **3** | 11% |
| Agree | **17** | 61% |
| Strongly Agree | **8** | 29% |
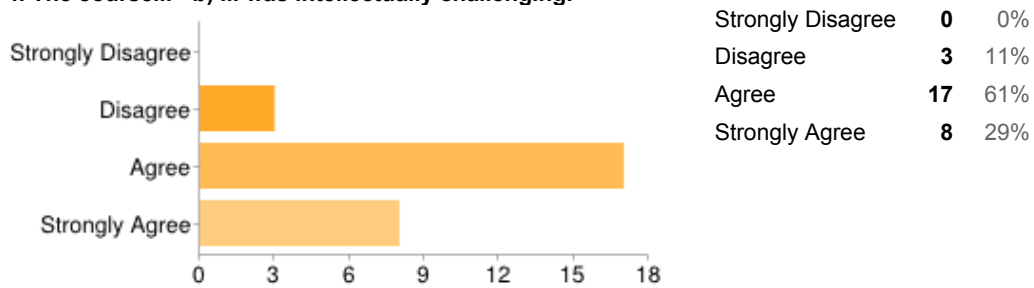
**4. The course... - c) ... has developed my problem-solving skills.**

| | | |
|---|---|---|
| Strongly Disagree | **0** | 0% |
| Disagree | **5** | 18% |
| Agree | **19** | 68% |
| Strongly Agree | **4** | 14% |
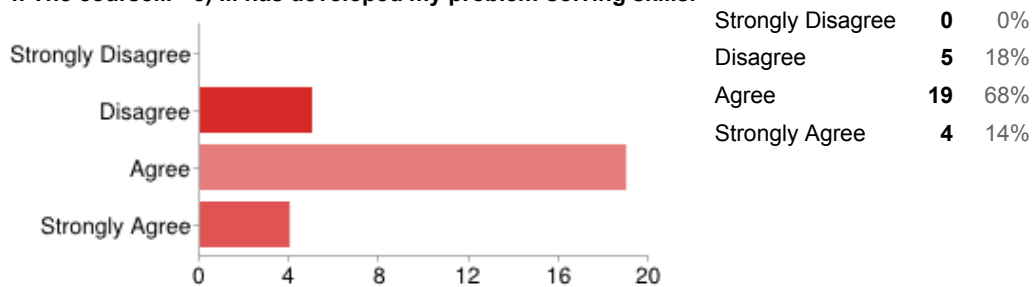
**4. The course... - d) ... has sharpened my analytical skills.**

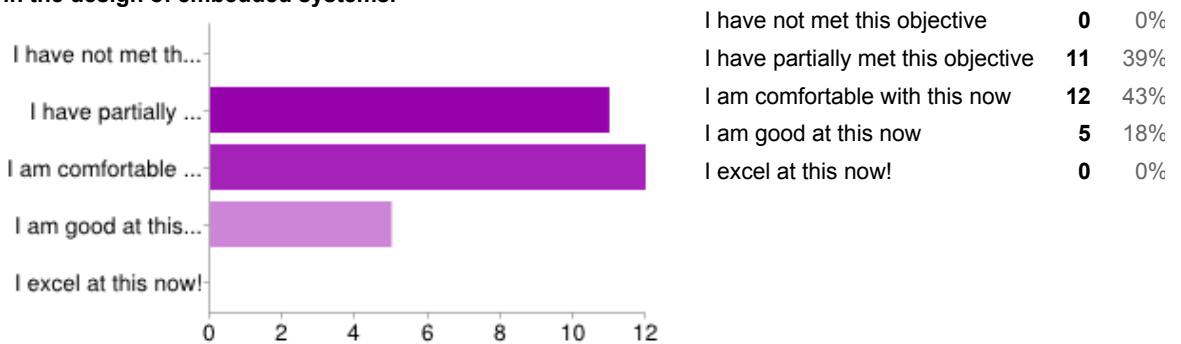| | | |
|---|---|---|
| Strongly Disagree | **0** | 0% |
| Disagree | **8** | 29% |
| Agree | **17** | 61% |
| Strongly Agree | **2** | 7% |
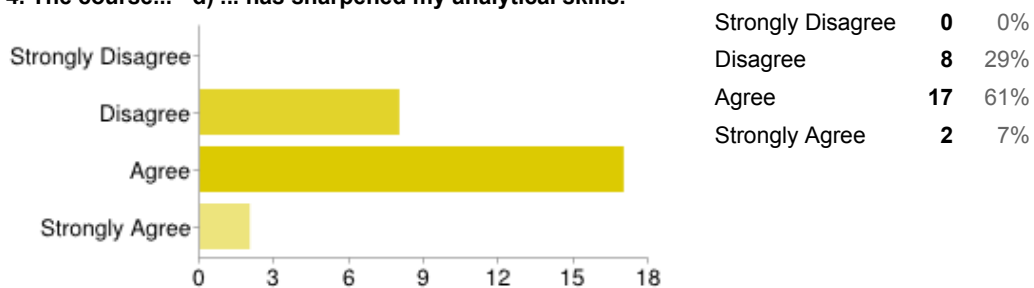
### Section 2a: Course-specific Learning Objectives

**5. Based on the learning objectives laid out in the Course Plan, please choose the option that best describes YOUR accomplishment of each objective. - a) I am able to provide examples of existing embedded systems based products and describe the special requirements placed in developing such systems.**
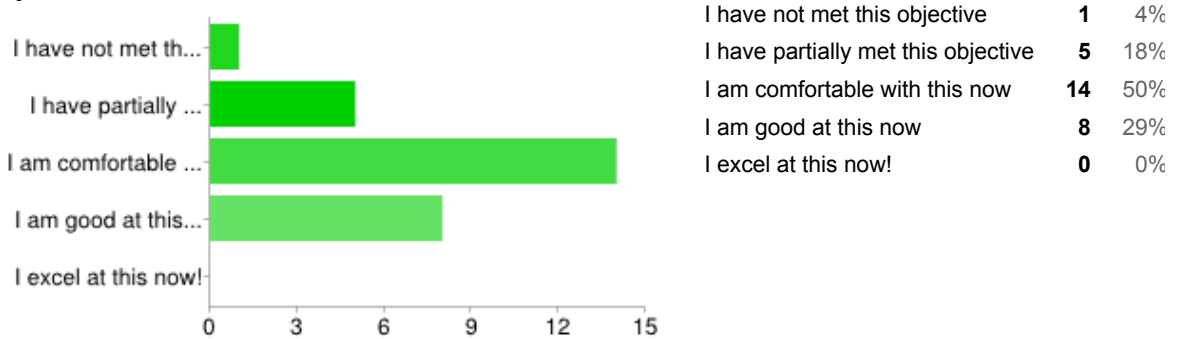


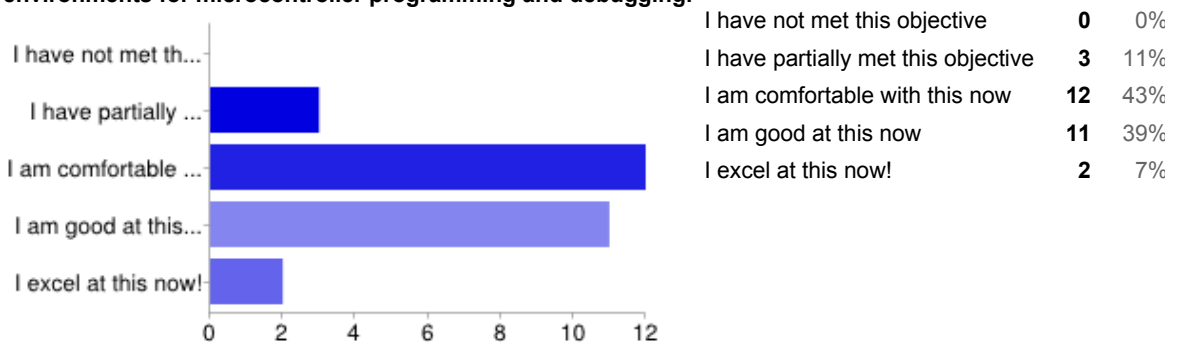| | | |
|---|---|---|
| I have not met this objective | **1** | 4% |
| I have partially met this objective | **5** | 18% |
| I am comfortable with this now | **14** | 50% |
| I am good at this now | **8** | 29% |
| I excel at this now! | **0** | 0% |

**5. Based on the learning objectives laid out in the Course Plan, please choose the option that best describes YOUR accomplishment of each objective. - b) I am able to describe and explain important steps in the design of embedded systems.**



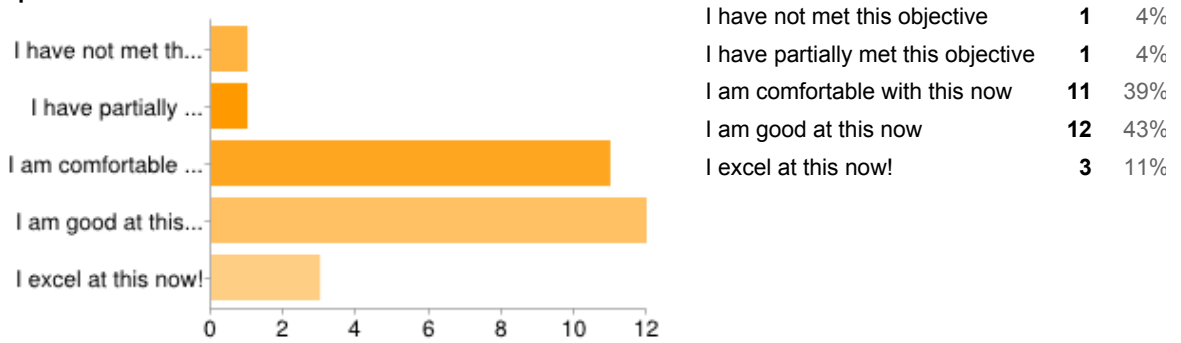| | | |
|---|---|---|
| I have not met this objective | **0** | 0% |
| I have partially met this objective | **11** | 39% |
| I am comfortable with this now | **12** | 43% |
| I am good at this now | **5** | 18% |
| I excel at this now! | **0** | 0% |

**5. Based on the learning objectives laid out in the Course Plan, please choose the option that best describes YOUR accomplishment of each objective. - c) I am able to use modern integrated development environments for microcontroller programming and debugging.**



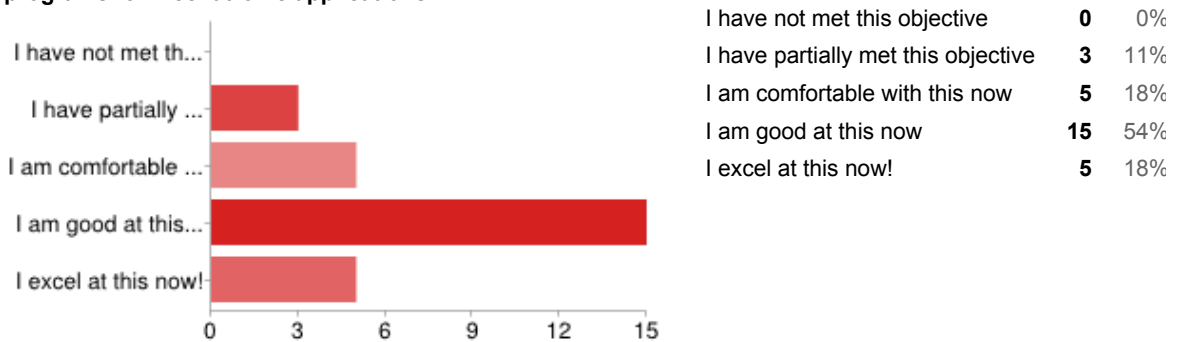| | | |
|---|---|---|
| I have not met this objective | **0** | 0% |
| I have partially met this objective | **3** | 11% |
| I am comfortable with this now | **12** | 43% |
| I am good at this now | **11** | 39% |
| I excel at this now! | **2** | 7% |

**5. Based on the learning objectives laid out in the Course Plan, please choose the option that best describes YOUR accomplishment of each objective. - d) I am able to describe and explain the basic operation of microcontrollers.**



| | | |
|---|---|---|
| I have not met this objective | **1** | 4% |
| I have partially met this objective | **1** | 4% |
| I am comfortable with this now | **11** | 39% |
| I am good at this now | **12** | 43% |
| I excel at this now! | **3** | 11% |

**5. Based on the learning objectives laid out in the Course Plan, please choose the option that best describes YOUR accomplishment of each objective. - e) I am able to develop basic microcontroller programs for mechatronic applications.**



| | | |
|---|---|---|
| I have not met this objective | **0** | 0% |
| I have partially met this objective | **3** | 11% |
| I am comfortable with this now | **5** | 18% |
| I am good at this now | **15** | 54% |
| I excel at this now! | **5** | 18% |

**5. Based on the learning objectives laid out in the Course Plan, please choose the option that best describes YOUR accomplishment of each objective. - f) I am able to describe, explain and apply basic concepts of concurrent and real-time programming.**



| | | |
|---|---|---|
| I have not met this objective | **0** | 0% |
| I have partially met this objective | **10** | 36% |
| I am comfortable with this now | **9** | 32% |
| I am good at this now | **9** | 32% |
| I excel at this now! | **0** | 0% |

**5. Based on the learning objectives laid out in the Course Plan, please choose the option that best describes YOUR accomplishment of each objective. - g) I am able to describe, explain and apply some of the basic concepts of communication protocols.**

| | | |
|---|---|---|
| I have not met this objective | **0** | 0% |
| I have partially met this objective | **5** | 18% |
| I am comfortable with this now | **9** | 32% |

| I am good at this now | **13** | 46% |
| I excel at this now! | **1** | 4% |



### 6. How relevant did you find each theme for YOUR education? - a) Introduction to AVR32



| Not relevant | **2** | 7% |
| Fairly relevant | **9** | 32% |
| Really relevant | **17** | 61% |
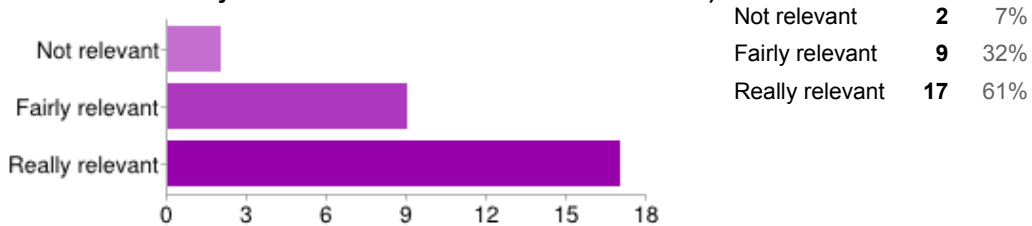
### 6. How relevant did you find each theme for YOUR education? - b) Programming is a Craft



| Not relevant | **9** | 32% |
| Fairly relevant | **15** | 54% |
| Really relevant | **4** | 14% |
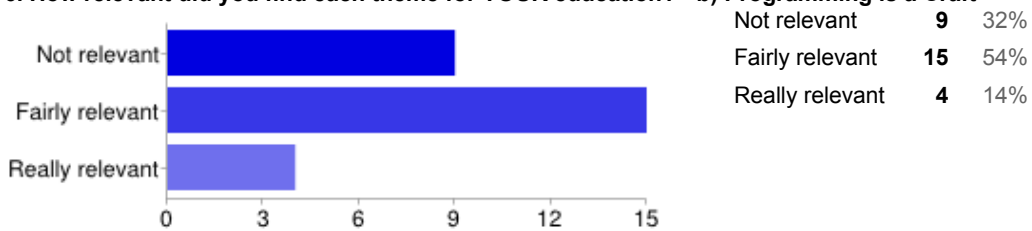
### 6. How relevant did you find each theme for YOUR education? - c) Power Management



| Not relevant | **1** | 4% |
| Fairly relevant | **4** | 14% |
| Really relevant | **23** | 82% |
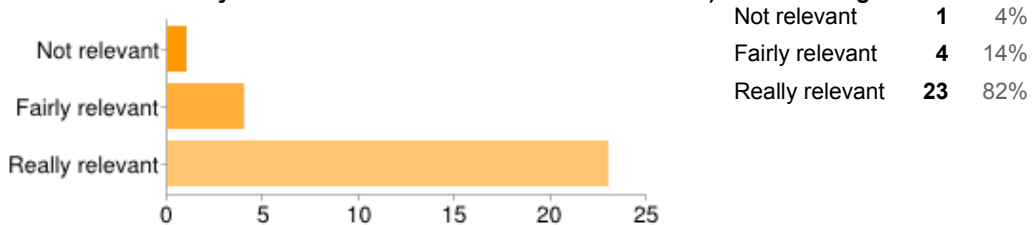
### 6. How relevant did you find each theme for YOUR education? - d) Distributed Systems

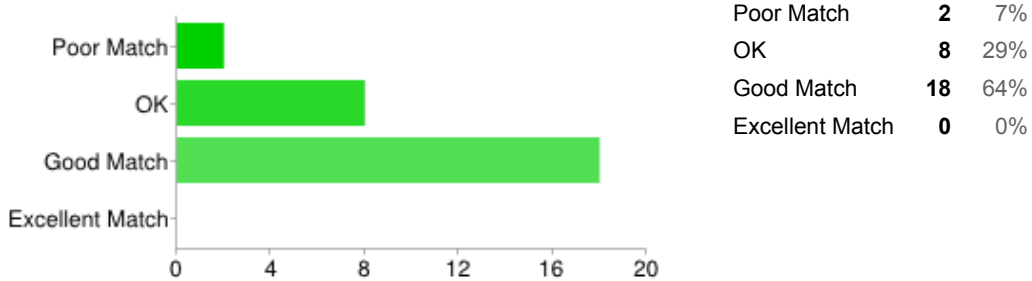| Not relevant | **1** | 4% |
| Fairly relevant | **2** | 7% |
| Really relevant | **25** | 89% |
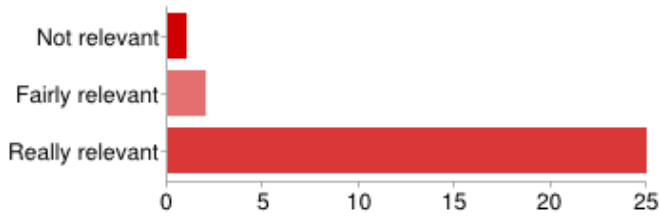
**6. How relevant did you find each theme for YOUR education? - e) Model Based Development**



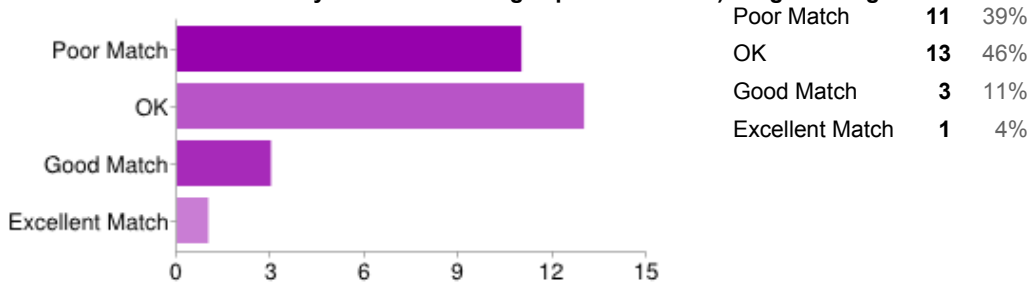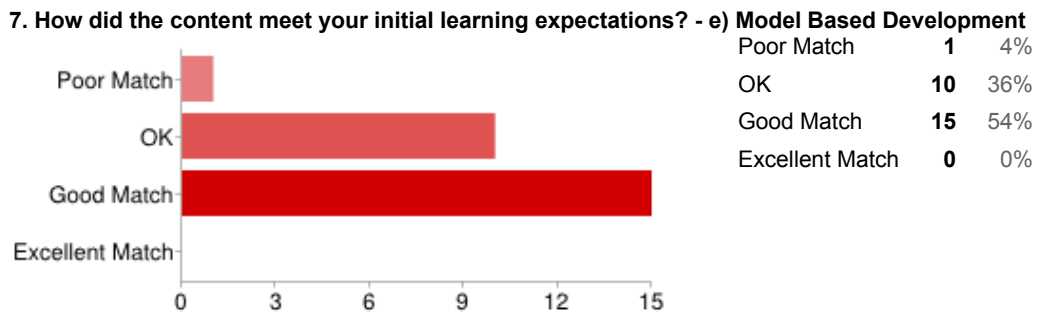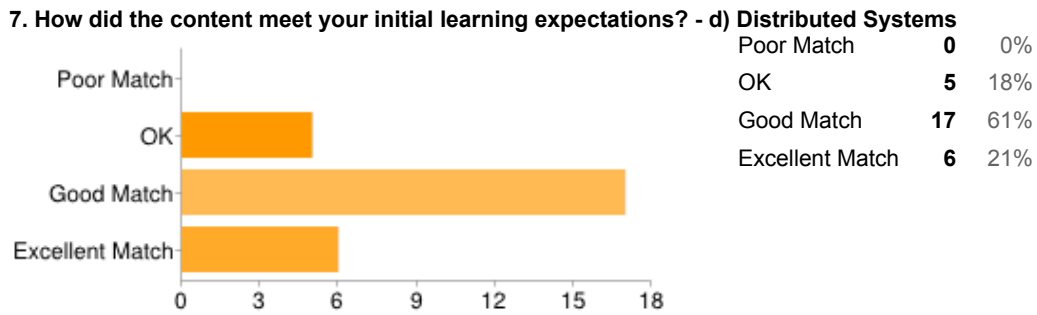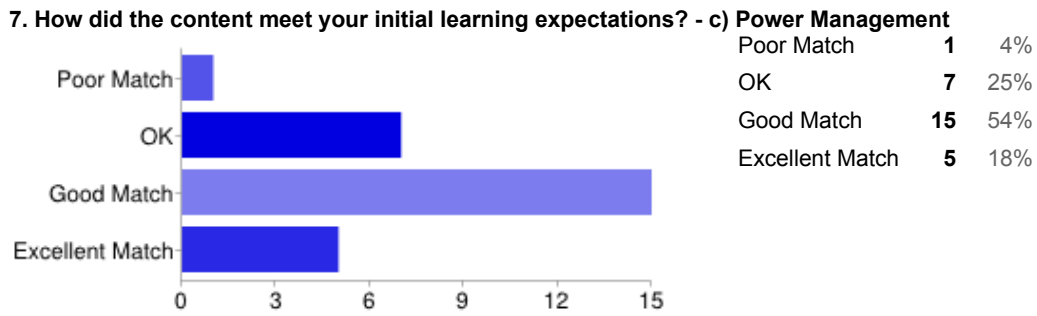| | | |
|---|---|---|
| Not relevant | **2** | 7% |
| Fairly relevant | **14** | 50% |
| Really relevant | **11** | 39% |
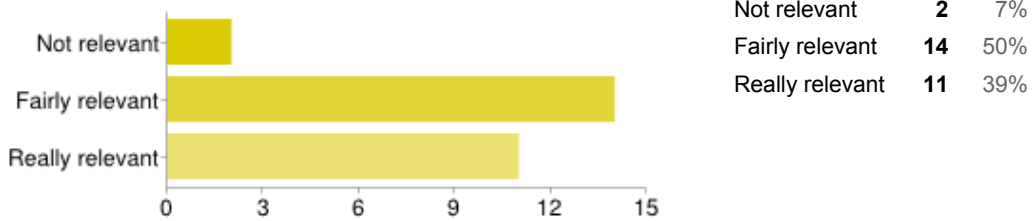
## Section 2b: Course Content

The course was divided into 5 themes.

**7. How did the content meet your initial learning expectations? - a) Introduction to AVR32**



| | | |
|---|---|---|
| Poor Match | **2** | 7% |
| OK | **8** | 29% |
| Good Match | **18** | 64% |
| Excellent Match | **0** | 0% |

**7. How did the content meet your initial learning expectations? - b) Programming is a Craft**



| | | |
|---|---|---|
| Poor Match | **11** | 39% |
| OK | **13** | 46% |
| Good Match | **3** | 11% |
| Excellent Match | **1** | 4% |

**7. How did the content meet your initial learning expectations? - c) Power Management**

| | | |
|---|---|---|
| Poor Match | **1** | 4% |
| OK | **7** | 25% |
| Good Match | **15** | 54% |
| Excellent Match | **5** | 18% |

**7. How did the content meet your initial learning expectations? - d) Distributed Systems**

| | | |
|---|---|---|
| Poor Match | **0** | 0% |
| OK | **5** | 18% |
| Good Match | **17** | 61% |
| Excellent Match | **6** | 21% |

**7. How did the content meet your initial learning expectations? - e) Model Based Development**

| | | |
|---|---|---|
| Poor Match | **1** | 4% |
| OK | **10** | 36% |
| Good Match | **15** | 54% |
| Excellent Match | **0** | 0% |

## 8. Do you have any suggestions for improvements for the 5 themes?

**8 (a) The Introduction to AVR32 could have been better if...**

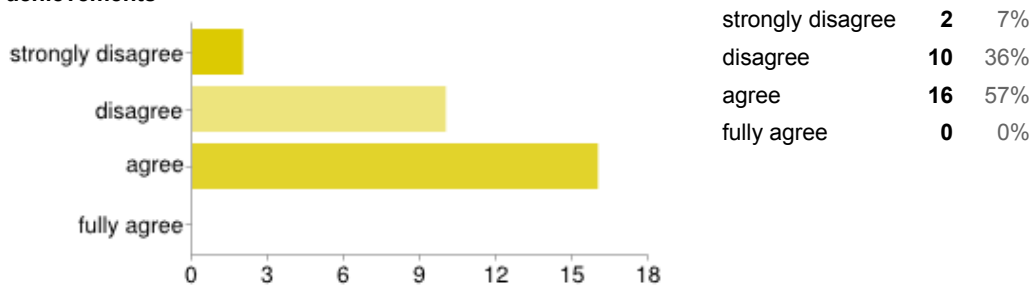**8 (b) The Programming is a Craft theme could have been better if...**

**8 (c) The Power Management theme could have been better if...**

**8 (d) The Distributed Systems theme could have been better if...**
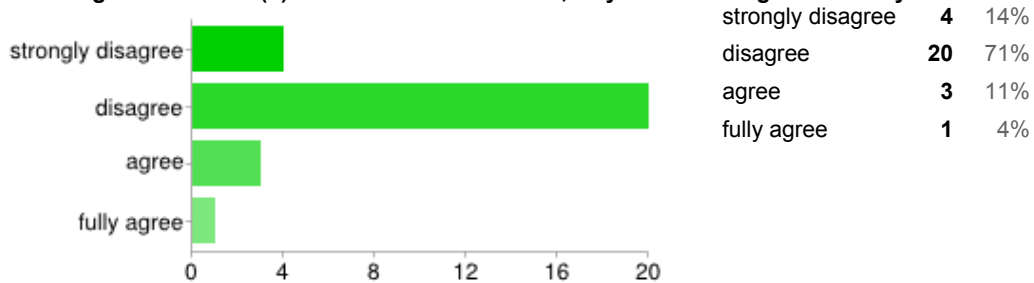
**8 (e) The Model Based Development theme could have been better if...**

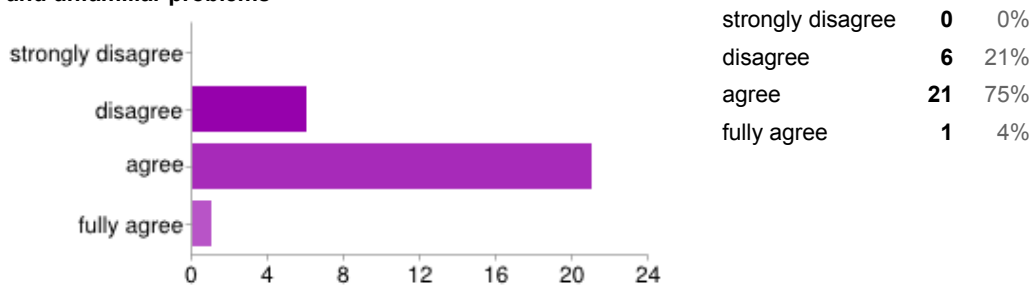## Section 3: Your Thoughts on the Learning Experience

**9. Looking back over the course and labs as a whole, please rate your feelings about the following statements. - (a) I received a lot of valuable feedback on my progress and achievements**

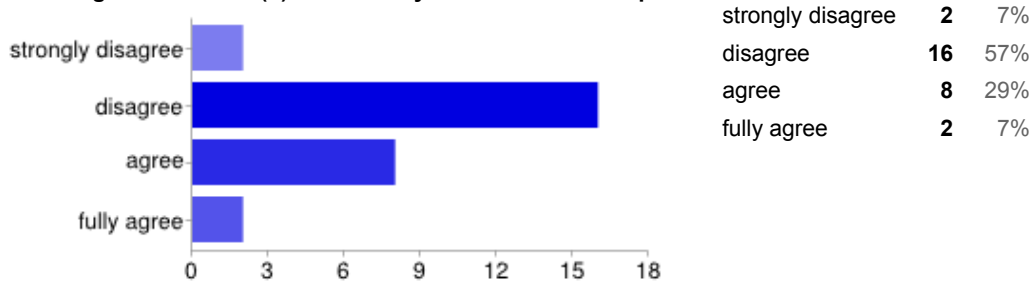| | | |
|---|---|---|
| strongly disagree | **2** | 7% |
| disagree | **10** | 36% |
| agree | **16** | 57% |
| fully agree | **0** | 0% |

**9. Looking back over the course and labs as a whole, please rate your feelings about the following statements. - (b) To do well in this course, all you need is a good memory.**

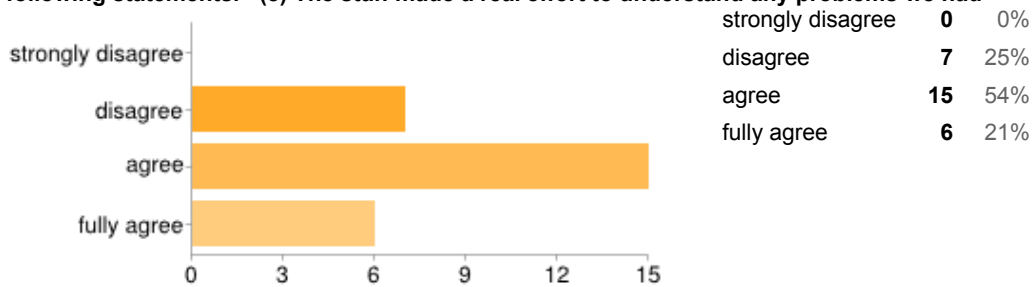| | | |
|---|---|---|
| strongly disagree | **4** | 14% |
| disagree | **20** | 71% |
| agree | **3** | 11% |
| fully agree | **1** | 4% |

**9. Looking back over the course and labs as a whole, please rate your feelings about the following statements. - (c) The course has made me feel more confident about tackling new and unfamiliar problems**

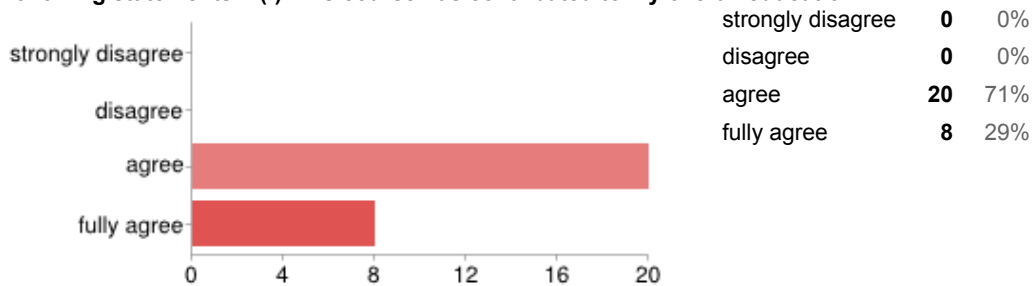| | | |
|---|---|---|
| strongly disagree | **0** | 0% |
| disagree | **6** | 21% |
| agree | **21** | 75% |
| fully agree | **1** | 4% |

**9. Looking back over the course and labs as a whole, please rate your feelings about the following statements. - (d) It was always clear what was expected of me in this course**

| | | |
|---|---|---|
| strongly disagree | **2** | 7% |
| disagree | **16** | 57% |
| agree | **8** | 29% |
| fully agree | **2** | 7% |

**9. Looking back over the course and labs as a whole, please rate your feelings about the following statements. - (e) The staff made a real effort to understand any problems we had**

| | | |
|---|---|---|
| strongly disagree | **0** | 0% |
| disagree | **7** | 25% |
| agree | **15** | 54% |
| fully agree | **6** | 21% |

**9. Looking back over the course and labs as a whole, please rate your feelings about the following statements. - (f) This course has contributed to my overall education**

| | | |
|---|---|---|
| strongly disagree | **0** | 0% |
| disagree | **0** | 0% |
| agree | **20** | 71% |
| fully agree | **8** | 29% |

**10. What did you enjoy LEAST about this course?**

**11. What did you enjoy MOST about this course?**

## 8 (a) The Introduction to AVR32 could have been better if...

- the software itself hadn't start bugging
- In fact, I have experience with other platform (NXPLPC1769), so it is rather easy for me to catch up. But for others, I suggest some live demo.
- the tutorials match the computer setup/ ATMELs program would work
- I think a lot of people knew how to program C but haven't used microcontrollers before => some big problems
- a little bit more challenging questions
  and more clear lab instructions- what is required, what is flexible, what is extra feature
- Show examples, how do I find which pin I have to connect in order to measure AD-channel?
- Some more low level programming was explained.
- A bit hard if unfamiliar with microcontrollers

## 8 (b) The Programming is a Craft theme could have been better if...

- With better structure...
- ...it was skipped!
- Have it _after_ most students finished CAN lab 2.
- Smaller groups, 2-4 students.
  GRADED EVALUATION! (Weight it with exam)
- The assignment had been a bit clearer
- STAMP was a bit vague. Maybe cut discussion time in half and use other half for examples by Fredrik.
- The groups were too big, should be smaller
- This part is irrelevant and boring. I think 1 lecture is sufficient. I feel the discussion and presentation is a waste of my time.
- a more practical step-by-step instruction would've been provided
- you leave it out.
- related to labs/project
  e.g. find flaws of our own project or example embedded project
- hands on practice instead of just theory
- Clearer instructions
- Oral presentation is mandatory, maybe more interesting discussion with more presentations or no presentation at all.
- The actual assignments and what was expected was communicated more clearly
- More organised and teacher led discussions
- Skip the written part and switch to small group-seminars (mandatory ones) where we get to discuss the case studies.

## 8 (c) The Power Management theme could have been better if...

- More! Was fun so... :)
- Exercises needed.
- This part is quite interesting although I don't usually care much about power efficiency problem.
- It was good
- Would have been nice to really see the low power consumption in sleep-mode, due to the whole board it wasn't measurable.
- maybe introduce what strategies that big microprocessor producer is using
- Magnus could have been more present during the labs to answer questions.
- If it was a bit more, and possibility to test dynamic frequencies and voltages.
- It had been larger and the pacemaker not optional, but mandatory.

## 8 (d) The Distributed Systems theme could have been better if...

- into, mention of more protocols
- It is the most interesting to me. I learnt serial, I2C, SPI before. It is good to know another protocol. However, I still hope I can learn USB and ethernet which are the most popular protocols nowadays.
- some explanations of practical programs/header files would've been provided. I know C from the TILDA course, but those CAN files are quite complicated/abstract... in a way

- Put up two or three example CAN stations that always send correct values.
- more challenging
- could need a little more time to complete the lab
- Explain better what is interrupt and how we can use it for the CAN lab 2.
- Assignment a bit too large, remove something?
- A little shorter
- We can review before we take the exam

## 8 (e) The Model Based Development theme could have been better if...

- explain the tools more.
  LAB PM not as slides, as the other PM's instead.
- Do examples self exercises.
- It requires knowledge about object oriented programming. Luckily, I learnt C++ before. However, I think it is quite challenge to others.
- don't know
- Use SySML (UML=old..) and go into depth of how the different 'views' work
- more challenging

## 10. What did you enjoy LEAST about this course?
- PIAC, even though it was a good experience.
- PIAC
- PIAC
- PIAC, I was working on CAN lab 2 when the PIAC was introduced. So it felt like something that should be finished ASAP to be able to continue CAN lab 2.
- PIAC, not because its "bad" or "meaningless", but because of big groups.
- The programming software isn't as stable as I'd wish it to be.
- bättre upplösning på bilder på slidesen
- Labs too time consuming for a 6 credit unit
- I cannot borrow the platform home!
  I suggest the course should be organized as a big project throughout. Each module will be implemented as we progress through the lectures. I think it will add more motivation rather just doing assignment.
- Extra featur
- not checking the <swearword> KTH social page. Its layout is stupid (of course not your fault...)
- In general too many copy paste tasks, a higher level over all would have been nice. felt like a basic course no master course.
- Enoying failure due to board errors. Being able to store data only on a local computer/USB.
- Some times instruction on lab manual is not so clear, i.e. don't know what is compulsory/optional/improving features
- PIAC lab
- 8 AM classes
- Not finding a computer to work with during the labs, sometimes too crowded.
- Programming is a Craft
- PIAC. I think it's a good theme, but it needs improvements.
- PIAC, it somehow felt irrelevant.
- CAN lab 2
- The second CAN lab and PIAC
- PIAC. felt misplaced. Doesn't fit in with this course.
- PIAC
- PIAC group work
- beginning of the course

## 11. What did you enjoy MOST about this course?
- The CAN labs.
- Labs
- CAN
- PM! GUEST LECTURE! (more guest lectures, plz!)
- Almost everything.

- Programming in LAB.
- Good lectures.
- I can access the lab anytime I want.
- actually making progress when programming
- The general content is good.
- Hands-on.
- easy to do the lab
  2. access to lab at any time
- CAN lab
- Learning to program the AVR
- 2nd to last lecture, interesting!
- Intro to AVR32/Power management
- PM, great lectures.
- CAN-lab
- PM lectures
- Intro and Power management lectures and labs.
- The CAN labs.
- The CAN lab 'cause I felt that was the lab which contributed the most to my current programming skills. I would've liked to see much more hands on programming exercises actually since the Tilda-course last year didn't at all meet my expectations and I still feel like I'm lacking good enough programming skills.
- Second CAN lab
- Lab