

ATLAS

EduCo Semester Documentation Semester 1, 2015, Class of 2018

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Introduction

This EduCo semester documentation consists of the evaluations of the courses, the project and the semester as a whole. All the evaluations have a similar structure: first, a short summary of the course/project/semester is given, followed by a discussion based on the results of the <u>EduCo semester survey</u> - which is based on the "<u>EduCo criteria</u>". In this discussion, the strengths and weaknesses of a course/project/semester will be pointed out. Then, solutions to these problems are suggested and in the last section the agreements that were made with the teacher/coordinator are described.

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NB: In this document, a distinction is made between 'regular' Mathematics and Mathematical Modelling. Both of these subjects are however part of the ATLAS domain Mathematics.

Engineering: Newtonian Mechanics

Created by: Stef Koenis E-mail: s.p.j.koenis@student.utwente.nl Year/semester: Semester 1, 2015, class of 2018 Teacher: Jasper Homminga

Summary of the course

We started off by studying the topics: *uncertainty, movement, Newton's Laws* and *Work, Energy and Power*. For this we used the book: Young & Freedman, University Physics 13th edition. Jasper introduced each topic with a short (30 minutes) lecture. In the same week, there were two drills sessions that were guided by Dawn (a second year student) and a concept test. In the week thereafter, there were usually two Q&A sessions and on Friday, a practical challenge was supposed to be handed in. We ended up doing only 3 practical challenges because the third was very lengthy. In the <u>first practical challenge</u>, students had to estimate the amount of sand grains on Dutch beaches. In the <u>second practical challenge</u>, they had to analyse a movement in terms of position, velocity and acceleration. In the <u>third practical challenge</u>, students had to analyse a movement of their choice, but now also in terms of forces and torques. After 10 weeks we had finished discussing these topics and started with the electives. There were 3 electives: Momentum, Vibrations (given by Jurnan Schilder) and Elasticity, which took 2 weeks each. A detailed description of the learning goals and an overview of the chapters of the book that were discussed can be found in the <u>syllabus of this seemester</u>.

EduCo semester survey

EduCo criterion	mean	SD
1. When possible, this course conveys both theoretical and applicable knowledge	4.1	0.7
2. This course features both group and individual work	4.1	0.8
3. During this course, students are provided with a minimum level of guidance	3.4	1.0
4. For this course, there is a variety of evidence possibilities	3.8	0.6
5. This course allows for and facilitates personalisation	3.9	0.7
6. This course relates to the project and the other courses	2.8	1.1
7. This course allows for an even distribution of the workload	3.9	1.1
8. There is clear communication about the learning goals, the schedule, deadlines and possibilities for evidence	3.7	1.0
9. Feedback given by the teacher(s) is complete, useful and fast	3.4	1.2
10. The teacher can be reached for feedback from the students and the students' feedback is considered	3.9	0.9

Discussion

One of the things students liked in particular was the application of the things they learned in assignments (practical challenges), this you can also see in the high score (4.1). There was also a nice balance between group and individual assignments (because of the practical challenges) and enough opportunity for personalisation.

This semester, we found several things that could be improved in the course Newtonian Mechanics: the Matlab workshop that was given in Mathematical Modelling had better be given *before* we actually needed these skills in the second practical challenge. Secondly, there was too much overlap between the second and third practical challenge. Because they were also quite lengthy, students did not have feel they were learning very much.

According to the scores from the semester survey and the answers to the questions about physics in our weekly EduCo wellbeing monitor in November, the feedback given by Jasper was not always fast and individual enough. However he improved this in the course of the semester. During this semester, students indicated that they did not see enough possibilities to apply the things they learned in physics in the semester project, this is also reflected by the low score (2.8) in the semester survey. In November, students indicated that they would like to have more lectures and less "do *it yourself*" and also that they would like to receive an indication of a topic's relevance before starting it.

Suggested solutions

More guidance:

- Longer introductory lectures
- Small group lectures instead of question hours
- Micro-lectures (videos) to support the students in their learning
- Focus on take-home exams and small practical challenges at the start of the semester

Practical challenges:

• Combining the second and third practical challenge into one large assignment in the end

Physics in the project:

- Create opportunities to apply physics in the semester project by giving the students Certain materials which they have to incorporate in their design
- Organise consults with Jasper for each project group to stimulate them to involve physics in the project by discussing the opportunities for this

- On blackboard, Jasper will give an indication of the relevance of the topics we study
- Matlab workshop will be given before we need basic Matlab skills in a practical challenge
- Jasper will try to give individual feedback for every practical challenge

Mathematics

created by: Rolf van der Hulst e-mail: r.p.vanderhulst@student.utwente.nl year/semester: Semester 1, 2015, class of 2018 teacher: Ruud van Damme, Yorick Birkhölzer

Summary of the course

We started the course by dividing the class into 4 groups of level A, B and C with A being the highest. We studied ODEs at first, and then went into linear algebra (matrices) later in the semester. The students had to read parts of the book each week, and then Ruud would explain/ go over these parts in the groups. A more detailed description of the learning goals can be found here. Halfway through the course, Ruud had an individual feedback session with everyone from the class. Yorick was Ruud's assistant and gave general lessons to the class. These were mainly for questions and for the discussion of problems.

EduCo criteria

EduCo criterion	mean	SD
1. When possible, this course conveys both theoretical and applicable knowledge	3.4	0.7
2. This course features both group and individual work	2.7	1.0
3. During this course, students are provided with a minimum level of guidance	4.3	0.9
4. For this course, there is a variety of evidence possibilities	4.1	1.0
5. This course allows for and facilitates personalisation	4.4	0.8
6. This course relates to the project and the other courses	3.0	0.7
7. This course allows for an even distribution of the workload	4.5	0.7
8. There is clear communication about the learning goals, the schedule, deadlines and possibilities for evidence	3.7	1.0
9. Feedback given by the teacher(s) is complete, useful and fast	4.1	1.2
10. The teacher can be reached for feedback from the students and the students' feedback is considered	4.5	0.7

Discussion

People were in general positive about the way feedback was given. They especially liked the individual conversations with Ruud and thought these were very useful. The extra sessions that were planned with Yorick and Ruud after the students' feedback are also a good explanation for the high score on criterion number 10.

For communication at first some people were slightly frustrated that there was no syllabus/schedule. Ruud does not want a schedule, but instead made a description of all the learning goals. Students do not have issues with this, as the distribution of the workload is fine (7). Communication was mostly done well. Some extra math sessions were not communicated clearly enough to everyone.

The students were positive about the evidence opportunities and opportunities to personalise the course. They liked the ATLAS problem book, it gave them choice and allowed for personalisation. Also the choosing of a group according to your level was something we've received positive feedback on.

Mathematics was not connected to the project this semester. There were connections between math and physics that were useful (the vibrations elective in particular), but there was no big link between Mathematics and other courses.

The course mainly features theoretical knowledge. There are some cases where knowledge is applied, but these are mainly found in physics. This can also be seen in the somewhat lower score in 1.

Mathematics does not have a lot of group work which can be seen in the low mark. It can be debatable whether this is an issue or not.

Suggested solutions

• Small intro to statistics in first semester, to help students with the statistics in math and psychology

Agreements

• The problem book will be segmented/ divided per subject. Ruud will give more hints for potential evidence to students.

Mathematical Modelling

created by: Rolf van der Hulst e-mail:r.p.vanderhulst@student.utwente.nl year/semester: Semester 1, 2015, class of 2018 teacher: David Boy

Summary of the course

The course was to be given on mathematical modelling with computers. We would use MatLab. The students would go through things that we did with Ruud on the computers to apply it to models and to use them in Matlab. Sometimes we coded assignments together whilst working through the <u>"Modelling in Matlab"</u> book on blackboard.

The course was set up with a class on Friday with 4 groups. There also were computing workshops set up on Thursdays. Yorick (from ordinary maths) would occasionally go over a bit of computer modelling too.

EduCo criteria

EduCo criterion	mean	SD
1. When possible, this course conveys both theoretical and applicable knowledge	4.0	0.8
2. This course features both group and individual work	2.9	1.2
3. During this course, students are provided with a minimum level of guidance	2.4	1.2
4. For this course, there is a variety of evidence possibilities	3.3	1.2
5. This course allows for and facilitates personalisation	3.9	1.1
6. This course relates to the project and the other courses	3.0	0.9
7. This course allows for an even distribution of the workload	3.8	0.7
8. There is clear communication about the learning goals, the schedule, deadlines and possibilities for evidence	2.6	1.2
9. Feedback given by the teacher(s) is complete, useful and fast	1.4	0.7
10. The teacher can be reached for feedback from the students and the students' feedback is considered	2.0	1.1

Discussion

People liked that it was very much an application of maths to reality. This kind of covers the low scores for Mathematics. Also the plenty evidence opportunities allowed for personalisation, which the students like (score: 3.9). The workload was also easily distributable because we could choose out assignments ourselves and work through the book at our own pace. One thing some people struggled with was the problem-book, many people felt they were left on their own with the book, and were unsure how to pick good evidence opportunities from the book.

There were some issues with planning. A lot of lessons dropped out, and students had to be very self-sufficient.

Students indicated they were really unhappy about feedback. There often was none, or it was way too late, according to feedback. Hence the low score. We tried to set up a feedback session at the end of the semester, but since students were busy there were not enough people willing to participate.

It was often not clear what we had to do and a lot of lessons dropped out (5 or so). The schedule was often changed too late, sometimes even hours before we actually had the lesson. This is why the course scores so low on clear communication too. This also impaired the guidance we had for the course, David was according to the students, not always easy to reach.

There was a bit more group work than with ordinary maths, because we also did assignments in pairs.

Suggested solutions

- Make one person responsible for both maths and mathematical modelling
- Organising extra feedback sessions

Agreements

There were no agreements made with David on how we will set up the course, since he left ATLAS. Instead, we informed Ruud about the course and the good and bad points.

We believe that the main issues students experienced with this subject stemmed from the fact that David was moving back to America and simply had too much to do/ was not available. Also, David was apparently only made responsible for maths just before the semester started. The communication between Ruud and David was reportedly scarce/insufficient. Thus, these should be prevented next semester (as stated in semester criteria). The agreements that we made are:

- The Atlas problem-book will be more guided /segmented, so that students have a clearer overview of what are good evidence opportunities for specific topics.
- Ruud will help organise the course. Having one person organise both parts of math should prevent a lot of the communication issues that happened.

Social Science: Psychology

created by: Pedro Arias e-mail: p.ariashernandez@student.utwente.nl year/semester: Semester 1, 2015, class of 2018 teacher: Ingrid Nota and Elze Ufkes

Summary of the course

In this course we studied the following topics: the science of psychology, consciousness and health psychology, emotional and social behaviour, intelligence, personality, cognition, learning and memory, and life span development. For this we used the book: Psychology, the science of mind and behaviour (third edition). Ingrid and Elze coordinated the class in such a way that each week (on Wednesdays) they would lead a discussion based lecture, lasting from 2 to 4 hours. For these lectures a predetermined group of students would have the assignment to read the chapter(s) pertaining to the lecture and prepare questions for Ingrid and Elze to answer during the lecture. Throughout the semester we also did a project which involved replicating an earlier study. By the end of this project we were also given an optional assignment (elective), to review the paper of another groups' project. A detailed description of the learning goals and an overview of the chapters of the book that were discussed can be found in <u>the syllabus</u> offered within the appendix.

EduCo criteria

EduCo criterion	mean	SD
1. When possible, this course conveys both theoretical and applicable knowledge	3.7	0.9
2. This course features both group and individual work	3.9	1.0
3. During this course, students are provided with a minimum level of guidance	3.7	0.9
4. For this course, there is a variety of evidence possibilities	2.1	1.0
5. This course allows for and facilitates personalisation	3.1	0.9
6. This course relates to the project and the other courses	3.9	0.9
7. This course allows for an even distribution of the workload	3.2	1.1
8. There is clear communication about the learning goals, the schedule, deadlines and possibilities for evidence	3.8	1.0
9. Feedback given by the teacher(s) is complete, useful and fast	3.8	0.8
10. The teacher can be reached for feedback from the students and the students' feedback is considered	4.0	0.6

Discussion

Positive: The students found most of the topics interesting and engaging. Discussions flourished in the lectures towards the end of the semester. There were several occasions when the teachers were open to give and receive feedback, this is reflected by a high score (4.0). The course also fit in very well with the project and provided practical experience with the smaller project involving the replication of a psychological study which involved conducting research.

Some issues were apparent early on within the course, and other areas of improvement were made evident as the course progressed. At first the theoretical lectures proved to be far too long spanning the full four hours. This was later resolved with the help of the EduCo. As some students reported, feedback in regards for the research project was at times inconsistent and/or misleading.

According to the scores from the semester survey and the questions about psychology in our weekly EduCo wellbeing monitor in November (22-11-2015) we have determined a couple of places where the course could improve as well. The class of 2018 as a whole felt that more electives for psychology would be a welcome addition to the course. The course also lacked in options for evidence according to both the wellbeing monitor questions and the survey as seen by the low average score of 2.1. As a side note the students were also asked if they would like the class discussions to be done in smaller groups. The response to this question was mixed, so we recommend to maybe experiment with this option in the future.

Suggested solutions to problems

- The solution for the lengthy lectures we found was to rearrange the class into two sessions (first two hours of theory, then two hours of project work). As well as having the teachers answer less questions.
- Suggestions for the electives came as follows:
 - A presentation with a synthesis of a couple of chapters.
 - Analysis of psychologists and research.
 - Discussion of research papers and perhaps ongoing research.
- As for more options for evidence, students suggested summaries of a chapter with a reflection, summary of use of psychology in different fields (or in history), and mind maps about content.
- Clarify who is receiving and giving feedback during the course.
- The teachers agreed to shorten the lectures and to alter the format of the class in order to improve the course.
- There will be more options for evidence. A group product made it difficult to assess each individual. So individual forms of evidence would be supplied or suggested.
- Peer review will now be mandatory, individual, and will be done prior to submitting research report. That way you can have individual evidence and peer feedback.
- Maybe have weekly assignments.
- May redesign schedule in order to begin with the project before hitting theory. That way, the psychology project does not overlap with the main project at the end of the semester (which caused an uneven workload this semester)
- Allow students to introduce observations of social sciences within the main project.
- First lecture would be more methodology, methods in order to start up the research project.

Learning Line Design

created by: Demi Vonk e-mail: d.a.t.vonk@student.utwente.nl year/semester: Semester 1, 2015, class of 2018 teacher: Wessel Wits and Ingrid Nota

Summary of the course

The main <u>goal</u> of the learning line design in this first semester is for students to learn how to work with the ATLASsocio-technical design model (e.g. being able to recognize and explain design activities/phases from the ATLAS sociotechnical design model in design examples from the field of both the natural and the social sciences). Students mainly prove the semester goals in the project itself and if the project is done at least adequately, one has proven him/her self to be able to 'design'.(almost) every week the class had workshops in which they were first shown a PowerPoint with relevant explanation on the topic and after that, they would make groups to practise and brainstorm on whiteboards. Electives were possible too (SolidWorks, working with the Arduino).

Discussion

Positive

- It was very practical since the class could prove it through the project.
- Lectures and workshops were interactive (using the whiteboard etc.)
- Teachers were willing to give extra workshops for those who wanted

Problems

• Workshops were not always being given at the moment it was most relevant.

Suggested solutions to problems

• Try to fit the workshops in the schedule so that they fit with the phases of the project more.(eg. how to screen and score conceptual design, this was only presented to us when we already started the embodiment phase.)

- The workshops are deliberately given when they are being given, so that we first try to find out things ourselves.
- DesignLab tour might be given in the introduction week already.
- The EduCo will prepare next year's students for Andrea, so that working in the DesignLab goes smoother.

Learning Line Learning Capacity

created by: Demi Vonk e-mail: d.a.t.vonk@student.utwente.nl year/semester: Semester 1, 2015, class of 2018 teacher: Frank van den Berg and Ans Netjes

Summary of the course

To help students reach the <u>learning goals</u> for Learning Capacity, workshops were organised: a self-reflection workshop, in which the students made core-quadrants and learned about how to reflect on themselves, PDP and SER sessions, in which the students were informed about the PDP and SER and finally PDP and SER laboratories where teachers were available to answer questions. Moreover, an ILS test was performed which was followed by an individual consult. This helped the students get more insight into how they learn.

Discussion

Positive:

- There was enough suggested evidence.
- There was enough own choice ('everything is learning capacity')
- Teachers were open to change and suggestions.
- Useful and quick feedback was being given after handing in assignments on portfolio.
- PDP and SER laboratories were useful, since it allowed students to work while also having the possibility to ask questions.

Problems

- People found the PDP and SER hard to write for the very first time and felt their mentor didn't guide them enough.
- People didn't realize 'everything is learning capacity' and therefore didn't realize that they could hand in anything 'learning'-related.

Suggested solutions to problems

- Mentors could also play a bigger role in giving feedback to PDP and SER. This will be discussed in the coreteam.
- Maybe students could be provided with examples of what 'older' ATLAS students handed in for learning capacity.

- Frank and Ans already discuss mentor input in the ATLAS-core team. And this will change as soon as possible by making guidelines.
- They will explain from the beginning of the semester that extra things could be done. Examples will also be given (planning, self-development). Frank suggested the EduCo to look into this, but the EduCo wants the teachers to take responsibility for this.

Project

created by: Jarmo Kikstra e-mail: j.s.kikstra@student.utwente.nl year/semester: Semester 1, 2015, class of 2018 teacher: Ingrid Nota, Jasper Homminga

Summary of the project

The subject of the semester 1 project was *Human Activity*, with the goal: *Design a product that inspires people to become more physically active*. The client was the *GGD Twente*, that wanted to use the product at a fair. There were two target groups: the first consisted of 12-16 year olds who had vocational training and the second of people from the age group 50-65 who were highly educated (HBO, university). We got the respective sample groups *Gilde College* and the educational staff of the *ROC of Twente*.

The project consisted of 4 phases: *Analysis, Conceptual design, Embodiment* and *Implementation/Evaluation*, that ran for 6, 1, 5 and 3 weeks respectively. Because of the late/lack of responses for both the ROC and the Gilde College Groups, it was decided to let the analysis phase overlap with the conceptual design phase.

The assessment consisted of a presentation and a discussion based on a justification report with two assessors.

EduCo criteria

EduCo criterion	mean	SD
1. For this project, the Dutch language is not a prerequisite for successful completion and non- Dutch students are not put at a disadvantage.	2.8	1.0
2. All ATLAS domains/courses that were taught in this semester can be integrated in this project	2.9	1.2
3. The group tutors/consultants are informed about the project, have basic knowledge of the relevant fields it addresses and are readily available/accessible for students.	3.1	1.3
4. This project has a clear and logical set-up that is communicated clearly to the students	3.2	1.1
5. The students are provided with some sort of knowledge input that is helpful for the project	3.8	0.7
6. The project is based on a problem that incorporates both social and technical aspects	4.4	0.7
7. This project clearly states which assumptions can be made by the students.	2.8	1.0
8. The assessment structure of this project is clearly defined and communicated to the students.	3.7	1.1

Discussion

People very much agree that this project involved both social and technical aspects. Moreover, the knowledge input was seen as helpful and the assessment structure was mostly clear, although some state that there seemed to be quite some difference between the assessors.

The general feeling in the analysis phase was that no one knew what to do in the first few weeks. A problem occurred with the research proposal, of which the teachers did not know that we had to deliver one beforehand, which resulted in a bit of a messy structure. This led to a lack of time that led to an overlap with the conceptual design. In short, this made the workload too high in the last weeks of the analysis phase. Moreover, we now had to write a research proposal for the project, before we had learned about writing a research proposal in the course Psychology, which was not ideal, but this did not lead to groups not being able to perform their analysis. Another problem was the lack of responses from the ROC and the lack of persons to test the product on for the target group 50-65.

Another general feeling was that communication was not always clear and usually too late (also reflected by a not so high score in the survey).

The results of the survey show that there was the *Dutchy Problem* (Dutch sometimes was a prerequisite or advantage) and not all courses were integrated within the project. Solutions are not easy to find for this problem, although we suggest using <u>this document</u> in developing a new project. Another problem that occurred was that a group was held back in their progress because of the absence of a tutor, even while not letting them know if this absence. Students did not know how to solve this problems and were held back in their progress.

Suggested solutions to problems

• Having a structured updating scheme, always notifying students appropriately in advance

- If there are problems with the project, such as tutoring or looking for experts, students can contact the project coordinators
- In case of local partners, strong agreements will be made about testing and interviewing
- The *Dutchy problem* will be taken more into account than the past semester

Personal Pursuit

created by: Tim Roelofs e-mail: t.j.t.roelofs@student.utwente.nl year/semester: Semester 1, 2015, class of 2018 teacher: Klaas Jan Visscher, Anne van der Maat

Summary of the personal pursuit

In this first semester, the concept personal pursuit (PP) was introduced to the class. An information session was organized by Klaas Jan and Anne for both the Class of 2018 and the Class of 2017 on the 26th of November. In this information session, the setup of the personal pursuit was explained. This setup was different from the previous year; the biggest changes were: making the PP less like an elective by discouraging filling it with courses, and also making a student's PP have one general theme. Klaas Jan had multiple office hours during which students could discuss their ideas. Although students could choose to start their PP this semester, most of the class chose not to.

Discussion

Because the presentation about the PP was very late in the semester, some of the students had to figure everything out by themselves when they wanted to do a course that was only available during semester 1. This could be improved next year.

Suggested solutions to problems

- The presentation about the personal pursuit should be sooner in the semester, preferably at the beginning of the year.
- Also the first PP proposal deadline should be sooner to make it possible to do courses during semester 1 as part of a Personal Pursuit.

Agreements

• The whole PP process (presentations, deadlines) will start one/two months earlier next year.

Semester

created by: Stef Koenis e-mail: s.p.j.koenis@student.utwente.nl year/semester: Semester 1, 2015, class of 2018 semester coordinator: David Boy

Summary of the semester

This semester ran from August 31 until December 18. Mentors were assigned to the students in the beginning of the semester. There was a mid-term evaluation which told the students whether they were "on-track" or not. After this mid-term evaluation the students had to write a revised PDP. The two dominant learning lines were Learning Capacity (which also aided the students in writing both their PDP and SER) and Design.

EduCo Semester Survey

EduCo criterion	mean	SD
1. This ATLAS Semester has a clear planning from the beginning onwards, with changes indicated appropriately in advance	3.0	0.9
2. This ATLAS Semester clearly communicates what the expectations are towards the students	2.7	1.1
3. This ATLAS Semester allows for an evenly spread out workload throughout the semester	2.9	1.2
4. This ATLAS Semester is coherent in all aspects	3.1	1.0
5. This ATLAS Semester enables students to make informed and meaningful choices on the combination of courses within the semester	3.0	0.9
6. This ATLAS Semester gives students input that can assist them in narrowing down their interests towards a possible Master's program.	3.0	1.0
7. This ATLAS Semester allows for personalisation	3.7	1.0
8. This ATLAS semester ensures that each student has an informed mentor that helps finding solutions to problems	3.6	1.4

Discussion

From the beginning on there was a lot of confusion about what was expected of the students and what it was they could expect in ATLAS, this is reflected in the results of the semester survey. For example: the concept of evidence was unclear as was the way you had to hand in evidence. Ans tried to solve this by organising an information session a few weeks after the start of the semester but this did not give enough clarity.

There were also some issues with the calendar: quite some changes had to be made and not all of those were made appropriately in advance, nor were the students always informed about them (e.g. an e-mail the night before that a lecture was cancelled).

The semester started off very quietly but became more stressful for the student towards its end. The fact that important deliverables (for instance: the project's justification report and the psychology research paper) had to be handed in in the same week made it very hard (or rather: impossible) for students to spread out the workload evenly over the semester (score in semester survey: 2.9).

Finally, we found that there were big difference between the mentors. For instance: not all mentors had time to meet as many times as their mentees wanted and some mentors actively helped their mentee with writing his or her PDP and gave feedback on it where others did not.

Suggested solutions to problems

Inspiring lectures

- Organise more truly inspiring lectures to assist the students in narrowing down their interests towards a possible Master's program.
 Stressfulness
- Improve the planning by distributing important deadlines more evenly over the semester **General confusion**
- Organise plenary sessions in which Ans and the EduCo try to answer questions

- Guidelines for mentors will be made to make sure quality is delivered to the students (e.g. all students should receive feedback on their (revised) PDP)
- The mid-term evaluation verdict will be improved by adding a justification to the on/off track message.
- A proper introduction to ATLAS will be given in the beginning of the semester, possibly during the kick-in. The EduCo is willing to help with this introduction
- From now on, the schedule will be changed by the office only
- A student will be involved in the design of the first semester