This report contains feedback from students about a course taught in the School of Informatics during the 2017/18 academic year, in response to the following questions:

- What would you say to students interested in taking this course?
- What did you find most valuable about the course?
- What improvements, if any, would you make to the course?
- Please add any other comments you have about workshops and tutors

Each course organiser receives this report as well as statistics on multiple-choice responses. All these reports, together with student feedback about individual members of teaching staff, are collected and sent to the Director of Learning and Teaching.

Please note that these are personal responses from individual students: some courses only have a few responses and a small sample can be unrepresentative.

Stereotyping and bias, especially unconscious bias, is a serious concern in any survey gathering personal responses. All students received the rubric below before completing the surveys, and you can read a brief introduction to issues of unconscious bias on the university web pages at http://edin.ac/2iypZBv

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### Rubric given to all students taking the end-of-course feedback survey

We value your opinions on the courses you take here at the University, as they allow us to shape future delivery and development. We welcome constructive comments about your courses, whether positive or negative, and ask you to give details about any issues in order to help the course organiser to understand and address them.

We encourage you to be aware of the potential for bias in the completion of these questionnaires, so we have developed resources which may be helpful to you:

- Equality, Diversity and Unconscious Bias (http://edin.ac/2iypZBv)

You also have a responsibility to provide feedback in a manner which does not breach the University’s Dignity and Respect Policy:

- University of Edinburgh Dignity and Respect Policy (http://edin.ac/1Cq0VZy)

The results of the questionnaires will never be analysed in a way that seeks to identify individual students from their responses. However, should you wish to remain anonymous, please do not identify yourself in your answers to the survey questionnaire implicitly or explicitly.
What advice would you give to a student taking this course in future?

- Although no one checks whether you do any tutorial work apparently my friends found the tutorials very useful so do them all the time.

- Study the content of previous lectures before attending next otherwise you will find it hard to follow.

- Ask for help if you need it!!!

- Be prepared to work!

- Do the assignments well in advance, especially if you take simultaneously the other Informatics courses.

- Do the tutorials.

- Don't worry if you don't understand the algorithms at the start. Try examples on your own, do the tutorial question and it should be fine. Don't be like me. Try to engage more.

- Expect the lectures to be extremely theoretical but keep reminding yourself of the bigger picture. Wait with your judgement for the coursework, because then you will see how magical all the different parts of the material actually are.

- Get an outside tutor or meet with Dr. Longley -- he is very helpful and friendly and appears to enjoy helping his students. I appreciate him.

- Go to the tutorials!! And do the reading especially for natural language.

- Go to tutorials, they help so much more than simply going through lecture material

- Good course, highly recommended.

- If possible, try to read ahead a little, as there are some ideas which take a while to wrap your head around. That being said, it's totally worth it when you "get it".

- If you are interested in formal languages, it's good for you.

- If you are interested in theoretical computer science, you will love this course! John Longley and Shay Cohen are some of the best lecturers in the School.

- Be prepared to study by yourself, there is a lot of content.

- If you haven't done INF1 CogSci previously, or not done much Linguistics before, then make sure to go to all lectures and to do all of the tutorials, as some stuff is completely different to anything in year 1

- Make sure to learn how all algorithms covered in the course work, don't rely on figuring out on your own - you won't.

- Make sure to understand the key principles of each topic.

- Make sure you know FSMs and regex.

- Read the textbooks

- Some of the concepts and ideas are tricky at first to get your head around but stick with it as it is useful and once you understand it, it is easy!

- Start the assignments early, you will have many at once but don't think that means you can leave Inf2a until the last weekend before it's due. You will only end up submitting something full of bugs, time management is key.

- Start the coursework early so you can enjoy them! They are really fun if you give yourself enough time, don't be afraid to let people know you don't understand something, they are some of the most helpful tutors in the school.

- Use the examples to learn the algorithms
What advice would you give to a student taking this course in future? (continued)

- Yes, but I am aware that it is not interesting for all computer scientists.
- Good luck
- make sure you revise your English grammar before starting
- Turn up to your tutorials no matter what. Take good notes on the pumping lemma, don't tune out when you hear FSMs come back up, they don't re-tread ground for very long.
What did you find most valuable about the course?

- Clear learning objectives, good foundation for a wide range of language tasks, topics on decidability are interesting.
- Coursework - was helpful in understanding the course.
- Courseworks were great
- Definitely the tutorials
- Everything basically.
- I really enjoyed the whole section of language semantics, using FOPL & lambda calculus to formulate some sort of meaning. Honestly, I really enjoyed the whole course - it had a wonderful mix of theory and practical implementations.
- I was introduced to coding in Java in this course and it was a great immersion. I really appreciated how hard they pushed us to succeed as well.
- It was an interesting introduction to how formal and languages are processed from raw input to some kind of meaning. I enjoyed the assignments, especially the second one. The motivation behind the second assignments was very interesting and it was really nice to see how NLP concepts can be used to create a small dialogue system.
- John's style of teaching is great. Shay is also great at explaining some of the trickier parts of his part of the course. The best part of this course was how good John and Shay were at welcoming questions in lectures.
- Knowledge about formal languages - Chomsky Hierarchy and Second coursework.
- In terms of how I gained the knowledge - mostly on tutorials/tutorial sheets.
- Learning how programming languages are interpreted.
- Learning the methods that are used for the processing of different types of languages, learning about the different types of languages, and learning how computers deal with the processing languages. The examples that Shay used showing the full process really helped my learning of the Natural Language process.
- One of the best courses in the School.
- Very well organised and structured, prof. Longley and prof. Cohen are prepared, approachable and passionate about the subject which makes it interesting.
- Genuinely fun coursework, which was unexpected.
- Other than INF1 CogSci, this has been the first course that was exactly what I was looking for at Uni. The most valuable thing was that the coursework was doing programming that Cognitive Science students are probably looking to do in future. Also, it gave more practice in the practical side of programming
- Programming assignments where very good, challenging and useful.
- The content is very interesting - it gives a great insight into the structure of languages and follows on well from INF1-CL.
- The coursework were quite interesting
- The coursework. The course is often times very abstract but it is beautifully applied within the work to be done for the both of the coursework assignments and they might just be my favourite part about the entire course.
- The formal half.
- The formal languages which work pretty demonstrably well are more interesting.
- The tutorials and to a lesser extent the assignments, particularly the second one.
What did you find most valuable about the course? (continued)

- The formal languages which work pretty demonstrably well are more interesting.
- The tutorials and to a lesser extent the assignments, particularly the second one.
- The tutorials were definitely the most valuable part of the course. Especially with so many algorithms, it's hard to learn a process like that from a lecture and it really helped to try questions for myself and get help from my tutor when I was stuck.
- The way it is taught
  - This course built really well onto Inf1 Cognitive Science, and the assignments were really interesting and engaging. It was made very clear how these techniques are applied to real life programming problems which made the course really engaging.
  - This course sounds useful in theory since human interaction is important and this is how to recognize the languages we use either it be natural languages like English or formal languages like Java. But only if it was made more clear rather than blindly following templates without really understanding courseworks.
- Tutorials, assessed assignments, lectures (especially those on formal languages).
- Tutorials, they covered a wide range of content and it was really helpful to do some questions on the more confusing algorithms. Tutorials.
  - Tutorials. Absolutely.
- Very interesting for learning about language processing and introduces a lot of new concepts.
- slides and tutorials
- tutorials
- Tutorials are good.
- tutorials helped a lot
What improvements, if any, would you make to the course?

- 2nd coursework was just terrible, the code was badly structured in a weird way and it was not very clear what we are supposed to do. We were not able to see if our code works until we completed all parts. Moreover the code was Java written in Python, terrible. Please provide future students with diagrams showing how your processing pipeline is supposed to work.

- Be clear about why we learn to perform algorithms by hand. For instance, directing our attention towards the fact that we can't really develop an intuitive idea of what an algorithm does and hence program a computer to perform it if we haven't actually experienced first-hand what is going on.

- Coursework 2 seemed a lot harder than coursework 1 and it was unfortunate timing given the last software engineering assignment is the biggest one of the 3 and the computer systems coursework is also quite big. At the time for coursework 1 i feel like we would have been better equipped to really enjoy coursework 2 without the added pressure of the deadlines and other courseworks. Coursework 1 then, as a smaller (and somewhat easier) coursework, would be better suited to the end of the semester, close to exam time.

- Courseworks contribute a greater percentage

- Courseworks are ok, but you don't really know what you are supposed to do. It takes 3 hours to solve the task, then 30 mins of coding...

- For natural language, the formal explanations of the algorithms are hard to follow, the worked examples are much more useful. Lambdas were not well explained at all.

- I felt that the second coursework has been a lot more challenging and taken a lot more time than the last one, and sadly I have had to abandon part D because I need to focus on the other 2 courseworks (CS and SE) as well as studying for all four exams. It might be more sensible to flip the course around and start with natural languages and do this harder coursework and arguably harder topics at the beginning of the year.

- I found myself dozing off during lectures, and the recordings are really really helpful. I'm not really sure why, because the contents of the course are really interesting but sometimes I just felt like I am wasting time going to lectures as I am not going to focus anyway. I did not have this problem last year, so I am not really sure what is the cause. I don't blame the lecturers though.

- I know a few people complained about the natural languages side of it, as it's not what they wanted to learn about while on a computer science degree, but I found it fascinating

- I think a lot of time is spent on natural language, which has so many complexities and is quite a niche area of research that it doesn't really feel like we're getting many implementable, tangibly helpful knowledge. Knowing how programming languages work is obviously applicable to people who'll be using them every day, knowing some undergrad level, moderately effective natural language processing methods is something that I don't think the majority of the class will benefit from through our careers.

- I think that the coursework should be worth more in terms of the final grade. Also, when we were doing different algorithms, I found the lectures very confusing and I never managed to understand them during lectures. But when I tried to do them on my own on an example, it wasn't that hard.

- I would look at improving and revising some of the slides in the Natural Language side of the course, as sometimes they were not used, possibly condense them down or split them up.

- I would make things like INFBase more known to the students. I also find that everyone is competing with each other in the tutorials for right answers and it makes me feel threatened and diminished in my intellectual capacity by my fellow students if I get the answer wrong. I hate that, because tutorials are for learning, but all the students in my tutorial want to do is try to outdo each other. I think stressing that the course isn't a competition would be helpful.

- It's pretty great as it is.

- Labs.. Better preparation for coursework. Even if we didn't need more knowledge in python, just we could feel more comfortable. Also, I was 4 times in total during labs session, during 2 of them (half!) there was no lab demonstrator. Anyway 50 people per one demonstrator - also quiet poor ratio.

- Slightly less thing about part of speeches etc, but maybe more developed semantics concept.
What improvements, if any, would you make to the course? (continued)

- Lecturers are unfortunately not engaging, they are much tougher to follow than in other courses.
- Lectures on NL sometimes felt like the topics/methods being introduced were being overcomplicated. Lack of explaining the intuition behind the methods.
- Link between topics. Otherwise they feel detached and unrelated
- More help on Piazza.
- More/clearer feedback on the coursework
- Saying "good job" doesn't give me many ideas for improvement
- Most of the time when any new concepts or algorithms were introduced, the lecture slides provided only a formal definition, without a plain and simple definition to go along with it. I found that when I only had the formal definition, it took quite a long time to get my head around the concept or algorithm. However, if I did a bit of my own internet searching or watched a YouTube video, I found that most of the things are actually quite simple to understand. I think it would save some understanding time if the lectures provided simpler definitions (as most of them could definitely be explained with more ease and without formality) along with the formal definitions, time would be saved and understanding would be increased.
- Nothing as of now.
- Please update tutorials (references to lecture slides) before uploading them, sometimes these references are misleading. Please use top hat or anything to keep us awake, difficult to pay attention for 50mins.
- Regular expressions are sort of covered last year in Computation and Logic, so there were some elements which felt repetitive. However, seeing as not everyone may have done it (and it was a year ago) I guess it makes sense.
- The grammar writing exercise was fun, however, I feel that this should never, as suggested it might next year, be for credit.
- The natural language lectures are extremely difficult to wrap our heads around the first time, but Shay Cohen goes right into challenging examples instead of explaining the content beforehand.
- There's a lot of material covered in each lecture, which results in a huge amount of work needed to keep on top. It's also quite common for there to be a lot of excess and unnecessary information. The slides could be more concise
- clearer requirements for coursework
- less linguistics
- more examples to help understand
- the lectures for the natural language section were boring and hard to follow
Please add any other comments you have about workshops and tutors

- As I mentioned - tutorials great, but labs poor (but good sheets for labs)
- Dr Cohen was a great tutor and I really enjoyed the tutorials, they were really helpful for grasping the problems
- I feel as though my tutor was not the best at explaining things to us. He took a lot of roundabouts in answering our questions and only explained them in terms that he understood. I also hated that everyone was competing with each other to answer things rather than taking time to understand the questions. I rarely attended the tutorials because of this.
- I love my tutor (Paul Sinclair I think, 1pm every Tuesday). He explains very well, and he is very approachable and friendly as well. He contributed a lot to my understanding of the materials, and overall I find the tutorials very enjoyable.
- I wanted to mention my tutor Sarenne Wallbridge. She has been super patient and has made it really easy to admit when I was struggling with something or even didn't understand it at all, without being embarrassed. She's always willing to go back to the basics and answer any question to make sure everyone understood exactly how something worked, even the particularly hard topics such as the pumping lemma. She encouraged us to email her with any additional questions and it's clear that she genuinely cares about our learning. She has made the course really enjoyable for me and I feel confident now going into the exam.
- If the tutorials/labs were compulsory (marked), then I'd have gone to more, and I feel like I probably should have been to the ones even when I pretty much knew it all anyway as I could have helped my peers
- My tutor has been very helpful.
- Paul Sinclair is an amazing tutor, please tell him!
- The tutorial exercises are more often easy than they are hard. However, little mistakes and things you thought you knew how they worked get caught very effectively so it really helps understanding the material more thoroughly.
- The tutors went over homework quickly regardless of how well I understood it and time pressure of the tutor has to go through makes it difficult to discuss problems. I would recommend group discussion activities since it will allow us to understand the work from our peers much more effectively.
- They were very helpful in understanding the concepts learned in lectures.
- Tutorials helped me to understand what I was supposed to do for various processes and gave me experience on the work. Would have been nice if details for Tutorials came out midway through the week of the last tutorial.
- Tutorials were the most helpful and enjoyable part of this course, our tutor Sarenne was really good at explaining some of the more difficult algorithms and was happy to explain it as many times as possible until we all understood, i also emailed her about an issue i was having regarding content for the first coursework and she quickly responded with a full explanation of the part i was stuck on and every week offered help to those who wanted it via email. This was the only tutorial I've had so far that I've felt confident in the class and was sure that I would leave the class with all my questions answered.
- Tutorials where very useful, My tutor was excellent
- Honestly, I'd rather drop a couple of lectures and have another hour of tutorials in this. Just seemed so much more helpful.
- most of my learning came from doing the tutorials exercises and attending the tutorials
- put the times on the website