

Sten Ternström, stern@kth.se

1. Description of the course evaluation process

The group of students is usually small. This year there were 7 participants plus one who sat in on the course, but was not allowed to register because the student already had too many ECTS credits. However, the course contents are very relevant to the student's M.Sc. degree project, so I found this appropriate. The course has a home exam, and this year a LEQ questionnaire. Unfortunately only 1 of 7 students responded to the LEQ on time, and so I am not able to report its contents (there is a minimum of 3 respondents).

2. Description of meetings with students

Student opinions are solicited during the course and discussed at a mid-point workshop in conjunction with a progress report on the group assignment task. Several of the students are exchange students that return home at the Christmas break.

3. Course design

Learning activities include

- 13 double-hour lectures;
- 3 tutorial sessions;
- a field trip;
- one group assignment in groups of three students: write an in-depth article, *or* solve a set of fairly complex audio programming tasks. Good articles are accumulated from earlier course rounds and used as add-on literature in this course.
- 4 three-hour laboratories, with ears-on activities using audio equipment in studios (not computer labs);
- author a candidate problem for the exam, including a solution and marking criteria; good problems will appear on the actual exam; ex-exams are *not* made available (but probably circulate anyway...).
- complete a home exam, which may involve a lot of independent literature research, to be handed in in January. Students report spending at least 10 hours on the exam.
- Presentations of the group assignments *in plenum* at the end of the course.

4. Students' workload

The students usually report being kept quite busy and that the workload is evenly distributed across the course. Earlier complaints about high workload near the end of the course have been addressed. The authoring of a usable exam problem is seen as particularly difficult but very instructive.

5. Students' results on the course

It is rare for students to fail this course; in 2022 no-one did. Generally the motivation is very high and students invest many hours of work in the home exam,

where creativity and integrity are encouraged. Grades tend to spread evenly from E to A. This year there were no D's or E's. The background knowledge varies; those with no prior signal processing have a somewhat harder time.

6. Students' answers to open questions

7. Summary of students' opinions

The LEQ was answered by only one student and so the results are not available.

8. Overall impression

This is a specialized course that attracts highly motivated students with an interest in sound processing and sound reproduction. The ambience during the course is generally very good and positive, and much effort is invested in trying to keep everyone on board even though the pace through complex topics is rather high.

The laboratories, in particular, are highly appreciated. In 2022 they were all conducted by a new assistant, Christian Stjernberg, who had taken the course in the preceding year and who has considerable field experience of audio work. This course offers a lot of teacher time per student, since the labs only take three students at a time, in specially equipped rooms. This is a bit of a luxury, but it is tremendously appreciated, and the free comments 'I learned a lot from the labs', 'the labs were great' have always appeared in the course evaluation.

9. Analysis

In 2022 seven students were registered and eight participated actively. International students sometimes do better thanks to a stronger background in signal processing, but this year the field was quite even.

10. Prioritized course development

This course round was the last to be given with Sten Ternström as coordinator. For the successor, he recommends to continue increasing the focus on networked audio and lessening that on physical storage media; and reworking Lab A to be more modern; it relies on equipment that is decades old (although still liked by the students). A more updated textbook than Pohlmann (2010), with more content on streaming and spatial audio, and less on physical media would be desirable.

11. Other information you want to share'

Teaching and labs were conducted on-site as we normally do. The first eight hours of the course are a module on spatial audio and surround sound. This module is taught by professor Damian Murphy, University of York, who has come to Stockholm for two weeks every year since 2003, with support from Erasmus; except in 2020 and 2021 when his teaching was done remotely from York due to the pandemic. We were happy to have him back in person in 2022. Since Brexit, Erasmus no longer supports his visits, but he was allowed to invoice the HCT-MID department that owns the course. Prof Murphy has compiled an excellent hand-out that covers this part of the course. It is not clear that he will continue to come when Sten steps down.

As earlier, we had the privilege of guest lectures at no cost, one on audio streaming from Spotify (Andreas Rossholm) and one on audio in broadcasting

from Sveriges Radio; who mustered a team of four people in person led by Paul Nygren. It is noteworthy that the technical development group at Sveriges Radio is now staffed almost entirely by alumni from the KTH Media Technology programme.

Course assessment DT2410 Audio Technology 2021

Your anonymous response may be given in Swedish or English.

	Bad-Good	<i>Based on 5 responses; 7 took the exam</i>
Lectures	1-5 Means	Comments (Compiled)
<i>Damian Murphy</i> : spatial sound (3 sessions + tutorial)	4,6	[Hybrid in Fantum and on Zoom]
Analog-digital-conversion, 2 sessions + tutorial	4,4	
Audio IC's	4,6	
Software architecture (x 2)	4,4	
Audio coding/compression	4,4	
Connection and transmission	4,2	
<i>Rossholm</i> from Spotify, on streaming	5,0	
<i>Swedish Radio</i> : Audio in broadcasting	4,5	SR came to Fantum with a great team of four (!) people, several of whom are former CMETE students
Other, please specify:		
Labs	1-5	Comment
A: The mixing console and outboard units	4,0	
B: Audio coding	4,1	
C: Analytical listening and voice reproduction	4,3	
D: Spatial sound and virtual acoustics with Ambisonics	4,5	
Enough time? Would have needed more preparation? Function? Competent lab-assistants?	4,8	
Assignment	1-5	Comment
Clear directives?	4,6	
Access to materials/guidance?	4,8	
Cooperation in the group?	4,6	
General	1-5	Comment
Textbook: <i>Pohlmann</i> , Principles of Digital Audio, 6 th edition (or other)	3,8	
Curriculum: topics missing, or redundant topics?	4,8	
Did the course fit your prior knowledge?	3,9	
Did the exam reflect the course contents well?	4,6	
Overall disposition of the course	5,0	
Participants were treated fairly and without discrimination	5,0	
Other		