Teaching Portfolio

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Contents:

1. **Teaching Philosophy**: my teaching philosophy is concretely based on **interaction**, **inspiration**, and **effective material comprehension**.

   We live in the age of information: almost everything can be found online, from courses and videos to notes and books. I strongly believe that the hours spent in class should give students something *more* or something *different* than what they can find by themselves through other sources of information, such as the Internet. Most of all, the hours spent in class should be worth students' time: they should be able to clearly understand most of the material of each lecture and - at the same time - enjoy doing so.

   To this direction, interaction between students and the lecturer helps material comprehension to a greater extent - and vice-versa. However, in-class interaction is time consuming and sometimes is not explicitly encouraged by the lecturer due to other in-class activities: writing on the board and figure sketching, the so-called dead time. Technology can significantly assist in these issues by providing audiovisuals (videos, pre-designed figures, audio, animations, etc) that can greatly reduce dead time and at the same time improve material comprehension and increase interaction time. In-class atmosphere is very important for achieving high levels of interaction between interlocutors. I prefer to create and encourage a relaxed (less strict) atmosphere during teaching because I strongly believe that it maximizes students' attention and helps their involvement in the lecture. I also think - and I have seen it in practice - that interaction significantly helps the lecturer to enhance, modify, and polish his/her material to make it more accessible with less effort. That is, the lecturer is a learner himself/herself! He/She learns from students' questions.

   Finally, in academia one mostly lectures in front of young people - much younger than oneself. I think that the lecturer should reflect the highest of academic virtues: ethos, kindness, and passion for teaching and science. In other words, his/her presence should *inspire* students. Inspiring students is, in my opinion, the halfway through a successful course.

2. **Teaching methodology**: in order to achieve the goals set in the previous paragraph, I have adopted the following approaches:

   - My courses are delivered via slides, supported by (occasionally, depending on the course) original notes. In this way, students get a reading material that is error-free, well-presented, well-structured, and up-to-date. Most - if not all - examples, figures, and images have been created from scratch. Moreover, I usually discourage students to spend time taking notes since that would increase their cognitive effort in *understanding* the material; however, they are free to do so if they want.
   - The courses I have taught so far include a variety of sample exercises that help understanding the fundamentals of the material. Instead of presenting pre-written solutions on slides, I write the solutions in real time using a stylus-equipped tablet PC. I also use the latter to highlight, comment, or add important information on the slides. Moreover, I use a "code break" between slides to demonstrate how "theory works in practice" using a programming environment (e.g. MATLAB, Octave). I have found such small examples very intuitive and motivational for students, mostly because the can immediately connect theory with practice. Finally, I enrich my slides and my talks with short bursts of high-level, complex, and state-of-the-art applications of the discussed theory to motivate and inspire students - and it makes more sense to them when my own research involves such applications.
   - In the signal processing-oriented courses I have taught, **weekly** assignments include a balance between theoretical and MATLAB/Octave-based exercises. I feel that in today's world, engineering students should put their hands on real data and real problems as often as possible, starting from their undergraduate studies.
   - Learning is continuous and does not end after class. As such, I encourage the use of mailing lists and office hours for further discussions or questions.

3. **Teaching Responsibilities**: I have been teaching at the University of Crete since 2015. my main teaching responsibilities in the Computer Science Department of the University of Crete include two courses in the winter semester:

   - **CS112-Physics for Engineers**
   - **CS370-Digital Signal Processing**

   and one course in the spring semester:

   - **CS215-Applied Mathematics for Engineers** - its syllabus is similar to "Signals and Systems" courses

   CS112 is an elective course, CS215 is a core course, and CS370 is an elective course as well. CS215 and CS370 are co-taught with Prof. Yannis Stylianou; however I have developed the courses' material (slides, notes, exercises, labs). Moreover, I am annually invited to give lectures in:

   - **CS578-Digital Speech Signal Processing**

   a graduate course offered by Prof. Yannis Stylianou. My lectures include topics from my Ph.D. thesis and recent trends in research I am involved in. Examples of my material can be found in: https://www.csd.uoc.gr/~kafentz/teaching.html.

   Furthermore, as a member of the Speech Signal Processing Laboratory (SSPL) of the Department of Computer Science, I have been involved in theses supervision (10 B.Sc. and 2 M.Sc.).

4. **Evaluation of my Teaching**: the University of Crete provides students with an official, anonymous, electronic questionnaire for each course. Since this questionnaire is generic (same for all courses), I additionally ask students to anonymously fill in a more course-specific questionnaire based on Google Forms. Comments from students are very positive for the teaching approach, myself as an instructor, and the quality of the material - there are, nevertheless, a minority of objections on the workload and difficulty of the courses. Here are some of the students' opinions taken only from the official questionnaire of several of my courses (translated from Greek):

   - *For Dr. Kafentzis, who was mostly in charge of the course: a role model of instructor and scientist. Approachable, kind, with a lot of passion for what he does, that is, his teaching and his course quality. I wish the majority of professors had the same energy and will to transfer knowledge, not just to cover the material.*
   - *The course was worth for the lectures Dr. Kafentzis gave. He is a really great teacher, he knows how to explain everything without being boring, he is interested in us and was always available for any question.*
   - *I am at a loss as to what to comment on this course... polished and refined to the smallest detail would be the best description. Personally, it got me interested in the signal processing area, which means that the course achieved its goal. As for the organization, it was excellent.*
   - *Congratulations to Dr. Kafentzis! He has turned a rather difficult course into a quite easy one with the love he seems to have for science. Really good - thumbs up. He is always close to students and responds immediately to any question asked by e-mail.*
   - *I have no comment on how to improve this course. Dr. Kafentzis is an excellent instructor and has been very helpful in making the course comprehensible to all of us. He was very consistent and helpful, he did everything he could to help us! He is very communicative and understands the workload of his students. He is a role model!*
   - *Dr. Kafentzis is by far the best instructor I have ever had, including my high-school years. He is very approachable and communicative, and he tries to get his students' attention.*

Finally, I have received numerous e-mails from students outside my department (even Greek students working abroad) who have found my online notes very useful and wanted to thank me for this. Motivated by such comments, I decided to polish my notes and properly write a textbook on continuous and discrete time signal processing. It is titled

- Continuous and Discrete Time Signal Processing: A First Introduction

and it has been recently published by Gutenberg Publications, ISBN: 978-960-01-2042-4. A sample chapter (in Greek) can be found here:

https://static.eudoxus.gr/books/https://static.eudoxus.gr/books/71/chapter-86057371.pdf

5. **Future Goals**: teaching is a dynamic process and by no means should be kept stationary. My future goals in teaching include:
   - keep improving my methodology of student participation
   - develop small-scale, real-world projects for enhancing material comprehension
   - make my lectures more interactive by including audiovisuals where appropriate