

System Identification and Data Analysis - 2014

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Instructions regarding the written test

Rules

- You must bring an identification document with you.
- You have **2 hours and 30 minutes** to complete the written test. Please be there on time, possibly 5 minutes before the official start. You *are* allowed to show up later, but in this case you have less time to complete your test.
- You are strongly discouraged to leave the room during the written test; for “urging matters” (the restroom) you are allowed 5 minutes, and only once, but you are not allowed to take *anything* outside the room.
- You are not allowed to talk with each other.
- You are not allowed to use lecture notes, scientific books or formulaires, handwritten notes, computers, or smartphones. You can use pens, pencils, rubbers, rulers etc., and a non-programmable pocket calculator. You are also allowed to use a dictionary from/to English/your mothertongue, without *anything* written on it; the teacher will check it before the beginning of the test. Before the beginning, please leave everything else at the entrance. The teacher will supply all the paper you need.
- At the end of the written test, you are supposed to handle *only* your “official” solution, on “official” white sheets marked with the UniBS stamp. (*Only sheets with the UniBS stamp will be accepted.* The recycled photocopy paper is only supposed to serve for your computations. If you need more paper, of either type, ask the teacher.) You can take home everything else, including the question sheet. If you do not handle anything, *or* if you resign, you fail your written test, and you will not be admitted to the oral exam 2 days later. You can of course repeat the written test at any following session, at your choice.
- At the head of *every* “official” sheet you handle, you must write your surname, name, student ID (“numero di matricola”), and the date.
- The official language of the written test is English, therefore you must answer in English. Language errors will not be taken into account. Anyway, if you have doubts about words, phrasings, or translations, ask the teacher; if a question is not sufficiently clear, ask the teacher.

Requests and suggestions

- *Please* do your best to write in good hand-writing.
- Justify every answer as well as you can. For example, if the question asks for a numerical solution, explain in reasonable detail how you have obtained it. In general, the clearer the answer, the higher the grade.
- At the beginning of each exercise you can find a percentage: it represents the weight of the exercise in the overall grade of the written test (if 10% is the weight of a question, you can get from 0 to 10 points from that question, on a total of 100 points). Of course you can answer whatever you know or whatever you want, but if you leave a question unanswered, or write *just pure nonsense* for the sake of writing something, you will get 0 (zero) points from that question. Here is a short example of pure nonsense: “*Consistency means that the result is correct because $\hat{\theta}_{LS} = \theta^o$, and we have proven it during the course.*”.
- Please *do not* answer to questions that have not been asked explicitly. For example, if the problem asks what are the *normal equations* of the least squares method, write down the normal equations (and if you wish, maybe also how they are obtained); but stop there. Do *not* proceed with dozens of examples, applications, consistency, identification methods and the like, you will waste time but not get “more points”.

- Solve, first, the exercises with which you feel comfortable; do not begin wasting precious time on a question about which you have no clue.
- Questions on which you commit conceptual mistakes, or that you leave unanswered, may very well be the subject of your oral examination (although they are not the only possible questions; the oral exam, like the written one, covers the whole program). Since you can take home the question sheet, you are invited to verify your answers at home: you have one more day for that.
- The above rules are stated in a pedantic fashion in order to make the “official standpoint” clear, not to frighten you. Indeed, don’t be afraid, and...

Good luck!