

Signal Recovery

Exam modalities and procedures

Approved by the CCS coordinator and by Student Representatives

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The purpose of this document is to provide all the useful information to best support the Signal Recovery exam at the Politecnico di Milano. The document was written trying to be as detailed as possible, especially regarding the online exam procedure. However, if you have any doubts, do not hesitate to contact the teacher.

General info

The basic description of the exam modalities are reported on the online summary sheet on the Polimi website:

“Assessment will be based on a final exam consisting of a 2 hours and 20mins (THIS VALUE IS NOW UPDATED TO 2 hours and 45 mins) closed-book written exam, typically including two problems related to practical applications and theoretical questions. After the exam, the problem solution will be published and the student will have one day to decide whether to request (by email) to have his/her written test corrected.”
Students who pass the written exam with a score above 26/30 may take an optional oral exam to adjust the final grade. The oral exam can either increment or decrement the grade achieved at the written test, with no limit.

Written test

The written test consists of **two problems**. A first one focuses on the pure filtering part; the second one is more applicative, hence it also includes concepts about the sensors presented during the course. Both problems have **three questions each**. The exam is **closed-book**; typically, one or two out of the six questions are about pure theory. In those questions, the student is expected to show what he learned, with no need of any calculations or solution of actual problems.

NOTICE: these questions about theory have been introduced recently (about in 2022) and therefore they may not be present in older written tests available on the course website (<https://rech.faculty.polimi.it>).

Written test procedure

Here are some rules to follow before, after and during the written test. These rules aim at ensuring uniformity of tests among all students and at maximizing the test score.

- 1) Please, read the ENTIRE text of the test before starting to solve the individual points. You could get a hint about the actual request behind each question;
- 2) Clearly write your name and surname on EVERY sheet, IN BLOCK CAPITALS and with your personal code (or serial number);
- 3) **EACH page must have a progressive number** so as to easily order them;
- 4) Please, do NOT **use any smart device** (mobile phones, smart watches, ...) not even to check the time. In case of infringement, your exam will be cancelled;
- 5) You can obviously use calculators;
- 6) During delivery, the exam paper is handed with text facing down. Please, do not turn it upside down and read it, until all your classmates have received the paper and the teacher gives the ok to officially start the test. In this way, all students have the same time for the exam;
- 7) When the time is getting to the end, the teacher will tell aloud how many minutes are left and, eventually, when there is one last minute left. Please, in these last minutes check if you wrote your name and personal code on the various sheets and numbered them. Once the time is over, it WILL NOT be possible to write anything on the sheets;
- 8) The teacher will pass among desks to collect all tests, unless otherwise specified;
- 9) The teacher has to correctly read what you wrote; therefore, please pay attention to your handwriting. If you are Italian, writing in Italian (apart technical English keywords, if needed) normally it makes up for handwriting that is not always legible;
- 10) During the exam it is not possible to leave the room, not even to go to the bathroom. Therefore, please use bathroom before the test begins.

Multichance & graduating students

Multichance students may perform a reduced portion of the written test (in compliance to academic regulations). A correction factor will be applied when calculating the exam final grade. In fact, given the duration of the exam and the tight scheduling of other exams, extending the duration of the test by 30% is actually unfeasible.

For both Multichance and graduating students, it is necessary to write in block capitals, clearly visible, on the first page of the assignment "MULTICHANCE" or "GRADUATING", so as to get the required priority during the correction.

Exam Duration

Since academic year 2023/2024, the duration of the written test has been extended to 2 hours and 45 minutes, in order to give the student as much time as possible (the

exam slots are 3:30 hours including the access into the classroom, the arrangement of all students, and the delivery and collection of tests).

NOTICE: the duration of the written test has been significantly prolonged over the years; it is therefore necessary to pay attention when examining exams from previous years. In the pre-covid period the exam consisted of 2 problems with 4 questions each and the duration was 3 hours. Due to Covid, and therefore the need to take exams online and the introduction of more restricted slots for exams, the exam was initially reduced to 2 problems of 3 questions each for a duration of 2 hours and 10 (almost proportionately equal to the pre-covid duration). The duration was then extended post-covid to 2 hours and 20 minutes for the last two years.

Exam evaluation

Both test problems have the same score; also the three **questions** within each problem **have the same score**. The maximum grade of the written test is 30/30 (it is possible to achieve honors/"lode" at the oral exam); the score for each question is therefore 5/30. After the written exam, all solutions will be published on WeBeep, so the student can self-evaluate the performance. **Students willing to have their test checked and graded must send an email to ivan.rech@polimi.it, asking for the exam to be checked, within the deadline stated on the day of the exam.** This deadline is always more than one day after the written test,.

Correction modality

After the deadline for requesting the test to be checked, the homework correction process begins and it is normally carried out in this way.

At first, only the first problems of all written tests are checked, and the significant errors (affecting the final grade) are marked in an Excel file, for each student. Minor errors are ignored. At the end of this process, the most common errors made by students are identified, if any, and a weight is attributed to each error. Eventually, all three questions of the first problem are scored for each student.

Then, the same procedure is repeated on the second problem of all tests. The aim is to provide an impartial and uniform evaluation and grading to each student, highlighting at the same time whether there were too difficult (or misunderstood) requests in the test.

Some typical errors are always present and, therefore, they normally have a fixed penalty. Computation errors are normally considered minor errors, with a penalty on the score of that question between -10% and -15%. This penalty can increase significantly if the computation error is very serious (e.g., voltage or current values far away from reasonable values, ...).

The fact that a computation error can be considered minor DOES NOT MEAN that one can skip calculations: you have to make computations; avoiding doing them

significantly simplifies the difficulty of the problem, so the penalty could exceed -50% of the score.

Final score and oral exam

At the end of the written tests check and grade, those results are published and a day is chosen to let students view their tests and evaluations together with the teacher, so as to understand the errors made. At this stage, it is obviously possible to highlight any possible error of the teacher during corrections. Students who reach a **grade higher than 26/30 can ask to take an oral exam**, in order to achieve the maximum 30/30 score, and possibly honours/"lode". The oral exam normally focuses on theory-only questions. In case of doubts about the written test, the teacher can ask for an oral exam, regardless of the grade of the written test.

The oral exam can raise the grade up to 30/30 "cum laude", but it could also decrease it, in case of glaring errors of understanding.

After the publication of the final grade, the student has the possibility to refuse the obtained grade. In this case, the student will be assigned the evaluation "RIFIUTATO". NOTICE: A student whose homework is so seriously insufficient, not possible to recover sufficient preparation in the following two weeks, could get the evaluation "RIPROVATO", which forces the student to skip the next written test within the same exam session, so to move to the following session. For "Signal Recovery" this option is definitely borderline, since the student can check the solutions of the test BEFORE asking the teacher to check the test. However, the threshold below which the written test is considered seriously insufficient is set to 10/30.

Request for an ONLINE written test

The School has defined specific cases for which it is possible to request an ONLINE written (and/or the following oral) test, such as in case on "mobility students".: Therefore, if you are on Erasmus in a partner institution on the day of the exam you can request to take the exam ONLINE. Unfortunately, being ill or being abroad for reasons other than Erasmus is currently not considered a sufficient reason by the School to take the exam online. However, if you believe you have good reasons to request it, you can contact the School's Dean, prof. Antonio Capone, and after his OK you could take the exam online. Unfortunately, the fact that other teachers could have already given the possibility to take the exam ONLINE is not sufficient to guarantee you this possibility but I advise you to use this information in the request sent to the School's Dean.

Midterm exam

In general, the School does not recommend midterm exams for Master's of Science degrees. In agreement with the coordinator of the Study Programme in Electronics Engineering, prof. Franco Zappa, for the academic year 2023/2024 we will try to carry

out a midterm exam also for “Signal Recovery”. Such a midterm will consist of the first problem of the typical written test; hence, the duration of the midterm will be approximately half the duration of the final exam, i.e., 1:30 hours. During the whole summer session (June and July exams), those who have obtained a sufficient grade at the midterm exam will be able to simply complete the second problem (skipping the first one).

In the June and July exams, it will be possible even for those who passed the first midterm to take the overall exam, thus cancelling the result achieved at the midterm exam. To do so, the student will simply NOT deliver the exam at the end of the first half of the time. At the end of half the time of the summer exam sessions (June-July), students who are only taking the second midterm will be asked to hand in the exam.

Online test procedure

General information

- Exams are conducted remotely. You must connect to **Zoom** and the teacher and/or assistants will monitor you during the test. The link of the Zoom classroom will be available on the Polimi website.
- The assignment must be solved on sheets of paper. Only handwritten answers will be graded.
- The exam test will be recorded.

Technical requirements:

The minimum hardware requirements include:

- desktop PC/notebook/tablet;
- smartphone.

Install the Zoom app on the mobile phone. You can conveniently use:

- the mobile phone as a stand-alone camera/microphone/speaker;
- the PC/tablet/notebook to access the text.

The preferred configuration includes external webcam and microphone/speaker (either built-in or external). In this case Zoom must be installed on your PC/notebook/tablet.

IMPORTANT NOTES:

- webcams built-in notebook/tablet are not acceptable.
- headphones, headsets or ear plugs are not allowed.

How to set up the camera:

The camera (webcam or mobile phone) should provide the remote teacher with a perspective of the examinee during the test. External webcams should be placed at a

fixed position in such a way that you, your workspace and the PC/notebook/tablet screen can be all seen.

Please take your time to check that the image shows your face, hands, work surface and PC screen.



Webcam position



Best view



Acceptable view

Other set ups might be allowed for carrying out the exam, provided that they have previously been agreed with the teacher.

Before the online exam:

- Test the camera (webcam or mobile phone) in your room. The camera should show yourself, your workspace (i.e. the part of the desk where you write and keep your permitted materials) and the PC/laptop/tablet screen.
- Test your microphone and speakers to make sure they work.
- Make sure you have plenty of blank paper sheets for your exam. Write your name and personal code (eight-digit number) on them before the exam.
- Test the Zoom app on your mobile phone and/or your computer.
- Hint: Print these instructions or write them down if you do not have access to a printer. You will not have access to your mobile phone and only limited access to your computer during the exam.
- Check that your handwriting and the size of the text in combination with your choice of pen and paper create readable files with the scanning app. (i.e. a visible contrast between the text and the paper).

30 minutes before the scheduled exam:

- Find a room where you are undisturbed.
- Make sure all of your electronics are plugged in during the exam so that you do not run out of battery.
- Set your mobile to silent mode, it should be quiet in the room at all times.
- Be sure to have a neat and uncluttered workspace aside from:
 - Blank paper

- Permitted materials (pocket calculator, pens, pencils, highlighter pens, correction fluid/tape, erasers, sharpeners, and ruler).
- Check that your camera is working and that you, your workspace (the part of your desk where you are writing, and have you permitted materials) and the screen of the PC/laptop/tablet are clearly visible.
- Sign-in to the Zoom room (SSO) using your Polimi login credentials. You will receive the link to the Zoom room in advance of the exam.
- You cannot run Zoom on a virtual machine.
- You cannot use a second screen.
- Both the microphone and the speaker should be turned on (with reduced volume).
- Virtual background must be turned off.

Beginning of the exam:

- Be on time (You have to be in the classroom at least 20 minutes before the starting time). Students late in arriving will not be admitted to the Zoom room.
- Once everybody is settled, the PDF exam page is released on the chat.
- Open the PDF file on your PC/laptop/tablet.
- The 2:45 exam time starts from here. From now on, the screen of the PC/laptop/tablet must be freezed. The question sheet must be the only thing that appears on the screen.

During the exam:

- Each student is identified by comparing his/her video image and the photo on the Student's Card or other ID that must have been previously loaded on Polimi Online Services.
- You will not be permitted to leave (quit the exam) the Zoom room during the duration of the examination. Toilet visits are not normally permitted.
- You must write only in blue or black ink, (no pencil on the final version).
- You are not allowed to use headphones, headsets or ear plugs. In addition, during the exam you must never switch off the camera.
- You are not allowed to have any other items besides those that are listed as permitted materials in the exam.
- You are strictly cautioned against:
 - communicating with anyone besides the teacher /teaching assistants;
 - bringing into the room any textbook, notebook or formula sheet.
- All inquiries must be addressed to the teacher/teaching assistants via microphone. The Zoom chat will be disabled. BEWARE! Everyone will hear you. You are strictly recommended to intervene just to report typos or unclear

questions in the question paper (raise your hand to ask for permission to ask a question).

- Write your name and personal code on all of your worksheets (and scrap paper if any).
- The teacher /teaching assistants can request that you move the camera and show the room that you are sitting in at any time. No other persons are allowed in your room during the exam, so remind any other persons present in your home that they may not enter the room you are sitting in until the exam is finished.
- Check that your name and personal code (12346678) are written on all of your worksheets (and scrap paper if any).
- If you have any technical difficulties, try to log in again and finish your exam.
- In the event of loss of connection or repeated interruptions, the teacher will decide whether the test is valid or not, taking into account the part of the exam that has already been carried out.

At the end of the exam:

- As soon as the “time’s up” is announced you may not write anything more on your paper. Put the pen/pencil far away to your left or right.
- Take your time to show all your handwritten sheets in front of the camera before sending a scanned copy. BEWARE! A consistency check will be performed off-line between the actual handwritten sheets and the uploaded pdf file.
- Take photos of your handwritten sheets with the mobile phone and put them in a single PDF file. The recommended app for taking photos and generating a PDF file is OneDrive.
- Name the PDF file as “10xxxxxx ” (your eight-digit polimi personal code) and drop it in your personal OneDrive area.
- Send the PDF file to both ivan.rech@polimi.it and giulia.acconcia@polimi.it and wait for confirmation of reception
- It is your responsibility to make sure that the scanned copy of your paper is clear and readable.
- After you receive an OK from the teacher, confirming that the exam papers have been correctly uploaded and they are readable, you can leave the Zoom session.

After the end of the exam:

- The same rules of the in-class exam are applied

Cheating

- Any behavior infringing the “academic honor code” of Polimi will automatically result in test invalidation and report to the competent University Bodies for taking the relevant disciplinary actions.
- The teacher has the right to require a second or alternate test in cases where cheating is strongly suspected