Exercise and MyCourses instructions

General

- Remember to enroll to the course in SISU.

Exercise instructions

General

- Units: Always use SI units. Also, pay attention to their metric prefixes. For example, if the inductance of a motor is given as 2 mH, it is 2 millihenrys i.e. 0.002 H. This needs to be taken to account in simulations and calculations.
- Efficiencies: In exercises, if the efficiency for a component such as a gearbox or an actuator is not given, it is generally assumed to be ideal i.e. the efficiency is 1.

Reporting exercises

When returning the written report of the exercises, make sure to include all the details required to grade the submission. The tasks are graded based on the PDF files. This means that include all the important equations, figures and details on the report. This also includes images of the simulink models. Make sure that the graphs have labels on axes etc. If matlab notebooks are used, return the original file as well as a PDF version of the same file.

Simulink and Matlab

Matlab console

When using scripts or Simulink, pay attention to the Matlab console. If there is something wrong with your script or Simulink model, the console will show what the problem is as it occurs. In my opinion it is best to drag the script editor out of the main Matlab window to keep them both easily visible.

Saving Matlab figure as an image

Edit menu in Matlab figure window has an option "Copy figure" which copies the figure as an image to clipboard. You can then paste the figure in an image editing program (for example Irfanview or paint) and save it. Or you can paste the image directly to for example a Word document.

Saving Simulink model as an image

Simulink does not have a direct tool for saving the model as an image. You can use Windows' built-in tool called "Snipping tool" ("Leikkaustyökalu" in Finnish) to capture the model as an image. You can find it in Start menu's "Accessories" ("Apuohjelmat") subsection.

Plotting in Matlab

The plot function can be used in two basic ways. The first is that you give it some data vector which is plotted on the y-axis. For example plot(Wm.data). In this case the x-axis will be the index of the vector's data cell (i.e. for a vector of 100 data points x-axis is from 1 to 100). The second way and the one that we usually use is to define the data on both the x- and y-axes. For example plot(speed, torque). In this case the data in the torque vector is plotted as a function of the angular speed vector. The first variable is the x-axis and the second y-axis. Y- and x-axes must have the same number of data points.

When data is exported from a Simulink model to Matlab workspace it is stored in a timeseries variable. A timeseries variable contains both a time vector and a data vector, for example the torque vector. To see the contents of a timeseries variable, you can type its name in the Matlab console. In this case the a timeseries variable with name Tm contains fields Tm.time and Tm.data, which can also be plotted as previously shown i.e.plot (Tm.time, Tm.data). A timeseries variable can also be plotted simply with command plot(Tm) the plot function automatically selects the time vector as x-axis and the data vector as y-axis.

Simulink time step

If you get simulation curves which have sharp edges where you think they should not have, this is might be because the solver is taking very large time steps and the simulation results are therefore not physically correct. The solution for this is to reduce the maximum time step of the solver from the Simulink window, "Simulation" menu and "Model configuration parameters" window.

A suitable step size depends on the dynamics of the system you are modelling. Generally speaking the step size should be much less than the time constant of the system. In the case of this course's exercises a max. step size of 0.001 i.e. 1 millisecond should be fine.

Exporting variables from Simulink to Matlab (Matlab 2019a or newer)

If you are using Matlab version 2019a or newer, the Matlab scripts, which are provided with the exercises, might not work with your Simulink model. To fix this please check the following link.

Random

Resistor symbol

Do not get confused by the resistor symbol in the exercises. There are two different resistor symbols used worldwide, the one with the zigzag wire (IEEE standard) and the one with the rectangle (IEC standard). The IEC version is usually used in Finland, although the IEEE version is also used in the exercises

MyCourses instructions

Deadlines

Exercises are closed exactly at the set time according to MyCourses clock. Check if your computer's time is different than in MyCourses. Late submission is not possible and will not be accepted. To MyCourses (and thus to the course personnel) it does not matter if the submission is one second or one day late so be sure not to miss the DL by a few seconds.

Deadline extensions for the exercises will not be granted in any case because the model answers would be already published. If you know that you will be for example a week in a military refresher, you can ask to receive the exercises in advance so that you can submit the solutions before the distraction. If you are not able to submit solutions in time for reasons that are out of your hands (injuries, illnesses etc.) you can contact the course staff and we can arrange some replacement exercises.

Grades

You should be able to see all your grades in MyCourses as soon as the exercises are graded. For those exercises that are automatically graded by MyCourses, i.e. multiple choices and some calculations, you can see the grades immediately. For the rest of the exercises, we will try to grade them during the following week after the DL.

Quizzes

General

You have generally only one attempt on each Quiz. The attempt is used when you click next at the bottom of the quiz and then click "Submit all and finish". After that you can not modify or add answers.

Saving

You do not need to complete the exercises in one session. You can leave the quiz and return to it later to continue. MyCourses stores all your previously written answers as long as they are properly saved. However, there is no dedicated save button in the quizzes. While doing quizzes, which have text fields you need to click the "Next" button at the bottom of the page in order to save your text before you leave the attempt. This saves the answers and takes you to the final submission page but you can just return back to the quiz to continue working. If you just exit the page or close the browser, you will lose your text.

Also, take to account that when you are working on your exercises with the quiz page open and you do not load any other pages in MyCourses, the MyCourses server sees you as being idle. After a certain idle time, the server will log you out automatically. If you are logged out and try to submit your quiz, the server will just give you a login page and your work will be lost (you can try to return to the previous page but the text may still be gone). To prevent this, save your text periodically by pressing the "Next" button. I do not know how long it takes for the MyCourses to log you out automatically but I would save my work every twenty minutes or so. You can also write your text in Word or notepad or wherever you want and then copy it to the quiz.

If you have not finished the quiz when the DL comes, your open answers will be submitted automatically and the quiz closes.

Images

The proper way to include your image is to click the "Image" button in the toolbar of the text field and then choose "Browse repositories". In the repositories you can upload your own files. Even though you can just copy paste or drag an image in the text field and it may even be visible in your web browser, it will not be stored in your submission, so do not include the image that way.

If the "Image" button is not available in a quiz, but you think it should be, inform the course staff.

When you are adding an image to your answer, you need to give the image a description in the "Browse repositories" window. Otherwise the the system does not accept your image. The error message given because of a missing description is easy to miss. And remember to use a compatible file format. At least .jpg and .png work fine.

Multiple tries

Usually you have several tries for each question inside a quiz. You will loose points for each incorrect answer. The number of tries is visible in the top right corner of each question. The penalty for each wrong answer depends on the quiz and the question.

Sometimes you will get a feedback for correct/incorrect answer but often not.

Numerical answers

According to MyCourses administators, the decimal separator in the answers is defined only by your MyCourses language setting (visible on the top of the page). So dot (.) for English and comma (,) for Finnish and Swedish. I'm not so sure about this but that's the information I got.

Give the numerical answers in MyCourses with at least a precision of two decimals, not two two significant digits. Give your answer in this accuracy (unless otherwise instructed) regardless of the accuracy of the given variables. You can also be more precise so you do not have to care about rounding. In Matlab console, the results are by default rounded to some number of significant digits. You can give command "format long g" to show the results with more precision.

Turnitin

Turnitin originality check compares your essay texts to internet sources and other essay submissions. The system actually shows pretty clearly what was copied and where from. It is sometimes difficult not to copy from a really good source, however, you should read the source, process the data in your head, close the source and then write the info in your answer. According to Aalto rules, clearly copied submissions would have to be revised but since we publish model answers immediately after the DL, this is not really an option. Therefore, you will just not get any points for a clearly plagiarised answer.

Plagiarism

Co-operating with other students when doing the exercises is fine and sharing your knowledge to fellow students is encouraged. This does not include sharing the answers to the exercises, model files, result graphs or reports. If you co-operate with someone in doing the exercises, you still have to make your own calculations and build your own models.

When submitting essay answers to Turnitin, MyCourses automatically checks for copy-pasting text from internet or other sources. You can see the result of this originality check for your submission in MyCourses. If plagiarism is detected, the submission will not be graded, possible breaking of academic rules will be investigated and punished accordingly. All the originality checks will be interpreted by course staff. If you get a 15 % plagiarism result, it usually does not mean that you have copy pasted text. If you get a 40 % plagiarism result, it might be bad but not for sure. If you get over 50 % plagiarism results, there is usually a reason for that and it will be investigated.

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