Assignment and Evaluation Information

TTK4190 - Guidance and Control of Vehicles

Fall 2019

Key Information

This course uses a portfolio evaluation where 70% of your final grade is decided by a written exam, and the remaining 30% is decided by a midway exam. In addition, three separate computer assignments must be approved to get access to the final exam. The aircraft book by Beard and McLain covers the curriculum for the midway exam. The book by Fossen will be covered in the final exam. Note that some parts of the curriculum are common in both books so you may face topics from Beard and McLain on the final exam and vice versa.

The computer assignments are mandatory and need to be delivered before the deadline. Assignments delivered after the deadline will not be approved. Each assignment is evaluated independently and you need at least 60% of the assignment correct to get the approval. This is not particularly challenging if you try to answer all parts of the assignments. We are grading the assignments in a kind manner and many different solutions are usually accepted.

Even though the course uses a portfolio evaluation, you must pass the final exam to get the portfolio grade. In other words, you need to get a score above 41% on the final written exam to pass this course (even in a scenario where you have managed to get full score on the midway exam).

Further Information about the Computer Assignments

You are encouraged to do the computer assignments in groups of 2-4 people but can do them individually if that is preferred for some reason. You can choose the groups yourself and we would recommend keeping the same group throughout the semester. The grading will be equally severe if you do the work individually. Moreover, the learning outcome will probably be better if you can discuss the topics with someone else so we recommend doing the assignments with other people.

The assignments usually have theoretical parts with questions/deductions and parts where you need to do simulations in Matlab. You need to deliver a written report/document for every assignment that answers the questions and shows simulation results. It is not necessary to deliver Matlab/Simulink files, but we might ask you to show the files if you deliver some weird results. Thus, you do not have to think about making the code readable, but it must work and recreate the results in the report. You are strongly urged to write the report on your computer using your favorite editor (LaTeX is recommended), and you must deliver a PDF document in

the end. Answer every question in the assignment properly but remember that this is not a writing contest so delivering a report with a lot of unnecessary information is not going to help you get the approval. A report template for the first assignment will be published on Blackboard together with assignment 1 and might be helpful if you are new to LaTeX. Learning LaTeX can be very useful for when you need to write the master thesis later.

It is obviously forbidden to use files or reports delivered by students who have participated in the course before. Some parts of the assignments can be quite similar, but usually things/parameters are changed so it is easy to find answers copied from old assignments. Use the assignment guidance to get help from student assistants and remember that a perfect answer is never expected. Reasonable attempts are sufficient and will be approved.

Previously, the assignments were part of the final grade. Therefore, student assistants could not answer all questions since it influenced the grade. This year, however, student assistants are allowed to help you as much as possible and can help you with questions from both the assignments, problem sets (see below) and other questions related to the course.

Feedback from previous students reveals that people used a lot of time to write the report since it influenced the grade. The report should be readable, but it is not a contest in the English language. Therefore, write a decent report, but do not use five extra hours to identify spelling errors. Showing that you understand the topics and discussing the most relevant parts of the simulations are much more important. You can also show a draft of your report in the assignment guidance if you have questions about how the report should be formulated/structured.

Evaluation of Assignments

The computer assignments will either be graded as passed or failed. If you fail the assignment, you need to present/discuss the assignment with the teaching assistant, or you may need to deliver it again. Therefore, to reduce your own and our workload, it is much better to deliver a reasonable attempt and then it will most likely be approved even if you have errors in your report. Every participant in the group will get the same evaluation. We will try to give you some feedback on the assignments to let you know if things have been understood correctly or not.

Note that in many situations we will ask for specific figures, but it may be clever to add other figures if that sheds light on a specific issue. Therefore, you are expected to identify relevant results/issues from the problems and distinguish between important and not so important results.

Preliminary Timetable for the Assignments

The timetable below indicates the most likely dates for the assignments. They can be changed during the semester to fit better with the midway exam, final exam and so forth. We want to be finished with the assignments quite early to give you sufficient time before the final exam and reduce the workload at the end of the semester. Assignment 2 is divided into two parts, where the first part concerns the aircraft book and will be delivered before the midway exam. The second part has deadline after the midway exam.

- Assignment 1 will be published Friday the 30th of August. The deadline will be on Monday the 16th of September.
- Assignment 2 will probably be published about Friday the 20th of September and consists of two parts. The deadline for part one will most likely be Monday the 7th of October. This assignment covers topics from the aircraft book and will be relevant for the midway exam. Kalman filtering is not lectured until the 25th of October. For this reason, the second part of assignment 2 will probably have a deadline Monday the 4th of November.
- Assignment 3 will be published the 11th of October, before the deadline of assignment 2, with deadline Monday the 18th of November (2 weeks after part 2 of assignment 2 is handed in).

Assignment Guidance

Guidance and help with the assignments or other topics in the course are available on Mondays at 12:15-14:00 in auditorium KJL2 (Kjelhuset). Student assistants and (sometimes) the teaching assistant will be present to help you with questions. Assignment guidance is held every Monday during the semester unless otherwise stated on Blackboard. Usually, we will be there to help you with questions, but the teaching assistant will normally go through a possible solution for the assignments the first Monday after the deadline.

On Monday the 26th of August (in the exercise session), the teaching assistant will give an overview of the assignments and practical information regarding the exams. This will be between 12:15-13:00. Questions related to this document or other course related questions are answered then. Information about the midway exam will also be given. The guidance sessions will start Monday the 2th of September at 12:15-14:00 where you can get help with assignment 1. At least two sessions with assignment guidance are planned for every assignment. Note that the guidance hours the 26th of August are cancelled.

We will use the calendar on Blackboard and add important dates for the assignments there.

Problem sets

In addition to the mandatory computer assignments, voluntary problem sets related to the chapters in the curriculum will be posted on Blackboard during the semester. Solutions will also be posted and it may be very useful to do/look into these problem sets because they might be relevant for the final exam. The problem sets are related to the books and often with other questions than the one you experience in the assignments. The assignments focus on learning you to apply theory in practice and, therefore, some of the questions on the exam can be quite different. Thus, it is clever to study the problem sets (and old exams) to get an early understanding of how the questions on the exam are formulated/structured.