

# MATH4406 (Control Theory)

## Instructions for the Course Summary Assignment

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This final assignment of the course does not involve any problem solving but rather a summarizing writing task. The goal is to write a 3-5 page paper that briefly, yet precisely, describes some of the mathematical problems arising in control and some of their methods of solution. It is important that your paper includes at least 80% of the problems described and solved during this course as well as touches on the problems outlined in the final unit (11), “summary and outlook”.

You can use the course outline that we followed (units 1-11) as a general path for your description. Alternatively you may begin by describing state space systems or alternatively you can base your paper on some hypothetical or real plant example. Any other way that you choose is also fine.

The paper needs to be self-contained in that it assumes no prior knowledge of “control theory”. Nevertheless, you can assume that your reader knows all about linear algebra, analysis, probability and basic optimization theory. Further, the paper should not mention the control course and needs to appear like a self contained document. In this respect, you should reference some sources. An easy (and acceptable) choice would be one or more of the books suggested in this course.

The grading of this assignment is broken up as follows:

- **20% Precision and flawlessness:** Punctuation, English, consistency and having a general professional appearance (as though it was in a scientific journal).
- **30% Mathematical and technical correctness:** All statements (summaries of results) need to be precise and self contained within the paper (terms need to be defined - even if this is done very briefly).
- **30% Scope:** As described above, the requirement is that 80% of the general problems described and solved in the scope are (briefly) summarized. In addition, at least one of the items introduced in unit (11) needs to be mentioned (Adaptive Control, Robust Control, Non-linear control).
- **20% Originality and touch:** Is your paper written in a smooth and original form? If so, even a seasoned control theorist would enjoy reading it as it would give a slightly different viewpoint on the field. Further, non-specialists or researchers that do not know anything about control theory will also find it useful.