Assignment 1
Optimal flight with a glider

Assignment practicalities
MS-E2133 Systems Analysis Laboratory II

Working in pairs

- The assignments on this course are completed in pairs
  - If necessary, there will be one group of three
- Grading is done in pairs, i.e., the same grade for both students
- Preferably work with the same pair throughout the course
- Discuss scheduling and work distribution with your pair
  - Both students should participate in both assignments
- Guidelines for forming the pairs at the end of this lecture

Completing the assignment

- Explore and study the topic of the assignment, brush up and revise earlier studies
  - https://mycourses.aalto.fi/course/view.php?id=25725 (Dynamic optimization)
  - https://mycourses.aalto.fi/course/view.php?id=25721 (Nonlinear optimization)
  - https://www.grc.nasa.gov/WWW/K-12/airplane/glider.html (Gliders – NASA)

- Read and familiarize yourself with the assignment instructions and supplementary materials

Schedule

Date	Event
Wednesday 9.9.2020	Introductory lecture
Friday 23.10.2020	DL for reports at 18:00

- Reserve enough time to complete the assignment
  - According to feedback from previous years, the assignment is interesting but laborious
- **Start working on the assignment in time!**

Assistant's reception hours

- Via Zoom on Wednesdays at 14:15 – (16:00)
  - https://aalto.zoom.us/j/65019324844 (same link every week)
  - Individual guidance for each group
    - "Waiting room" feature of Zoom is activated for the meeting
    - Assistant will pick participants in the order of arrival – wait for your turn in the queue
  - If nobody shows up during the first 30 minutes, the assistant may leave

- At other times by appointment
- E-mail (janne.lahti@aalto.fi)
- Any problems related to the course
  - Questions about the assignment instructions
  - Problems related to MATLAB

MATLAB (& Simulink)

- Implementations using MATLAB
- If you don't have MATLAB installed:
  - Instructions for download and installation given on the MyCourses page of this course
  - When installing, install also at least the following toolboxes/add-ons (needed for the assignments of this course):
    - Optimization toolbox
    - Simulink
  - Installation requires at least 10 GB of free space
- Preferably update existing MATLAB installations to the latest release

Writing the report

- Answer **all the questions** given in the assignment instructions
    - Many short questions, read the instructions carefully
- Justify your answers
    - Show that you understand the problem and the solution
- Remember to comment on all figures
- Return the project work via MyCourses
    - The complete report (.pdf)
    - All MATLAB-files (.zip)
        - All the relevant code should be run when the flight_main.m and tflight_main.m scripts are executed

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Grading

- All tasks must be completed and questions answered
  - Each task is graded separately, but extra points can be awarded for particularly good answers
- All required figures must be included
- Demonstrate understanding
- The assignment is graded based on the first submitted report
  - Significant flaws or shortcomings must be corrected before passing the course
- The grade for the course is determined based on the average of the two assignments

Forming the pairs

- You are free to choose your pair
- Report to the assistant one of the following:
  - You know who you are working with (enough that one of you sends a message with both names)
  - You don't have a pair but would like to have one, assistant will help you to find a pair
  - You would like to work alone

➔ Send a message to janne.lahti@aalto.fi

- Deadline **14.9.2020**