Numerical Methods in Aeronautical Engineering
Instructions for submitting computational homework assignments

In order to avoid any misunderstandings about the requirements when submitting your computational homework assignments please read the following carefully.

Each computational assignment must have the following structure:

(1) **An abstract**. You should write the abstract AFTER you have completed writing the entire report. The abstract consists of a few lines of text summarizing the work in terms of the problem solved, the numerical methods employed to solve the problem and the main results that were obtained.
(2) **Contents**. The pages of the report, Tables and Figures should all be numbered. The Contents page should include the sections of the report, subsections and any tables or graphs (i.e. on which page of the report each of the aforementioned are to be found).
(3) **The physical problem**. This section should contain a short description of the physical problem being solved.
(4) **The mathematical model.** This section should contain the mathematical equations (differential and/or other) used to solve the physical problem, the significance of the equations, initial and/or boundary conditions, notation &c.
(5) **The numerical methods.** A theoretical explanation of the all the numerical methods you used (e.g. integration, interpolation, iterative methods &c.) should be given. *There is no need to develop the methods.* The mathematical formulation of each method should be given. Other details such as the order of the methods, their accuracy, implicit or explicit &c. should all be included. Also, explain how you arrived at the integration step utilized and how you chose any other numerical parameters that are relevant.
(6) **Influence of the numerical methods.** This section should contain a thorough description of the way in which the numerical parameters of the methods used impacted on the numerical results. Examples of such parameters: mesh size, convergence criterion &c.
(7) **Results.** You should give details of all the results computed and try to give a physical description of the behavior of what you found. Graphs never explain themselves! Make sure that all graphs have titles, axes legends, consistent units and that they are clear. It is very important to number the graphs and to refer to this numbering in your discussion of the results. Graphs that are related should appear on the same page or, if possible, within the same frame.
(8) **Summary and conclusion** A brief summary of the main results, numerical and qualitative, should be provided, as well as conclusions about your choice of numerical methods, comments about the work, suggestions for future work &c.
(9) **Listing of the computer program.** The program should be written modularly. Each section of the program should contain a comment about what that sections function is. The more comments you include the easier it is for the reader to follow the program. You can write the program in whatever computing language you want. You MUST write the numerical methods yourself. Do NOT use ready-made routines (e.g. MATLAB routines for numerical integration &c.)

The entire report must be typed using WORD and, at most, a 12-point font and should not exceed 25 printed pages. Please note that each section of your report receives a grade. Use the Cover Page for Computational Assignments 2025 on the course's site and include all your relevant details.

Please submit your report together with your executable code by uploading it to the course's MOODLE site. In addition, send it by email as an attachment together with the executable code you wrote, to me (aer9801@technion.ac.il) .