Term Project

The Term Project will contribute towards *at least* 10 marks out of the 20 marks from Teacher's Assessment.

Important deadline
March. 3 (Tuesday): Formation of groups
March 20 (Monday): Submission of initial term project idea.
March 30 (Monday): Finalization of term project idea → Deadline extended to 7 PM, May 31.
April 17 (Friday): Submission of term project → Deadline extended to 7 PM, June 15.

Instructions:
Regarding formation of groups:

- Each group will consist of 3 members. The members of a group can be a mixture from the B.Tech, the Dual Degree, and the M.Tech. students.

- Since the total number of students is not a perfect multiple of 3, it is possible that one or two groups may consist of 2 or 4 members. In any case, if a group has fewer or more than 3 members for any reason, it has to be notified by March 2 properly so that the finalization of the group formation can be done smoothly by March 3.

- Please note carefully that at the time of final term project submission, a short description of who has done what has to be submitted. So keep that in mind while forming the groups.

- One member of the group should email me (Jeevan) cc'ing the two TAs (Amrita and Prasanna) with the names of the group members by 7 PM, March 3. It is critically important that the two TA's are cc'ed to avoid some of the serious problems that were faced last semester during Applied Elasticity.

Regarding formulating the project idea:

- The project idea should be the implementation of a problem using a computer algebra system or through numerical methods. In order that the evaluation of the projects can be done in a smooth and time-effective manner, implementations done only through MATLAB or Jupyter Notebook will be accepted.

- Note that using numerical methods does not mean that the method has to be coded up from scratch. It is perfectly acceptable to utilize the in-built utilities of MATLAB or Python (NumPy and SciPy).

- Avoid plagiarism at all costs! If you read up about a problem somewhere and decide to work on it, cite the source. If you come across a particular implementation of a problem and decide to present a variant of it as your project idea, cite the source. **Plagiarism is the academic equivalent of stealing and will be penalized summarily with zero points.**

- While coming up with the project idea, keep in mind the following:

    - Is it too simple and probably not worth 10 points of the Teacher's Assessment? Then, think of something more challenging.

    - Is it too difficult and probably much more than 10 points? Then, think of something simpler.

- Is the implementation and the subsequent report writing practically possible within a span of about 2 to 3 weeks? (Note the important dates mentioned at the top of this document)
- Is the project idea such that all group members can contribute properly to the final implementation? (Note again that at the time of final term project submission, a short description of who has done what has to be submitted)

Instructions regarding final project submission:

- The final project will be evaluated based on both the description of the project and the implementation through code. The description part covers how the problem is introduced, the formulation method described, the results presented and discussed, and the references included. Simply writing the code with zero or poor description will be awarded poor marks.

- Be extremely careful against plagiarism and cite your sources.

- In Jupyter Notebook there is provision to write proper description using Markdown+LaTeX. So, groups who are using Jupyter Notebook should use this provision to introduce their problem, present the mathematical formulation with proper equations, and present the results with proper discussions. Similar provision is available in MATLAB and should be appropriately utilized.

- If any group feels that their problem description requires a separate report, then by all means do prepare a report separately. This term project report must again cover the important sections on problem introduction, formulation method, results and discussions, and references. This document must be typed in font size 11 or 12 with reasonable margins, page numbers etc. VERY IMPORTANT: In this separate term project report, there should be a description of which part of the formulation is implemented in which input cell numbers / line numbers in the code. Simultaneously, the code must be appropriately commented throughout.

- There is no upper or lower limit to the number of pages in the term project report or to the length of the description within Jupyter notebook or MATLAB. However, an all-out effort must be made to present a full description and to discuss the important details in a clear and coherent manner. Where necessary, a descriptive figure or schematic with proper caption and labelling should be included.

- Whether writing the description through Jupyter Notebook or through MATLAB or through a separate document, every group must ensure that their group number is clearly mentioned, the names of all group members are included, and a proper title of the project is given.

- Figures of line plots, surface plots etc. should be of professional quality. The axes must be properly labelled including SI units where necessary. If there are more than one plots in a figure box, the different plots should be distinguished from each other through different colours and line-styles and appropriate legends should be provided. Non-adherence to these basic rules will be severely penalized.

- The final code (.ipynb file or .m file) and, if written, the term project report (strictly as a .pdf file) must be submitted via email to me (Jeevan) and cc'ed to the two TAs, Amrita and Prasanna. The email subject must be: "`Term Project Submission: Group #`". The body of the email must include the Term project title, the names and roll numbers of the group members, and a list of the files attached (in addition to the actual attachments).

- If some group feels that it is more convenient to upload all their files to GitHub, then they are most welcome to do so. However, in this case, a proper README file must be present which describes all the important details: Group number, Group member names and roll numbers, Title of the Project, and a meaningful description of which code/file does what. Look at the GitHub page for this course as an example).

- The final project submission email must be sent by 7 PM, June 15, 2020.