INDU6310 - 2TT - Applied Probability and Statistics for Engineers

Fall, 2019

PROJECT DESCRIPTION

September 6, 2019

- 1. All projects are group projects conducted by student teams.
- If you plan to make your own team, email the instructor at <u>mychen@encs.concordia.ca</u> the names of the students (and Student IDs) in the project team by Friday, September 27, 2019. A team can have 4 to 6 students. Consult the instructor if your team has less than 4 or more than 6 members.
- 3. If you do not make your own team, you will be assigned to a project team by the instructor. Please check the course website for announcement later.
- 4. Each team identifies a proper project. The project should be related to engineering applications of probability, data analysis, statistical inferences, regression, experimental design and other statistics tools related to materials discussed in class. The following are some sample project areas you may consider if data are available or can be collected.
 - a. Consumers have reported various quality issues related to the functions, performance, fuel efficiency, etc, on certain models of passenger cars. Use statistical tools to identify the main problems and compare the quality of different models.
 - b. Data of certain Key Performance Indices (KPIs) related to a manufacturing process have been collected. Mechanical engineers believe the less-than-expected performance of the process is due to particular reasons such as temperature control, operator skills, etc. Use statistical tools to verify or dispute the identified reasons.
 - c. Polls were conducted before a Federal or Provincial election was held. After the election took place, the actual result may show some of the polls were more accurate than others. Use statistical tools to verify or dispute such argument.
 - *d.* Collect relevant data and use statistical tools to verify consumer behaviors influenced by social media.
- 5. A project can be for practical applications and has the components of data collection, data analysis, problem solving using engineering statistics, result analysis and further development. The project should be "open-ended" with various scenario analysis.
- 6. The project can be based on manufacturing, services or other applications.
- 7. Based on the nature of the course, the project should involve sufficient amount of data. These data can be collected from real world applications. Alternatively, some of the data may be computer-generated with the parameters based on practice.

- 8. The final project report should have 15 to 20 pages. It should be in the format of an engineering report and should typically include:
 - a. Abstract
 - b. Introduction
 - c. Problem description
 - d. Assumptions and limitations
 - e. Data analysis
 - f. Statistical analysis
 - g. Numerical results
 - h. Conclusions or summery
 - i. References
- 9. The cover page of the project report must contain
 - The title of the project
 - The Team Number (assigned by the instructor)
 - Names of all team members and their signatures
- 10. Each project report may contain one page of explanations on contributions made by each team member. This page, if presented, should also be signed by all team members.
- 11. Timeline
 - Friday, September 27, 2019: if you are making your own team, submit (by email) the list of you team members.
 - Friday October 4, 2019: submit a softcopy or hardcopy of Proposal (1 to 2 pages) with project title and names of students.
 - Friday, October 25, 2019: submit a softcopy or hardcopy of Progress Report (2 to 3 pages).
 - Friday, November 29, 2019: submit the **hardcopy** of the Final Project Report.
- 12. Presentation
 - Project presentations will take place from 5:45pm to 8:30pm on Tuesday, November 26, 2019, the last day of class.
 - Each team will have about 12 to 15 minutes for a group presentation.
 - Each team member is expected to present a portion of the project.

Consult the instructor if you have any questions