

**Description of Course Project:**

As a part of the assigned work for this course, you are required to conduct a course project. The purpose of this project is to encourage you to explore an avenue related to, but not limited to, the material in the class. You may need to read additional literature and broaden your knowledge base. The project will enable you to gain hands-on experience about developing methods for quality control and anomaly detection.

The project is based on a set of data collected from a manufacturing process, in which both in-control and out-of-control data are present. You are asked to develop a method or a procedure to identify the data falling in the respective categories, i.e., which ones are in-control and which ones out of control. This is amounted to a Phase I analysis, whose purpose to isolate the in-control data for estimating the in-control distribution parameters so that a monitoring scheme can be set up for future missions.

**Description of the dataset**

(a) This is a manufacturing related dataset, and it has a total of 552 data records.

(b) Each row is a data record. Each data record contains 209 values.

(c) The physical meaning of each value is omitted.

**Teaming:** For on-campus students, a team should include two students. For DL students, each student can be his/her own team. Multiple-person team is allowed but this should be discussed with the instructor before team formation.

**Report and Presentation:** Each team should submit one written report and make a set of Power Point slides as if you were to give a presentation (no actual presentation).

**Format of your report:** You need to start with a single-page executive summary (no more than one page) to state what you have done and the insights you gained from doing the project, that is, *anything* that you feel you have a better understanding because of doing this project. The main text of the report should clearly present your approaches, justification, results, and conclusion. There is no page limit for the final report. Nevertheless, keep in mind that the grade is given upon the quality instead of the length of your report. Also, please do NOT include any code or pseudo-code in your report. Your writing style of the report should mirror that of articles published in *IIE Transactions*.

**Format of your Power Point slides:** Your set of slides will start with a title slide, which includes the title of your project and the team members. The total number of slides, including the title slide, MUST be equal to, or less than, **ten (10)**. Inclusion of each EXTRA slide will receive one point reduction in the project score, until the project score reaches zero. Suppose that you have 30 slides. It gives you – 20 points. Even if your team has done everything else perfectly, gaining +10 points, your project score will still be zero (0).

## Timeline:

**Formation of team:** The list of students in your team. Due on October 27.

**Report/Slides:** Due by 5 PM on December 6.

## Submission:

- Both the written report and the set of slides are due by **5PM on December 6**.
- **Electronic submission (to my email) is required**, and the electronic time stamp will be used to determine whether the report is submitted on time.
- **You must submit both report and presentation in PDF files.** If you used the MS WORD, or MS Power Point, or other word processors, please make sure to convert your report and your presentation into PDF format before submission.
- You need to submit exactly two files, both in PDF format. No more and no less.
- A late submission will be penalized 0.5 points per hour it is late. The time is counted starting from the due date and time. A complete submission is defined as submitting BOTH files in the REQUIRED format. Anything other than a complete submission is considered “late submission.”

**Grading:** A total of 10 points are allocated to this project. Grading depends on your report and slides combined. Emphasis will be given to the sophistication of your methodology as demonstrated in your reasoning/arguments and results (6 points).

Please note that *sophistication* of your methodology does not equate *complexity* of a method. If you believe a simple method will do the best for answering the questions raised, it is Okay to use a simple method but you still need to provide convincing arguments and results to support your claim. Other considerations for grading include the organization and clarity of your report and slides (2 points for report and 2 points for slides).

## Mandatory point deductions:

- 1 per extra slide beyond ten (10);
- 1 per extra file submitted;
- 1 executive summary longer than one page;
- 1 submission of report not in PDF format;
- 1 submission of presentation not in PDF format;
- 0.5 per hour the report/presentation is late;