

CONCORDIA UNIVERSITY

DEPARTMENT OF MECHANICAL, INDUSTRIAL & AEROSPACE ENGINEERING

INDU 6310/2-TT Applied Probability and Statistics for Engineers (Credits: 4.0)

Fall 2019

Instructor: Dr. M.Chen, Office: EV004-169, Phone: 3134, Email:mychen@encs.concordia.ca

Classes: Tuesday, 5:45 - 8:15pm

Class Room: FG B030

Office Hours: Wednesday, 1:00-3:00pm, or by appointment

Course Webpage: <http://users.encs.concordia.ca/~mychen/mychen.html#courses>

Text Book: **Applied Statistics and Probability for Engineers, Montgomery and Runger, 6th Edition, Wiley, 2014**

References: Probability and Statistics for Engineers, Miller and Freund, 9th Edition, Pearson, 2016

Course Description: This course introduces probability and statistics concepts frequently used in engineering applications. Probability theory, randomness, conditional probability, joint probability, independence and probability distributions are covered. Data collection, sampling, confidence intervals, hypothesis formulation, errors, estimation topics are given. Linear and non-linear regression, analysis of residuals and remedial measures, transformation of data, multiple, polynomial and weighted regression, model selection techniques, joint confidence regions concepts are taught with relevant industry applications. Statistical packages are introduced. A project is required.

Learning Objectives: To provide the student with knowledge of probability and statistics focusing on engineering applications. To introduce fundamental and practical statistical tools and process improvement methods as they are used in different application areas of manufacturing, services and other sectors. For student to understand the importance of data and statistics related to industrial, manufacturing and general engineering.

Syllabus

	Lecture Topics	Est. Number of Lectures	Reference To Text
1	Introduction	1	1
2	Probability	1	2
3	Probability Distributions	2	3,4,5
4	General Statistics	2	6,7
5	Statistical Intervals, Tests of Hypotheses	2	8,9
6	Single and multiple Linear Regressions	2	11,12
7	Introduction to other engineering statistics topics Design of Experiments Statistical Quality Control	2	13,14,15
8	Project Presentations	1	

Total		13	
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Grading:

Assignments	5%
In class quizzes	20% (counting the best 4 out of 5 quizzes)
Project	15%
Final Exam	60%
Total	100%

Note: Quizzes will be announced one week before they take place

Passing Requirement:

- 50% or higher of the final exam paper
- 60% or higher of the total mark
- Must participate and complete the group project

Project:

Group project should be conducted for manufacturing or service process design and analysis, for system analysis and process improvement. It should be based on sufficient amount of collected data. More details will be given within the first 3 weeks of class.

Table of conversion (subject to adjustment) from numerical marks to alphabetical grades

0-59	60-66	67-71	72-76	76-80	81-85	86-90	91-100
F	C	B-	B	B+	A-	A	A+