City University of Hong Kong

Information on a Course
offered by Department of Systems Engineering and Engineering Management
with effect from Semester B in 2011 / 2012

Part I

Course Title: **Statistical Modeling and Design of Experiments**

Course Code: **SEEM8011**

Course Duration: **One Semester**

No. of Credit Units: **3**

Level: **R8**

Medium of Instruction: **English**

Prerequisites: **Nil**

Precursors: **Knowledge in Basic Probability and Statistics**

Equivalent Courses: **MEEM8011/MEEM8011D/SEEM8011D**
Statistical Modeling and Design of Experiments

Exclusive Courses: **Nil**

Note: Students may repeat a course, or an equivalent course, to improve course grade only if the previous course grade obtained is C or below.

Part II

1. Course Aims:

This course aims to develop students' abilities to understand the theory and application methods on statistical modeling of observational data and design of experiment data, including linear models, regression models, and analysis of variance models.

2. Course Intended Learning Outcomes (CILOs):

Upon successful completion of this course, students should be able to:

No.	CILOs	Weighting* (if applicable)
1.	Develop a familiarity with basic statistical estimation and hypothesis testing ideas and methods	1
2.	Understand simple and multiple linear regression models and corresponding inference methods for process characterization and prediction.	3
3.	Understand motivations and needs for design of experiments in manufacturing and other applications.	1
4.	Understand design and analysis of experiments methods to characterize and improve systems and processes.	3
5.	Understand and apply regression methods and design of experiment methods to analyze and solve real life problems and applications.	2

***Weighting ranging from 1,2,3 to indicate the relative level of importance in an ascending order.**

3. Teaching and learning Activities (TLAs)

Activity Type	Timetabled Activity (Hours per week)
Lecture/Tutorial/Laboratory Mix	Lecture (3)

TLA / ILO	Lecture	Total hours
CILO 1	6	6
CILO 2	12	12
CILO 3	3	3
CILO 4	12	12
CILO 5	6	6
Total	**39**	**39**

4. Assessment Tasks/Activities (ATs)

Examination duration: Nil
Percentage of coursework, examination, etc.: 100% continuous assessment
(25 % Coursework; 35% Midterm Test; 40% Group Project)

Detailed breakdown is given in the following table:

CILO No.	Group Work	Individual Coursework	Test	Overall Weighting
CILO 1	-	5	-	5
CILO 2	10	10	15	35
CILO 3	10	-	5	15
CILO 4	10	10	15	35
CILO 5	10	-	-	10
Total (%)	**40%**	**25%**	**35%**	**100%**

5. Grading of Student Achievement:

Grading Pattern: Standard (A+AA-…..F)

Grade Table

Letter Grade	**Grade Point**	**Grade Definitions**
A+ A A-	4.3 4.0 3.7	Excellent
B+ B B-	3.3 3.0 2.7	Good
C+ C C-	2.3 2.0 1.7	Adequate
D	1.0	Marginal
F	0.0	Failure
P	-	Pass

Please refer to the SGS's website for details.

Part III

Keyword Syllabus:

- Statistical estimation and hypothesis testing
- Data collection, data analysis, and model prediction
- Regression modeling and analysis
- Design and analysis of Experiments
- Analysis of Variance modeling
- Process estimation and prediction
- Process characterization and improvement
- Robust design and parameter design

Recommended Reading:

Essential Reading:
Applied Linear Statistical Models by Kutner, Nachtsheim, Neter, and Li, 5th edition, McGraw Hill

Lecture notes

Supplementary Reading:

Nil