

TEMPLATE FOR COURSE SPECIFICATION(Statistics and Measurement)

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Elementary introduction to statistical reasoning including data presentation ,central tendency, and dispersion measures,correlation ,introduction to probability theory,test to probability distribution, introduction and definition of measurement ,estimation of errors and brief presentation for important instruments to measure temperature ,pressure,level and flow rate.

1. Teaching Institution	University of Technology
2. University Department/Centre	Chemical Engineering Department
3. Course title/code	CE/233
4. Programmer(s) to which it contributes	BE.3208,PT.321,ME/134
5. Modes of Attendance offered	Full
6. Semester/Year	2 semester/year
7. Number of hours tuition (total)	1 theortical hour/1 tetorial hour/1 practical hour during one semester.
8. Date of production/revision of this Specification	25/9/2015
9. Aims of the Course:	
1. Teaching students how to use statistical methods.	
2. Application of statistical methods in description and analysis of data.	
3. Use of statistics in solving different problems.	
4. Knowledge of basic principles of measurement instruments .	

10• Learning Outcomes, Teaching ,Learning and Assessment Method
A- Knowledge and Understanding A1.Illustrate the statistical terms and basic principles of statistics . A2.Explain the data representation methods in tables or graphs. A3.Explain methods of measurement of central tendency and dispersion. A4.Explain the correlation and regression concept of data.
B. Subject-specific skills B1.Use the methods for summerising data for a specified problem. B2.Evaluate the different statistical measures from central and dispersion measures and correlation,regression data. B3.Proposes a group of hypothetical solutions for a problem under study.
Teaching and Learning Methods
Lectures, Tutorials , Example Classes, Weekly homework problems.
Assessment methods
Midterm exams , Final exam , Quizzes, Weekly homework, Team and homework problems , partial test.
C. Thinking Skills C1. Presume a group of data from his own mind for a specific problem. C2. Detect the extent of grouping or dispersion data from statistical measures. C3.Decide the extent of hypothetical data validity.

D. General and Transferable Skills (other skills relevant to employability and personal development).

D1. Participate in his audible opinion in group discussions.

D2. Benefiting from people with different abilities.

D3. Use of internet in references research and communication.

11. Course Structure

Week	Hour	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st semester					
1	2	1. Students comprehend basic concepts of statistics.	Introduction, statistics population, descriptive and inductive statistics.	Lectures.	Oral questions.
2	2	Ability of student to change data to tables.	Frequency distribution table, types of frequency.	Lectures and solving examples.	Quiz.
3	2	Student's skill of dealing with groups of data.	Tutorial of frequency distribution table.	Lectures and tutorials.	
4	2	Student's comprehension of different graphical	Graphical representation of frequency distribution table.	Lectures.	oral questions.
5	2	Conversion of frequency distribution table to different shapes of graphs.	Tutorial in graphical representation.	Tutorials.	Quiz.
6	2	Knowledge of statistical measures.	Measures of central tendency.	Lectures and solving examples.	Oral questions.

7	2	Student's ability to distinguish between different statistical measures.	Measures of dispersion.	Lectures and solving examples.	Oral questions.
8	2	Differentiation between statistical measures.	Tutorials in centre and dispersion measures.	Lectures and tutorials.	Quiz.
9	2	Student's ability to find the constants of an equation with two variables.	Curve fitting, least squares method, variance and correlation coefficient.	Lectures and solving examples.	Oral questions.
10	2	Student's ability to find the best equation to describe the data.	Tutorial of the least square methods.	Tutorial.	Solving tutorial and a quiz.
11	2	Determination of the constants of an equation with three variables.	Multiple and partial correlation, normal equations for the least square regression, coefficient of correlation.	Lectures and solving examples.	Oral questions.
12	2	The ability to differentiate between the solving methods of two variables or more.	Tutorial in partial correlation.	Tutorial.	Partial test.
13	2	Comprehension of the probability definition.	Probability distribution, continuous and discrete dist., normal dist.	Lectures and solving examples.	Oral questions.
14	2	Student's ability of application of normal distribution.	Tutorial in normal distribution.	Tutorials.	Quiz.
15	2	Knowledge of discrete probability concepts.	Binomial distribution and Poisson distribution.	Lectures and solving examples.	Oral questions.

2 nd semester					
16	2	Distinguish between different probability distribution.	Tutorial of probability distribution.	Tutorial.	Partial test.
17	2	Student's ability of using Chi square to test hypothesis.	The chi-square test, test of hypothesis.	Lectures and solving examples.	Quiz.
18	2	Using of Chi square test for goodness of probability distribution.	Chi square test for goodness of fit and independence test.	Lectures and solving examples.	Oral questions.
19	2	Distinguish between the different uses of Chi square.	Tutorial in Chi square.	Tutorials.	Quiz.
20	2	Student's ability of testing the means.	Comparison between three or more of the means. Anova test.	Lectures and solving examples.	Oral questions.
21	2	The use of Anova test and F test.	Tutorial in Anova test.	Homework.	Quiz.
22	2	Knowledge of basic principles of measurement's science.	Absolute and relative measurement and classification of measurements.	Lectures.	Oral questions.
23	2	Student's ability of error calculation.	Types of error and propagation of error.	Lectures.	Homework.
24	2	Student's familiarity of instrument classification.	Methods of instrument classification.	Lectures.	Oral questions.
25	2	Student's ability to distinguish between different types of manometers.	Pressure measurement by balancing against a column of liquid of a known density.	Lectures.	Oral questions.
26	2	Knowledge of some instruments that	Pressure measurement by balancing against the stress in an elastic	Lectures.	Oral questions and a quiz.

		depend on stress in an elastic medium.	medium.		
27	2	Familiarity of expansion thermometer's concept.	Temperature measurements, expansion thermometers.	Lectures.	Partial test.
28	2	Knowledge of electrical methods of temperature measurement.	Electrical methods, thermo couples, radiation pyrometers.	Lectures.	Oral questions.
29	2	Student's ability to distinguish between direct and indirect methods of level measurement.	Measurement of level, direct methods pressure operated methods.	Lectures.	Oral questions.
30	2	Knowledge of flow measurement methods of liquids and gases.	Measurement of flow, quantity, meters for liquids, differential pressure methods.	Lectures.	Partial test.