Form 2B

Information on a Course
offered by Department of SEEM
with effect from Semester A in 2014/2015

Part I

Course Title: **Quality and Reliability Engineering**

Course Code: **SEEM6043**

Course Duration: **One Semester**

No. of Credit Units: **3**

Level: **P6**

Prerequisites: **Nil**

Precursors: **Nil**

Equivalent Courses: **NA**

Exclusive Courses: **NA**

Part II

1. Course Aims:

The aim of this course is to provide students with a basic understanding of the approaches and techniques to assess and improve process and/or product quality and reliability. The objectives are to introduce the principles and techniques of Statistical Quality Control and their practical uses in product and/or process design and monitoring; and the basic concepts and techniques of modern reliability engineering tools.

2. Course Intended Learning Outcomes (CILOs)

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

No	CILOs	Level of importance
1.	**Beware of** some basic techniques for quality improvement, and fundamental knowledge of statistics and probability.	**1**
2.	**Apply** control charts to analyze and improve the process quality.	**3**
3.	**Design** a simple sampling plan and its OC curve for effectiveness analysis.	**2**
4.	**Acquire** basic knowledge of reliability for the system reliability calculation and the model calculation.	**2**
5.	**Acquire** basic knowledge of the experimental design with emphasis to factorial design matrix and Taguchi loss function	**2**

3. Teaching and learning Activities (TLAs)

(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)

Activity Type	Timetabled Activity (Hours per week)
Lecture/Tutorial/Laboratory Mix	Lecture/Tutorial (3) and Consultation (1 hour/week)

TLAs	Large Class Activities (Lecture / tutorial)	Small Class Activities	Total hours
CILO 1	5		5
CILO 2	16	3	19
CILO 3	6	1	7
CILO 4	6	1	7
CILO 5	6	2	8
Total (hrs)	**39**	**7**	**46**

4. Assessment Tasks/Activities

(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

ATs	Examination (3 hours)	Course work	Total (%)
CILO 1	5	5	10
CILO 2	15	25	40
CILO 3	10	5	15
CILO 4	10	5	15
CILO 5	10	10	20
Total (%)	**50**	**50**	**100**

5. Grading of Student Achievement: Refer to Grading of Courses in the Academic Regulations (Attachment) and to the Explanatory Notes.

Examination and course work will be numerically marked and grades awarded accordingly. Overall, the course work weights about 50% and examination weights about 50% of the total mark. The course work includes two assignments.

Part III

Keyword Syllabus:

- Quality concepts and basic techniques for quality improvement;
- Basic statistics and probabilities for quality and reliability;
- Variable control chart;
- Process capability analysis;
- Attribute control chart;
- Acceptance sampling;
- System reliability and reliability model;
- Experimental design and analysis;
- Taguchi loss function and design;

Recommended Reading:

- Dale H. Besterfield, Quality Control, seventh edition, Prentice Hall, 2004
- Lecture notes

Online Resources:

- Lecture notes are provided via University computer network.