

**Document 3: Mapping the course contents with the learning outcomes, CoT graduate attributes and student-centered teaching approaches.**

DAS DELP FORM 004



**DEPARTMENT OF APPLIED SCIENCES**  
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**DELIVERY PLAN - January 2014 (Sem 2, 2013-2014)**

<b>Course Title / Code</b>	Quality Assurance & Quality Control / ASAC 3341	<b>Prerequisite</b>	
<b>Lecturer</b>	Dr. Maximo ROGER Asuncion Pua (MRP)	<b>Office Hours</b>	1:00 – 2:00 Sunday 10 – 11 Mon., Wed. and Thurs.
<b>Section</b>	1 and 2	<b>Time</b>	<b>Theory</b> <b>Section 1</b> = 8 – 9 Mon. and Wed (M309) <b>Section 2</b> = 3 – 4 Mon. and Wed. (M309) <b>Practical</b> <b>Section 1</b> = 8 – 10 Sun. (M311) <b>Section 2</b> = 12 – 2 Thurs. (M213)
<b>Material</b>	Handouts	<b>References</b>	- Howard S. Gitlow, Alan J. Oppenheim, Rosa Oppenheim, and David M. Levine, 2005, “ <b>Quality Management</b> ”, 3 <sup>rd</sup> ed., McGraw-Hill international edition, Singapore. - J. M. Juran and Frank M. Gryna, 1993, “ <b>Quality Planning and Analysis</b> ”, 3 <sup>rd</sup> ed., McGraw-Hill, Inc., Singapore.

**Course Description**

This course is designed to introduce the concepts of quality assurance systems to the students and explain their applications to familiar situations while considering related statistical methods. It also introduces to the students the application of quality processes and procedures in different industries and their implementation.

**Objectives & Outcomes of the Course**

Course Objectives	Learning Outcomes
The course should enable the student to:	The students should be able to:

Course Objectives	Learning Outcomes
<p>Understand the principles and practices of quality systems.</p> <p>Apply the tools of quality assurance and management procedures which can lead to an effective quality organization or a process improvement.</p> <p>Understand the: a) statistical methods used in quality control, b) process capability, c) discrete and continuous data for specific examples.</p> <p>Understand the concepts of control charts and sampling plans and their application in the quality assurance of industries.</p> <p>Understand some quality approaches and their application.</p> <p>Apply the concepts and principles of quality assurance and quality control in the management of science laboratories</p>	<ol style="list-style-type: none"> <li>1. Use process flow charts, Pareto analysis to investigate a familiar industrial process from local industry.</li> <li>2. Identify the critical control points in a selected industrial process and investigate the management structures which can lead to the process improvement.</li> <li>3. Outline the principles underlying a quality system and design structures for familiar operations.</li> <li>4. Illustrate the economic benefits of quality assurance and quality control in selected example from the local industry.</li> <li>5. Examine and use statistical methods in quality control.</li> <li>6. Define the terms, specification, tolerance, process variation, assignable variation, process capability, in-control and out-of-control.</li> <li>7. Explain how statistical techniques can be used in the control of a selected process and identify the consumer's and producer's risk.</li> <li>8. Choose simple quality procedures for a selected process from the local industry.</li> <li>9. Explain the process capability for specific examples.</li> <li>10. Explain PDCA and ISO as an approach to quality assurance and quality control</li> <li>11. Explain the use and importance of quality assurance and quality control in an analytical chemistry laboratory</li> <li>12. Describe how to validate analytical method</li> </ol>

College Graduate Attribute	Graduate Attributes Covered by the Course (Please Tick)
1. Are well disciplined and committed to hard work and a high standard of productivity.	✓
2. Are able to apply the knowledge and skills to a diverse and competitive work environment.	✓
3. Are able to think critically, analyze and solve problems.	✓
4. Have a high degree of competence in using information and communication technology.	✓
5. Are professionally competent and up-to-date in their	✓

College Graduate Attribute	Graduate Attributes Covered by the Course (Please Tick)
field of specialization in a changing global environment.	
6. Can gather and process knowledge from a variety of sources, and communicate effectively in written and spoken English.	✓
7. Can effectively demonstrate and apply good interpersonal skills in team work and leadership roles.	✓
8. Are committed to self development through lifelong learning.	
9. Are socially responsible citizens aware of contemporary issues in contributing to national development	
10. Are able to demonstrate and apply their entrepreneurial skills.	

#	Contents	Week	Learning Outcome(s) Covered	Graduate Attribute/s Covered	Student - Centered Teaching Approach Used
1	<p>Introduction to Quality:</p> <ul style="list-style-type: none"> <li>- Definition of Quality, Quality Control (QC) and Quality Assurance (QA).</li> <li>- The role of QC and QA</li> <li>- Total Quality Management (TQM).</li> <li>- Cost of Quality</li> <li>- Specifications: Raw material and finished product specifications</li> </ul> <p><b>Classwork (Practicals)</b>            Classwork 1: Product Specifications            Classwork 2: Product Recall</p>	2 & 3	2, 3 & 4	3 & 6	<p>Concept Mapping</p> <p>Group work</p>
2	<p>Quality Tools:</p> <ul style="list-style-type: none"> <li>- Flow Charts: Block diagrams and detailed flow charts; flow chart symbols.</li> <li>- Cause &amp; Effect Diagram (Ishikawa Diagram)</li> <li>- Check sheets (Check lists)</li> <li>- Histograms:               <ul style="list-style-type: none"> <li>o Normal histograms</li> <li>o Bimodal histograms</li> </ul> </li> </ul>	4, 5, 6 & 7	1, 2, 5 & 6	2, 3 4 & 7	<p>Problem Solving and Case Analysis</p>



#	Contents	Week	Learning Outcome(s) Covered	Graduate Attribute/s Covered	Student - Centered Teaching Approach Used
	<ul style="list-style-type: none"> <li>- Definition and overview</li> <li>- Process capability index</li> </ul> <p><b>Classwork (Practicals)</b> Classwork 9: Product Capability</p>				Problem Solving and Case Analysis
5	Quality Continual improvement/Some Quality approaches: <ul style="list-style-type: none"> <li>- The Deming Cycle (The PDCA approach):</li> <li>- Six Sigma Quality Approach</li> <li>- ISO 9001:2000</li> </ul> <p><b>Practicals (Industry Visit)</b> Quality Assurance in an Oman Industry</p>	13	10	4 & 5	Cooperative Learning (Jigsaw Model)
6	Main Activities and Responsibilities of Quality Control and Quality Assurance in analytical laboratories: <ul style="list-style-type: none"> <li>- Importance of Quality Assurance and Quality Control in analytical laboratories.</li> <li>- Quality control Activities in analytical laboratories:               <ul style="list-style-type: none"> <li>o Control of analysis results.</li> <li>o Blank determinations.</li> <li>o Calibration of instruments.</li> </ul> </li> <li>- Validation of analytical methods:               <ul style="list-style-type: none"> <li>o Validation parameters.</li> <li>o Statistical aspects.</li> </ul> </li> </ul> <p><b>Classwork (Practicals)</b> Classwork 10: Quality Control Activities in an Analytical Laboratory (Written and Oral Report)</p>	14	11 & 12	3, 4 & 5	Cooperative Learning (Jigsaw Model)  Concept Mapping  Group work

#### Assessment:

The assessment plan for this course includes written examinations as well as continuous assessment such as test, assignment/s, and practicals.

Theory	<b>85%</b>	
Test	10 %	
Course Work (Assignment)	5 %	
Mid-Term Examination	20 %	
Final Examination	50 %	
Practical	<b>15%</b>	
Reports / Class works		13%
Attendance		2%
TOTAL	<b>100%</b>	

### Grading System

Grade	%	GPA		Grade	%	GPA
A	90-100	4.0		C+	70-72	2.3
A-	85-89	3.7		C	<b>67-69</b>	<b>2.0</b>
B+	80-84	3.3		<b>C-</b>	<b>60-66</b>	<b>1.7</b>
B	76-79	3.0		D	55-59	1.0
B-	73-75	2.7		F	≤ 54	0.0

### Rules for students

#### Attendance:

- Students are expected to attend all classes. Punctuality is very important. A student who arrives five minutes after the start of class will be marked L (late). Three late will amount to one absenteeism. Warning letters will be issued to students as given below. Absenteeism of 30% or more will result in debarring of the student. Since laboratory practicals are considered components of continuous assessment, the student will have to provide a valid proof for any absenteeism.

1 <sup>st</sup> Warning letter	10 %
2 <sup>nd</sup> Warning letter	20 %
Debarring	30%

#### Examination:

Students have to take and comply with all the assessments of the course on the scheduled dates. Absolutely **NO MAKE-UP EXAM** is given in continuous assessment (test, assignment/s and practicals, etc.). However if the reason for being absent or not complying with the assessment is valid, the mark of the student will be calculated based on the assessments that s/he was able to take or comply with. Make-up examination is allowed for Midterm and Final Examinations provided the reason is valid. For a reason to be valid, an **authentic proof should be submitted by the student**. Any form of cheating/unfair practices will be dealt with severely. Students are expected to bring all their materials (pens, pencils, erasers, calculators, etc) and avoid borrowing anything from their friends.

#### Preparation:

Students will come prepared to class as per instructions from the lecturer. Surprise quizzes may be conducted at the beginning of the class as part of their class work.

### **Laboratory Coats and Safety:**

It is compulsory to wear laboratory coat when one is in the laboratory. Students should follow all safety guidelines in the laboratory. Students with a careless attitude towards safety can be disallowed from the lab.

### **Calculators:**

Students should have a scientific calculator for all the classes. The use of mobile phones is to be avoided.

### **Submission of Assignment**

Assignments are to be submitted on time as per the lecturer's instructions. Late submission of assignments will be penalized by deduction of marks. The student's name, identification number, course number and section number should be clearly written in the assignments.

### **Communications with Lecturer**

The student may consult his / her lecturer through e-mail. In fact, this is encouraged. However, if there is a need to consult the lecturer in his / her office, the student must follow the office hours of the lecturer. The lecturer is expected to be available during his / her office hour. Appointments outside the office hours may also be arranged with the lecturer.

### **Academic Violations**

Academic violations include

- **Plagiarism:** copying or using the work, ideas, images or words of someone else without attribution. It may also mean misrepresenting the sources of information that were used in writing or answering the assignments. Plagiarism is a form of academic cheating and it is a serious violation of HCT Academic Integrity Code as stipulated in Article 77.2 and Article 78 of HCT By-laws. The usual punishment for a student found guilty of plagiarizing is suspension for one semester and "F" in the course
- **Dishonesty:** academic work and materials submitted for assignment must be the sole, original work of the student. Cheating which includes copying from another's paper or giving unauthorized assistance is prohibited. Students are also prohibited from submitting any materials from another person or company.
- **Cheating:** Cheating during exams or tests is dealt with very severely. Possession of unauthorized material is also considered cheating.

### **Disciplinary Violations**

Disciplinary violations include unacceptable behavior, rudeness to staff, and inconsiderate treatment of others. Apart from these, dress code violations are also taken seriously. These include colored dish-dasha, long & unkempt hair and poorly groomed appearance. All students are expected to wear lab coats and adhere to other safety considerations during lab sessions.

### **Use of Mobile Phone**

Use of mobile phone during class is considered a disciplinary violation. All mobile phones should be switched off/in silent mode in the classroom.

### **E-Learning Portal**

E-Learning is an advanced electronic learning resource, which can make the communication and interaction between the lecturer and his / her students easier and faster. The students can download the teaching notes, assignments, solutions or answers of problem sets or any other material uploaded by the lecturer that would enhance the teaching and learning process.

When a student joins the college, he / she is given an e-learning account which he / she can access using his / her COLLEGE ID NO. as the USER NAME and PASSWORD.

After logging in successfully he/she will be asked to change the password. Students can access only the course where they are enrolled by their lecturer in the e-learning portal.