
**Universidad de Ingeniería y Tecnología
School of Chemical Engineering**

Course Syllabus - Term 2017-I

- 1. Course code and name: QI0027 – General Chemistry**
- 2. Credits:** 3 (three)
- 3. Hours per session (Lecture and laboratory):** 3 – Lecture (weekly)
Total number of sessions: 15 – Lectures
- 4. Name, e-mail and faculty office hours:**

Coordinator:

Alejandra Ratti

Office hours: by appointment only.

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Course Instructors:

- Melissa Barrera mbarrera@utec.edu.pe
- Lucia Bertholdo lbertholdo@utec.edu.pe
- Max Carlos mcarloss@utec.edu.pe
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- Rocío Hoyos rhoyos@utec.edu.pe
- Ángela Pinedo apinedo@utec.edu.pe
- Carmen Zegarrau czegarrau@utec.edu.pe

Office hours: to be announced

5. Textbooks:

- T. L. Brown, H. E. LeMay, B. E. Bursten, C. J. Murphy, P. M. Woodward, A. E. García Hernández, *Química: la ciencia central*, 12ma ed, México D.F.: Pearson Educación, 2014
- R. Chang, K. A. Goldsby, O. S. Sarmiento, E. J. H. D’Borneville, *Química*, 11ma ed, México D.F: McGraw-Hill, 2013
- R. Petrucci, G. Herring, J. Madura, C. Bissonnette, *Química General*, 10ma ed, México D.F.: Pearson Educación, 2011

Supplemental material:

- M. S. Silberberg, *Química General*, 2da ed, México D.F: McGraw-Hill Interamericana, 2002
- L. S. Brown, T. A. Holme, *Chemistry for Engineering Students*, 2da ed, California: Brooks/Cole Cengage Learning,

6. Course information

a. Brief description of course' content (catalog description):

This course is divided into lectures and laboratory sessions, which implies a general introduction to the study of the matter and its changes. At the end of the term, engineering students will acquire knowledge on the fundamentals of chemical principles, and recognize the role of the Chemistry in many areas of engineering and technology with focus on finding solutions to a variety of modern problems. Topics covered include: atomic theory, chemical bonding, chemical reactions and stoichiometry, solutions, gases, acids and bases, redox processes and electrochemistry.

b. Prerequisites or co-requisites: None

c. This course is mandatory for all Engineering majors

7. Specific goals for the course:

a. At the end of this course, students should be able to::

- a2: apply Science knowledge (level 1)
- d1: work in groups (level 1)
- e1: identify engineering problems (level 1)
- g2: communicate orally (level 1)
- g3: communicate in a written manner (level 1)
- i3: recognize the need for lifelong learning (level 1)

b. Specific outcomes of the course

1. Describe the difference between element and compound, and between mixture and pure substance.
2. Summarize the principal properties of gases, liquids and solids.
3. Distinguish the relation between molecular structure and matter' properties
4. Apply problem solving skills for: chemical reactions, stoichiometry, solutions and solubility, acids and bases and electrochemistry.
5. Appraise the relation between theory and experiment for science in general and particularly in chemistry.

8. Brief list of topics to be covered during the course

1. Modern atomic theory.
2. Periodic table: periodic properties
3. Chemical bonding.
4. Chemical reactions
5. Balance of chemical equations
6. The mole and stoichiometry
7. Gases: partial pressure and ideal gases

8. Liquids & solids: properties
9. Solutions and solubility: concentration units, molarity.
10. Acids and bases
11. Redox reactions
12. Electrochemistry and electrochemical cells. Corrosion.

9. Methodology and evaluation system

The instructor facilitates the understanding of concepts given in the class through active learning techniques.

Biweekly lab sessions will be offered at the end of which each group of students will be tested in order to help them reflect about the relationship between theory lectures and practices, as well as to gather evidence of their application of the scientific method to their experimentation.

Various means will be used in order to help the student to understand the context of application of the knowledge acquired and to grasp a current and realistic panorama of the use of such knowledge.

Readings and activities will be given to the student to work on them outside the classroom and laboratory. Such readings and activities will be included in the course evaluations.

It will be possible to access study materials openly as well as contacting the instructors through the Canvas Online platform. The instructor will also be available in his/her office hours.

Lectures:

	Theory	Project	Final Exam
Weight (%)	40	40	20
Includes	50% in class activity 25% Exercises 25% Homework	3 installments (indicated by the teacher) 1 st : 5% 2 nd : 10% 3 rd : 25%	Exam: 10% ePortfolio: 10%
Minimum percentage needed in each category:			
	25%	20%	10%
Minimum required: 55% - Minimum grade 11 (eleven) points			

NOTE: None of the course examinations is dropped.