Basic Data

(1) Course Title: Analytical Chemistry I (introduction to quantitative chemical analysis)
(2) Course Code No.: 211ch
(3) Credit Hours:
  Lectures: 2 credit hours
  Laboratory: 4 credit hours
  Total hours: 6 credit hours

The course is designed to help student-teachers achieve the following goals:

1. Explain different methods of volumetric and gravimetric analysis and their applications in industry.
2. Acquire skills in performing accurate chemical measurements.

By the end of this course, student teachers are expected to achieve the following objectives:

A-1 Identify the differences between qualitative and quantitative analysis.
A-2 Express concentration units.
A-3 Compare between qualitative and quantitative analysis.
A-4 Explain the different types of reactions used in volumetric analysis.
A-5 Describe the industrial applications of volumetric analysis.
A-6 Develop an appreciation for the nature of scientific inquiry.

ب) المهارات العقلية:

B-1 Relate the concepts of chemistry to contemporary, historical, technological, and societal issues; in particular, relate concepts of chemistry to current controversies, such as those around energy uses and medical research, as well as other issues.
B-2 Demonstrate competence in the practice of teaching as defined within the Entry-Level Standards.
B-3 Visualize chemistry as the study of the composition, structure, properties, reactions of matter, and the dynamic interrelations of matter.

ج) المهارات العملية:

C-1 Gains familiarity with acid–base, redox, complexometric, and precipitation reactions and titrations.
C-2 Processes the data obtained from titration curves in chemical calculations.
C-3 Acquire familiarity with industrial, medical and biological applications of analytical chemistry.
C-4 Locate resources, design and conduct inquiry-based open-ended investigations in chemistry, interpret findings, communicate results, and make judgments based on evidence.
C-5 Demonstrate competence in the practice of teaching through investigative experiences.
C-6 Demonstrating the application of the scientific process and assessing student learning through multiple processes.

د) المهارات العامة والمنقولة:

D-1 Construct new knowledge for themselves through research, reading and discussion, and reflect in an informed way on the role of science in human affairs.
D-2 Create and maintain an educational environment in which conceptual understanding will occur for all science students.
<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Lectures</th>
<th>Laboratory</th>
<th>Total</th>
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<td>First</td>
<td>Introduction to quantitative chemical analysis. Concentration.</td>
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<td>Second</td>
<td>Volumetric Analysis: acid-base</td>
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<td>2</td>
<td>4</td>
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<tr>
<td>Third</td>
<td>base</td>
<td>2</td>
<td>2</td>
<td>4</td>
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<tr>
<td>Fourth</td>
<td>redox</td>
<td>2</td>
<td>2</td>
<td>4</td>
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<tr>
<td>Fifth</td>
<td>complex formation,</td>
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<td>4</td>
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<td>Sixth</td>
<td>gravimetry</td>
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<td>titrimetry</td>
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<td>Eighth</td>
<td>Chemical and industrial applications.</td>
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<td>Laboratory: Volumetric analysis: Acid</td>
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<td>Tenth</td>
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<td>Thirteenth</td>
<td>complexometric titrations.</td>
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</table>

**Activities, tasks and assignments:**
- Solves and discusses problem sets.
- Submission and class presentation of term papers.
- Computer aided and web based assignments and assessment.
- Visits to industrial and medical institutions and submission of subsequent reports.

**Assessment and Evaluation tools:**
- Final exam
- Hourly and midterm exams.
- Oral assessment.
- Laboratory work, group discussions, and reports on: volumetric analysis, precipitation, complexometric and redox titrations.
- Assessment of term paper, reports and group discussions.
- Quizzes
### Summative Evaluation Table

<table>
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<th>Assessment</th>
<th>Score</th>
<th>Weight</th>
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<tbody>
<tr>
<td>1. Final exam</td>
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<td>2. Final written exam</td>
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<td>3. Final oral exam</td>
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<td>4. assignments</td>
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<td>المجموع</td>
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**References:**

1. Students' Textbooks
2. Periodicals and websites
   - Journal of Chemical Information and Modeling
   - Journal of Chemical Education (JCE)
   - Chemical reviews.
   - Condensed matter, materials, surfaces, interfaces & biophysical.

**Resources**

- References
- Chemistry library
- Textbooks
- Handouts and problem sets.
- Electronic, web, and multimedia based resources.
- Lab work.
Course coordinator: منسق المقرر: د محمد عبد الطيف

Head of the Department: رئيس القسم: أ. د مدحت شاكر

Date التواريخ: 11/5/2005م
رؤية الكلية: انطلاقاً من رؤية جامعة الإسكندرية تعنى كلية التربية بدمتهر إلى تحقيق الجودة والحصول على الاعتماد الأكاديمي لتحقيق مكانة متميزة بين كليات التربية على المستوى القومي والعالمي (مجلس الكلية، 8 مارس 2009).

رسالة الكلية: إعداد المعلمين والكوادو المؤهلة القادرة على تطوير النظم التعليمية والإدارية بالتعليم العام والفنى، والباحثين القادرين على تطوير...