بِكَارْتِنَةٍ أَسَاسِيَّةٍ

1. **Course Title**: Organic Chemistry II (Functional groups in organic Compound II
2. **Course Number**: 223
3. **Number of Hours**: 2 credit hours
   - Lectures: 2 credit hours
   - Laboratory: 4 credit hours & rec: 2 credit hour
   - Total hours: 8 credit hours
4. **prerequisites**: 221 ch

بِكَارْتِنَةٍ مُهِنِيَّةٍ

1) **General goals of the course**

- The course is designed to help student-teachers achieve the following goals:
  - Discuss the concept of structure of carboxylic acids and their derivatives, and amines.
  - Assign Common and IUPAC names to carboxylic acids and their derivatives, and amines.
  - Relate the properties of amines and amides to their structure.
  - Define the relationship between the functional group and characteristics chemistry exhibited by organic molecules.
  - Correlate between the properties preparation, and chemical reactions of carboxyl acids and their derivatives.
  - Define the effect of hydroxyl group in the carboxyl group on the reactivity of the carbonyl group.
  - Define the applications of organic compounds in industry (dyes, biochemical, polymers, etc).
  - Correlate between structure of amines and their reactions.
2) Operational learning objectives of the course

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

A) Knowledge and Comprehension:

A-1 Explain and outline the structure nomenclature, classification, synthesis, and reactions of carboxylic acids.
A-2 Compare between the Ka values for different carboxylic acids.
A-3 Draw the structure nomenclature, classification, synthesis, and reactions of carboxylic acid derivatives.
A-4 Explain and outlines the structure nomenclature, classification, synthesis and reactions of amines.
A-5 Classify types of polymers and elucidate the different synthetic method employed.

B) Cognitive Skills:

B-1 Relate the properties of different organic compounds to their structures.
B-2 Correlate structure with properties and uses of polymers
B-3 Demonstrate competence in the
B-4 Visualize the Role of Functional groups in organic Compounds.

C) Practical Skills:

C-1 Purify, and identify functional groups in organic compounds experimentally.
C-2 Acquire basic lab skills in qualitative elemental analysis of organic compounds, preparation of simple organic compounds.
C-3 Acquire hands on practical skills.

D) Enabling Skills:

D-1 Construct new knowledge for themselves through research, reading and discussion, and reflect in an informed way on the role of organic chemistry in human affairs.
D-2 Apply scientific skills in his life.

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<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Lectures</th>
<th>Laboratory</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>First</td>
<td><strong>Functional Groups in Organic Compounds (II)</strong></td>
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<tr>
<td>Second</td>
<td><strong>Oxygenated Organic Compounds:</strong> Carboxylic acids, Dicarboxylic Acids, Carboxylic Acid derivatives (Esters, Acid Chlorides, Anhydrides, Amides),</td>
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<td>Third</td>
<td>Carboxylic Acids: Structure, nomenclature, properties,</td>
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<td>Fourth</td>
<td>Carboxylic Acids: preparation, reactions, industrial sources and uses.</td>
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<td>Fifth</td>
<td><strong>Nitrogenated Organic Compounds:</strong> <strong>Aliphatic and Aromatic Amines:</strong> Structure, classification, basicity, nomenclature</td>
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<tr>
<td>Sixth</td>
<td>properties, preparation, reactions, industrial sources and</td>
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<td>Seventh</td>
<td><strong>Dyes:</strong> synthesis, properties, industrial synthesis and uses.</td>
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<td>Eighth</td>
<td><strong>Sulfa Drugs:</strong> Sulfonation of amines and sulfonamides. Macromolecules Chemistry</td>
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<td>Ninth</td>
<td><strong>Sulfa Drugs:</strong> Sulfonation of amines and sulfonamides. Macromolecules Chemistry</td>
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<td>Tenth</td>
<td><strong>Polymers and Polymerization:</strong> Synthesis, of different types of polymers, relationship between structure and property.</td>
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<td>Eleventh</td>
<td>polymers in industry and uses. (Polyethylene, polypropylene, polyvinyl chloride, polystyrene, polyester, etc.)</td>
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<tr>
<td>Twelfth</td>
<td>Development and properties of polymers (Thermoset polymer and thermoplastic polymer)</td>
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</table>

**Laboratory:** Synthesis and identification of some organic compounds related to the studied topics.

**Activities, tasks and assignments:**

- Solves and discusses problem sets.
- Submission and class presentation of term papers.
• Visits to relevant industrial plants and submission of subsequent reports
• Molecular modeling to elucidate organic compounds and related structure-property-chemical reactivity relationships.
• Computer aided and web based assignments and assessment.
• Laboratory work, group discussions, and reports on: preparation, separation, purification, and identification of some binary mixtures of organic compounds.

Assessment and Evaluation tools:

• Quizzes.
• Hourly and midterm exams.
• Final Exam.
• Oral assessment.
• Assessment of term paper, reports and group discussions.
• Evaluation of performance in the lab, group projects, and reports

Summative Evaluation table

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Final exam</th>
<th>Fifteenth Week</th>
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<tbody>
<tr>
<td>2. Final written exam</td>
<td>105</td>
<td>1. امتحان نهاية الفصل الدراسي</td>
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<tr>
<td>3. Final oral exam</td>
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<td>2. الامتحان العملي</td>
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<td>4. assignments</td>
<td>15</td>
<td>3. أعمال السنة</td>
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<td>Total</td>
<td>150</td>
<td>المجموع</td>
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</tbody>
</table>

References:

Students' Textbooks
Periodicals and websites

Journal of Chemical Education (JCE)
Journal of organic chemistry
Supplementary material
Chemical reviews.

Resources

- Chemistry library
- Textbooks
- Handouts and problem sets.
- Electronic, web, and multimedia based resources.
- Lab work.

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Course coordinator: • منسق المقرر:
Head of the Department: • رئيس القسم:
Date: • التاريخ:
رؤية الكلية: انطلاقاً من رؤية جامعة الإسكندرية تسعى كلية التربية لدستهور إلى تحقيق الجودة والحصول على الاعتراف الأكاديمي لتحقيق مكانة متميزة بين كليات التربية على المستوى القومي والعالمي (مجلس الكلية، 8 مارس 2009).

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