

Kafr El-Sheikh University  
Faculty of Science  
Chemistry Department



**Suggested research topics**  
**Winter semester of the academic year 2019/2020**

<b>Course name: III</b> كلية التربية-شعبة الكيمياء- كيمياء تحليلية
<b>Professor Dr.: Shaban Y. Shaban</b>
<b>Level:</b> الفرقة الثالثة عادي
<b>Program: Chemistry</b>

**1. Title: Spectrometers**

- Spectrophotometer; fundamentals and applications
  - Fluorometer; fundamentals and applications
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**2. Title: Electronic Transitions**

- Discuss the different types of electronic transition in details with diagrams.
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**3. Title: UV and visible Spectrum**

- Visible Spectrum
  - Light Absorption and the Origin of Colour
  - Visual Pigments: Chromophore
  - Absorption and Emission of light
  - Spin multiplicity
  - Selection rules,
  - Beer-Lambert Law and its limitations
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**4. Title: UV spectrum and its parameters**

- Presentation of Spectra
  - How to choose a solvent.
  - Polar and nonpolar Solvents
  - What is Chromophore with examples?
  - What is Auxochroms and their effect?
  - The Effect of Conjugation
  - Effect of lone pair of electron
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**5. Title: Interaction of Light with Matter**

- Physical Interaction of Light with Matter
  - Chemical Interaction of Light with Matter
  - Electromagnetic spectrum and detailed effect of its regions (Short note on regions and its applications Starting from Cosmic ray to radio)
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**Name: Professor Dr. Shaban Y. Shaban**

**Signature:**

