**المواضيع المقترحة في المقرر 330 كيم**

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| **chapter** | **topic** | **hour** |
| **Chapter 1** | **1. Average molecular weight of polymer**  1.1 Notation of molecular mass in polymer  1.2 Molecular mass in polymer (statistical calculation)  1.3 Experimental methods used to determine the molecular mass of polymer:  *a. Colligative properties.*  *b. Terminal group evaluation*  *c. Viscometry method*  *d. Chromatography methods*  *e. Light scattering method* | 3 |
| **Chapter 2** | **2. Crystalline and amorphous structure of polymers**  Classification based on crystal structure   * 1. Crystalline   2. Semi-crystalline   3. Amorphous polymer   4. Factors effected on crystallinity   5. Measuring crystallinity | 2 |
| **Chapter 3** | **3. Thermal properties of polymer**  3.1 classification of polymer based on thermal properties (thermoplastics, thermoset, elastomer)  3.2 Thermal transition: glass transition, melting and crystallization temperature, factors affected on Tg  3.3 Differential scanning calorimetry  *a- Glass transition temperature*  *b- Melting temperature of polymer*  *c- Crystallization and crystallinity temperatures* | 3 |
| **Chapter 4** | **4. Degradation and stability of polymer**  4.1 Type of degradation (e.g. chemical, biological degradation and photodegradation)  4.2 Thermal degradation: mechanism and the factors affected the thermal degradation.  4.3 Thermogravimetry analysis  *a-* *Thermal stability of polymer*  *b- Thermal degradation of polymer* | 3 |
| **Chapter 5** | **5. Polymer solution**  5.1 Solubility parameter  5.2 Type of solvents (good, poor, theta)  5.3 Factors affected on the solubility.  5.4 Thermodynamic of polymer solution (ideal solution theory, Florry-Huggins theory) | 2 |
| **Chapter 6** | **6. Polymer network**  6.1 Definition  6.2 Mechanism of network polymer formation(gelation)  6.3 Properties of network  6.4 Characterization of network polymer (IR, SEM, swelling, solubility) | 2 |
|  |  | Total: 15 h |