**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 polymer1.2 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 Tg3.3 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 parameter5.2 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 Definition6.2 Mechanism of network polymer formation(gelation)6.3 Properties of network6.4 Characterization of network polymer (IR, SEM, swelling, solubility) | 2 |
|  |  | Total: 15 h |