

**Subject: Concrete Technology (2)**

**Class: Third year**

**Hours : 2hrs ( Theoretical ) , 2hrs ( Practical )**

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**Objectives:**

The objectives of this subject are to give information about:

**Properties of Fresh and hardened concrete; durability of concrete;**

**Concrete mix design; Special types of concrete; as well as, In-situ tests.**

<b>Week</b>	<b>Practical Syllabus</b>
<b>1</b>	<b>Review about cement and aggregates tests.</b>
<b>2&amp;3 4&amp;5</b>	<b>Fresh concrete tests: (Air content, Slump test, Compacting factor test, and V-B test).</b>
<b>6&amp;7 8&amp;9 10&amp;11 12&amp;13&amp;14</b>	<b>Factors affecting compressive strength of concrete: (a) Effect of water/cement ratio; (b) Effect of cement content; (c) Effect of age; (d) Effect of end condition of specimen and capping; (e) Effect of dimensions of specimen; (f) Effect of curing conditions (Normal curing, Untreated curing, Autoclaved curing, Hot water curing); and (g) Effect of shape of specimen.</b>
<b>15</b>	<b>Indirect Splitting Tensile strength of concrete.</b>
<b>16</b>	<b>Flexural test (Modulus of rupture) of concrete.</b>
<b>17</b>	<b>Modulus of elasticity and Poisson's Ratio of concrete.</b>
<b>18&amp;19 20&amp;21&amp;22</b>	<b>Project about mix design of concrete using (ACI, BRITISH, and CP : 110) methods.</b>
<b>23&amp;24</b>	<b>Light weight concrete tests.</b>
<b>25&amp;26 27&amp;28 29&amp;30</b>	<b>In-situ Tests: (Rebound – Hammer Test, Ultrasonic Pulse Velocity Test, Load test, and Core test).</b>

**References:**

- 1. A.M. Neville, "Properties of concrete", 3<sup>rd</sup>. Ed., A Pitman International Text (1998).**
- 2. Troxell, Davis, and Kelly, "Composition and properties of concrete", McGraw-Hill book Company (1986).**
- 3. Iraqi (IS), British (BS), and American (ASTM) Standards for concrete testing.**