

**Course Contents:**

Effect of chemical admixtures on properties of mortars, (i) Water reducers; (ii) Air-entraining agents, (iii) Accelerators or retarders; Properties of freshly mixed concrete, (i) Slump; (ii) Bleeding potential; (iii) Initial & final setting time; (iv) Air content; (v) Temperature and density; Properties of hardened concrete, (i) Compressive strength; (ii) Toughness; (iii) Rapid chloride ion permeability; Non-destructive testing, (i) Rebound hammer; (ii) Ultra-sonic pulse velocity; (iii) Ground penetrating radar; (iv) Electrical Resistivity; (v) Others; Bitumen characterization tests like softening point, flash point, float test, ductility and bituminous mix design; Calibration of profilograph and its use in the determination of roughness index of road Sub-grade improvement techniques for pavements; Control establishment and detailed mapping using Global Navigation Satellite System (GNSS) receivers and Total station (TS) [For the use of GNSS, TS and corresponding data processing SW for the preparation of digital maps]; Development of geospatial database in Geographic Information System (GIS) environment [For the use of GIS SW for creation and analysis of geospatial database]