

## **Resins for Surface Coatings**

**Undergraduate 3 credit course in Polymer Engineering curriculum**

**Amirkabir University of Technology**

1. Introduction to resins, their applications and important terminologies
2. Basic concepts of natural resins (Vegetables oils: chemical structure, properties, chemical modifications, film formation mechanism)
3. Basics of polymer science, polymerization and polymer reaction engineering (definitions, classifications, the engineering of polycondensation reactions)
4. Alkyd resins (chemistry, synthesis, production processes, manufacturing equipment, classification of different alkyds, alkyd resins applications)
5. Phenolic resins (chemistry, raw materials, synthesis, production processes, properties, applications)
6. Amino resins (chemistry, raw materials, synthesis, production processes, properties, applications)
7. Epoxy resins (chemistry, raw materials, synthesis, production processes, properties, applications)
8. Unsaturated polyester resins (chemistry, raw materials, synthesis, production process, properties, applications)
9. Urethane resins (chemistry, synthesis, properties, applications)

### **References:**

- Oldering P.K.T. and Hayward G. "A manual for resins for surface coatings" 3 vols, SITA Technology, 1987.
- Wicks Z.W., Jones F.N. and Pappas S.P., "Organic Coatings: science and technology", 3rd edition, John Wiley and Sons Inc., New Yourk, 2007
- Stoy D.and Freitag(eds), Resins for coatings, chemistry, proprties and applications", Hanser Publications, Munchen, 1996
- Lambourne R. and Srivens T.A. (eds), "Paint and surface coatings", William Andrew Publishing, 1999
- Ebrahimi m., Kasiriha S.M. and Akbarinezhad E., "waterborne resins and coatings", 2<sup>nd</sup> edition, Amirkabir university Publications, 2013.