

Unit Operations in Food Processing 3(3-0)

Theory

Introduction: units, dimensions, conversion. Energy and mass balance: heat transfer fundamentals – conduction, convection and radiation. Mass balance equations and Pearson's Law. Air-water mixture: psychrometric charts and their application. Rheology of food products: stress, deformation and other aspects. Transport of fluids through pipes: laminar and turbulent regimes. Circulation of fluid through porous beds. Darcy's law: permeability, porosity. Filtration: fundamentals, equipment, maintenance problems, prospects. Separation processes by membranes. Solid-liquid extraction.

Books Recommended

1. McCabe, W.L., Smith, J.C and Harriott, P. 2005. Unit operations of chemical engineering. McGraw Hill Inc., New York, USA.
2. Earle, R.L. and Earle, M. D. 2004. Unit operations in food processing (web edition). The New Zealand Institute of Food Science and Technology. Available at: <http://www.nzifst.org.nz/unitoperations/>.
3. Jeankoplis, C.J. 2004. Transport processes and separation process. Prentice Hall Professional Technical Reference, New Jersey, USA.
4. Gustavo, A and Barbosa-Canovas, V. 2002. Unit operations in food engineering. CRC Press, Taylor & Francis Group, Boca Raton, Florida.

Website: www.foodscienceuniverse.com