

GUJARAT TECHNOLOGICAL UNIVERSITY

B. Pharm. Semester - 3

Subject Code 230002

Subject Name Pharmaceutical Engineering – II

Sr.No	Course content
1.	Content uniformity : Importance of content uniformity, means of achieving content uniformity, Sampling techniques, statistical treatment, requirements of regulatory agencies, (FDA, USP and European Pharmacopoeia)
2.	Powder flow : Importance of flow in pharmacy, Factors influencing powder/granules flow (moisture, particle size, etc.), Determination of angle of repose (AR) , Hausner ratio (HR), Carr's compressibility index (CI) , Sample calculations (examples), pharmacopoeial specifications for AR, HR and CI
3.	Control charts and its applications in pharmacy – elements of control charts and types of control charts, etc.,
4.	Extrusion and Pelletization : Factors affecting pellet properties, Cold extrusion, Melt extrusion, Applications of extrusion in pharmacy (including preparation of solid solution), selective equipments used for extrusion and pelletization, Use of polyethylene oxide and Eudragit in melt extrusion, Use of MCC in pelletization
5.	Supercritical fluids : Introduction to supercritical fluids, Pharmaceutical applications of supercritical fluids in extraction, size reduction, preparation of inclusion complexes, preparation of solid dispersions, etc., Equipments

Pharmaceutical Engineering – II – Practicals(230002P)

Practicals related to topics in pharmaceutical engineering theory should be carried out.

Note: 1. Calculations shall be performed in EXCEL

2. Graphs shall be drawn using EXCEL

Reference Books:

1. Perry's Chemical Engineer's Handbook - Robert H Perry, Green D.W., Maloney J.O. 7th Edition, 1998, McGraw – Hill Inc., New York.
2. Tutorial Pharmacy by Cooper & Gunn, ed. S.J.Carter, CBS Publishers & Distributors, Delhi, 6th Edition, 2000.
3. Pharmaceutics: The Science of Dosage Form Design - M.E. Aulton. 2nd edition, Churchill Livingstone, New York, 2002.
4. The Theory & Practice of Industrial Pharmacy – Lachman L., Lieberman H.A. & Kanjig J.L., 3rd edition, 1990 Varghese Publishing House, Bombay.
5. Alfonso G. Remington: The Science & Practice of Pharmacy. Vol.I & II. Lippincott, Williams & Wilkins Philadelphia.
6. Pharmacopoeia : I.P., U. S. P. , E.P. (latest editions)
7. Journal articles