

ChE 309
Particle Technology
Lecture Schedule (approximate)

SL.	Topics	Number of Lectures
	Properties of Particulate Solids	
1.	Introduction to Particle Technology	1
2.	Particle Size Measurement	2
3.	Screen Analysis	3-5
4.	Analytical Size Distribution	6-7
5.	Particle Shape	8
6.	Mean Diameter	9-10
7.	Size distributions of feed and products of crystallizers and size reduction equipment	11-13
	Bulk Properties of Particles	
8.	Mohr Stress Diagram	14
9.	Storage of Solids	15
10.	Bin Design	16
	Fluid-Solid Momentum Transport	
11.	Flow past a sphere	17-18
12.	Drag Coefficient velocity	19
13.	Terminal settling velocity	20
14.	Pressure Drop in packed beds	21-22
15.	Fluidization and Sedimentation	23-25
16.	Slurry transport and pneumatic conveying	26
	Fluid-Solid Separation Based on Momentum Transport	
17.	Classification	27-30
18.	Pre-treatment of solid-liquid mixture	31-32
19.	Theory of coagulation	33
20.	Flocculation and floatation	34
21.	Gravity thickening	35
	Filtration	
22.	Basic equations for incompressible and compressible cakes	36-37
23.	Filter media and filter aids	38-39
24.	Cake washing and dewatering	40
25.	Optimum design of semi-continuous equipment	41
26.	Rotary Filtration	42

Reference:

- ✚ McCabe, Warren L., Smith, Julian C. & Harriott, Peter. : **Unit Operations of Chemical Engineering**, sixth edition, McGraw-Hill Companies, Inc., 2001
- ✚ Foust *et al*: **Principles of Unit Operations**, second edition, John Wiley & Sons
- ✚ Coulson and Richardson's **Chemical Engineering**, Volume 2, fifth edition, "Particle Technology and Separation Processes" Butterworth Heinemann, 2005
- ✚ Rhodes Martin.: **Introduction to Particle Technology**, John Wiley & Sons, 2004
- ✚ Svarovsky L.: **Solid-liquid Separation**, fourth edition