NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF CHEMICAL ENGINEERING

COURSE OUTLINE TEMPLATE			
Course Title	Particulate Science and Technology Lab		
Course Code	CLLR13	**No. of Credits**	2
Department	Chemical Engineering	**Faculty**	Dr J Sarat Chandra babu Dr A Arunagiri
Pre-requisites Course Code	CLPC18		
Course Coordinator(s) (if, applicable)	-		
Other Course Teacher(s)/Tutor(s) E-mail	-	Telephone No.	91-431-2503107 91-431-2503114
Course Type	Core course		

COURSE OVERVIEW

Bulk powder material handling and multiphase gas-solid or liquid solid sytems are complex and critical in many of the process industries. The different systems and characteristics have been addressed in the theory course CLPC18 Particulate Science & Technology. Determination of specific parameters and anaylysis of various fluid solid systems will be addressed in this practical course.

COURSE OBJECTIVES

To gain knowledge through conducting experiments on characterization of single particle and powder samples, particulate process such as comminution, Screen Analysis, filtration, mixing, sedimentation and Elutriation.

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
1. able to verify the fundamental concepts underlying the behavior of particulate materials	**1,2,5,6,7,8,9,10,11,12**

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week	Topic	Mode of Delivery
1	First Week	Introduction on Experiments, Grouping the students Team	Chalk & Board, PPT
2	Second Week	1. Particle Size Characterization (Settling Velocity, Particle Density, Bulk Density (Tap Density, Repose Density), Angle of Repose	Experiment will be carried out by the students.
3	Third Week	2. Screen Analysis (Evaluation of Effectiveness of a screen)	Experiment will be carried out by the students.
4	Fourth week	3. Jaw Crusher (Evaluation of Energy Requirement in Jaw Crusher, check the validity of communition laws)	Experiment will be carried out by the students.
5	Fifth week	4. Ball mill (Influence of Flight on comminution in a Ball Mill	Experiment will be carried out by the students.

6	Sixth week	Filtration (Evaluation of Characteristics for cake and filter medium)	Experiment will be carried out by the students.
7	Seventh Week	Mixing (Evaluation of Mixing Characteristics and influence of Baffles)	Experiment will be carried out by the students.
8	Eighth week	Sedimentation (Evaluation of effect of inclination on sedimentation of different concentration suspension)	Experiment will be carried out by the students.
9	Ninth week	Elutriation (Evaluation of elutriation parameters)	Experiment will be carried out by the students.
10	Tenth Week	Repetition and Compensation class	Experiment will be carried out by the students.

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Internal assessment	Every week during lab hours	During lab hours	60%
2	Viva/Written examination	Eleventh Week	1 hour test	15%
3	Practical Laboratory Examination	Twelveth Week	3 hours	25%

ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc

1. *Martin Rhodes [2001], "Introduction to Particle Technology" 2nd Edn. Elsevier Publications*
2. *Lab manual and the references given by the Course Instructor*

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

Feedback from students in the class committee meeting

COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

1. It is expected that the student must do all the experiments
2. The results and discussions should be verified by the course teacher before writing the record book.
3. The students should get prior permission from the course teacher to do the compensation classes.
4. The students carry out the proper experiments, proper discussion of results, and discipline in the laboratory will be appreciated properly.
5. Dishonesty will be penalized severely.

ADDITIONAL COURSE INFORMATION

The students can contact the course coordinator for consultation in the department (Room no: 104/ 105) during working hours.

Queries may also be emailed to the Course Coordinator directly at sarat@nitt.edu & aagiri@nitt.edu

FOR SENATE'S CONSIDERATION

Course Faculty	CC-Chairperson	HoD
1. Dr Sarat Chandra Babu		
2. Dr A Arunagiri	(Dr. K. N. SHEEBA)	(Dr. P. SIVASHANMUGAM)