CHE 0324 / CHE 0324.1 Particle Technology (Lecture and Calculations)

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Course Syllabus

Course Code:	**CHE 0324 & CHE 0324.1**
Course Title:	**PARTICLE TECHNOLOGY (LECTURE AND CALCULATIONS)**
Pre-requisite:	**CHE 0322**
Co-requisite:	**None**
Credit:	**3 UNITS (2 units Lec and 1 unit Calc)**

Course Syllabus

Course Description:

This course is intended to provide background material in particle technology, focusing on characterization, behavior, production, separation, and modeling of particulate systems and surveying engineering processes that involve particulates and powders. Multiphase transport phenomena and fluidization are also discussed.

Course Learning Outcomes

1. Characterize particle and particulate systems.
2. Apply the concepts and principles of particle and fluid mechanics to solve problems in particle technology.
3. Identify the typical equipment and solid flow regime used for each process studied in this course.
4. Design processes involving particle systems

Course Coverage

Week	COs	Topic	AT
1 - 2	CO1	**Orientation** Mission/Vision Orientation and Introduction to the Course Discussion on COs, TLAs, and ATs of the course Overview on student-centered learning and eclectic approaches to be used in the course **Introduction to Particle Technology** Particle shape	

Course Coverage

Week	COs	Topic	AT
3	CO1 CO2	**Introduction to Particle Technology** Population of particles Methods of particle size measurement **Motion of solid particles in a fluid** Motion of solid particles in a fluid	Quiz 1 Problem Set 1 & 2

Course Coverage

Week	COs	Topic	AT
4 – 5	CO3	**Flow through packed bed / fluidized bed** Flow through packed bed / fluidized bed	Q2/PS3

Course Coverage

Week	COs	Topic	AT
6 – 8	CO4	**Screening** Screening **Mechanical Separation** Size reduction Classification Centrifugation Sedimentation	Q3/PS4

Course Coverage

Week	COs	Topic	AT
9 – 14	CO5	**Special Topics** Related to particle technology	Group Presentation

Course Coverage

Week	COs	Topic	AT
15	CO1 CO2 CO3 CO4 CO5	**Final Exams** Written Examinations covering topics under CO1, CO2, CO3, CO4 and CO5	FE

Grading System

The students will be graded according to the following:

- Midterm Examination 20%
- Final Examination 20%
- Problem Sets 35%
- Quizzes 25%

PASSING: 60% (ZERO BASED)

Grading System

The following table is used in assigning final grades:
Transmutation Table:

98 - 100	1.00
95 – 97	1.25
92 – 94	1.50
89 – 91	1.75
86 – 88	2.00
83 – 85	2.25
80 – 82	2.50
77 – 79	2.75
75 – 76	3.00
Below 75	5.00

- To be able to use the transmutation table above, the following is the computation from the zero-based grade:

(Zero-based grade x 0.625) + 37.5 = Final grade

Course Policies

Class Standing Requirements:

- Problem solving exercises or seatworks are usually given at the start or near the end of the lecture period. Some exercises are solved through team effort to promote cooperative learning.
- Problem set assignments are done individually. Outputs are collected at the beginning of the next class session.
- Students will be rated individually in the group oral presentation through the rubric.

Course Policies

Student's attendance

- Students are expected to attend weekly meetings for lecture discussion, graded recitation and case study presentation.
- Students are expected to maintain proper decorum during meetings.
- Students are expected to submit all necessary documents such as homework, machine problems and case studies based on the stipulated schedule as based on the guidelines below

Course Policies

Honor, Dress and Grooming Codes

All of us have been instructed on the Dress and Grooming Codes of the Institute. We have all committed to obey and sustain these codes. It will be expected in this class that each of us will honor the commitments that we have made.

For this course the Honor Code is that there will be no plagiarizing on written work and no cheating on exams. Proper citation must be given to authors whose works were used in the process of developing instructional materials and learning in this course. If a student is caught cheating on an exam, he or she will be given zero mark for the exam. If a student is caught cheating twice, the student will be referred to the Prefect of Student Affairs and be given a failing grade.

Course Policies

- Problem set assignments are due at the beginning of class.
- Only digital submissions will be allowed.

Course Policies

Major Exams

- All major exams will be conducted face to face inside the campus and requires student's individual attendance. If a student log in late for any examination, the student must complete the examination at the same scheduled time as all other students.
- No make-up exams will be given except for legitimate medical excuses. Grace period for the make-up exam is one week after the student's submission of medical excuses.
- Cheating in a major examination will entail a failing mark for the given course.
- Cheating, dishonesty, and plagiarism in other works will entail a zero score for the said requirement.

Course Policies

Artificial Intelligence and Academic Integrity

The utilization of Artificial Intelligence (AI) within the curriculum is designed to support learning outcomes and address specific educational needs. To maintain academic standards, students are mandated to observe the following protocols:

- **Mandatory Disclosure**: Students must formally declare and provide proper citations for all AI-generated material included in their submissions.
- **Prohibition of Plagiarism**: The use of AI must not compromise academic integrity; all coursework must remain free of plagiarism.
- **Informed Consent**: Students are required to inform all data collection participants if AI technologies are employed as part of the research process.
- **Zero Tolerance for Misconduct**: The use of AI for illegal activities or to cause harm is strictly prohibited.

Reference Text

- Geankoplis, C.J. Transport Processes and Separation Process Principles, 4th ed., Pearson 2003
- Rhodes, M. (ed.). Introduction To Particle Technology, 2nd ed. New York: Wiley. (2008)
- Foust, Alan S., Unit Operations, 2nd ed, Wiley, 1980
- McCabe, Smith and Harriot, Unit Operations, 6th edition, McGraw Hill, NY, 2001
- Perry, Robert H., Perry's Chemical Engineers' Handbook, 8th ed

Any questions?