

COURSE NUMBER: ME 5113, 4 credits	COURSE TITLE: Aerosol/Particle Engineering
TERMS OFFERED: Fall Semester	PREREQUISITES: ME 3331 Thermal Sciences I, IT upper division or Grad student.
TEXTBOOKS/REQUIRED MATERIAL: “Aerosol Technology”2 nd Edition, By W.C. Hinds, John Wiley & Sons, NY	PREPARED BY: David Y. H. Pui DATE OF PREPARATION: May 2007
COURSE LEADER(S): David Y. H. Pui	CLASS/LABORATORY SCHEDULE: Two 100 minute sessions per week. CONTRIBUTION OF COURSE TO MEETING PROFESSIONAL OBJECTIVES: 100 % Engineering Topics
CATALOG DESCRIPTION: Kinetic Theory, definition, theory and measurement of particle properties, elementary particle mechanics, particle statistics; Brownian motion and diffusion, coagulation, evaporation and condensation, electrical properties, sampling and transport.	COURSE TOPICS: 1. Introduction and elementary concepts 2. Kinetic theory of gases 3. Elementary particle mechanics 4. Inertial separation 5. Particle statistics 6. Brown motion and diffusion 7. Coagulation 8. Evaporation and condensation 9. Electrical properties 10. Aerosol sampling and transport

COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To teach principles of aerosol mechanics and particle properties as applied to air pollution, health effects, and industrial applications of aerosol technology. 2. To teach problem formulation and solution methods for aerosol behavior and properties. 3. To teach principles of instruments for measuring particle properties. 4. To teach particle statistics for handling size distribution data. 5. To expose students to practical aerosol problems through examples and assignments.
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<p>COURSE OUTCOMES</p>	<p>(Letters shown in brackets are linked to program outcomes a-k)</p> <ol style="list-style-type: none"> 1. Understand aerosol systems behavior and properties so as to comprehend applications in air pollution, health effects, and industrial aerosols. [a, e, f, h, j] 2. Apply the principles of aerosol mechanics to separate and classify particles. [a, e] 3. Apply the principles of kinetic theory and Brownian motion to derive submicron particle properties [a, e] 4. Apply the principles of coagulation, evaporation and condensation to study mass transfer phenomena in aerosol system. [a, e] 5. Apply the principles of ionic charging to study charge transport phenomena in aerosol system. [a, e] 6. Select and interpret information required for design and analysis industrial aerosol problems. [c, e, h, k]
<p>ASSESSMENT TOOLS:</p>	<ol style="list-style-type: none"> 1. Exams, Two exams during the semester and a final exam. 2. Homework grading or weekly quizzes.

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Nature of Changes:

This Syllabus was reviewed in 2007 and no changes were made.