

ENVR 754, AIR POLLUTION CONTROL
SCHEDULE REVISED AS OF 8 APRIL 2009

Spring 2009
Instructor: David Leith

Mon. Wed. Fri. 10-11 a.m.
Office 166 Rosenau, 966-3851
Baity Laboratory, 966-7337
Home 929-6176
david_leith@unc.edu
mboundy@unc.edu

Maryanne Boundy – Baity Lab

1. INTRODUCTION

M	12	Jan	Course objectives	
W	14	Jan	Survey of industrial gas cleaning equipment	
F	16	Jan	Overall efficiency of a collector; size distributions	
M	19	Jan	<i>Holiday</i> – Martin Luther King day	
W	21	Jan	Pressure drop and cost Isokinetic sampling	
M	26	Jan	EPA sampling methods	
W	28	Jan	Dustiness <i>Discussion:</i> Assignment on introduction to the course	Problem Set #1 Due Item 1, 2, 3

2. INERTIAL COLLECTORS

M	2	Feb	Gravitational settling	
W	4	Feb	<i>Laboratory #1:</i> Cyclone Performance <i>Literature #1:</i> Article on inertial collectors	Literature Review #1 Due Item 4
M	9	Feb	Cyclone flow pattern and standard design	
W	11	Feb	Cyclone efficiency and optimization <i>Discussion:</i> Lab on cyclone performance	Lab Writeup #1 Due Item 5

3. FILTRATION

M	16	Feb	Filtration Fundamentals	
W	18	Feb	Media filter efficiency and pressure drop <i>Discussion:</i> Assignment on inertial collectors	Problem Set #2 Due Item 6, 7
M	23	Feb	<i>Laboratory #2:</i> Filtration	
W	25	Feb	Types and characteristics of fabric filters <i>Discussion:</i> Lab on filtration	Lab Writeup #2 Due Item 8
M	2	Mar	Fabric filter efficiency and pressure drop	

4. SCRUBBERS FOR PARTICLE COLLECTION

W	4	Mar	Types and characteristics of scrubbers <i>Discussion:</i> Assignment on filtration	Problem Set #3 Due Item 9, 10, 11
M	9	Mar	<i>Spring Break</i>	
W	11	Mar	<i>Spring Break</i>	
M	16	Mar	Collection efficiency of spray towers	
W	18	Mar	Venturi scrubbers theory and pressure drop <i>Literature #2:</i> Article on scrubbers	Literature Review #2 Due Item 12
M	23	Mar	Venturi scrubbers efficiency and optimization	

5. ELECTROSTATIC PRECIPITATORS

W	25	Mar	<i>Laboratory #3:</i> Electrostatic precipitation <i>Discussion:</i> Assignment on scrubbers	Problem Set #4 Due Item 13, 14
M	30	Mar	Types and characteristics of electrostatic precipitators	
W	1	Apr	Corona, particle charging and particle motion <i>Discussion:</i> Lab on electrostatic precipitation	Lab Writeup #3 Due Item 15

6. CONTROL OF GASES AND VAPORS

W	8	Apr	Control of inorganic gases: Absorption <i>Discussion:</i> Assignment on electrostatic precipitation	Problem Set #5 Due Item 16, 17
M	13	Apr	Control of VOCs: Adsorption	
W	15	Apr	Control of VOCs: Incineration Control of SO _x and NO _x	
F	17	Apr	Control of auto emissions Control of auto emissions	
M	20	Apr	Tour – UNC Cogeneration Facility <i>Wear Long Pants and Covered Shoes</i>	
W	22	Apr	<i>Discussion:</i> Assignment on control of gases and vapors	Problem Set #6 Due Item 18, 19