

## ENVR 754 AIR POLLUTION CONTROL

Spring 2007  
Instructor: David Leith

Mon. 1 – 3 p.m.; Wed. 10-11 a.m.  
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Maryanne Boundy – Baity Lab  
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### 1. INTRODUCTION

W	10	Jan	Course objectives
F	12	Jan	Survey of industrial gas cleaning equipment
M	15	Jan	<i>Holiday</i> – Martin Luther King Day
W	17	Jan	(needs to be rescheduled because of conflict) Overall efficiency of a collector; size distributions
M	22	Jan	Sampling Pressure drop and cost
W	24	Jan	Dustiness

### 2. INERTIAL COLLECTORS

M	29	Jan	<i>Discussion:</i> Assignment on introduction to the course Gravitational settling	<b>Problem Set #1 Due</b>
W	31	Jan	<i>Laboratory #1:</i> Cyclone Performance	
M	5	Feb	<i>Literature #1:</i> Article on inertial collectors Cyclone flow pattern and standard design	<b>Literature Review #1 Due</b>
W	7	Feb	Cyclone efficiency and optimization	

### 3. FILTRATION

M	12	Feb	<i>Discussion:</i> Lab on cyclone performance Filtration Fundamentals	<b>Lab Writeup #1 Due</b>
W	14	Feb	Media filter efficiency and pressure drop	
M	19	Feb	<i>Laboratory #2:</i> Filtration	
W	21	Feb	<i>Discussion:</i> Assignment on inertial collectors	<b>Problem Set #2 Due</b>
M	26	Feb	Types and characteristics of fabric filters Fabric filter efficiency and pressure drop	
W	28	Feb	<i>Discussion:</i> Lab on filtration	<b>Lab Writeup #2 Due</b>

#### 4. SCRUBBERS FOR PARTICLE COLLECTION

M	5	Mar	Types and characteristics of scrubbers Collection efficiency of spray towers	
W	7	Mar	<i>Discussion:</i> Assignment on filtration	<b>Problem Set #3 Due</b>
M	12	Mar	<i>Spring Break</i>	
W	14	Mar	<i>Spring Break</i>	
M	19	Mar	Venturi scrubbers theory and pressure drop <i>Literature #2:</i> Article on scrubbers	<b>Literature Review #2 Due</b>
W	21	Mar	Venturi scrubbers efficiency and optimization	

#### 5. ELECTROSTATIC PRECIPITATORS

M	26	Mar	<i>Laboratory #3:</i> Electrostatic precipitation (second hour continues the lab)	
W	28	Mar	<i>Discussion:</i> Assignment on scrubbers	<b>Problem Set #4 Due</b>
M	2	Apr	Types and characteristics of electrostatic precipitators Corona, particle charging and particle motion	
W	4	Apr	<i>Discussion:</i> Lab on electrostatic precipitation	<b>Lab Writeup #3 Due</b>

#### 6. CONTROL OF GASES AND VAPORS

M	9	Apr	Control of inorganic gases <i>Discussion:</i> Assignment on electrostatic precipitation	<b>Problem Set #5 Due</b>
W	11	Apr	Control of VOCs: Adsorption Control of VOCs: Incineration (extra class this day)	
M	16	Apr	Control of Auto Emissions	
W	18	Apr	<i>Discussion:</i> Assignment on control of gases and vapors	<b>Problem Set #6 Due</b>

#### 7. FIELD TRIP

M	23	Apr	Tour – UNC Cogeneration Facility <i>Wear Long Pants and Covered Shoes</i>	
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