ENVR 416, Aerosol Technology

Fall 2009 – Version 2 MWF 10:00 a.m. to 10:50 a.m. 2306 McGavran Greenberg

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Text: Hinds, William C., Aerosol Technology, 2nd edition, Wiley, New York, 1999.
Course Web Site: http://www.unc.edu/courses/2009fall/envr/416/001

			Topic	**Reading**	
W	26	Aug	Course introduction, objectives, policies, schedule		Leith
F	28	Aug	Particle size	1-12	Leith
M	31	Aug	Properties of gases	15-23, 27-31	Leith
W	2	Sep	Rectilinear motion; Newton's resistance law	42-44	Leith
F	4	Sep	Stokes's law and slip correction factor	44-51;53-55	Leith
M	7	Sep	***Labor Day – No Class***		
W	9	Sep	Terminal settling velocity	55-62	Leith
F	11	Sep	Problem solving session	12, 39, 70	Leith
M	14	Sep	Particle dosimetry in the respiratory tract	233-257	Brown
W	16	Sep	Aerosols and respiratory health		Brown
F	18	Sep	Resuspension of deposited particulate matter; Aerosols generated by the WTC disaster	144-146	Rosati
M	21	Sep	Particle size distributions: frequency and cumulative	75-89	Leith
W	23	Sep	Log-normal distributions	90-97	Leith
F	25	Sep	Conversion: count to mass distribution	97-104	Leith
F	***25***	***Sep***	***Discussion: Lab Next Week*** – (*extra class this day*) ***Particle Size Measurement***	see website: 402-08;413-16	Leith, Boundy
M-F	***28-2***	***Sep Oct***	***Lab Session: Particle Size Measurement***	see website	Boundy
M	28	Sep	Problem solving session	108-110	Leith
W	30	Sep	Particle acceleration	111-116	Leith
F	2	Oct	Stopping distance	117-119	Leith
F	***25***	***Sep***	***Discussion: Lab Results*** - (*extra class this day*) ***Particle Size Measurement***	see website	Leith, Boundy
M	5	Oct	Curvilinear motion and Stokes number	119-121	Leith
W	7	Oct	Inertial impaction	121-128	Leith
F	9	Oct	Cascade impactors	128-136	Leith
F	***9***	***Oct***	***Lab on Particle Size Measurement is Due***		
M	12	Oct	***University Day – No Class***		

Class Schedule – ENVR 416

W	14	Oct	Problem solving session	138-140	
F	16	Oct	Brownian motion and diffusion	150-160	Leith
M	19	Oct	Particle deposition by diffusion	160-168	Leith
W	21	Oct	Review for midterm		Leith
F	23	Oct	***Fall Recess – No Class***		
M	26	Oct	Midterm exam		Flynn
W	28	Oct	Atmospheric aerosols	see website	Kamens
F	30	Oct	Atmospheric aerosols	see website	Kamens
M	2	Nov	Kelvin effect, droplet equilibrium	278-283	Leith
W	4	Nov	Condensation and evaporation	283-92;94-301	Leith
F	6	Nov	Problem solving session	168-9; 301-2	Leith
F	***6***	***Nov***	***Discussion: Lab Next Week – Instrument Calibration***	see website; 370-76;136-38	Leith, Boundy
M-F	***9-13***	***Nov***	***Lab Session****: Instrument Calibration*	see website	Boundy
M	9	Nov	Coagulation	260-272	Leith
W	11	Nov	Electrical forces, motion in an electric field	316-323	Leith
F	13	Nov	Particle charging	323-333	Leith
F	***13***	***Nov***	***Discussion: Lab Results*** - (*extra class this day*) ***Instrument Calibration***	see website	Leith, Boundy
M	16	Nov	Charge Limits	333-338	Leith
W	18	Nov	Problem solving session	346-347	Leith
F	20	Nov	Optical properties of aerosols	349-352	Leith
F	***20***	***Nov***	***Lab on Instrument Calibration is Due***		
M	23	Nov	Extinction	352-358	Leith
W	25	Nov	THANKSGIVING RECESS		Turkey
F	27	Nov	THANKSGIVING RECESS		Turkey
M	30	Nov	Scattering	358-364	Nash
W	2	Dec	Visibility	364-370	Nash
F	4	Dec	Problem solving session	376	Nash
M	7	Dec	Dust Explosions	386-392	Leith
W	9	Dec	Review for final exam		Leith
W	16	Dec	Final Exam – 8 until 11 a.m..		Leith