

Air Dispersion Modeling: APTI 423
Mid-Atlantic Regional Air Association - MARAMA

Course Director and Instructor:

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Time	Subject
<u>Day 1</u>	
8:30-8:45 AM	Welcome/Orientation
8:45-9:00	Course Review
9:00-9:30	Pre-test & review
9:30-9:45	Two modeling problems class exercise (box model and Gaussian model)
9:45-10:30	Regulatory Background of Air Dispersion Models <ul style="list-style-type: none">• Clean Air Act & Amendments• Guideline on Air Quality Models• Air Permitting• Air Toxic Reviews• Risk Assessment
10:30-10:45	Break
10:45-11:15	Introduction to Model Concepts <ul style="list-style-type: none">• Transport and Dispersion• Source Types• Emissions
11:15-12:00	Overview of Meteorology in Modeling <ul style="list-style-type: none">• Concepts and parameterization• Why needed in modeling
12:00-1:00	Lunch (on your own)
1:00-1:45	Air Pollution Meteorology - Transport and Dispersion
1:45-2:30	Meteorological Data Part I <ul style="list-style-type: none">• Required parameters• Review state-specific Local Climatological Data (class exercise)• Measurements (slides & instrumentation demos)
2:30-2:45	Break
2:45-3:30	Meteorological Data Part II <ul style="list-style-type: none">• Processing wind rose data (class exercise)• WRPLOT wind roses
3:30-5:00	Meteorological Data Part III <ul style="list-style-type: none">• Introduction to AERMET• Processing data using AERMINUTE & AERMET• AERMET (class exercise)
5:00	Adjourn

Time	Subject
Day 2	
8:30-10:30 AM	Introduction to Models <ul style="list-style-type: none"> • Model components • Gaussian Theory • Plume rise calculations • Simplified models/Turner's Workbook • Class exercise • Screening vs. refined models • Models Used in Permitting <ul style="list-style-type: none"> - AERMOD - CAL3QHC – mobile sources - CAMx & CMAQ – regional modeling - Air toxics models - CALPUFF
10:30-10:45	Break
10:45-11:15	Overview of the <i>Guideline on Air Quality Models</i> (in-class review)
11:15-11:45	Building downwash <ul style="list-style-type: none"> • Calculations • Introduction to Building Profile Implementation Program – BPIP
11:45-12:45	Lunch
12:45-1:15	Screening Models <ul style="list-style-type: none"> • Point sources: SCREEN3/AERMODSCREEN • Terrain: COMPLEX1\RTDM\ CTSCREEN • Toxic: TSCREEN\OCA Guidance • Visibility/deposition: VISCREEN/IWAQM/CALPUFF-lite
1:15-1:45	SCREEN3 Model Overview <ul style="list-style-type: none"> • Basic algorithms • Inputs/outputs • Hands-on interactive (class exercise)
1:45-2:30	Student exercises using SCREEN3 (and break as needed)
2:30-3:00	Introduction to More Refined Gaussian Models
3:00-4:00	Introduction to Complex Terrain Modeling (slides) <ul style="list-style-type: none"> • Visual Characterization, Modeling Adaptations • Guideline Models –AERSCREEN, SCREEN3, CTSCREEN, AERMOD, CALPUFF • Reading USGS maps • Using Digital Elevation Model (DEM) and NED files in models
4:00-5:00	Overview & discussion of State-specific modeling guidance
5:00	Adjourn

Time	Subject
<u>Day 3</u>	
8:30-9:15	Overview of AERMOD Modeling System <ul style="list-style-type: none"> • AERMOD, AERMINUTE, AERMET, AERSURFACE, AERMAP, BPIP • Concepts and model • Daytime & nighttime boundary layers • Complex terrain
9:00-10:15	AERMOD Model <ul style="list-style-type: none"> • Review the executable and input/output files • Execute the test files in DOS and review (exercise) • Student exercise
10:15-10:30	Break
10:30-12:00	Overview of AERMOD Graphical User Interfaces (GUIs) <ul style="list-style-type: none"> • Hands-on exercise using GUI
12:00-1:00 PM	Lunch
1:00-1:30	Overview of AERMAP <ul style="list-style-type: none"> • Running AERMAP & AERMAP exercise
1:30-2:15	Setting up and running AERMOD; Importing an existing AERMOD file into GUI <ul style="list-style-type: none"> • Using AERMOD, AERMAP, and AERMET together
2:15-4:00	AERMOD Exercises (break as needed)
4:00-5:00	Post-test and adjourn
