

EASE Seminar – May 7th to 9th 2019, Ramboll, London, UK

Instructors: Paul Malpas
Language: English
Hours: 08:45 - 17:00 (class starts at 9:00)

This 3-day seminar covers an overview of EASE and the basics of room modeling and sound system design. The EASE database, mapping results and visualization functions will be discussed as well. An introduction is given into auralisation and post-processing of calculation results. Case studies are presented and interpreted.

Agenda

Day 1:

1. Introduction and overview
 - a. Class objectives *Establishing an understanding of theory, capabilities, limits and efficient use*
 - b. History and background of EASE
2. Concepts in acoustical simulation
 - a. What is simulation?
 - b. Why do we need simulation? *Feasible approach to predict rooms/systems behavior -vs- analytical methods*
 - c. Tutorial on essential acoustic parameters in EASE
3. Basic program modules and general settings
 - a. Main module
 - b. Room editor *Items, perspectives and data checking*
 - c. Database *Materials and speakers*
 - d. Eyes *Rendering, performing calculations and viewing results*
 - e. EARS *Auralization*
 - f. Room data settings *Statistics, reverberation, noise and power settings*
4. Constructing and closing room models *Hands-on Model*
 - a. EASE model items
 - i. Vertices *Coordinates*
 - ii. Faces *Boundary vertices, material, folds, coating*
 - iii. Audience areas *Boundary nodes, shift*
 - iv. Listener's seats *Coordinates, orientation*
 - b. Fast Entry methods
 - i. Prototypes
 - ii. Three-dimensional shapes *Cuboid, cylinder, cupola, pyramid, cone*
 - c. Potential causes and remedy of holes
5. Material database
 - a. Format of material data
 - i. Absorption coefficients
 - b. Adding new materials *Interpolation*
 - c. Using Excel
6. Reverberation time formulae and their limits
7. RT optimization *Employing EASE to find the right acoustical treatment Hands-on Model*

Day 2:

8. Adding loudspeakers *Hands-on Model*
 - a. Position
 - b. Aiming angles and convention
 - c. Model
 - d. Power settings and alternatives *Broadband pink noise or multi-tone signal*
9. Looking at the rendered model and first calculations in Standard Mapping *Hands-on Model*
 - a. Eyes settings and options
 - b. Views
 - i. Dyes *White, material, face, alpha, random*
 - ii. External
 - iii. Item
 - iv. Walker *Jumping/wandering inside the model*
 - c. Standard mapping
 - i. Settings *Patch, shadow, interference*
 - ii. Limits
 - d. Viewing Standard Mapping results
 - i. Map types *SPL, energy ratios, intelligibility*
 - ii. Frequency perspective
 - iii. Distribution
 - iv. STI options *Standard, male/female, STIPA, with/without noise and masking*
 - v. Exporting Standard Mapping results *Pictures and values*
10. Speaker database
 - a. Format of speaker data
 - i. Types of speaker data files *SPK, DLL and GLL*
 - ii. Attenuation table *Horizontal/vertical planes and interpolation*
 - b. Polar plots
 - c. Balloons
 - i. Interpretation of balloons
 - ii. Rendering balloons *Coloured globes and shaped balloons*
 - iii. Phase balloons
 - d. Graphical representation of speaker data
 - i. Sensitivity
 - ii. Directivity index
 - iii. Frequency response
 - e. Speaker cases
11. GLL Modeled Speakers
 - a. Shortcomings of other methods *Configurable arrays, multi-way loudspeakers, ...*
 - b. Advantages of the GLL solution
12. Line array simulation in EASE
 - a. What are line arrays?
 - i. Concept *Cylindrical radiation*
 - ii. Advantages versus conventional loudspeakers *Coverage, spreading loss, steerability...*
 - b. Modeling line arrays in EASE
 - i. Near/far field considerations
 - ii. Balloons of line arrays *Disc-shaped balloons*
 - iii. Use of DLL files *Embedded programs for configuring arrays*
13. Auralisation of direct sound from Standard Mapping *Hands-on Model*
 - a. Probe with direct sound *Arrivals level and delay*
 - b. Using auralization of direct arrivals to check echoes

Day 3:

14. Advanced functions for faster and more efficient room modeling *Hands-on Model*
 - a. Objects
 - i. Definition *Items, reference point and angle*
 - ii. Advantages of using Objects *Group actions*
 - b. Tables
 - i. Different types of Tables
 - ii. Advantages of using Tables *Group actions*
15. Import/export functions
 - a. Advantages of using SketchUp *Using architectural drawings, curved and non-uniform surfaces*
 - b. 3D polylines and 3D faces
 - c. Examples
16. Presentation utilizing Vision *Hands-on Model*
 - a. Face texture
 - b. Lamps
 - c. Methods of rendering in EASE Vision
 - i. Ray tracing
 - ii. Scanline
 - iii. OpenGL Texture Map
 - iv. OpenGL Simple Map
 - d. 16.04 Perspective views
 - i. External
 - ii. Item
 - iii. Walker