

## Leaflet Master Class Room Acoustic Prediction Modelling

### Contents

Designing an acoustical critical space requires a deeper understanding of the acoustical performance of the space. Acoustic prediction modelling is a useful tool to be able to investigate and control the interior acoustics. For three days you will gain knowledge about the theoretical background of computer prediction modelling, how to create and validate a model, the prediction accuracy of acoustic prediction modelling and what is the range of applications. Also will be discussed how detailed a space has to be modelled for a reliable prediction of the acoustics. The applications include auditoria, theatres, concert halls, class rooms, open plan offices, industrial halls, and restaurants, atria, and other public buildings. The Master Class is complemented by a workshop in modelling and simulating the acoustics of a space. In this workshop the Odeon room acoustics prediction software and the Dirac room acoustics measurement software will be used.

### What will be presented?

- History, state of the art and future of acoustic prediction modelling.
- Theoretical background of acoustic prediction modelling; Image-source method / ray tracing, angle dependent reflection, scattering due to surface roughness and diffraction due to edges.
- Creation of room models with Odeon's Extrusion Modeller or by import of an architect's 3D model. The use of layers in models and how to repair typical errors in a model.
- Modelling of audience, furniture, curved shapes, etc. Assigning scattering properties to surfaces.
- Interpretation of simulation results. Detection of echoes, flutter echo, uneven sound distribution, etc.
- The use of auralisation as a tool in the acoustic prediction modelling.
- Guest presentation: The use of scale modelling as a prediction tool. The choice of source and microphone. What conditions have to be respected?
- Comparison of scale modelling with computer modelling.
- Workshop in simulating the acoustics of a space, both as a scale model and as a computer model.

### For whom?

The Master Class is primarily meant for acoustic consultants with several years of experience. The participants are expected to have considerable knowledge and experience in the field of room acoustics. Experience in room acoustical modelling is convenient, but not necessary. The participants should bring a notebook with Windows XP or Vista, however experience with Odeon or Dirac is not needed. Also, this Master Class can be relevant for PhD students and post-doctoral research fellows. The maximum size of the group is 12 persons.

### The master

The class will be given by Dr. J.H. Rindel, who is the managing director of Odeon A/S. For many years Dr. Rindel was a professor at the Technical University of Denmark where he established room acoustics as a major research field, and about 25 years ago he started the development of the Odeon Room Acoustics Software. Dr. Rindel has been a guest professor at universities in Japan, Australia, and New Zealand, and he is the convener of the ISO working groups that have created the current international standard methods for measurement of room acoustic parameters and scattering properties of materials.

### Guest speaker

MSc. C. Hak. Assistant professor at the Eindhoven University of Technology and partner of Acoustics Engineering. Content: scale modelling.

### Dates

The Master Class will take place from Wednesday 27 January through Friday 29 January 2010.

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**Location**

Laboratorium voor Akoestiek (Level Acoustics BV)

The laboratory is located at the campus of Eindhoven University of Technology in the Netherlands.

**Costs**

The cost for attending the Master Class is € 3.275,- (VAT excluded); this includes:

- A reader with literature and presentation sheets.
- Demo versions of the software that is used for the training.
- A four night's stay in a hotel, including breakfast, lunch and diner.

**Registration**

You can register for the Master Class by filling in the paper registration form thoroughly and sending it to Level Acoustics by mail or email. Registrations will be accepted in the order in which they are received, up to a maximum of 12 participants. After receiving the registration form, we will send a confirmation and an invoice. The payment must be fulfilled within 30 days after receipt of the invoice. Your registration for the Master Class is confirmed after we receive the course fee. The final subscription date is 21<sup>st</sup> of December 2009.

**Cancellation**

If you cancel more than four weeks before the Master Class starts, the course fee will be refunded, less € 327,50 for administration costs. If you cancel within one to four weeks before the Master Class starts, a refund of 50% of the course fee is given. Cancelling within the last week before the Master Class starts, implies no refund of the course fee. However, it is possible to send a substitute to follow the class, provided he or she has considerable knowledge and experience in the field of room acoustics. If there are not enough participants, Level Acoustics has the right to cancel the Master Class, up to one week before the start of the Master Class. In that case, the total course fee will be refunded.

**Information and registration**

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**Download the registration form here:**

<http://www.levelacoustics.nl/education/masterclasses/info/regformMCPM.doc>