Lecture Materials for Modal Analysis

Our package for universities and scientific institutions: Ready-to-use lecture materials and state-of-the-art software for experimental and numeric modal analysis.

Modal analysis is one of the tools, which seldom finds the required space in an engineer's education. Firm curricula and high preparation efforts leave teaching personnel with hardly any possibilities to dive deep into modal analysis. In many cases especially virtual classes quite simply lack access to the necessary professional analysis software.

Our academic offer gives universities and scientific institutions an easy solution to teach modal analysis in a comprehensive and practical way.

Highlights:

- **Ready-to-use lecture materials** (incl. tutorials, data sets, documentations)
- **Comparison of simulation and test:** Impart knowledge about the concept of the Digital Twin
- **High-end software tools:** Simcenter Testlab and Simcenter 3D academic licenses offer a large range of functions

Students will apply the theoretical fundamentals to an example of use and confirm the results experimentally as well as simulatively on the computer. Our modal analysis lecture is suited not only for in-person training but for virtual classroom traning as well.

Bundle 1	**Course material:** Fundamentals of Modal Analysis	**Course material:** Experimental Modal Analysis **Training material:** Experimental Modal Analysis	**Tutorial incl. data sets:** Experimental Modal Analysis **Academic Software:** Siemens Simcenter Testlab	**Optional:** Validation
Bundle 2		**Course material:** Numerical Modal Analysis **Training material:** Numerical Modal Analysis	**Tutorial incl. data sets:** Numerical Modal Analysis **Academic Software:** Siemens Simcenter 3D	

Full-package = Bundle 1 + Bundle 2 + Validation

Modal Analysis - Lecture Modules

Our **Full-package Modal Analysis** offers you comprehensive resources to impart knowledge to your students in a practical laboratory course. It consists of professionally prepared theoretical and practical lecture material, application-oriented tutorials including any necessary data sets, documentations and instructions. Additionally you will gain access to the software products Simcenter Testlab and Simcenter 3D via our academic licenses.

The lectures are built in a modular fashion and are available as a bundle for experimental and respectively numerical modal analysis. Both tutorials cover the same practical example and are especially interesting in direct comparison.

The lecture material **"Fundamentals of Modal Analysis"** consists of a sound technical and theoretical introduction to the topic and explains fundametal mechanical principles and modal transformation.

Bundle 1 includes specific course and training materials for **Experimental Modal Analysis (EMA).** It illustrates the essential steps and possibilities of modal analysis and consolidates this knowledge with the necessary theoretical basics. Challenges and possible sources of error will be focussed with examples including the correspondent solution strategies.

Bundle 2 deals with the **Numerical Modal Analysis (NuMA)**. The course and training materials include theoretical model assumptions, the necessary mathematical basics as well as the specification of the numerical simulation environment. During the tutorial the students will create their own numerical model and critically discuss the results of their modal analysis.

Our **Full-package** contains both bundles, which additionally are aligned in a validation. Suitable validation practices and their theoretical backgrounds are being introduced and applied.

Extensions and Additions

You can extend and combine **Bundle 1 (EMA)** or our Full-package with different **Simcenter SCADAS** hardware configurations according to your needs.

Thematic continuations of the lectures are possible, especially in the areas of **Operational Modal Analysis (OMA)** and **Order-Based Modal Analysis (OBMA)**. Also, the topic of Rotating Machinery offers many interesting points of reference.

Would you like to learn more about our offer and add experimental and modal analysis to your curriculum?
We are happy to answer your questions:
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About Novicos

As a leading expert in the fields of vibration, flow, electromagnetics and especially acoustics, Novicos GmbH offers a broad range of technical services and consulting.

As a Siemens Solution Partner we provide you with state-of-the-art testing equipment and software solutions from Siemens Digital Industries Software's simulation portfolio.

Our experience with the tools we use every day in our commercial as well as our research projects enables us to support our customers not only in choosing the best numeric tools for their application, but also in the operation of these tools.