

# **An e-learning-concept for research based learning in structural dynamics**

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## **ABSTRACT**

As part of a joint research project between TH Köln and TU Darmstadt an e-learning-concept is being developed. This concept provides students with an opportunity to engage in research regardless of their semester and specific time within the academic year.

The project focuses both on educational development and engineering research.

The engineering part is about the load model for human induced vibrations, described in the guideline VDI 2038 [1]. The current load model needs revision and must be completed because of missing values for horizontal loads and differences compared to the latest load models used in biomechanics.

The e-learning-concept is evaluated in different areas, like the achievement motivation of the students, the acceptance of the concept and its effectiveness. Therefore it can be regarded as a Scholarship of Teaching and Learning project [2].

The concept includes a wiki containing all basics of structural dynamics and measuring technology as well as information on the load model. The students work on small projects. The scope of their study is based on the required workload of the respective module. The students summarize their results in a new wiki page that subsequent students can later use for their projects.

The students shall obtain a good understanding of the connections between different modules and constitute a research community. They can participate in the research project in two optional modules within their bachelor curriculum, two optional modules within their master courses and in their bachelor and master thesis.

The results during the first year after implementation are predominantly positive. The students are commonly motivated and get a good understanding of the subject. The connection between research based learning and e-learning enables the instructor to supervise a lot of different student projects and the students can apply the newly learned contents to a larger research project.

## **REFERENCES**

- [1] *Verein Deutscher Ingenieure*: VDI 2038-Blatt 1: Gebrauchstauglichkeit von Bauwerken bei dynamischen Einwirkungen, Untersuchungsmethoden und Beurteilungsverfahren der Baudynamik (Juni 2012).
- [2] *Huber, L.*: Scholarship of Teaching and Learning: Konzept, Geschichte, Formen, Entwicklungsaufgaben. In: Huber, L., Pilniok, A., Sethe, R., Szczyrba, B. (Hg.): *Forschendes Lehren im eigenen Fach. Scholarship of Teaching and Learning in Beispielen.* s.l.: Bertelsmann W. Verlag.