

## **Modeling engineering structure as multidisciplinary system**

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### *About the subject*

Physical level model of product or other engineering structure is restricted to contextual part models, connection objects for parts, as well as objects for the related processes, analyses, and controls. Recently, there is a growing tendency to develop increasingly multidisciplinary systems operated engineering structures. Physical level modeling is not enough anymore: systems level modeling is required. This subject includes a set of issues to support research in this area.

### *Purpose and objectives*

Subject supports student to recognize necessity of system based engineering modeling, to understand method which is applied from systems engineering (SE), and to connect system and physical levels of model. It helps student at research in system behavior optimizing and integrated simulation processes. In the context of this subject, phrase engineering structure is applied for multidisciplinary system-based experimental engineering configuration.

### *Issues and topics*

Multidisciplinary systems operated engineering structures.  
Functional and logical level modeling in RFLP structure.  
Behavior definitions and representations for virtual execution of conceptual model.  
Connection of functional and logical components.  
Modeling and simulation of multi-body and multi-physic systems.  
Representation of content behind information in engineering model.  
System level parameter optimization.  
Organized simulations for multi-physics and multi-scale systems.

### *Laboratory support*

Students understand principles, methods, contextual connections and system issues discussing related issues on most advanced experimental models. These models are developed for this subject in the cloud environment of 3DEXPERIENCE system.

### *Literature*

Student collects, studies, and processes recent actual and time-honored classical publications about relevant research results considering own research plan then submit results of this work in the form of survey paper. Aim is to collect published knowledge and research results for the application at student PhD research.