Problems
The traditional structure of lecture, seminar and tutorial is not fit anymore to meet the needs of students, the job market, and the industry 4.0. In the last years a series of problems became apparent:

- The students cannot be supported appropriate with the rising number of students,
- have insufficient occupational qualification and practical knowledge,
- lack methodical and organisational competences, and
- learn little social and communicative skills throughout their studies.

With a new structure of teaching and learning Computational Mechanics, the IBNM attempts to solve these issues within the module, while strengthening the students’ independence in academic learning.

New Structure
The module will start with 6 intense theoretical lectures as an introduction into the subject matter. Later on, the students work on the online platform ILIAS to acquire further theoretical knowledge. During the semester, a lecture series will be held by several industrial professionals. Every week there will be a workshop and tutorials. The students will be assigned in groups to a semester project and can attend an open consultation every other week.

The scope of work includes biweekly online tests, a colloquium and a written report on the project.

Functions of every block:
- Intense lecture phase: Theoretical input
- Lecture series: Insight in practical usage
- Workshop: Exercises and feedback regarding online tests
- Tutorials: Interpretation and using business software
- Semester project in groups: Solving a practical problem
- Open consultation: Addressing problems in projects
- Online tests & feedback from ILIAS: Learning theoretical basics

Process of Learning
With this blended learning and flipped classroom concept the students are not ‘consuming’ input but participating in the learning process,
- have a continuous learning process due to the online tests, and
- get regular feedback, which allows them to evaluate and improve their skill level.

The multiple feedback possibilities within the semester enable not only the students to reflect their learning but allow the lecturer to adjust his or her teaching consistently depending on the individual needs of the students.

Outcome
With this new course concept, the previously evaluated problems can be faced:

- By sorting the problems beforehand, supporting students in the open consultation will be easier and more focused on individual problems
- By working on the project the students gain practical knowledge as well as professional skills
- The lecture series establishes a relationship between theory and practical usage in the professional life
- The work on the project helps acquire methodical and organisational competences
- The group work improves the students’ social and communicative skills

Timeline; on-campus and self-study.
(IC: Intermediate colloquium, WR: Written report, FC: Final colloquium)