Teaching the ABCs of Structural Simulation in Undergraduate Engineering Courses: from Meshing to Live Design Practices

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The accelerated development of computational technologies and tools during the 3rd Industrial Revolution has led us into the interconnected 4th Industrial Revolution. Increasing emerging technologies such as autonomy, big data, machine learning and artificial intelligence provide us with co-existing opportunities and challenges. To prepare for this array of experiences and knowledge in employment and further studies, young engineering students are actively searching for new approaches and tools to help them catch up with the latest trends.

In this talk, we have focused on one of the hottest topics in undergraduate engineering courses, structural simulation, with an example of introducing knowledge and understanding of the basics of the Finite Element Method, meshing and a new approach for 1st and 2nd year engineering students learning about simulation through hands-on experiences. We used free simulation hours in web-based Ansys OnScale to set up and run a structural simulation. For further exploration, different forces and meshing scenarios of an I-Beam can be analyzed with the free student download of Ansys Discovery. This aims to lower the threshold for young students to learn simulation and raise their interests in other advanced topics at the same time.

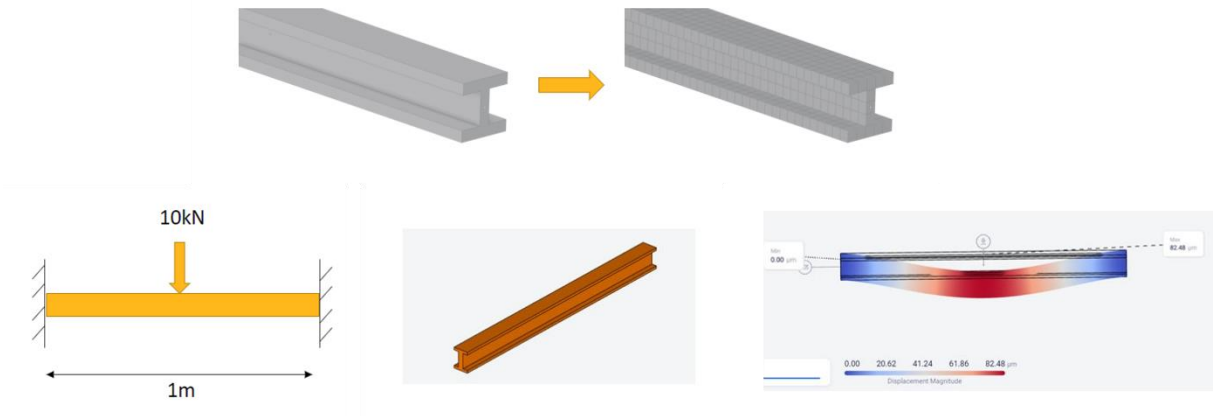

Figure 1 Learning structural simulation from meshing to hands-on experiences