

1	Course Number	Study Programme INTAP	Semester 3-7	Offered in <input checked="" type="checkbox"/> WS	Duration 1 Semester	Course Type optional	Workload (h)	ECTS Points 4
2	Courses		Teaching and Learning Forms Lectures, practices and project work		Contact Time (SWS) (h) 4 40 (1h=45 min.)		Self-Study Time (h) 20	Language English
3	Learning outcomes and competences After successfully completing the module, students will be able to ... <ul style="list-style-type: none"> - Formulate, analyze, and verify mechanical system analysis problems using an industry standard finite element analysis (FEA) software - Understand the structure and operation of a commercial FEA program (ANSYS) - Analyze deformations, forces, strains and stresses under a variety of loading conditions, including static and dynamic load cases 							
4	Course contents <ul style="list-style-type: none"> • Introduction to finite element analysis and ANSYS • Data transfer from CAD to FEA • Modelling, meshing, applying loads and boundary conditions • Determination of displacements and stresses in beams, trusses and three-dimensional bodies • Validation and Verification in FEA • Laboratory Work • Introduction to ANSYS Workbench • Application to example problems (beams, trusses, three-dimensional bodies) • Group Project • Use of FEA to solve an engineering problem • Documentation in a professional engineering report 							
5	Participation Requirements <ul style="list-style-type: none"> • Basic courses in engineering mechanics and mathematics 							
6	Examination Forms and Prerequisites for Awarding ECTS Points in-class exercises; project work, graded							
7	Estimated student workload 40 hours							
8	Further Use of course Electrical Engineering, Mechatronics							
9	Course Manager and Full-Time Lecturer Prof. Dr. Carsten Block							
10	Literature Lecture notes							
11	Course Registration Due to the limited number of participants, please register in advance by email at: kremena.daneva@hs-esslingen.de							
12	Last Updated 07.04.2026							