Course Name	CAD and FEA Technique in Automobile Design
Course Director	Zhou Hongni, Zhang Jiwei, Kang Yuanchun, Zhang Jianhui
Major	Mechanical Engineering, Automotive Engineering
Objective	The objective of this course is to let the student master the ability to three-dimensional design and finite element analysis of automobile components and parts by using the software of CAD and CAE. The task of this course is to let the student master some key and advanced technology and application skillfully with the English version software of CATIA and ANSYS.
Semester	6th
Language	English
Learning/Teaching methods	The theory teaching must be combined with practice teaching. The teacher can arrange classroom practice at the end of the teaching for several minutes. If the conditions permit, the course should be teaching in computer room, or all students should come to the class with notebook PC in the multi-media classroom.
Hour	48h
Credit	4.0
Prerequisite	Mechanical Drawing and Descriptive Geometry, Mechanical Design, CAD Basic Technique(CATIA), Automobile Structure, Finite Element Method and Application
Content	1. CAD Technique (12h): PDG (Part Design) update; ASD (Assembly Design) and GDR (Generative Drafting) update; GSD (Generative Shape Design); Parameterization and Knowledge; SMD (Sheet metal design). 2. CAD Experiment (12h). 3. FEA Technique(14h): Some Basic Concepts of Engineering Analysis; The Displacement-Based Finite Element Method; Some Basic Concepts of Engineering Analysis; The Displacement-Based Finite Element Method; Implementation of Methods in Computer Programs; Modeling Considerations; Solution of Static Analysis; Solution of Dynamic Analysis; Solution Methods for Frequencies and Mode Shapes. 4. FEA Experiment (10h).
Grade/Exam	Computer Experiments（20%）+ course exercise（80%） Course exercise includes parts modeling, assembly, drafting, and the finite element analysis of main part. At last the student should hand in a design paper and all the files of CAD and FEA.
Reference	[1] CATIA Training Files. DASSAULT SYSTEM, 2002 [2] MICHEL MICHAUD. CATIA CORE TOOLS: Computer-Aided Three-Dimensional Interactive Application, 2012 [3] Wiley. Concepts and Applications of Finite Element Analysis (3rd Edition), 2001 [4] Klaus-Jurgen Bathe. Finite Element Procedures, 2007