

Syllabus CDHK					
Faculty	Vehicle Engineering, Sino-German School for Postgraduate Studies (CDHK)				
Title	Automobile Energy Conservation and Emissions				
Course Form	Lecture <input checked="" type="checkbox"/>	Exercise <input type="checkbox"/>	seminar <input type="checkbox"/>	Workshop <input type="checkbox"/>	Others <input type="checkbox"/>
Semester	Year 2018/19	SS <input type="checkbox"/>	WS <input checked="" type="checkbox"/>	Course Code	2130020
Responsible	Chair Prof. Dr. LI Liguang			Lecturer Prof. Dr. LI Liguang	
Contact data	Email: liguang@tongji.edu.cn			Tel./Fax. +86-21- 69583817	
Consulting Hour					

### 1. Date/Time/Room

Prof. Dr. LI Liguang:

18. Oct, 25. Oct, 01. Nov, 15. Nov (student homework), 22. Nov, 29. Nov (concluding report) CDHK 307

Prof. Dr. Jakob Andert: 05.11.2018-09.11.2018

05. Nov 18:00-21:00, 06. Nov 13:30-17:00, 08. Nov 18:00-21:00, 09. Nov 13:30-17:00 CDHK 307

Siping Campus

### 2. Learning Target

Based on the system of "People-Vehicle-Environment" and the key position of the automobile role in the transportation of society, to understand and master the modern technology of automobile energy conservation and emission control. The Life Cycle Analysis (LCA) is employed to analysis the energy consumption of transportation, manufacturing, cruising, recycle and their effects on the energy consumption and emissions. Some typical low carbon automobile cases, such as EV, FCV and HEV are introduced. The lecture focuses on the low carbon automobile technologies.

Course Purposes:

1. History of Automobile energy consumption and emissions and future trends;
2. Automobile energy consumption and emissions by LCA method;
3. Modern technology of automobile energy conservation;
4. Modern emission control technology of automobile;
5. Low carbon automobile technology.

*The course covers professional technology information and application(in% - Sum = 100)*

Prof. competence	30	Method. competence	30	System competence	30	Social competence	10
------------------	----	--------------------	----	-------------------	----	-------------------	----

### 3. Course Content Description

The course contents those items as follows:

1. History, Today and Future Challenge of automobile energy conservation and emissions
2. LCA application on automobile energy conservation and emissions
3. Introduction of Low Carbon Automobile
4. Vehicle and components energy conservation
5. Engine conservation and emissions-Gasoline engine
6. Engine conservation and emissions-Diesel engine
7. Engine conservation and emissions-Alternative fuels
8. New Powertrain System-Hybrid Electric Vehicle, EV and FCV
9. System View for Vehicle Energy Conservation and Emissions
10. High efficiency and Zero emission IC engine for future Vehicle

### 4. Language

English

### 5. Workload

Lectures: 36 hours

Self study: 24 hours

Home works: 24 hours

<i>ECTS Credit Points</i>	4 ECTS
---------------------------	--------

**Note:**

The European Credit Transfer and Accumulation System (ECTS) is a student-centered system based on the student workload required to achieve the objectives of a program of study. One ECTS stands for around 30 working hours. Student workload in ECTS consists of the time required to complete all planned learning activities such as: attending lectures, seminars, laboratory classes; independent study; preparation of projects, dissertations, examinations and so forth.

### 6. Exam Form

Write a technical paper based on the overview on papers reading and reviewing. The paper is a report in details about the trend of the fuel saving and energy conservation in some areas related automobile.

### 7. Literature, Scripts

Print-material available?	<input checked="" type="checkbox"/>	at:	Reference book
Digital material available?	<input checked="" type="checkbox"/>	at:	References of papers and book chapters



**Obligatory Lecture:**

1. History, Today and Future Challenge of automobile energy conservation and emissions
2. LCA application on automobile energy conservation and emissions
3. Introduction of Low Carbon Automobile
4. Vehicle and components energy conservation
5. Engine conservation and emissions-Gasoline engine
6. Engine conservation and emissions-Diesel engine
7. Engine conservation and emissions-Alternative fuels
8. New Powertrain System-Hybrid Electric Vehicle, EV and FCV
9. System View for Vehicle Energy Conservation and Emissions
10. High efficiency and Zero emission IC engine for future Vehicle

**8. Others**

1. Group homeworks for 3-4 times.
2. One big home work related LCA application in the automobile.  
This homework will need at least about 16 hours for papers reading and writing the paper
3. One seminar presentation with PPT report.  
This home work will need at least 8 hours for papers searching, reading and writing and preparing the PPT.