



Vrije Universiteit Brussel
Faculteit Ingenieurswetenschappen
Vakgroep Toegepaste Mechanica
Academic Year 2014-2015

Lecture schedule Piston engines

Week 1

There will be no lectures in this week, as I am abroad.

Week 2

Monday September 22 2014

Introduction to combustion engines. Classification. Two and four stroke engines. Diesel and Otto engines.

Thursday September 25 2014

Construction of a piston engine. Main components.

Week 3

Monday September 29 2014

Rotary engines. Future evolutions of engines.

Thursday October 2 2014

Operational engine parameters : torque, power and specific consumption

Week 4

Monday October 6 2014

Operational engine parameters : torque, power and specific consumption((continued)

Thursday October 9 2014

Fuels : characteristics of petrol and diesel, alternative fuels.

Week 5

Monday October 13 2014

Mixture formation in Otto engines : carburation , indirect and direct injection systems

Thursday October 16 2014

Ignition in Otto-engines

Week 6

Monday October 20 2014

Combustion in SI engines. Deviating combustion : knock & glow ignition.
Design of combustion chambers for SI engines.

Thursday October 23 2014

Emission of SI engines. Emission treatment systems : EGR & three-way catalyst. EC regulations

Week 7

Thursday October 30 2014

Emission of SI engines. Emission treatment systems : EGR & three-way catalyst. EC regulations

Week 8

Thursday November 6 2014

No course (abroad)

Week 9

Thursday November 13 2014

No course (abroad)

Week 10

Thursday November 20 2014

No course Sint Vebaegen

Week 11

Thursday November 27 2014

Combustion in diesel engines

Week 12

Thursday December 4 2014

Emission of CI engines : EGR, oxidation catalyst and soot filter

Week 13

Thursday December 11 2014

Principle of supercharging. Volumetric compressors. Exhaust gas driven compressors. Turbo-compressors

Week 14

Thursday December 18 2014

Vibrations in engines. Balancing of engines
Concluding remarks. Q&A session

Lectures take place from 8 to 10 am.. In weeks 1 to 6 on Monday and Thursday in room AY2.114 at Campus Solbosch (ULB). From week 8 on in room D.005 at Campus Oefenplein VUB.

The transparencies will be made available on Poincaré, as well as some of the videos. A printed version of the Powerpoint presentations (three parts) is available at VUB uitgaven (VUBTIEK (Campus VUB, Building B, ground floor)).

Reference book for this course is :

Stone, R. "Introduction to internal Combustion Engines", Palgrave McMillan, 4th edition, 2014. ISBN 9780230576636

A complete reference list is found in part 3 of the transparencies and on Poincaré.