

Course Topic: *Design and Implementation of a LTC Engine Test Setup*

Outline:

Low Temperature Combustion (LTC) engine is a clean and efficient type of IC engines which is a crucial topic for today's powertrain industries. Design and Instrumentation of a LTC engine setup offers substantial benefits for the automotive industries. This course is mainly divided into two sections, the design and the instrumentation. The design section will cover the 3D modeling of the test cell and the design of adapter for E-motor connection to the LTC engine. The instrumentation section of the course contains coming up with the setup of encoder and ECU interface, electronic control of EGR line, and controller implementation and instrumentation for LTC engine control. The course also contains bonus elements for experimentally testing and ainitial analysis of the instrumented LTC engine. Finally, results are to be expected in the form of reports, 3D models, and experimental results (Table A).

Table A: Project/Course Description (2 credit)

Item	Section	Description	Deliverable	Final grade contribution
1	Design	3D modeling of the test cell	3D test cell Model	20%
2	Design	Design of adapter for E-motor connection to the LTC engine	Report + 3D test cell Model	20%
3	Instrumentation	Setup and instrumentation of encoder	Report + Test Results	20%
4	Instrumentation	Setup and instrumentation of ECU	Report + Test Results	20%
5	Experimental	Electronic control of EGR line	Report + Test Results	20%
6	Experimental	Experimental testing of LTC engine	Report + TestResults	Bonus (up to 10%)

Notes:

- Frequency of sessions/meetings: once per week