Course Topic: ***Experimental and Simulation of LTC engine in Hybrid Electric Powertrain***

Outline:

Low Temperature Combustion (LTC) engine is a clean and efficient type of IC engines which is crucial topic for today's powertrain industries. Pairing a LTC engine with a hybrid electric powertrain offers substantial benefits for the automotive industries. This course is mainly divided into two sections, the experimental and the simulation. The simulation section will cover the combustion and dynamic modeling of the LTC engine along with the neural network modeling of the engine. It will also cover the modeling of HC and CO emission of LTC engine based on Greybox modeling techniques. The experimental side of the course contains coming up with a LTC-HEV test setup model. The course also contains bonus modules which are based on the availability of required LTC engine. The bonus module includes topics such as instrumentation of LTC engine, and experimental testing of LTC engine. Finally, results are to be expected in the form of reports, simulation results, and experimental data (Table A).

Table A: Project/Course Description

Item	Section	Description	Deliverable	Final grade contribution
1	Simulation	Literature survey – LTC combustion and dynamic modeling of LTC engine	Literature survey report	10%
2	Experimental	Design of LTC HEV test setup	Report + 3D test cell Model	20%
3	Simulation	Study of Neural network modeling of IC engines	Report	20%
4	Simulation	Greybox modeling of HC and CO emission of LTC engine	Report + Simulation model + Results	30%
5	Experimental	Instrumentation of LTC engine	Report + Instrumented engine	20% + Bonus
6	Experimental	Experimental testing of LTC engine	Report + Testing Results	Bonus