

## Vehicle Engines and New Propulsion Systems(2.0 credits)

Code	: 10274	
Course Type	: Specialized Courses	
Class Format	: Lecture	
Course Name	: Automotive Engineering	Automotive Engineering
Starts 1	: 3 Autumn Semester	3 Autumn Semester
Elective/Compulsory	: Elective	Elective
Lecturer	: Part-time Faculty Professor	

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### •Course Purpose

In this course, students will learn about the combustion engine and advanced propulsion systems. Course objectives include (1)developing an understanding of the design and mechanics of the combustion engine (Otto-cycle engine and Diesel engine) and, (2)reviewing revolutionary vehicles with new propulsion system (electric vehicles, hybrids and fuel cell vehicles).

### •Prerequisite Subjects

Thermodynamics, Fluid mechanics/dynamics

### •Course Topics

1. Otto-cycle engine
2. Diesel engine
3. Supercharging
4. Fundamental of vehicle propulsion
5. Combustion engines
6. Electric vehicles
7. Hybrid electric vehicles
8. Design principle of series and parallel hybrids
9. Fuel cell vehicles

### •Textbook

Printed handouts will be provided.

### •Additional Reading

The Internal Combustion Engine in Theory and Practice: Vol. 1, The MIT Press  
Hybrid, Electric and Fuel-Cell Vehicles, Delmar Cengage Learning  
Fuel Cell Systems Explained 2nd Edition, SAE International  
Internal Combustion Engine Handbook, SAE International

### •Grade Assessment

Grades will be based on class participation and reports.

30% for attendance  
30% for interim report  
40% for final report

### •Notes

### •Contacting Faculty

Students can ask questions at any time during classes.

Questions during off-class hours can be asked at the lecturer's room (Engineering Building No.3 North Wing, Room 223 (3125)) or via e-mail: takimotof@nuem.nagoya-u.ac.jp

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