INSTRUCTIONS FOR THE COURSE

Alternate Fuels and Advances in I.C. Engines

ME-690

Course Instructor

Prof. Avinash Kumar Agarwal
http://home.iitk.ac.in/~akag/

FB-302
Department of Mechanical Engineering
Indian Institute of Technology Kanpur,
Kanpur-208016, India
Tel: +91-512-259 7982 (office)
Email-akag@iitk.ac.in
Lectures:
9.00-10.30 AM
Wednesday- TB-201
Friday-L3

Teaching Assistant:
Rajesh Kumar Prasad

Email:
rajeshpd@iitk.ac.in

Address:
FB-301, Department of Mechanical Engineering, IIT Kanpur

Grading

Mid-semester examination (Closed books/notes) 40 Points
Final Examination (Closed books/notes) 50 Points
Attendance in lectures 10 Points
• Attendance is mandatory in lectures.

• No compromise in integrity: any act of dishonesty will be dealt strictly, as per institute guideline.

• Final letter-grade is relative; attendance would be important for the borderline cases.

• No makeup exams without approved leave.

Text Books

• Internal Combustion engine fundamentals:

• Fundamentals of internal combustion engines:
  Gill, Smith and Ziurys, Oxford and IBH.

• The Internal combustion Engine in theory and practice:

• Internal Combustion Engines and Air Pollution:
  E F Obert, Intext Educational Publishers, NY.

• Hydrogen Fuel for Surface Transportation:
  Joseph Norbeck, SAE Publications, 1996
Text Books


Re-grading

- You can return the examination copies on the day, the answer-scripts are distributed for re-grading, after writing your comments on the top of the answer scripts.

- If you are absent on that day, you lose the right to appeal.

- Re-grading of the entire question will be done even if a part re-grading is requested for.
Makeup Exam

- Only one make-up examination will be given, Only to the students with regular attendance in lectures and tutorials.
- Students missing mid-semester examination, can also take this makeup upon production of a valid medical certificate.
- The entire material covered in the course will be included, irrespective of which test is missed.
- This makeup will be at the same time as the final makeup exam (date of which will be decided by the DOAA).
- Cheating of any kind (proxy in attendance or taking help during examinations, coping, etc.) would result in severe punishment.

Course Summary

- Combustion and Fuels: Combustion process in SI and CI engines, Petroleum based liquid fuels and refining;
- Liquid alternative fuels such as vegetable oils, biodiesel, and emulsified fuels, lubricating oils composition and effect of alternate fuels;
- Gaseous alternative fuels such as hydrogen, compressed natural gas, liquefied petroleum gas, di-methyl ether, and hythane;
- Modern developments in IC Engines such as EGR, MPFI, GDI, HCCI and Turbo-charging;
- Optical measurement techniques and tools: Particle image velocimetry, 3D and Holographic PIV, spray visualization, phase doppler interferometry for spray characterization,
- Optical engines and engine endoscopy; Pollution monitoring instruments and techniques,
- Control measures such as DOC, DPF, SCR and LNT.
Thank You