



MJ2246 Rocket Propulsion 6.0 credits

Rocket Propulsion

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for MJ2246 valid from Autumn 2007

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

MJ1112 Thermodynamics, 9 hp or corresponding knowledge

SG1220 Fluid mechanics, 6 hp or corresponding knowledge

MJ2429 Turbomachinery, 6 hp or corresponding knowledge

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

To provide an understanding of rocket propulsion systems for both launch and orbital control missions.

Course contents

Fundamentals of rocket vehicles: static performance, vehicle acceleration, orbital mechanics, types of rockets. Components of a rocket: performance characteristics, nozzle design. Chemical rocket propellants: performance with chemical equilibrium, non-equilibrium effects, combustion chamber design, hybrid rockets. Rocket engine subsystems: wall cooling, injectors, propellant feed systems, controls.

Projects: calculation of rocket nozzle flow field and calculation of liquid rocket performance with equilibrium chemistry

Disposition

50% selfstudy course with supportive lectures and seminar

Course literature

Hill, P. and Peterson, R. 1992. "Mechanics and Thermodynamics or Propulsion".

Addison-Wesley Publishing Company, Inc., USA. ISBN 0-201-14659-2.

George P. Sutton, Oscar Biblarz, 2001 "Rocket Propulsion Elements", 7th Edition John-Wiley & Sons, Ltd., ISBN: 0-471-32642-9 Compedu (www.compedu.net)

Kungliga Tekniska Högskolan (KTH) - Sweden Department of Energy Technology

Division of Heat and Power Technology

Examination

- PRO1 - Project, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Home Assignments, 1.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

PRO1 Project 1.5 hp

TEN1 Examination 3.0 hp

ÖVN1 Home Assignments 1.5

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.