

**SYLLABUS**

# **Aircraft Engine Technology**

## **7.5 credits F0039T**

**Flygmotorteknik**

**Course syllabus admitted: Autumn 2023 Sp 1 - Present**

**DECISION DATE**  
**2021-02-17**

# Aircraft Engine Technology 7.5 credits F0039T

## Flygmotorteknik

### First cycle, F0039T

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Farkostteknik	Vehicle Engineering

## Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and Thermodynamics, Aerodynamics and Performance or equivalent. Good knowledge in English, equivalent to English 6.

## Selection

The selection is based on 1-165 credits.

## Course Aim

After completing the course, students should:

### 1. Knowledge and understanding

- be able to illustrate different engines for airplanes and helicopters
- be able to identify the thermodynamic phenomena occurring in jet engines

### 2. Skills and abilities

- be able to calculate energy balances for gas turbines
- be able to perform one-dimensional calculations about compressible flows
- be able to solve engineering problems about the flow in single stages of compressors and turbines

### 3. Evaluation and attitude

- be able to evaluate the influence of different design parameters on jet engine performance
- be able to briefly discuss the energy conversion issues in jet engines

## Contents

One-dimensional compressible flow in nozzles and channels with and without friction and heat transfer. Elementary gas turbine theory, two-dimensional flow in compressor and turbine stages, flow losses. Applications in radial and axial compressors and gas expanders. Characteristics of jet engines under different running conditions. Service and maintenance. Choice of materials and material problems. Project: Prediction of thrust in an aircraft jet engine.

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Teaching consists of lectures with theory review and problem solving. Submission of bonus assignments. One project assignment in groups of 2-3 students.

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.

Item 1: individual written exam (there can be alternative examination methods) with differentiated grades in the scale G U 3 4 5. Item 2: review of project reports. Both items are required for the final grade in the course.

## Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

## Overlap

The course F0039T is equal to MTM461

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## Course offered by

Department of Engineering Sciences and Mathematics

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0002	Project	U G#	3	Mandatory	A07	
0003	Written exam	G U 3 4 5	4.5	Mandatory	A21	

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## Last revised

by Head Faculty Programme Director Niklas Lehto 2021-02-17

## Syllabus established

The syllabus was established by the Department of Applied Physics and Mechanical Engineering 2007-02-28, and remains valid from autumn 2007.