

Turbomachinery

Course code: ATM3

ECTS Credits: 2

Department	: MFA	Lectures	: 12h30
Lecturers	: A. Spohn	Tutorials	: 12h30
Year of study	: 2 nd year	Laboratory sessions	:
Semester	: 3 rd semester	Project	:
Assessment method(s)	: 1 written test	Home works	:
Language of instruction	: English	Total hours <i>Horaire</i>	: 25h00
Type of courses	: Compulsory		

Objective: To provide the student with working knowledge of the fluid mechanics of turbomachinery elements (flow inlets, compressors and turbines)

Prerequisites: Compressible fluid mechanics, notions of turbulent flows, thermal engines

Content:

1. Introduction, overview and machinery classification
2. Two-dimensional flow in a compressor and a turbine stage
3. Two-dimensional cascades and airfoils
4. Simplified three-dimensional flow
5. General design criteria for compressors and turbines
6. Radial compressor
7. Stable operation and off design operation

Recommended reading:

- S.L. Dixon, *Fluid Mechanics, Thermodynamics of Turbomachinery*, Pergamon Press Second Edition, 1975
B. Lakshminarayana, *Fluid Dynamics and Heat Transfer of Turbomachinery*, John Wiley and Sons Inc., 1996

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