



# UNICUSANO

Università degli Studi Niccolò Cusano - Telematica Roma

<b>Course Title</b>	Turbomachinery Design
<b>Lecturer / Professor</b>	Laura Tribioli
<b>Degree Course</b>	Mechanical Engineering LM-33
<b>ECTS</b>	9
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<b>Reference Book</b>	C. Caputo, Vol. 2 - LE TURBOMACCHINE, Casa Editrice Ambrosiana
<b>Method of examination</b>	Written
<b>Topics Covered</b>	
<ul style="list-style-type: none"><li>• Introduction;</li><li>• Monodimensional analysis;</li><li>• Velocity triangles, diffusion factor, flow characteristics, degree of reaction;</li><li>• Axial steam turbines;</li><li>• Two-dimensional stage design, blade families, boundary layer theory, blade loading;</li><li>• Real turbine and compressor characteristics, radial equilibrium, loss mechanisms, secondary flows;</li><li>• Axial flow compressor;</li><li>• Flow instabilities, stall and surge, rotating stall, stability improvement, flutter, noise reduction;</li><li>• Overview on hydraulic turbines;</li><li>• Overview on similitude theory.</li></ul>	
<b>Course Objectives</b>	
<p>At the end of the course, the student should be able to:</p> <ol style="list-style-type: none"><li>1. Realize a preliminary design of a turbomachinery;</li><li>2. Understand the limits of the monodimensional analysis and the need of a bi or three-dimensional approach.</li></ol>	
<b>Expected Results</b>	
<p>Ability to realize a preliminary design of a turbomachinery.</p>	