



### BIOMACHINES

<b>Enrollment year</b>	2015/2016
<b>Academic year</b>	2015/2016
<b>Regulations</b>	DM270
<b>Academic discipline</b>	ING-IND/34 (INDUSTRIAL BIOENGINEERING)
<b>Department</b>	DEPARTMENT OF ELECTRICAL, COMPUTER AND BIOMEDICAL ENGINEERING
<b>Course</b>	BIOENGINEERING
<b>Curriculum</b>	TECNOLOGIE PER LA SALUTE
<b>Year of study</b>	1°
<b>Period</b>	2nd semester (29/02/2016 - 10/06/2016)
<b>ECTS</b>	6
<b>Lesson hours</b>	45 lesson hours
<b>Language</b>	Italian
<b>Activity type</b>	WRITTEN AND ORAL TEST
<b>Teacher</b>	GHILARDI PAOLO - 6 ECTS
<b>Prerequisites</b>	Basic knowledge of Fluid Mechanics and of Partial Differential Equations
<b>Learning outcomes</b>	The student will gain a basic knowledge on how Biomachines are made and work, will be able to understand and to develop mathematical models of biomachines on the basis of fluid dynamics concepts, will know the fundamental concepts of cardiovascular fluid dynamics and of its modelling strategies.
<b>Course contents</b>	Fluid dynamics of cardiovascular systems  Hemodialysis machines  Prosthetic heart valves

	<p>arterial pressure measurement</p> <p>Heart-lung machines</p> <p>Mathematical models of hemodynamics</p> <p>One dimensional modelling of pulsatile flow</p>
<b>Teaching methods</b>	lectures, practical work with computers
<b>Reccomended or required readings</b>	<p>lecture notes available on Kiro.</p> <p>Kundu, P.K., Cohen, I.M.. Fluid Mechanics. Elsevier. With particular reference to the chapter "Introduction to Biofluid Mechanics".</p> <p>Miller,G.E.. Artificial Organs. Morgan &amp; Claypool.</p>
<b>Assessment methods</b>	<p>During the final written test the candidate should be able to understand how Biomachines are made and work, to understand and to develop mathematical models of biomachines based on fluid dynamics, know the fundamental concepts of cardiovascular fluid dynamics and of its modelling strategies.</p>
<b>Further information</b>	
<b>Sustainable development goals - Agenda 2030</b>	<a href="#">\$lbl_legenda_sviluppo_sostenibile</a>