



# FACOLTA' DI INGEGNERIA DI PISA

## ATTIVITA' FORMATIVE A.A. 2018-2019

### Laurea Magistrale

### BIONICS ENGINEERING

#### Sezione 1: Manifesto degli studi

Anno di corso	[SSD]	CFU		Per	Note	Lab
<b>Primo anno</b>						
Biomechanics of human motion	ING-IND/34	6		1		
Statistical signal processing	ING-INF/03/	6		2		
Bioinspired computational methods	ING-INF/05	6	6	E	1	
Applied brain science	[INF/01 ING-INF/06]	6	6	E	2	
Materials and instrumentation for bionics engineering	[ING-INF/06,ING-IND/34]	6	6	E	3	
A scelta dello studente		12		1 e 2		
<b>Secondo anno</b>						
Prova finale		15				
Lab training		3		2		
<b>Neural Engineering (42CFU)</b>						
Social robotics and affective computing	ING-INF/06	6	6	E	4	
Neural prostheses	[ING-INF/06, ING-IND/34]	6	6	E	5	
Integrative cerebral function and image processing	[ING-INF/06]	6	6	E	6	
Bionic senses	[ING-INF/06]	6		2		
<b>Biorobotics (42 CFU)</b>						
Human and animal models in biorobotics	ING-IND/34	6		1		
Prosthetics and rehabilitation robotics	ING-IND/34	6	6	E	7	
Robotics for surgery and targeted therapy	ING-IND/34	6	6	E	8	
Robotics for assisted living	ING-IND/34	6	6	E	9	

Dettagli insegnamenti integrati (nota INT)				
Insegnamento Integrato o plurisettoriale	Modulo (solo se integrato)	[SSD]	CFU	Per.
1) Bioinspired computational methods	Neural and fuzzy computation	ING-INF/05	6	2
	Biological data mining	ING-INF/05	6	1
2) Applied brain science	Behavioural and cognitive neuroscience	ING-INF/06	6	1
	Computational neuroscience	INF/01	6	2
3) Materials and instrumentation for bionics engineering	Instrumentation and measurement for bionic systems	ING-INF/06	6	1
	Soft and smart materials	ING-IND/34	6	2
4) Social robotics and affective computing	Social Robotics	ING-INF/06	6	1
	Affective Computing	ING-INF/06	6	2
5) Neural prostheses	Neural tissue engineering	ING-INF/06	6	1
	Neural interfaces and bioelectronic medicine	ING-IND/34	6	2
6) Integrative cerebral function and image processing	Integrative cerebral function	MPSI/02	6	2
	Advanced image processing	ING-INF/06	6	1
7) Prosthetics and rehabilitation robotics	Artificial limbs	ING-IND/34	6	2
	Robotic exoskeletons	ING-IND/34	6	2
8) Robotics for surgery and targeted therapy	Robotics for minimally invasive therapy	ING-IND/34	6	1
	Miniaturized therapeutic and regenerative systems	ING-IND/34	6	2
9) Robotics for assisted living	Robot companions for assisted living	ING-IND/34	6	1
	Cloud robotics	ING-IND/34	6	2

#### Sezione 2: Dettagli attività a scelta

Insegnamenti dell'Ateneo consigliati come attività a scelta dello studente				
Insegnamento	[SSD]	CFU	Per.	Note
Economic assessment of medical technologies and robotics for healthcare	SECS-P08	6	2	
Electronics for Bionics engineering	ING-INF/01	6	2	
Principles of bionics engineering	ING-IND/34	6	1	
Neuromorphic engineering	ING-IND/34	6	1	
Mechanics of elastic solids and bio-robotic structures	ING-IND/34	6	1	



**FACOLTA' DI INGEGNERIA DI PISA**  
**ATTIVITA' FORMATIVE A.A. 2018-2019**