



FACOLTA' DI INGEGNERIA DI PISA

ATTIVITA' FORMATIVE A.A. 2022-2023

Laurea Magistrale

BIONICS ENGINEERING

Sezione 1: Manifesto degli studi

Anno di corso	[SSD]	CFU		Per	Note	Lab	
Denominazione							
Primo anno							
Methods and techniques of measurement and data analysis	ING-INF/06	6		2			
Statistical Signal Processing	ING-INF/03	6		1			
Bioinspired Computational Methods	ING-INF/05	6	6	1-2	1		
Analysis of bionic and robotic systems	[ING-INF/06,ING-IND/34]	6	6	1.2	2		
Neural Engineering (12CFU)							
Applied Brain Science	[INF/01, ING-INF/06]	6	6	1-2	3		
Biorobotics (12 CFU)							
Bioinspired and soft robotics	ING-IND/34	6	6	1-2	4		
A scelta dello studente		12					
Secondo anno							
Prova finale		15					
Lab training		3					
Neural Engineering (42CFU)							
Interactive Systems and Affective Computing	[INF/01, ING-INF/06]	6	6	1-2	5		
Neural Prostheses	ING-INF/06	6	6	1-2	6		
Integrative Cerebral Function and Image Processing	[MPSI/02,ING-INF/06]	6	6	1-2	7		
Bionic Senses	ING-INF/06	6		1			
Biorobotics (42 CFU)							
Design principles for bionic tissue engineering	ING-INF/06	6		1			
Wearable robotics	ING-IND/34	6	6	1-2	8		
Rehabilitation and assistive technologies	ING-IND/34	6	6	1-2	9		
Advanced interventional and therapeutic technologies	ING-IND/34	6	6	1-2	10		

Dettagli insegnamenti integrati (nota INT)				
Insegnamento Integrato o plurisetoriale	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) Analysis of bionic and robotic systems	Principles of bionics and biorobotics engineering	ING-IND/34	6	1
	Modeling of multi-physics phenomena	ING-INF/06	6	2
3) Applied Brain Science	Behavioural and Cognitive Neuroscience	ING-INF/06	6	1
	Computational Neuroscience	INF/01	6	2
4) Bioinspired and soft robotics	Mechanics of smart materials and structures	ING-IND/34	6	1
	Soft robotics technologies	ING-IND/34	6	2
5) Interactive Systems and Affective Computing	Interactive Systems	INF/01	6	1
	Affective Computing	ING-INF/06	6	2
6) Neural Prostheses	Neural Tissue Engineering	ING-INF/06	6	1
	Neural Interfaces and Bioelectronic Medicine	ING-INF/06	6	2
7) Integrative Cerebral Function and Image Processing	Integrative Cerebral Function	MPSI/02	6	2
	Advanced Image Processing	ING-INF/06	6	1
8) Wearable robotics	Prostheses	ING-IND/34	6	1
	Exoskeletons	ING-IND/34	6	2
9) Rehabilitation and assistive technologies	Biomechanics of human motion	ING-IND/34	6	1
	Robotic and data-driven rehabilitation	ING-IND/34	6	2
10) Advanced interventional and therapeutic technologies	Robotics for minimally invasive and targeted therapy	ING-IND/34	6	1
	Bionic organs and tissues	ING-IND/34	6	2



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Sezione 2: Dettagli attività a scelta

Insegnamenti dell'Ateneo consigliati come attività a scelta dello studente

<i>Insegnamento</i>	<i>[SSD]</i>	<i>CFU</i>	<i>Per.</i>	<i>Note</i>
Robot programming frameworks and IoT platforms	ING-IND/34	6	1	
Electronics for Bionics engineering	ING-INF/01	6	2	
Advanced materials for bionics	ING-IND/34	6	1	
Neuromorphic engineering	ING-IND/34	6	2	
Artificial intelligent systems for human identification	ING-INF/06	6	2	
Probability and Biostatics	ING-INF/06	6	1	