



## WIRELESS SENSOR SYSTEMS FOR BIOMEDICAL DATA AND SIGNAL MONITORING

Enrollment year	2019/2020
Academic year	2020/2021
Regulations	DM270
Academic discipline	ING-INF/06 (ELECTRONIC AND INFORMATION BIOENGINEERING)
Department	DEPARTMENT OF ELECTRICAL, COMPUTER AND BIOMEDICAL ENGINEERING
Course	BIOENGINEERING
Curriculum	Sensoristica e strumentazione biomedica
Year of study	2°
Period	1st semester (28/09/2020 - 22/01/2021)
ECTS	6
Lesson hours	53 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	SAVAZZI PIETRO (titolare) - 6 ECTS
Prerequisites	Basic knowledge of statistics and signal processing, usually acquired from the course on biosignal and bioimage processing.
Learning outcomes	Basic knowledge of telecommunication networks and systems, with a deeper analysis of the main transmission standards for wireless sensor networks. Ability to choose the best wireless system for applications devoted to monitoring, processing, and transmission of biomedical data and signals collected by sensor networks, describing the rationale behind the selected options.
Course contents	Elements of Wireless sensor network architectures: sensors,

	<p>communication nodes or motes, data gateways and processing elements. How they are deployed: main network topologies. Radio communication standards for sensor networks: physical layer, MAC protocols, routing and node labeling. Techniques for network synchronization and node localization. Biomedical applications of sensor networks: localization and tracking, people and environment monitoring, intrabody networks. Laboratory activities exploiting design platforms for wireless communication systems and sensors, focused on biomedical applications.</p>
Teaching methods	<p>Lectures (hours/year in lecture theatre): 40 Workshops (hours/year in a lab): 16 The lectures are given using slides, providing additional explanations and examples at the blackboard. Laboratory activities are based on “hands on” experience with real sensors and wireless networks.</p>
Reccomended or required readings	<p>H. Karl, A. Willig, “Protocols and Architectures for Wireless Sensor Networks,” Wiley, 2005.</p>
Assessment methods	<p>The final exam is an oral test, starting from the presentation and discussion of the results of the projects developed during the lab activities. The minimum score to pass the exam is 18, the top one is 30 cum laude.</p>
Further information	
Sustainable development goals - Agenda 2030	<p><a href="#">\$lbl legenda sviluppo sostenibile</a></p>