## Courses/Seminars for PhD students (Electronic Engineering –open to others) – Block 2: July 2025 (Academic Year 2024/2025)

#### General frame

The Courses and Seminars are organized in three tracks:

- 1. Exploitation and Protection of R&D (Patents, spin-off/start-up Companies)
- 2. Critical Tools (Data Analysis)
- 3. Examples of New Frontiers in R&D (Epidermal electronics)

REMARK - The official language is English and all activities are held in the <u>Lecture Room C7</u>, "Nuovo Edificio Didattica di Ingegneria", via del Politecnico, Roma

## 1. Exploitation and Protection of Research and Development

#### 1.1 Introduction to Patents and related procedures; the role of the IPR consultant (2 hours) Ing. Antonio Celona - <u>a.celona@ngpatent.it</u> Schedule: 15 of July from 10:00 to 12:00

Curriculum Vitae - **Antonio Celona** - After graduating in 2001 at the University of Messina in Materials Engineering, he received a Master's Degree in Innovation and Development of Intellectual Property at the Istituto Guglielmo Tagliacarne in Rome in 2003. In 2008 he obtained the qualification as Italian Patent Consultant and he is qualified at the European Union Intellectual Property Office (EUIPO) in the field of designs. In 2012 he obtained the qualification as European Patent Attorney and he is enrolled in the European Patent Institute (EPI).

1.2 Design Your Start-Up (8 hours) Dr. Roberto Giuliani – robertogiuliani10@alice.it Schedule: 4,11 of July from 14:00 to 18:00

#### **Main Topics**

Introduction: key topics for a start-up

Design your Business Model Canvas: your company in one slide

The Business Plan structure and basic instructions about the economic and financial aspects of budgeting for your start-up.

The start-up fund raising activities addressed to private investors

Curriculum Vitae: **Roberto Giuliani** has over ten years of international experience in marketing and in strategic planning of business. His career started in an American multinational company and he was responsible for a regional-based incubator aimed to support the creation of new companies and spin-off in the high-tech area, with over thirty start-up companies created to date. Today he is in charge as Innovation Manager in a big industrial player in the mobility infrastructure sector.

## 2. Critical Tools (Data Analysis)

Artificial Intelligence and Machine Learning for Electronics Engineering (16 hours) Dott. Sergio Spanò - spano@ing.uniroma2.it Schedule: 1, 2, 3, 4 of July from 9:00 to 13:00

**Content:** The course offers a comprehensive introduction to the foundational concepts of Artificial Intelligence (AI) and Machine Learning (ML). It covers key theories and equips students with the essential tools for developing practical Machine Learning applications. Throughout the course, students will explore various AI and ML methodologies, gaining hands-on experience with industry-standard software and frameworks. The curriculum is further enriched with the examination of real-world case studies, providing insights into how AI and ML are applied in practical scenarios, particularly in the context of Electronics Engineering. Overall, the course aims to build a solid understanding of AI and ML principles, while also fostering the skills necessary to apply this knowledge to address complex engineering challenges.

Curriculum Vitae: **Sergio SPANO'** received the Ph.D. degree (summa cum laude) in electronic engineering from the Tor Vergata University of Rome in 2022. Since then, he has been an Adjunct Professor at Tor Vergata University of Rome,

where he is currently a Postdoctoral Research Fellow. In addition, he is an Adjunct Professor at "Guglielmo Marconi" University of Rome. He has several industrial work experiences in the fields of space and telecommunications. His research interests include digital signal processing, machine learning, the IoT, the development of telecommunication systems, and the implementation of machine learning accelerators for embedded and low-power systems.

## 3. Examples of New Frontiers in R&D

# **5.1** *Radio Frequency Identification and Sensing for the Digital Transition in Industry and Medicine (8 hours)*

Prof. Gaetano Marrocco - <u>gaetano.marrocco@uniroma2.it</u> Schedule: 9,11 of July from 9:00 to 13:00

**Content:** This course introduces the basics of Radiofrequency Identification technology (RFID) from its assessed application in the logistic of goods and, above all, to the most advanced research trends in bioengineering and in predictive maintenance. Indeed, an RFID system is one of the best scalable infrastructures that can handle a single device, like an implanted sensor and a fruit, but it can, however, be indefinitely replicated to control a multitude of entities in farms and even in process of huge complexity thus becoming an unprecedented source of big-data.

Curriculum Vitae: **Gaetano MARROCCO** is currently Full Professor of Electromagnetics at the University of Roma Tor Vergata, director of the Medical Engineering Degree and Chair of the Pervasive Electromagnetics Lab. His research is currently focused to the development of the wireless physical layer of the Medical and Industrial Internet of Things. He pioneered the extension of RFID technology to the batteryless sensing of deformation, temperature, humidity, volatile compounds, implanted bio prosthesis, skin parameters, human motion recognition and restoration of epidermal senses.

Associate Editor of IEEE RFID Journal and of IEEE Journal of Flexible Electronics, chair of the Commission D - Electronics and Photonics, Union RadioScience International (URSI) - Italy, Co-founder and President of the University spin-off RADIO6ENSE, active in Industry 4.0.

	<u>Monday</u>	<u>Tuesday</u>	<u>Wednesday</u>	<u>Thursday</u>	<u>Friday</u>	<u>Room</u>
	30 June 2025	1 July 2025	2 July 2025	3 July 2025	4 July 2025	
June 30 - July 4		S. Spanò Artificial Intelligence and Machine Learning for Electronics Engineering (9:00 – 13:00)	S. Spanò Artificial Intelligence and Machine Learning for Electronics Engineering (9:00 – 13:00)	S. Spanò Artificial Intelligence and Machine Learning for Electronics Engineering (9:00 – 13:00)	S. Spanò Artificial Intelligence and Machine Learning for Electronics Engineering (9:00 – 13:00) R. Giuliani Design Your Start-Up (14:00 – 18:00)	C7
	7 July 2025	8 July 2025	9 July 2025	10 July 2025	11 July 2025	ļ
July 7 - 11			G. Marrocco Radio Frequency Identification and Sensing for the Digital Transition in Industry and Medicine (9:00 – 13:00)		G. Marrocco Radio Frequency Identification and Sensing for the Digital Transition in Industry and Medicine (9:00 – 13:00) R. Giuliani Design Your Start-Up (14:00 – 18:00)	C7
July 14 - 18	14 July 2025	15 July 2025 A. Celona Introduction to Patents and related procedures; the role of the IPR consultant (10:00 – 12:00)	16 July 2025	17 July 2025	18 July 2025	С7
	21 10/2 2025	22 July 2025	23 101/2 2025	24 July 2025	25 July 2025	
July 21 - 25	21 July 2025	22 July 2025	23 July 2025	24 JUIY 2025	20 JUIY 2025	