Courses/Seminars for PhD students (Electronic Engineering –open to others)
Block 1: January and February 2025 (Academic Year 2024/2025)

General frame

The Courses and Seminars of Block 1 are organized in 4 tracks:

1. *Communication aspects of R&D (Scientific writing)*
2. *Organization of R&D (Project Management),*
3. *Examples of New Frontiers in R&D (Quantum computation)*
4. *Science & Tech Diplomacy and innovation policies & practices*

REMARK - The official language is English and all activities are held in the Lecture Room B15, "Nuovo Edificio Didattica di Ingegneria", via del Politecnico, Roma

1. Scientific Writing (32 hours)

Prof. Thomas M. Brown - thomas.brown@uniroma2.it,

Schedule: 28, 30 of January from 9:30 to 13:00

4, 6, 11, 13, 18, 20 of February from 9:30 to 13:00

Main Topics : Expectations for PhD students, Careers for PhD students in and outside Academia in Engineering and Sciences, Understanding the publication process for peer-reviewed scientific articles: metrics, impact and impact factors, open access, selecting a journal, submission, cover letter, manuscript, peer review, response to reviewers, revisions, editorial processes. Understanding what makes research and your results publishable. Scientific communication: writing, presentations, finding information. Writing of a scientific article (with class exercises): structure of an article (title, abstract, introduction, results, discussion, conclusions etc.), graphing and images, writing a PhD thesis, writing a proceeding, preparing a poster, preparing an abstract for conferences.

*Curriculum Vitae: **Thomas M. Brown** investigated polymer OLEDs for his PhD at the Cavendish Laboratory, University of Cambridge. From 2001– 2005 he developed OTFTs and E-Paper as Senior Engineer with Plastic Logic Ltd. In 2005 he was recipient of a ''Re-entry'' Fellowship awarded by the Italian Ministry of University and Research and is Associate Professor at the University of Rome-Tor Vergata. Cofounder of the Centre for Hybrid and Organic Solar Energy, his current research is in solution-processed solar cells including perovskites, especially on flexible substrates, and bio-hybrid devices. He is author of over 150 publications and 15 patents and is Associate Editor of Solar Energy.*

2. Project Management (20 hours)

Prof. Vito Introna - vito.introna@uniroma2.it

Dott.ssa Annalisa Santolamazza - annalisa.santolamazza@uniroma2.it

Schedule: 30 of January from 14:00 to 18:00

6, 13, 20, 26 of February from 14:00 to 18:00

Content: The Project Management course aims at providing students with the basic competencies for managing a project. The course starts with an introduction to Project Management. Then the course focuses on project management processes: initiating processes, planning processes, executing and controlling processes and closing processes. The course focus on processes belonging to different knowledge areas: Scope, Time, Cost, Quality, Resource, Risk, Purchasing, Communication, Stakeholder and Integration. The standard steps and tools needed to implement each processes are described. Finally the course focuses on general management basic competencies and behavioural competencies needed for project manager.

*Curriculum Vitae: **Vito Introna** is Associate Professor at the University of Rome "Tor Vergata" where he teaches "Innovation and Project Management". He received his PhD in Industrial Product and Process Engineering at the University of Naples "Federico II" in 2003. Since 2000 he has carried out research project for National and International Research Centers and international companies and he has held project management course within Master program and certification program. He is a certified project manager according to the standard UNI 11648:2016*

*Curriculum Vitae: **Annalisa Santolamazza** is a Researcher at the University of Rome "Tor Vergata," where she teaches the course "Smart Factories." In 2020 she received her PhD in Design, Manufacturing and Operations Engineering and*

since then she has been involved in research and teaching at "Tor Vergata", the University of Tuscia and "Guglielmo Marconi" University in "Innovation and Project Management", "Industrial Plants" and "Energy Consumption Management". On the research front, she has primarily focused on themes related to maintenance and energy management and Smart Manufacturing.

3. Examples of New Frontiers in R&D

3.1. *Introduction to Quantum Computation for Engineers (8 hours)*

Prof. Aldo Di Carlo - aldo.dicarlo@uniroma2.it
Schedule: 5 of February from 9:00 to 12:00
12 of February from 9:00 to 12:00 and from 14:00 to 16:00

Content: *In this course I will review the basic concept of quantum computing and the new paradigm for computation introduced by the quantum mechanical concepts. The concept of qbit is introduced and a short discussion about the quantum algorithm is presented. An overview of present implementation of quantum computers will be given including quantum programming software.*

*Curriculum Vitae - **Aldo Di Carlo** is the director of the Institute for Structure of the Matter of the Italian National Research Council (CNR-ISM) and full professor at the University of Rome "Tor Vergata" (Italy). His research activity focusses on the design, fabrication and characterization of electronic and optoelectronics devices. He was developing a quantum simulation tool based on non-equilibrium transport theory for nanodevices which has been extended to the multiscale simulation software TiberCAD. Recently he was focusing his research investigation on novel nanomaterials including nanotubes, graphene and related 2D materials and halide perovskites. Di Carlo is author/coauthor of more than 450 scientific publications on international journals, 13 patents and several book chapters.*

4. Science & Tech Diplomacy and innovation policies & practices

4.1. Seminar courses on 'Science and tech Diplomacy' and 'Innovation policies (and practices)' *(20 hours)*

Prof. Giulio Busulini – Giulio.Busulini@outlook.com
Schedule: 26 February from 9:30 to 13:00
27 and 28 February from 9:30 to 13:00 and from 14:00 to 17:00

Content: *In this course I will address the following topics*

- *U.S. Innovation Policies: An Overview of the Most Successful Federal Programs: Overview of the various programs supporting innovation policies, particularly those for research commercialization.*
- *Understanding the difference between EU-US innovation programs: analysis of policies supporting innovation. Comparison of different Rationales and their transatlantic transferability/adoption.*
- *Innovation practice - basics of lean entrepreneurship methodology: an overview of the lean entrepreneurship methodology as a tool to foster the commercialization of research and make the researcher aware of his/her aspirations. Short exercises will be provided.*
- *Global innovation: overview and comparison of different innovation policies applied in different countries worldwide. The implementation of ecosystems: some success stories.*
- *Science and Technology Diplomacy: Overview of the science diplomacy mechanism adopted by Italy. Bilateral cooperation agreements. Toolkit of the scientific attaché. Some countries, in comparison.*

*Curriculum Vitae – **Giulio Busulini***

Giulio Busulini is a Senior Independent Consultant with extensive experience in science, technology, and diplomacy. He notably served as Science and Technology Counselor at the Italian Embassy in Washington DC (2010-2018), working with major US federal agencies. His advisory roles span multiple prestigious institutions including George Washington University, Italian Institute of Technology, the Italian Research Council, the Italian Ministry of Defense and industries such as Leonardo and Aws. At the invitation of the US National Academy of Sciences, he also serves as a member of the Global Science Diplomacy Roundtable and at the Center for Strategic and International Studies (CSIS) as a Senior Associate (Non-Resident) within the Renewing American Innovation initiative.. His expertise covers defense, space, cybersecurity, and innovation, supported by degrees in Institutional Communication(BA), Security and Defense Studies (MS), and Intelligence and Cybersecurity (MS).

	Monday	Tuesday	Wednesday	Thursday	Friday	Room
	27 January 2025	28 January 2025	29 January 2025	30 January 2025	31 January 2025	
January 27 - 31		*Scientific Writing* 9:30-13:00		Scientific Writing 9:30-13:00 *Project Management* 14:00 – 18:00		B15
	3 February 2025	4 February 2025	5 February 2025	6 February 2025	7 February 2025	
February 3 – 7		*Scientific Writing* 9:30-13:00	*QUANTUM COMPUTING* *9:00-12:00*	*Scientific Writing* 9:30-13:00 *Project Management* 14:00 – 18:00		B15
	10 February 2025	11 February 2025	12 February 2025	13 February 2025	14 February 2025	
February 10 – 14		*Scientific Writing* 9:30-13:00	*QUANTUM COMPUTING* *9:00-12:00* *QUANTUM COMPUTING* *14:00 – 16:00*	*Scientific Writing* 9:30-13:00 *Project Management* 14:00 – 18:00		B15
	17 February 2025	18 February 2025	19 February 2025	20 February 2025	21 February 2025	
February 17 – 21		*Scientific Writing* 9:30-13:00		*Scientific Writing* 9:30-13:00 *Project Management* 14:00 – 18:00		B15
	24 February 2025	25 February 2025	26 February 2025	27 February 2025	28 February 2025	
February 24 – 28			*Science & Innovation Diplomacy, policies & practices* 9:30-13:00 *Project Management* 14:00 – 18:00	*Science & Innovation Diplomacy, policies & practices* 9:30-13:00 *Science & Innovation Diplomacy, policies & practices* 14:00-17:00	*Science & Innovation Diplomacy, policies & practices* 9:30-13:00 *Science & Innovation Diplomacy, policies & practices* 14:00-17:00	B15