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FIVEG Academy Postgraduate

Introduction

The **FIVEG Academy** brings together the University of Naples Federico II, Nokia and TIM, in collaboration with Kineton and Fastweb, with the aim of training new highly professional figures in the field of "digital transformation", with specific reference to the revolutionary potential of 5G.

The **University of Naples Federico II** was founded on the 5th June 1224 by the Holy Roman Emperor Frederick II. It is the second oldest University in the world after Bologna and the first non-religious University. Currently, it has over ~90.000 students being the second largest University in Italy after the University of Rome. The academic teaching staff is currently 2532 persons. Moreover, the School of Engineering is the oldest engineering school in Italy Founded in 1811 and the Department of Electrical and Information Technology Engineering is among the top five Electrical Engineering departments in Italy for quality of research.

Gruppo TIM, legally **TIM** (formerly Telecom Italia), also known as the TIM Group in English, is an Italian telecommunications company which provides fixed telephony and DSL data services. It is the largest Italian telecommunications services provider in revenues and subscribers. It was founded in 1994 by the merger of several state-owned telecommunications companies, the most prominent of which was Società Italiana per l'Esercizio Telefonico p.A., (known as SIP), the former state monopoly telephone operator in Italy. The company's stock is traded in the Borsa Italiana. Since 2017, the Italian State exercises on TIM the "Golden Power", which allows the government to take several actions when the strategic interests of the country are concerned.

Nokia Corporation is a Finnish multinational telecommunication, information technology, and consumer electronics corporation, established in 1865. It is the world's largest manufacturer of mobile phones, serving customers in 130 countries. Nokia is a major contributor to the mobile telephony industry, having assisted in the development of the GSM, 3G and LTE standards (and currently in 5G), and was once the largest worldwide vendor of mobile phones and smartphones. Nokia operates 15 manufacturing facilities in nine countries and maintains research and development facilities in 12 countries.

Fastweb is an Italian telecommunications company that provides fixed and mobile telephony, broadband Internet and IPTV services. Fastweb is also one of the prominent companies in Italy providing FTTH connections. In July 2019 becomes the fifth mobile network operator in Italy by obtaining the license to operate on 5G network. Today, on the government market, Fastweb is the main supplier of fixed network telephone and data services to central public agencies.

Kineton, is an Italian SME that offers cutting-edge engineering services, founded in 2017, as an innovative startup, by ten professionals specialized in the field of automation and software development. Just a few years after its foundation, it already has about 400 employees located in the Naples, Milan, Reggio Emilia, Turin, Birkenhead (UK), and Tirana (AL) offices. It offers innovative solutions in the main technological sectors such as Automotive, Media, IT, Telco, IoT, Aerospace and Gaming.

Objectives and its structure

The FIVEG Academy Postgraduate is a 7-months training program designed to forge highly specialized professionals in relevant industry sectors, empowered with a diverse range of transversal skills in the field of 5G.

Students acquire technical, management, and consulting skills.

39 students (includes 3 reserved positions for students with disabilities) are selected to take part in this initiative totally free of charge. We are not only talking about undergraduates and graduates with a scientific-technological background, but also young economists, lawyers, philosophers, and sociologists, passionate about new technologies. This leads to the creation of a completely heterogeneous class, with a great opportunity for students to expand their knowledge, not only through lectures but also through interaction with colleagues on different curricular paths.

We are interested to include reserved positions (up to 5-10) in FIVEG Academy Postgraduate training course for deserving students in STEM disciplines (in particular Computer science, Computer Engineering, Electrical Engineering, Mathematics) enrolled in the last academic year of bachelors' degree, selected by the Georgian Institutes, who meet the minimum eligibility requirements for the application, and the possibility to attend the course online and totally free of charge. The selected students must be communicated to FIVEG Academy in 20th January 2023.

The FIVEG Academy Postgraduate will start on 13rd February and will end on 30th September 2023.

All educational activities are carried out at the Technological Park San Giovanni a Teduccio of the University of Naples Federico II and require a commitment of 5 days a week, from Monday to Friday, from 9:00 to 16:00 (CET). Forforeign students it's possible attend the course online, by MS Teams.

The Academy is structured in 4 phases:
- Phase 1 (Soft Skill Courses),
- Phase 2 (Transversal Skill Courses),
- Phase 3 (Deep Dive Courses),
- Phase 4 (Project Work).

The first 3 phases, spanning 4 months of face-to-face teaching, are divided into classes dedicated to the acquisition of:
- **SOFT SKILLS** where participants acquire the foundation of management and industry consulting skills through courses such as: Introduction to consulting, Problem solving, Team efficacy, Business model, Value proposition design, Business case, Negotiation (proposals development), Planning work (WBS, Scope/time/cost, Agile@scale, DevOps), Effective presentation.
- **TRASVERSAL SKILLS** where students acquire transversal technical knowledge related to 5G, the technologies enabled by 5G, and the main business sectors that can be strengthened and revolutionized via 5G including regulatory aspects of the new technologies. The training path consists of the following courses:
  - **CONSULTING SKILLS:** Business Case, Business model, Risk Management, Value Proposition Design
  - **TECHNOLOGICAL SKILLS**: Overview on next generation network (5G and beyond), Cloud platforms (Fundamental + AWS+ Google), Edge Technology (Edge Caching, Edge Computing), IoT platform, AI/ML/Analytics, Blockchain, Security for next generation networks (5G and beyond), 5G Devices;
  - **SECTOR-SPECIFIC SKILLS:** Smart Energy Utilities/Smart Stations, Healthcare & Life-Sciences, Entertainment, Smart city/Smart Airport/Smart Port, Automotive Industrial/logistics/manufacturing/ Retails, Construction Courses.
  - **REGULATORY SKILLS:** Regulation for next generation networks (5G and beyond) regarding security, safety, public health, jurisdiction.

- **DEEP TECHNICAL SKILLS** (Deep Dive): where students divided into 3 different classes based on their background (TLC Curriculum, Business, and Software), depending on the original education and interests expressed, acquire vertical skills on 5G through specific paths.
  - The 3 pathways are: Telecommunications (TLC), Business, and Software (SW).
    - The TLC class addresses topics such as: Connectivity Strategy, Access and Core Architecture for next generation network (5G and beyond). In particular, some of the topics are: MEC, 5G Standalone, O-RAN, 5G Core Architecture; 5G Security; Machine Learning Lab; FWA
    - The SW class focuses on aspects such as: Service Enablement Platform, Mobile Edge Application Development, Digital Twin, and Immersive Technologies; 5G Security; MachineLearning Lab.
    - Finally, the Business class focuses on Sector-specific Skills such as: Energy, Logistics, Healthcare & life-sciences, Entertainment, Manufacturing, considering for each sector examples of business models, risk management and sustainability, Cost management e pricing, regulation, and Platform Economy.

- **The fourth phase (Project work)** consists of 10 weeks of experiential learning based on a realization-design approach, in which participants, divided into mixed teams, work on the development -- in verticals such as healthcare, manufacturing, media and entertainment, logistics -- of concrete business cases with associated technical and economic feasibility analysis and prototypes. For each project we will also produce a video that try to describe at a very high level the work done by the student. Often these videos have been used by our partners to promote their project activities developed within the academy. Here the link of the 5G Academy youtube channel https://www.youtube.com/channel/UCsD5_rDzZC9KsZOBQ1drBqw)
  and to our webpage describing the projects of last year
  https://www.5gacademy.unina.it/en/academy-en/5gacademypostgraduate-en/project-work-en.html

Among the third and fourth phase we have a week of panels, webinars, workshops. This week will be dedicated to the aspect of next generation network (6G and beyond) and to some deep dive on the dual concept of sustainability and new technologies.

At the end of the Academy, the best students are also offered the possibility of internships and hiring at one of our partners.

One of **our strengths** is the teaching staff, composed of academics and managers of leading companies in the sector. Specifically, in our faculty there are:
- Experts from academia and research centers, such as: New York University Tandon School of Engineering, Northeastern University, University Carlos III Madrid, King's College London, University of Rome La Sapienza, University of Padua, University of Rome Tor Vergata; IMDEA Networks, Bell Labs Nokia, Murry Hill, ICEmB (National Inter-University Research Center on the Interactions between Electromagnetic Fields and Biosystems), ISASI (Institute of Applied Sciences and Intelligent Systems "Eduardo Caianiello") and CNR (National Research Council of Italy)
- Expert from leading companies, such as: Google, AWS, Cadami, Altran, Evja, Geosystem Hellas, Athonet, Kineton, Mustang Strategy, Noovle, and Telsy .

All with the goal of providing participants with excellent content on enabling technologies and innovative 5G services, not only through lectures and seminars but also by providing daily support throughout the Project Works phase.