Understanding Patents in Photonics

CARLES PUENTE

July 08, 2026 to July 09, 2026
14:30 to 18:00
Elements Room

The aim of the course is getting ICFO researchers to understand the basics of the patent, to learn how to find, read and interpret patent documents and to get familiar with some basic patent writing techniques. Researchers will understand the value and role of patents in the technology ecosystem, will get familiar with the patent prosecution process and learn to manage patent information comfortably.

Target group: PhD students, Postdoctoral researchers, and Research Engineers.

Available places: 25

Training content:

A first session will be used to overview through several examples the basics of the patent system, its motivation and social impact and its use in several technology corporations in the telecom, electronics and photonics fields. The fundamental nature of a patent right will be introduced, explaining the impact of such a nature in the business dynamics. The genera principles of patentability will be explained and the architecture of a patent document will b introduced, so participants get familiar in managing patent information. The aim of the nex session of the course is to provide the participants with some basic practical knowledg concerning fundamental patent-related issues, such as patent writing, scope of protectio and patent prosecution. The goal is to enable researchers to become effective and proactiv when participating in the process of patenting as a result of their R&D. This session wil include a practical case: a real patent in the photonics field will be handed-out to th researchers who will practice in writing some claims. Participants will be able to share thei proposals which will be discussed as a group.

Day 1: Ecosystem - A technology and patent-based business model.

IP business in telecoms/electronics: Apple and Samsung, Qualcomm, Rambus, Tessera, Nortel, Google. The Fractus case. The MP3 case: Fraunhoffer/Thomson. Examples of a patent-based technology companies in Photonics (Rambus, Tessera). The essentials of the patent system: Why do patents exist? What is a patent? Patenting inventions vs. patenting products. The patent as a technical document. The patent as a legal document. Social impact of patenting. The patent as a negative right. Impact of patents in business dynamics.

? General requirements for patentability. Exclusions from patentability. Patents as a source f knowledge: patent searches. The patent system worldwide: national filings and rules, pate t cooperation treaty. Data structure of a patent and patent application document. Invento s and Assignees. Filing, priority, publication and granting dates. Structure of a pate

t document. Example: a patent on an Erbium Doped Fiber Amplifier (EDFA). Pate
t specification and claims. Patent specification: background, summary of the inventio
, description of the preferred embodiments/best mode, list of figures, drawings and claims

Day 2: Scope of protection and patent infringement.

Claim structure: limiting features and scope of protection. Claim features and novelty. Independent and dependent claims. Claim hierarchy and protection level graphs. The onion layer structure. Multidependency. Independent claims in the EPO and in the US. Structure of a claim: preamble, limiting features and the two-part form. Basic and special types of claims (Markush, means plus function, product by process,..). Limiting words: ?comprising', ?including' vs. ?consisting of'. Support according to EPO and USPTO rules. Independent and dependent claims: scope and validity. Claims as the skeleton of a patent specification. Claim drafting session - Students will read a patent specification on a Photonics system (e.g. a compact disk system based on a laser diode) and prepare a set of independent and dependent claims. Three students will present simultaneously their claim proposals. The class will discuss the scope of protection of both sets and support according to the US and EPO perspectives.

Trainer:

Prof. Carles Puente is a co-founder and director at Fractus S.A., where he has been in charge of technology and intellectual property portfolio development since 1999. As a CTO and IPR director, he developed an antenna technology and patent portfolio which has been massively adopted by the cell phone industry and licensed to 10 of the top cell phone OEMs worldwide. Carles is a university professor at Barcelona Tech (UPC), where he is currently teaching graduate courses on technology and patent asset management.?

In 2013 he has been teaching patent management at the Executive Master in Technolog Management of the University of Pennsylvania, a program sponsored by the Wharto business school. He has been an invited speaker in several industry/entrepreneurship forum including the Licensing Executive Society meeting in Barcelona (2012), the FINAVES meetin at IESE Business School (2012), the Mobile World Congress (2007), the REE by Stanfor University (2007), the European Venture Capital Association (2001) and the Internationa Congress of the Forum for ICT Professionals (2001).

? As a researcher and scientist, Carles and his team have been nominated to the Europe n Inventor Award by the European Patent Office (2014), and awarded with the Technolo y Pioneer award by the World Economic Forum (2005), the European Information Technolo y Grand Prize by the European Commission (1998), the Premi Ciutat de Barcelona (1999) a d Best Doctoral Thesis in Mobile Communications in Spain (1997). He is an inventor in 1 5 granted patents (including 83 US patents) within a set of 400 patent and patent applicatio s worldwide, and has co-authored over 150 scientific papers in scientific journals a d conference proceedings. He was an invited speaker at the Antennas and Propagati n Millennium Conference in Davos (2000), the Gordon Research Conference on Fractals (199

) and the Fractals in Engineering conference (1997). He holds a Ph.D. in Telecommunication Engineering from Barcelona Tech (UPC,1997), a M.Sc. from the University of Illinois at Urban

- Champaign (1994), and a Telecom Engineer degree from Barcelona Tech (1992)

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