

Course guide

300314 - IGAT-OAT - Introduction to Technology Asset Management

Last modified: 22/01/2024

Unit in charge: Castelldefels School of Telecommunications and Aerospace Engineering
Teaching unit: 739 - TSC - Department of Signal Theory and Communications.

Degree: BACHELOR'S DEGREE IN NETWORK ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN TELECOMMUNICATIONS SYSTEMS ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN AEROSPACE SYSTEMS ENGINEERING (Syllabus 2015). (Optional subject).

Academic year: 2023 **ECTS Credits:** 3.0 **Languages:** English

LECTURER

Coordinating lecturer: Puente Baliarda, Carles

Others:

PRIOR SKILLS

General Knowledge in Engineering and Physics

REQUIREMENTS

General Knowledge in Engineering and Physics

TEACHING METHODOLOGY

Lectures, Homework and one Project

LEARNING OBJECTIVES OF THE SUBJECT

To introduce engineers and scientists into the management of technology assets, research and engineering teams. To understand the basic rules of the international patent system and to learn how to patent claims to secure and monetize the technology value of a corporation. To learn the basic technology and patent licensing models and the related business trade-offs. To develop the basic skills to plan and manage a technology and product roadmap, understanding the role of a technology department in a small or large corporation and its fit and interaction with other departments and government bodies within the organization. To review several strategies on how to introduce an innovation into the market, from the traditional product development cycle to a pure intellectual property licensing model.

STUDY LOAD

Type	Hours	Percentage
Hours medium group	33,0	44.00
Self study	42,0	56.00

Total learning time: 75 h

CONTENTS

Introduction to Technology Asset Management

Description:

Part-I ? Background, Basic Knowledge and Skills

Technology Based Companies and a Knowledge Based Economy - What is a technology based company? The technology and the team as key assets of the corporation. Structure and organization of a technology based company. Examples of technology companies in the telecommunications/electronics industry (Qualcomm, ARM, Intel, Thomson, Rambus, Tessera, InterDigital, IBM, Immersion, WiLAN). Overview of Intellectual Property (IP) protection. The patent system worldwide: why patenting?

Project Oriented Management ? The project as a business and engineering management tool. The project steering committee. The project leader and the project team. Project management tools: project definition, project planning, budget and resources planning and tracking, tracking tools (action item list, meeting minutes, reporting), closing meetings. Project planning examples with Microsoft Project.

Part-II ? Introduction to Patent Management

Introduction to Patent Prosecution ? What is a patent? The patent as a technical document. The patent as a legal document. The patent as a negative right. Data structure of a patent and patent application document. Searches in patent databases. General requirements for patentability.

Introduction to Patent Engineering ? The invention report as the link between the engineering and legal teams. Technical content and structure of a patent document: background, specification, drawings and claims. Independent and dependent claims. Claim look-up tables. Claim charts. Basic patent drafting for engineers. Technology and patent review examples.

Technology and Product Innovation ?The technology roadmap. The product roadmap. The project funnel. Product development cycle and product development pipeline. Intellectual property considerations in product development: intellectual property surveillance and product marking.

Part-III ? Technology and Patent Based Business Models

Technology and Patent Licensing Models ? Product, design, technology and patent licensing. Enabling technologies and the ?carrot? patent license model. Examples of ?carrot? licensing. Infringed technologies and the ?stick? license model. Examples of ?stick? licensing. Choosing the right licensee in the value chain. Pricing models and technology and patent value. The Entire Market Value Rule in the US. Patents as defensive business tools for large corporations. Cross-licensing. Patents as a key business tool for high-tech companies.

The ?carrot? licensing model ? Product and design licensing vs. patent licensing. Engineering services and the non-recurring expenses (NRE) model. Enabling technology and patent pricing and licensing. Bundling an IP product pack. Partnership programs. The pilot program. Confidentiality and Non-Disclosure Agreements (NDA). The Memorandum of Understanding (MoU). Client-attorney privileged information and the Common Interest Agreement (CIA) in the US.

The ?stick? licensing model ? Patent enforcement in the US and Europe. Choosing a venue for patent enforcement. The Federal Circuit and the International Trade Commission in the US. Injunctive relief. Lost profits and past damages. Patent marking of products. Royalty awards. Timings and stages of litigation. Litigation as a defensive tool: declaratory judgements in the US.

Licensing agreements ? Dimensions of a licensing agreement: defining your IP product. Exclusivity. Rights to Sublicensing. Reservation of Rights. Term and termination. Royalties and other considerations. Prosecution and maintenance. Infringement. Indemnification. Representation and warranties. Disclaimers.

Specific objectives:

1. To make engineers and scientists conscious on the potential value of a technology asset beyond its use in a traditional product development program.
2. To provide engineers and scientists with some basic tools and insights in the art of technology management.
3. To get engineers and scientists confident and familiar in managing patent information.

4. To get engineers and scientists understand the purpose of patenting and to provide them an insight on how to make an effective use of patents in a business context.
5. To get engineers and scientist familiar in the reading and wording of patent documents and interpreting its basic scope of protection.
6. To help engineers and scientists in protecting through patents broad technology concepts rather than narrow product lines.
7. To provide engineers and scientists with the tools to budget and monitor a patent portfolio and help in making a strategic plan for a patent asset development.
8. To provide engineers and scientists with the basic concepts on technology and patent licensing.
9. To provide engineers and scientists with a perspective on how to set up a technology and IP group inside a company whether a start-up or a large corporation.
10. To train engineers and scientists in the reading of technical documents (patents) in different fields where the student is not necessarily an expert.

Related activities:

Weekly Assignments (2h/week) - At the end of the week (6 out of 10 weeks), students will have to work on an assignment for the following week. Completing and delivering the exercises will be mandatory. Completion of work will be checked, and a few randomly selected assignments will be graded each week. Weekly assignments will be based on:

- ? Read and comment ?the patent of the week?
- ? Read selected material from reference books and papers.
- ? Quest on the content of the week sessions and material.
- ? Exercises based on the week sessions.

Course Project #1 (20h in 4 weeks)? Patent Drafting & Innovation: The paper airplane competition ? Every student is invited to prepare a paper airplane in class and compete for the longest flight-time airplane. Then students are arranged in teams of two/three, and a time period for improving the plane and ?filing? a provisional patent on the invention (including drawings and claims) is proposed. Entire prior-art will be defined by the professor. ?First to file? system is proposed. The winners are those who get to own an intellectual property right on the ?best flying airplane? (to be defined). The winning teams get 4 extra points in the final exam. (Teamwork)

Full-or-part-time: 2h 24m

Theory classes: 1h

Self study : 1h 24m

Content and Sessions

Description:

Part-I ? Background, Basic Knowledge and Skills

Session #1 .- Introduction to Technology Asset Management ? Examples of technology corporation. What is a technology company? A technology and IP based business model. Overview of TAM course. Parts of TAM. Objectives of TAM. Who should take TAM? Why TAM: technology and IP related careers.

Session #2.- An Intellectual Property (IP) based economy. Overview of IP protection: patents, trademarks, copy rights, industrial designs, integrated circuit layouts. The patent system worldwide: national filings and rules, patent cooperation treaty. IP related information sources (websites, patent and trademark offices, associations).

Session #3.- Organization of a Technology Company. Organization chart. The General Shareholders Meeting, Board of Directors and Executive Committee. Executives, roles, teams and functions in a Technology company. Matrix organization models: departments and business units. Professional roles in a Technology company. Examples. Project oriented management. Project definition. The project as an engineering tool. The project as business organization tool. The project steering committee. The project sponsor, the project leader and the project team.

Session #4.- Project management tools: project definition, action item lists, meeting minutes, project reports. Project information system. Team building, team meetings: kick-off, follow-up and closing meetings. Project planning with Microsoft Project (I). Task definition and hierarchy. Task length and interdependence. Task margin and critical path. Project optimization. Example of Project Definition.

Session #5.- Project planning with Microsoft Project (I). Task definition and hierarchy. Task length and interdependence. Task

margin and critical path. Project optimization. Example.

Session #6.- Project planning with Microsoft Project (II). Task resources and assignment. Workload assessment and task redistribution. Costs and budgeting. Cost tracking. Example. Project #1 Kick-Off: Project Planning.

Session #7.- Technology and Product Innovation ? The technology roadmap. The product roadmap. The R&D programme. The project funnel. Product development cycle and product development pipeline.

Session #8.- Introduction to Patent Prosecution (I) -What is a patent? Why patenting? Introduction to patent prosecution. The patent as a technical document. The patent as a legal document. The patent as a negative right. The WIPO, EPO and USPTO websites. Data structure of a patent and patent application document. INID Codes. Inventors and Assignees. Filing, priority, publication and granting dates. Patent and patent application numbers. Searches in patent databases. General requirements for patentability. Patent specification and claims.

Session #9.- Introduction to Patent Engineering (I) ? Structure of a patent document. Patent specification: background, summary of the invention, description of the preferred embodiments/best mode, list of figures, drawings and claims. Claim structure: limiting features and scope of protection.

Session #10.- Introduction to Patent Engineering (II) ? Claim features and novelty. Independent and dependent claims. Claim hierarchy and protection level graphs. The onion layer structure. Multidependency. Examples. Innovation & Patenting Project - The Paper Airplane Competition (I): Introduction and kick-off.

Part-II ? Technology and Patent Strategies and Organization

Session #11.- Introduction to Patent Engineering (II): Introduction to Claim drafting - 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. Examples.

Session #12.- Introduction to Patent Engineering (III) : Claim drafting session ? Students will read a patent specification on an IT system (e.g. a compact disk system based on a laser diode) and prepare a set of independent and dependent claims. Two 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.

Session #13.- Scope of protection and patent infringement ? Patent Infringement Example. Claim Charts. Literal infringement. The Doctrine of Equivalents. The FESTO case in the US.

Session #14-15 Introduction to Patent Engineering (IV) : Claim drafting session ? Patent Infringement Example. Claim Charts. Literal infringement. The Doctrine of Equivalents. The FESTO case in the US.

Session #16.- Patent Prosecution and Portfolio Management (I) ? Patent prosecution phases: from filing to granting and maintenance. Filing through the Patent Cooperation Treaty (PCT) route. Why filing

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Full-or-part-time: 72h 36m

Practical classes: 32h

Self study : 40h 36m

ACTIVITIES

Homework and Project

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Material:

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Full-or-part-time: 33h

Theory classes: 1h

Self study: 32h

GRADING SYSTEM

- ? 40% Patent Drafting & Innovation (paper airplane project)
 - o Winners (teams with exclusion rights) get 4 extra bonus points in final exam.
 - o Best airplane builders get 2 extra bonus points in final exam.
 - o Delivering all assignments and projects and obtaining at least 4/10 points in the final exam is a condition for the bonus to accrue.
- ? 30% Weekly Assignments
- ? 30% Final Exam

RESOURCES

Other resources:

1. D. Mock, ?The Qualcomm Equation?, AMACOM, New York, 2005
2. B. DeMatteis, A. Gibbs, M. Neustel, ?The Patent Writer?, SquareOne Publishers, New York, 2006
3. K.T.Ulrich, S.D.Eppinger, ?Product Design and Development?, McGraw Hill International Edition, New York, 2008.



4. G. Lowery , T. Stover, "Managing Projects With Microsoft Project 2000: For Windows?", John Wiley and Sons, 2001
5. M.S. Holmes, "Patent Licensing?", Practising Law Institute, New York, 2004.
6. M.E. McGrath, "Product Strategy for Hight Tech Companies?", McGrawHill, New York, 2001.
7. USPTO, "Manual of Patent Examining Procedure (MPEP)?", <http://www.uspto.gov/web/offices/pac/mpep/> />8. EPO, "Guidelines for Examination in the European Patent Office?", <http://www.epo.org/patents/law/legal-texts/guidelines>