

# ***INVENTING, PATENTING, & LICENSING***

## ***Understanding, protecting, exploiting inventions and patents***

**Colorado School of Mines    EGGN 498 / CHGN 598**

The course will be offered twice in 2006

### **FIELD SESSION 2006**

May 15–June 2; Mon, Wed, Thurs; 9AM–2PM, with a 1-hour break

### **SUMMER SESSION 2006    Tentative Dates**

June 26–July 14; Mon, Wed, Fri; 9AM–2PM, with a 1-hour break

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# **Inventing, Patenting, & Licensing**

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## **COURSE OUTLINE - Brief**

**THE BIG PICTURE** -- the various forms of intellectual property, including patents, trademarks, copyrights, and trade secrets, are discussed; the terminology of inventing, patenting and licensing is reviewed, and an overview of the complete process is given; the patent statutes most frequently encountered in dealing with patents are introduced and explained

- A. INTRODUCTION TO COURSE**
- B. FORMS OF INTELLECTUAL PROPERTY**
- C. INVENTING, PATENTING, LICENSING -- An Overview**
- D. UNDERSTANDING PATENT LAWS**

**REAL-LIFE STORIES** -- the basics of searching the prior art are presented; participants 'walk through' case histories illustrating patenting, licensing, and patent infringement and litigation; one of the more subtle patent statutes is examined in more detail; and the importance of proper documentation at several stages of the process is explained

- E. PRIOR ART SEARCHING**
- F. DOCUMENTING THE INVENTION**
- G. CASE HISTORIES -- Inventing, Patenting, Licensing**
- H. MORE DETAILED STUDY OF 35 USC §102**

**USING YOUR KNOWLEDGE** -- the subtleties of the patent document are explained; the "do's" and "don't" of disclosing inventions are presented; various types of agreements are discussed; methods for evaluating the market potential of new products are presented; the resources available for inventors are reviewed; and advice for choosing patent and licensing attorneys is presented

- I. PREPARING and SUBMITTING A PATENT APPLICATION**
- J. CLAIM READING / DRAFTING**
- K. THE STRENGTH OF A PATENT**
- L. EXPERIMENTATION AND PROTOTYPES**
- M. INVENTING WITHIN THE CORPORATE ENVIRONMENT**
- N. DISCLOSURE / NONDISCLOSURE & RELATED AGREEMENTS**
- O. MARKET EVALUATION**
- P. LICENSE AGREEMENTS**
- Q. PATENTING IN FOREIGN COUNTRIES**
- R. SOME FINAL THOUGHTS**
- ADJOURN**

This outline may undergo minor changes prior to the course

**DETAILED COURSE DESCRIPTION**

**Section A. INTRODUCTION TO COURSE**

**Section A** provides a general introduction to the program and describes what the course is intended to be, and what it is not. The objectives of the course and the target audiences for whom it is designed are explained. This section presents the "flavor" for the complete course, and explains the overall layout of the course. A preview of the special terminology and vocabulary encountered in the areas of Inventing, Patenting, & Licensing is given.

**Section B. FORMS OF INTELLECTUAL PROPERTY**

The course deals primarily with patents. Patents are but one form of intangible assets called intellectual property (IP). Other forms of intellectual property are copyrights, trademarks, trade secrets, and unfair competition. Each of these forms of IP is complementary to the others, and in some cases there is overlap --- a given entity may be amenable for "protection" by more than one form of intellectual property. In order to put patents into proper perspective relative to other forms of IP, these other forms of intellectual property are reviewed and compared with each other and with patents in **Section B** of the course. The basic definitions of "invention", "patent" and "patentable invention" are presented in this section.

**Section C. INVENTING, PATENTING, LICENSING -- An Overview**

The purpose of **Section C** is to present a preliminary overview of the complete process of inventing, patenting, and licensing so that participants get a view of "The Big Picture" early in the course. The remainder of the course elaborates on the "big picture" in more detail. All three topics -- Inventing, Patenting, Licensing -- are interrelated e.g. actions or inactions at the inventing stage may affect the strength or validity of subsequently-issued patents; and a knowledge of inventions and patents is important if one is to fully understand the substance of patent license agreements. With this overview of the complete process, attendees can appreciate the complete mosaic of activities and concepts involved in inventing, patenting, and licensing rather than looking at bits and pieces of the overall process in a fragmented manner.

**Section D. UNDERSTANDING PATENT LAWS**

**Section D** provides a general overview of the history and nature of patent laws. The statutes most commonly encountered in patent application and prosecution are discussed in some detail in this section; other statutes are also discussed to a lesser extent. In addition to the actual laws *per se*, the formal regulations associated with each of the laws, and the detailed procedures involved in the administration of these laws and rules are covered. Knowledge of the material in this section allows one to understand:

- the nature of patents;
- what transpires during patent prosecution;
- the nature of infringement and interference; and,
- some of the principles underlying patent license agreements.

**Section E. PRIOR ART SEARCHING**

To obtain a patent, it is necessary to have an invention that is novel and unobvious (among other requirements). The novelty requirement is a consequence of 35 USC §102, and the unobviousness requirement results from 35 USC §103 (already discussed in Section D, and as

will be discussed further throughout the course). In order to determine novelty and unobviousness in a particular case, it is first necessary to establish the existing state of knowledge in that area – the so-called *prior art*. Prior art includes the complete body of knowledge prior to certain specified dates. The prior art includes published information (books, magazines, journals, newspapers, Internet, etc.), objects in museums or in public use (now or previously), public disclosures as in speeches or seminars, and even conversations with friends. It is virtually impossible to search all of these sources in a particular case, but it is in the interest of the inventor / owner to perform as thorough a search as possible. In the event of an infringement lawsuit later, the infringer may put a major effort and vast resources into a prior art search with the hope of invalidating the patent by uncovering some relevant, overlooked prior art. In general, the prior-art category most frequently reviewed by inventors and by the Examiner at the Patent Office consists of prior US patents and some foreign patents. Frequently, that is not adequate. The procedures for examining the patent segment of the prior-art are outlined in this section and advice is provided for searching other forms of prior art.

### **Section F. DOCUMENTING THE INVENTION**

It is difficult to overestimate the importance of keeping accurate records of the various stages of the inventing process and of having these records properly witnessed. The U.S. patent system operates on a "first-to-invent" basis, whereas most other countries operate on a "first-to-file" system. When an interference arises (i.e. a battle between independent inventors who have filed applications on the same invention), the basic issue is who can provide proper documentation as to being the earliest inventor. This is not a simple task, and in the ultimate case, it means who can prove that they were first to:

- (i) reduce the invention to practice, OR
- (ii) to conceive of the invention AND also provide evidence of diligence from the time of conception until reduction to practice.

When issues of allowability (during patent application), and validity of the patent (when the issued patent is challenged) arise, the questions often boil down to "who did and knew what, when, and where"? The simple expedient of maintaining accurate records, properly witnessed by others, provides one of the most powerful tools in resolving these disputes in favor of the inventor.

### **Section G. CASE HISTORIES -- Inventing, Patenting, Licensing**

Now that we have a general view of The Big Picture (Section C), and a feeling for the most commonly-encountered patent laws (Sect. D), we will develop a more concrete feeling for the complete Inventing, Patenting, and Licensing process by walking through a real-life case history from the initial inventing activity, through patent application, prosecution, and patent issuance, to licensing the invention, alleged infringement of the patent, and patent infringement litigation in the Federal Courts and in the "Patent Court" (i.e. the Court of Appeals of the Federal Circuit). The main case history examined involves an invention and patent of the course instructor; other more limited case histories will also be presented.

### **Section H. MORE DETAILED STUDY OF 35 USC §102**

Several patent statutes (including 35 USC §101, §102, §103, and §112) were introduced in Section D. Of these statutes, §102 is one of the more commonly encountered laws during patent prosecution (also during interference and infringement). This is a very complex statute that is difficult to comprehend in its entirety. Yet, if one does not understand this statute at least to some extent, many of the issues involved in:

- inventing,
- patent application and prosecution,
- infringement and interference proceeding will go "over your head".

## **Section I. PREPARING and SUBMITTING A PATENT APPLICATION**

The purpose of each part of a patent document is explained in more detail in this section. An understanding of this material helps inventors to read patents more critically and to contribute in a more substantive manner to the preparation of their own patent applications.

## **Section J. CLAIM READING and DRAFTING**

All parts of a patent document are important. The claims are particularly important because it is the claims that specifically define what the inventor is claiming as the invention. If the claims are well written they add "strength" (i.e. survivability) to the patent; if poorly written, the seed may be sown for the eventual downfall of the patent. An understanding of the nature of patent claims helps the inventor:

- (i) to read and interpret claims more critically, and
- (ii) in conjunction with a broad understanding of inventing and patenting in general, to contribute more meaningfully to the preparation of claims, or interact more knowledgeably with a patent attorney in writing the claims.

If the set of claims as a whole is written too *narrowly*, the claims may not provide adequate coverage to the invention, and it may be easy for another party to work around the patent i.e. create a similar device that produces comparable or perhaps better results than the invention covered by your patent without infringing the patent. Such working around a patent is legal, and is, in fact, encouraged by the patent system. On the other hand, a set of claims that is *broad* as a whole may be so all-encompassing that it treads on items from the prior art that the inventor never intended to embrace as part of his/her invention. This situation can subsequently lead to invalidation of the patent. Strategies of minimizing these problems are presented.

## **Section K. THE STRENGTH OF A PATENT**

A *strong patent* is defined, and the factors that contribute to making a patent strong are explained.

## **Section L. EXPERIMENTATION & PROTOTYPES**

In general, it is highly desirable to prepare a working model of an invention prior to filing a patent application. Making a working prototype can satisfy the legal requirement of reduction to practice (if properly documented and witnessed). A prototype will show whether the invention works as intended and can help generate ideas to make further improvements in the invention. These aspects are discussed in this section of the course.

## **Section M. INVENTING WITHIN THE CORPORATE ENVIRONMENT**

Patents, trade secrets, and other forms of intellectual property can be of enormous economic value to a company. To initiate the process of acquiring *patents* or maintaining *trade secrets* many corporations, universities and government agencies require the engineers and scientists to submit invention disclosures. Such disclosures contain a description of the ideas and inventions that will be considered for patent application or trade secret status. Many organizations wish to increase the number of such submissions by its employees as a step toward improving the intellectual property holdings of the company. In order for employees to properly avail of the Invention Disclosure program in an organization, they need to not only know of the existence of the program, but to understand it and to have some awareness of the nuances and subtleties of inventing, patenting and trade secrets. For example, employees should understand that:

- there are several reasons for obtaining a patent
- valuable patents may be obtained that involve apparently minor changes to existing

technology

- others in the organization may recognize important features or implications in the invention disclosure not recognized by the submitter
- for several reasons, some inventions may be more appropriately maintained as trade secrets, rather than being patented.

#### **Section N. DISCLOSURE / NONDISCLOSURE & RELATED AGREEMENTS**

Inventing, product development, patenting, and securing trade secret status involves several groups of individuals within an organization --- engineers/scientists, patent coordinators, management, legal counsel, sales and marketing personnel. Such activities frequently also involve individuals from outside the company ---- customers, suppliers, consultants, contractors (e.g. funded university research), etc. Defining the ownership of the intellectual property then becomes critical to a company's interest, and the issue of agreements (nondisclosure agreements [NDA]; joint development agreements [JDA]) is of critical importance.

The following topics relating to invention disclosures are addressed in this section of the course:

- the purposes of invention disclosures
- what invention disclosures should include
- the organizational protocol for handling:
  - inventions
  - invention disclosures
  - patent preparation and application, and,
  - patent maintenance and enforcement
  - trade secrets --- NDA's, JDA's

#### **Section O. MARKET EVALUATION**

Generally, the goal in inventing, patenting, and licensing activities is to reap some financial benefit from the time, effort, and expense involved in the process [There are also other reasons for obtaining a patent]. It is in the interest of the inventor / owner to estimate, at an early stage, the sales potential of the device or process that is based on the invention. If there is no potential market for the device / process, then, no matter how ingenious the invention is, one should reconsider the value of proceeding with a patent application. This section examines some of the basic aspects of performing a market evaluation. There are also some secondary benefits to conducting a market evaluation at an early date. For example, some of the information obtained in the market evaluation may be used within the specification of the patent (e.g. "Background of the Invention", and "Objects and Advantages" sections) to show advantages of the invention over prior art and to help demonstrate novelty and unobviousness of the invention.

#### **Section P. LICENSE AGREEMENTS**

Many types of legal agreements are encountered in inventing and patenting endeavors. These include patent license agreements, option agreements, agreements with consultants, disclosure and nondisclosure agreements, joint development agreements, employer-employee agreements, etc. Patent license agreements are discussed in detail in this section of the course, and some of the other types of agreements are treated to a lesser extent. As discussed throughout the course, there are many pitfalls that must be avoided in the inventing and patenting stages if one is to successfully exploit an invention. However, generally, one does not reap financial benefits directly from the inventing or patenting processes *per se*; the financial rewards come from the sale of the products (or usage of the process) that is based on the patented invention. Frequently, this involves a license agreement, and it is important that the inventor / patent owner on the one hand, and the manufacturer who may acquire rights to produce and market the product on the other hand, has a clear understanding of the subtleties of patent license agreements. Even when

one has taken all reasonable precautions at the inventing and patenting stages, it is still possible to enter into a patent license agreement that may prove troublesome and expensive down the road. This can be damaging to both the inventor / patent owner (licensor) and to the manufacturer (licensee). An understanding by both parties (licensor and licensee) of the key issues involved in patent license agreements can help to facilitate licensing negotiations. A carefully and knowledgeably constructed license agreement also helps to minimize misunderstandings and avoid disputes at a later date.

#### **Section Q. PATENTING IN FOREIGN COUNTRIES**

An overview of patenting in foreign countries is presented in this Section.

#### **Section R. SOME FINAL THOUGHTS**

This is a summarizing and concluding section -- some of the major points from the course are reiterated, some conclusions are drawn, and general advice is given relating to inventing, patenting, and licensing matters.

**OBJECTIVES BY SECTION**

- Sections A, B, C:** To obtain a preliminary overview of the complete process of inventing, patenting, and licensing (including terminology, timelines, concepts). To learn the various types of intellectual property (IP) and to understand the role of patents in relation to the other forms of IP
- Section D:** To gain a basic understanding of the main laws most commonly encountered in patent application and prosecution (statutes, rules, procedures)
- Section E:** To learn the basic elements of prior art searching (concepts, mechanics)
- Section F:** To learn how to document the various stages of the inventing process (concepts, mechanics)
- Section G:** To obtain a more in-depth understanding of the complete inventing, patenting, and licensing process (the good, the bad, and the ugly)
- Section H:** To examine the statutory meaning of novelty in greater depth (the law, the rules, the procedures; the subtleties)
- Section I:** To learn the parts of a patent and how to draft a patent application
- Section J:** To learn how to critically read the claims of a patent to better understand what is / is not protected by the patent. To examine the basic elements of drafting patent claims
- Section K:** To learn the subtleties underlying the concept of patent strength
- Section L:** To learn the value of continued experimentation during the inventing and patenting process and the importance of have workable prototypes at various stages of the process
- Section M:** To address issues relating to the patenting culture within small and large companies and other organizations
- Section N:** To learn the nature and importance of invention disclosures in the industrial, government and university environments. The organizational structure for dealing with intellectual property issues and the 'chain of authority' on these matters are addressed. Various types of disclosure, nondisclosure (NDA), and joint development agreements (JDA) are discussed
- Section O:** To learn the basic elements of conducting a market evaluation of an invention early in the inventing patenting process
- Section P:** To learn the various types of agreements that are involved in inventing, patenting, and licensing
- Section Q:** To learn the similarities and differences between the US patent system and the patent systems of other countries

**Section R:**

To become familiar with some of the resources that are available for inventors and entrepreneurs. To learn how to choose the best attorney for your situation, how to best interact with the attorney, how to know that he is doing the best job for you, etc.