

**Empowering Young Inventors: An Experimental Course on IP and Patent Application
Drafting at Auburn University**

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Empowering Young Inventors: An Experimental Course on IP and Patent Application Drafting at Auburn University

Abstract

A new one-credit course on IP and Patent Application Drafting was offered at Auburn University (AU) jointly by the authors in spring 2009. The course started with a target of 15 students. Within one week of its announcement, the course was oversubscribed; the class was filled within a week of its announcement through e-mails to engineering and business students, a few were turned down, 16 were enrolled including one MS and one Ph.D. student from engineering (graduate students were required to do an additional term paper). The goal of this first-of-its-kind course at Auburn was to teach undergraduate and graduate students to understand the protection of intellectual property rights, and to train them to prepare a patent application fit for submission to the US Patent and Trademark Office (USPTO). The hands-on experience was intended to give them the freedom to grab their own new ideas and protect them through patents as a first step towards the commercial exploitation of their intellectual property (IP). The paper explains the limited goals of the course, outcome and conclusions with a recommendation for other universities to offer a similar course. The course fulfilled an important need and empowered some of the young inventors in the class to consider venturing into a new business based on their product ideas.

Key Words: Patent Application; Intellectual Property; Young Entrepreneurs; Patent Application Drafting; Career in Patent Law.

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The Need

The premise of this course was that many students at the university level, including engineering and science students, with original ideas for products are reluctant to take it to the next stage that includes IP protection and commercial exploitation because young inventors do not know and understand the process of patenting their ideas, and cannot afford the services of patent attorneys. Further, young inventors find the patenting process rather mysterious.

The *2008 Global Venture Capital Survey* found that “Taiwan, Japan and Israel are just some of the emerging hotspots for innovation outside the United States, as venture capitalists continue to pour more dollars into global investments, a new survey said. Nearly three out of every five of U.S. venture capitalists, or 57 percent, are now investing outside the country, compared with 46 percent last year...” (Source: *Reuters*, 2008-06-03—quoted in Powell Goldstein Communication, Atlanta, GA).

Students, including engineers and scientists, who can germinate new ideas for products, are confused about the process of protecting their ideas that have commercial value. Graduate students in the sciences and engineering are trained to create new ideas and inventions but we do not teach them how they might protect their intellectual properties. This course’s intent is to generate enthusiasm among these students for the IP protection including patent application drafting.

Limited Goals of this project

Our goal for the project was limited. It is important to understand the goals of the project to appreciate the project itself. The goals of the project were:

1. Enable students to prepare most of the sections of a patent application such as Specification, Background, etc.;
2. Enable students to seek limited help, if needed, from patent attorneys for improving their Claims statements and thereby substantially reduce the cost of preparing a sound patent application;
3. Enable students to become better judges of what is patentable or not, and become knowledgeable in searching prior art on their own to make educated judgment before pursuing a patent;
4. Prepare students to understand office actions from the USPTO;
5. Give students the option to patent more of their inventions knowing that they can file patents without incurring the full cost of using patent attorneys;
6. Encourage budding serial inventors to venture into a life of inventions knowing that the process and cost of getting IP protection through patents is manageable;
7. Lift the shroud of mystery surrounding the process of getting a patent;
8. Enable students to consider patent law or agency as a potential career.

Course content

This one-credit (semester) course met once a week. The course was designed to include the following basics:

1. Patents are property rights that exclude others from making, using, selling, or distributing the patented invention without permission;
2. The patent claims define the “bounds” of the property right;
3. The importance of claims and how they need to be clearly drafted;
4. The body or specification of the application has to be described so that others can practice the claimed invention;
5. Writing Claims in three parts:
 - a. the preamble;
 - b. the transition clause; and
 - c. the body;
6. Examiners at the Patent Office review patent applications and determine whether claims satisfy all the requirements for patentability;
7. The concept of a Quid Pro Quo, where the government affords the patentee a limited monopoly right in exchange for a complete disclosure of the invention;
8. Invention is based on conception, and to be an inventor, a person must have made an original and conceptual contribution to at least one element of a claim;
9. A patentee does not necessarily have a right to practice the invention for a number of reasons; and
10. An inventor has to decide whether to patent the invention or keep it a trade secret.

The course met for 50 minutes once a week for 15 weeks; it had three distinct parts. The first part of the semester was devoted to an introduction to IP. The next part introduced the students to USPTO’s web pages for patent searches, patenting process, and patent application.

The last part of the semester was devoted to guiding the students to complete a term project that required each student to prepare a USPTO utility patent application, and submit it for class grade; it was evaluated on its fitness for submission to the USPTO after the class. Students had the rare opportunity to hear first hand from a patent attorney and get his guidance throughout the course in drafting their patent application. The course maintained strict confidentiality of the ideas; no class presentation of individual projects was required to protect the confidentiality of student ideas. Feedback to students on their projects was given privately. The course required the textbook *Protecting your Idea: The Inventor's Guide to Patents*, by Joy Bryant (Academic Press, San Diego, CA, 1999).

Exploratory research questions

This paper, while it explains how the said course was delivered and received by students, it also, directly or indirectly, answers the following research questions for future investigations.

1. Are college students interested in patent application drafting?
2. Why are they interested?
3. What backgrounds do they come from?
4. What technical backgrounds do they have?
5. Technical nature of student ideas?
6. Could non-law students grasp patenting issues?
7. Is a one-credit course adequate?
8. How to teach this course effectively?

We believe that each reader can form an opinion about the above questions after reading this paper in its entirety and the three appendices. We have directly answered some; the answers to other questions could be easily inferred or debated.

Comparing Auburn patent class vs. law school patent class

Patent law classes that involve teaching of patent application and claims drafting as part of an elective law school course have many similarities and differences compared to the one-unit course we offered at Auburn University. In a law school course, the inventions or invention disclosures of existing patents, which are usually mechanical in nature, are provided to law students as input.

In this course, the students use their own inventions as part of the learning process; consequently, students have first-hand knowledge of the invention and an emotional attachment to it. In law school courses, relevant prior art is provided to the students, whereas in this course, students research the prior art themselves.

Another difference being, in law schools, patent drafting is offered in two three-credit courses; the first semester focusing on claims drafting exercises and the second semester focusing on the rest of the application. In contrast, this course is a one-semester, one-credit course that teaches drafting of the entire patent application. Also, students in the law school courses meet together for weekly lectures with a full-time faculty member for a part of the course and in separate break-out sections with an adjunct faculty member, who is typically a practicing attorney. It is in these break-out sections that the students receive feedback on their individually drafted claims and patent applications. The adjunct professor for each section is also responsible

for grading the patent claims and applications of his students, which can lead to non-uniform grading standards if multiple adjuncts are used for grading.

In this course, the lectures and exercises are done together in class – with no separate breakout sessions; students had the option to meet with the professors during office hours. Also, the students in the patent-practice law course have little interest in the licensing or commercializing aspect of the invention, since it is never their own. In contrast, the students in our course may license or use their invention to start a company (see the last section on Feedback). Thus, the students in this course have a personal stake in the patent application unlike the law students.

Furthermore, while both classes – at law school and this class – spend time teaching the basics of patent law, such as the meaning of invention, the role of the US Patent Office, the requirements of relevant US patent codes described in 35 U.S.C. § 101, 102, 103 and 112, and the differences between patents and other forms of intellectual property protection, the law school course focuses more on the law, including the case law and the guidelines used by the patent examiners.

Auburn patent class vs. patent practitioner

Obviously, a student completing the Auburn patent class would not possess the skill set or competency of a practicing patent attorney or agent drafting a patent application. However, we taught them the steps necessary to draft a patent application that are similar to the steps taken by a law practitioner. The students, like the practitioner, need a thorough understanding of the invention that is being patented. The students in this class, being the inventors, know the

invention well but a patent attorney understands alternative embodiments that could make the invention more valuable or more difficult to design around.

The patent practitioner has to acquire knowledge about the invention from the inventor to complete the application. This may be the most difficult part of the process. Assuming that hurdle is overcome – and it usually is achieved with adequate time – the next step for some practitioners is a prior art search. However, it is generally not a good idea for the law practitioner to perform a search unless requested to by the inventor or client.

However, when the patent application is being drafted by the inventor – as is the case with this patent class – a prior art search is usually recommended before the application is drafted. After drafting the claims, the law practitioner would often finish other sections of the application, usually completing the specification (or body) of the application in conjunction with the figures (or drawings). This is the sequence used in this course.

There is another difference between an application drafted by a legal practitioner and a student-inventor in this class. The practitioner-drafted applications are usually reviewed by more than one person – an associate, a partner and the inventor(s) -- prior to finalizing, which allows for “fresh sets of eyes” to check for mistakes or omissions. The inventor drafted (or “pro se”) applications lack this safeguard.

An evaluation of student-drafted claims

In a patent application, Claims Section is the heart of the application; the application fails or succeeds on the basis of allowed claims. We assessed the value of the class to students by the ability of the students to prepare claims. The three criteria we used to assess the students' claims were:

1. Whether the claims were clear, concise or easily understood;
2. Whether proper claims terminology known as the "terms of art" were used--was there a preamble, transitional term, and claim body in each claim; and
3. Whether the claims were proper in terms of scope or breadth – neither too broad nor too narrow in scope.

In the grading the claims section, we assigned ten points to the first criteria, ten points to the second criteria, and five points to the third, and assigned a couple bonus points for proper formalities. In actuality, the third criteria is the most important in terms of the market value of the patent, but it is also the most difficult and requires extensive experience and knowledge of the prior art. Criteria 1 and 2 are also easier to grade for class purposes.

As to Criterion 1, the students' claims were quite clear across-the-board. This was probably the easiest part of claims drafting for our students. The students obviously understood their own inventions and could articulate them in a single sentence paragraph; they scored high.

As to Criterion 2, students had some problems with preambles and transitional terms--some forgot to include them--but all of the claims included the inventive features or elements that comprise the body of the claim. Average score on this criterion was less than the score for Criterion 1.

As to Criterion 3, students experienced some difficulty. The challenge is to draft claims that are not too broad to be anticipated by the prior art, and that are not too narrow to be easily designed around or commercially worthless because of the narrowness of the claim. Most of the students drafted claims that fell on the side of being too narrow or descriptive. Many terms in their independent claims could have been deleted or placed in a dependent claim instead. The students also did not include enough alternative embodiments to anticipate future design changes

made by potential competitors of the invention; the average score for this criterion was less than the other two.

The grading also considered the "formalities" of each claim: was there proper use of "antecedent basis," semicolon to separate out each step or element of the claim, period use at the end of each claim, and so forth; these were of lesser concern.

Overall, the students exceeded our expectations and managed to draft claims that could be submitted in a filed patent application without too much revision. Our inferences based on the findings from this are two-fold.

1. First, one must devote more time to teaching claims drafting to improve their ability to do better on Criteria 3; and
2. Second, business and engineering students could learn the essence of patent drafting in a short course.

Limitations of the course and other remarks

At the end of the course, the students in this course are not going to gain the knowledge needed to skillfully draft patent applications as an experienced patent practitioner would. But, they learned the value of patenting in IP protection and gained limited skills and practice in drafting a patent application for their invention – which may or may not be “ready” for patenting.

Conclusions

Various sections of this paper and the three appendices at the end answer most of the Research Questions listed earlier. While the students in this class would not replace patent attorneys and agents, the course gives inventors the knowledge and skills needed for preparing a

patent application. The course also enabled non-law students to actively consider patent law or agency as a potential career option.

This was designed as a course for students with original ideas whereas a law school course on patenting is for law practitioners who want to assist people with ideas. Clearly, there is a need for both; although, the former is rare. We found that offering a course for majors from both colleges brings a unique joint learning experience.

This course demonstrated that a patent drafting course combined with IP protection can be taught successfully to business and engineering students with no prior law background. The authors see no reason why this course could not be made available to all majors at an university. We recommend more universities to consider offering a similar course to their non-law students.

A one-credit course accomplishes the purpose of introducing IP and patent application drafting to non-law students. However, this course could be offered as a two- or three-credit course; although, it should be much easier to introduce the one-credit version in almost any university setting.

Sufficient material is presented in this paper to assist a faculty member to decide for or against offering such a course in partnership with a patent attorney; it is recommended that a patent attorney is a co-teacher of a course such as this. This paper gives a complete picture of the course from several angles including content, delivery, composition, student response and results in the hope of enabling interested faculty in any university to attempt to offer a similar course for the benefit of budding inventors in their campus.

The authors thank Auburn University colleges of business and engineering for enabling the offering of this first-of-its-kind course at the university with minimal procedural delays and

hindrances. The authors are convinced there will be continuing interest among students for this course.

Feedback

A short survey of our students at the end of the semester revealed that 100% of the respondents want the course to be either 2- or 3-credits long. Two respondents wanted to know more about post-filing issues that arise after filing of patent applications with the USPTO. Several were keen on submitting their application to the USPTO.

Every student in this small class of about 16 students had a viable idea, which he/she strived to turn into a patent application. In the process, they learned much about the quality and value of their ideas. In response to the survey, three students wanted to know more about marketing and launching their product as a new business. One of the authors with nearly 30 years of university teaching could attest to the fact that rarely one comes across so many potential entrepreneurs in a single university class; the class woke up the inner entrepreneur in the students.

An experienced patent attorney who teaches patent law to law students in Wisconsin was a guest speaker to the class. His comments to the teachers were: *“Your students were very enthusiastic and I was impressed by the caliber and amount of questions that they asked. I have taught patent courses as an adjunct professor at [university name withheld] University Law School for the past six years, and your students demonstrated an understanding of basic patent law that was equivalent (or better) than many of the law students in my classes.”*

While manufacturing industries have moved away from the US to countries such as China, India, Mexico, etc., it is imperative that the US crank up its innovative capabilities and

speed the commercialization of productive ideas of our citizens. The authors are convinced that a patent drafting course to non-law students in universities is a step in the right direction. The authors encourage other universities to try this course.

Appendix I

Student Background

1. Undergraduates (14)
2. Graduate students (2)
3. Industrial & Systems engineering (4 students)
4. Business (2 students)
5. Mechanical Engineering (3 students)
6. Computer Science (2 students)
7. Finance (1 student)
8. History (1 student)
9. Polymer & Fiber engineering (1 student)
10. Civil Engineering (1 student)
11. Aerospace Engineering (1 student)

Appendix II

The nature of inventions of students

1. Computer system (computer engineering)
2. Media device (electronics)
3. Network security (computer science)
4. Textile product for divers (textile/materials engineering)
5. Business method for organizing an enterprise (marketing/business)
6. Media device (electronics)
7. Lifting apparatus (mechanical)
8. tethering/toy device (mechanical)
9. Writing instrument (industrial/mechanical)
10. Ergonomic knife (industrial/mechanical)
11. Air purification (environmental)
12. IC card and system (electronics/computer science)
13. Material for a walkway (materials science/engineering)

Appendix III

Why are they interested in the class?

1. They want to pursue a future career in law (5 students, with 2 specific to IP/patent law career)
2. They want to start a business based on their invention(s) (5 students)
3. They want to learn generally how to protect and exploit intellectual property in their ideas (3 students)