CHAPTER 1

Intellectual Property Rights and their usefulness for Engineers

Intellectual Property and its different forms. Importance of this course. Usefulness of IPRs for engineers-introduction to new career opportunities/consultancy opportunities

Intellectual Property and its different forms

Ideas and creations of the mind, having commercial value are called **"Intellectual Property (IP)".** Legal rights associated with intellectual property are called **"Intellectual Property Rights (IPRs)"** and are respected by more than 150 countries worldwide. The basic purpose behind IP and also IPRs is to recognize and reward ORIGINAL effort and also to protect such effort from wrongful use by making it a 'legal offence'. It is an undisputed fact that unless we reward 'original thinkers' and 'creators' and protect their rights over intellectual creations, society will suffer and technological progress will be seriously affected.

Creations of the mind or 'ideas' can have immense commercial value and can be bought or sold just like physical property e.g house or car. Since they can be bought and sold, that is why the word 'property' is used. Since creations of the mind are so different, it is not possible to have one mechanism to protect all creations of the mind.

Accordingly, there are **eight different mechanisms to protect IP** and there is no ninth mechanism. These 8 mechanisms are:

(i) Patents (for inventions)
(ii) Copyrights (for creative/artistic works/software)
(iii) Trademarks (for marks used in trade)
(iv) Industrial Designs (for external shape of goods)
(v) Layout Designs of Integrated Circuits
(vi) Geographical Indications (for goods from a particular region e.g. Darjeeling Tea, Kullu Shawls),
(vii) Plant Varieties (for new varieties of plants e.g. a rose plant bearing roses of several colors)
(viii) Trade Secrets (for information of commercial importance).

Importance of this course

The subject of IP is very important for engineers. This is because a lot of technical innovations occur in engineering institutes and to protect them knowledge of IP is necessary. Knowledge of IP helps an engineer to not only protect his valuable ideas and thus create 'intellectual property' but also to promote its licensing and development in the larger interests of society. The present course thus creates awareness about how IP can benefit an engineer in terms of new and better career opportunities and also increased sources of income.

You don't need a legal background to study and understand intellectual property – what you need to have is a strong technical background, which you already have – as an engineering professional!

Why is there so much lack of understanding of IPRs? Maybe because the subject is yet to be introduced at graduate or post-graduate level, not only in India, but other countries too. Professionals e.g. engineers, chemists, doctors, researchers in different branches of science, all study their own subjects in detail

but not IPRs. It is these very professionals who later join industries or rise to senior level positions involving policy level decisions. Hence, introduction of the subject at student level during professional study, can be a powerful tool in promoting IPR understanding and acceptance, globally.

Usefulness of IPRs for engineers

1. **Knowledge of IP adds tremendous monetary value to your work**: Many of our engineers come up with very good innovations and inventions, but in absence of knowledge of IPRs, their work goes waste. Either somebody else takes the credit or it remains confined to published papers, project reports or just 'compiled information' which nobody uses. This course will teach you how to value your engineering innovations and ideas, how to exploit them commercially and convert ideas to wealth.
2. **Knowledge of IP enables you to improve the quality of your own work:** A huge ocean of technical knowledge lies untapped in patent databases, which you can access completely free of cost! Knowledge worth millions of dollars is available to you. It can drastically change the quality of your engineering research or even your own efforts to develop something new. This course will teach you how to actually harness the 'power' of intellect to enable your 'creativity' to take off!
3. **Knowledge of IP opens up a world of new career opportunities for you:** Careers in the field of IP are highly paid and niche careers. They open an altogether new world for you – a new world you never knew existed. *Patent agents, patent attorneys, patent litigation experts, patent analysts, technology transfer professionals, licensing specialists* etc. are some of the new careers in IP for engineering professionals in which there is always a shortage of right people. Using these words, check out 'job websites' such as 'monsterindia.com', 'naukri.com'- you are likely to find a vacancy open for a qualified person like you!
4. **Knowledge of IP empowers you to take your own decisions:** Knowledge is power and power leads to freedom. Freedom from working 'under someone'. Freedom from looking for jobs. IP empowers you to become a 'job creator' than a 'job seeker'.

It opens up tremendous opportunities for entrepreneurship and gives you easy access to venture capital and funding, which is not available to another who does not have knowledge of IP.

5. **Knowledge of IP has special value for qualified engineers in terms of consultancy promotion:** For engineering professionals already in Job or at middle level positions, knowledge of IP opens up tremendous new opportunities in the area of 'technical consultancy'. You can 'sell' knowledge and earn money. How do you get the knowledge to help industry, to troubleshoot and solve problems? From your technical background and from your knowledge of IP. Knowledge of IP enables you to access rare technical knowledge hidden in patents, which can give a boost to your career and earning prospects. The story 'Rose Garden' given below is illustrative and conveys how IP opens up consultancy opportunities for qualified engineers.

As an engineer, you may have an idea, which can improve an existing machine, drastically altering the production process and affecting the price of goods! It can lead to significant technological advantages, making the goods globally competitive and help earn valuable foreign exchange. Hence, it is very important for engineers and engineering students to understand the immense value of ideas, how to protect them and how they can be important in changing their lives and that of others. The stories 'BLUE DENIM' and the 'ROSE GARDEN' given below are illustrative and convey the importance of this course in a very simple and lucid manner.

Blue Denim

Raman, a mechanical engineer joined 'Blue Planet' – a textiles company engaged in the manufacture of a special brand of blue denim. The process of producing this denim involved use of heavy duty, imported machines. As the company expanded its production, it went in for purchase of more and more machines. The machines were huge mechanical giants, consuming lots of electricity and also involved huge transportation and installation costs. They could not be copied and made indigenously, as the American Company which made the machines, had 'intellectual property rights' over these machines in form of a number of patents, which they enforced very strictly throughout the world.

Raman, as the maintenance engineer got to spend considerable time in the production section and also with the machines. He observed the difficulties in production of denim and started thinking.

One day he had an idea regarding a new machine, which might be able to produce the same quality of denim in a very simple manner. Excited he discussed his idea with his supervisor, who in turn approached the management.

The management listened to his idea patiently and felt it was worth exploring. They called the patent attorneys who drafted a 'provisional patent application' in which Raman disclosed his idea and deposited the same in the patent office. Raman's idea was now safe and he had ownership over his idea. The management agreed to give Raman a percentage of profits per machine sold, in case he successfully developed a new and improved machine. For this they signed a legal agreement with him.

Raman worked hard and within six months produced a new machine, which produced the same quality of denim as the imported machines. However, his machine was very innovative. It occupied very less space and consumed very low power. It had very few moving parts and was practically maintenance free. Compared to about four persons required to operate the imported machines, Raman's machine could be operated by a single person.

The management of 'Blue Planet' was extremely happy with Raman's 'idea'– they were now no longer dependent on imported machines. They could produce Denim at a cheaper price and enjoy more profits.

Encouraged by the performance of Raman's machine, the company filed patents worldwide for the machine. In his honor, they named the machine as Raman Machine. They sold the patents to different manufacturers and earned money as well as respect for an original and creative idea.

Raman's innovation was recognized worldwide and he was honored by the Government of India for bringing recognition to Indian innovation. He became a rich man due to royalties earned from sale of his machines throughout the world and set up hospitals for the poor. He also set up a world class 'innovation' university in India, which encourages people who come up with new and creative ideas and provides them all financial and mentoring support.

A simple idea changed his world and that of so many other people, forever!

Rose Garden

Simi was the eldest of three sisters and a good performer in studies. She had just completed her BE (Electronics and communication) from a reputed engineering college, when her father fixed her marriage. She desperately wanted to study further, but her father gently explained to her his 'social obligations'. Confronted with family and career obligations, Simi had no choice. Her husband was in a transferable job- whenever she explored career options and was on the verge of professionally attaining some acceptance, it was time for her husband to move.

Time flew by and she was blessed with a daughter in due course of time. Caught in the whirlpool of life and responsibilities, her engineering degree seemed a faraway dream. At times she wondered whether it was worth all the efforts and hard work she had put in. On the personal front, she had no regrets for she was blessed with a loving and caring family. However, professionally at times she felt a sense of loss.

Then one day, her cosy world collapsed suddenly and without warning! While away on tour, her husband met with an accident and expired on the spot. She was stunned and for weeks and months was unable to come out of her grief. She watched silently as family members came and went. Gradually, her grief subsided and she realized that it was time for her to stand up and pick up the threads once again. The financial support she got from her husband's employer was gradually getting exhausted. She had no job- her circumstances never allowed her to take up one. However, she had a child to bring up and take care. Worried, she wondered what to do? How to manage?

Behind her house, was a small rose garden where she took her daughter to play every evening. She became friendly with an old couple, who knew about her tragedy. The elderly man proved a valuable guide and friend.

Simi shared with him her desire to work but also the challenge which she was facing as a single parent. The elderly man listened patiently to her and informed that her professional qualification could be a valuable asset. But Simi was discouraged- she was out of touch for several years, she could not take up a full-time job and besides who would give her a job based on her degree in engineering, which she had not exploited professionally for so many years?

Unknown to her, the old man had already started to make efforts to help her out. He was the retired Head of the Intellectual Property Division of a leading manufacturer of Electronic Security Systems. The company was constantly exploring new ideas and concepts. They needed a professional with electronics and communication background to understand their innovations, check literature and patents and help them to protect their ideas.

The old man talked to the management, who agreed to 'hire' the 'untrained' female engineering graduate as a 'Consultant' for their 'IP Division'! She could operate as a 'free-lancer' from her home and would be

paid a 'fixed' monthly amount as 'retainership'. The old man took the responsibility to impart IP skills to her.

Simi had been a bright and intelligent student- she turned out to be a quick learner. Though completely out of 'tune' with her professional field, she was surprised at the ease with which she was able to 'fill up' the gaps in knowledge. She had no books or journals at home- just a fast broadband internet connection and plenty of time when her daughter was away to school! She read and re-read plenty of patents and journal articles and gradually matured into a mature IP Professional, who while operating from home, commanded respect and 'money'. The transition did not take long- barely a year!

Knowledge of IP changed her world- it helped overcome her personal grief, helped her to regain her professional confidence which she had lost somewhere along the journey of her personal life and also gave her a sense of freedom which was heady and rejuvenating!

She remembered the words of the old man who once had explained to her -Your degree was an 'asset'- knowledge of IP helped you to 'encash' it! Don't thank me- thank your father who had given you a good education.

A chance encounter with an IP professional in the rose garden had made Simi's life bloom once again.