**Introduction to Professional Engineering in Canada, 3e**

**Chapter 17: Intellectual Property**

**Intellectual property**: tangible form of creativity in designs, processes, ideas and products

* + The ideas and creations produced by others and ourselves

In this chapter you’ll learn:

* The importance and use of the formally defined types of intellectual property
* The types of intellectual property for which special laws have been written
* How to obtain protection for you intellectual property
  1. **introduction**
* Intellectual property considered is any creative material that has been put into tangible form.
* Ex: discussing an idea with a colleague is not considered intellectual property until someone writes it down and claims copyright on it
* Proprietary property: owned by an individual or company
* Public-domain property: accessible by all

**17.1.1 Proprietary intellectual property**

* Info for which ownership has been claimed
* Intellectual property can be bought, sold or shared like any other tangible asset
* Government legislation sets the legal rules therefore some legal protections such as patents don’t extend beyond the country where it was issued, unless agreements/ conventions have been signed to extend proprietary rights between countries
* 6 types of intellectual property: patents, copyrights, industrial designs, trademarks, integrated circuit topographies, trade secrets
* Formal process: 1. an application is made to a government office, 2. Government office registers ownership if requirements are met
* Copyright does not required formal registration, once registered a description of it is made public
* The Canadian Intellectual Property Office (CIPO) registers the first 5 types of intellectual property; trade secrets are not registered- do not require disclosure/ have any special protection
* Some cases require new legal definition of intellectual property and re-examination of ethical conduct.
* Ex: recent developments in bioengineering, applicability of copyright to electronic documents

**17.1.2 The public domain**

* Info that has no ownership, includes material: that is common knowledge, for which legal protection
* Most of our knowledge is in the public domain: equations, laws, published info
* Ex: Newton’s laws, standard time (published by Sandford Fleming), Shakespeare’s plays (intellectual property expired)
  1. **The importance of intellectual property**
* 2 important consequences of ownership: 1. the owner can control and possibly profit from the use of the work by others, 2. the records of registered intellectual property are vast public storehouses of knowledge
* 1st purpose of protecting intellectual property is to ensure producer is rewarded for it
* It encourages creativity as not many people would invest in research, development or creation if they didn’t have exclusive use to the results
* The CIPO does not protect owners except by registering ownership (up to owner to initiate its protection)
* Advice about intellectual property can be obtained from the Publications Centre of the CIPO
* Engineers use the CIPO as a great source of info about current technological developments
* Most CIPO files are public and it permits us to monitor progress of competitors and inspire our own inventiveness
  + 1. **Rights of employers and employees**
* Employment contracts sometimes state that company owns ANY intellectual property developed by the employee, who cannot publish or exploit intellectual property without the consent of the employer
* Other employee contracts limit the company’s claim to property related to the job
* An employee contract may prohibit an employee from working for a competitor for a period after leaving the company
* Relationship of publisher to author is similar of employer to employee

**17.3 Copyright**

* Copyright Act by the CIPO states a copyright is the right to produce, reproduce, perform, publish, adapt, sell or lease an original literary, dramatic, musical, or artistic work
  + Reproduction includes recording, photographing, filming, using any “mechanical contrivance” including communication technology or telecommunication signals
* If the creation occurs during employment, employer usually owns the right unless stated otherwise in contract
* Copyright lasts for author’s lifetime +50 years in Canada (differs in diff countries)

**Copyright registration**

* In Canada copyright is automatically possessed by the author and marked as “©” or registered
* Registration is not necessary to obtain copyright protection.
* Registration gives notice that copyright exists, date of creation, author’s name and ownership of work
* Canadian copyright also gives foreign protection as a result of 2 international treaties (Berne Copyright Convention and Universal Copyright Convention)
* Violation of copyright is infringement (substantial quotation/ borrowing of another’s work without author’s permission, even if source is attributed properly), and if includes misrepresentation of authorship it’s plagiarism
* If someone infringes copyright, you can sue under civil law for recovery of lost income
* “piracy” reproducing a copyrighted work for sale or hire- penalty for criminal infringement is severe

**17.3.2 Fair dealing**

* Copyright Act permits small copying under “fair dealing” provisions- short extracts for the purpose of review, criticism, or research (author & source must be completely identified)
* No exact guidelines for how much can be copied during fair dealing
* Licensing collectives (Access Copyright) are established to negotiate licenses for schools and to pay royalties to authors

**17.3.3 Copyright and computer programs**

* Computer programs may be protected by copyright (as a literary work)
* Infringement: make, sell, distribute, import, make copies without written consent
* Fair dealing also applies to computer programs- the owner of an authorized copy may make a copy for his own use that must be destroyed when authorization ends for the original. It may also be adapted/ translated into another computer language
* “piracy” is so easily done, people don’t often realize it
* As an engineer, must avoid pirated software and ensure all computer software is authorized
* Program decompilation: (form of reverse engineering), may be much cheaper than obtaining a license or developing a completely new program

**17.4 Patents**

* Patent: the legal right, lasting 20 years, to exclude others from making, using, or selling an invention.
* The Canadian Intellectual Property Office handles approximately 35000 patent applications a year
* The second major function of a patent is public notice
* The Patent Act allows the rights to an invention to be sold or licensed to others by registering a written document with the Patent Office
* A patent application may be submitted for
  + a product
  + an apparatus
  + a manufacturing process
  + a composition of matter
  + an improvement for any of the above
* Criteria: novelty, usefulness, ingenuity
* Pure ideas, scientific principles, and abstract theorems are not patentable
* Computer program files can be protected by copyright
* Genetically engineered life forms are patentable
* Biotechnology and software are two evolving areas where patent criteria are anything but clear
* The patent process has come under criticism for delays caused by increase in number of applications
* Patent laws continue to evolve

**17.4.1 The Patent Application Process**

* Retain an agent, and search existing patents (what is already registered or known?)
* File an application (“first to file” rule; made public 18 months after filing; must be completed within 15 months and must contain:
  + petition: formal request for patent to be granted
  + abstract: summary for publication
  + specification: a description of invention- including novelty, usefulness, and ingenuity
  + claims: precisely define what aspects of the invention the inventor wants to protect
  + drawings: illustrations of the invention)
* Request an examination (must be made within five years of the filing date, or it may expire)
* Protect the patent (entails legal fees just like every other aspect; can be expensive; Canadian patents are valid only in Canada- if you wish to file patent in more than one country, you must file a foreign patent from within Canada)

**17.5 Industrial Designs**

* Any original shape, pattern, and ornamentation that is not induced purely by the function of the article can be registered (exclusive rights for 5 years, renewable once for another 5 years)- applies in Canada only

**17.6 Trademarks**

* Trademark: word, symbol or design intended to identify the wares or services of a person or company in the marketplace
  + Ordinary marks: distinguish articles or services (i.e. corporate logos)
  + Certification marks: indicate quality standard for a product or service
  + Distinguisher guise: wrapping, shape, packaging, or appearance that distinguishes a product from other similar ones (i.e. candy shaped like a butterfly)
* A company name doesn’t necessarily qualify as a trademark unless it is used to identify products or services
* Trade marks can be renewed unlimitedly
* The Canadian Intellectual Property Office ensures that no two trademarks are the same or confusingly similar
* For foreign trademark to be registered in Canada, it must be non confusing, non deceptive, distinctive and not otherwise prohibited

**17.7 Integrated Circuit Topographies**

* 3D configuration of layers of semiconductors, metals, insulators, and other materials that form the circuits semi-conductor microchip
* Topography must be original
* Term ends after 10 years of commercial use or form the filing of application (whichever is first)

**17.8 Trade secrets**

* Commercially important secret formula, design, process, or compilation of information
* Government does not regulate them
* Works only as long as the secret can be maintained; subject to leaks, espionage, independent discovery, reverse engineering, or obsolescence; cost to maintain secrecy may be very high (ensure confidentiality of information held by former employees)