I. Introduction
  a. Patent Claims
    i. Types of Patents
      1. Utility patents
      2. Plant patents
      3. Design patents
        a. New and ornamental designs of an object
        b. Term: 14 years from issue date
    ii. Structure
      1. Preamble
      2. Transition
        a. Open: "comprising": does not limit the claim to the listed elements; additional elements are included within the scope as long as the listed elements are present
        b. Closed: "consisting of": Additional elements are not included within the scope of the claims
        c. "Consisting essentially of" limits claim to elements present plus any additional elements that do not make the variant essentially different from the claimed invention (often used in chemical/biological arts)
      3. The Body
        a. Requirements for Claims
          i. Must be in a single sentence
          ii. Must recite how the elements interact
          iii. All internal references must clearly refer back to the element referred to
        b. Independent Claims
        c. Dependent Claims
          i. Will remain valid even if independent claim is invalidated
          ii. Acts as "insurance policy"
        d. Multiple Dependent Claims
        e. Means-Plus-Function
          i. A means for performing a function
          ii. Function must be used in combination with at least one other element
          iii. Function must be clear in specification
    iii. Claim Drafting
      1. Claim as broadly as possible but not so broadly as to invalidate the patent
      2. Determine what part of the invention is new; identify as little a change in the prior art so as to differentiate it from what came before
  b. Overview of the Patent System
    i. Patent Prosecution
      1. Apply/rejection/final rejection/appeal to Board
      2. After appealing to Board, have two options
        a. Appeal to Federal Circuit, using facts before the Board
        b. Sue Commissioner in D.C. District Court, using new or additional facts and evidence
      3. Types of patent applications
        a. Standard application
        b. Request for Continued Examination (RCE)/Continued Prosecution Application (CPA): Means to continue examination of application after final rejection
        c. Provisional application
          i. Placeholder to ensure early filing date
          ii. Must comply with enablement requirement of §112
          iii. Have one year to file standard application

4. Patent applications maintained in confidence during application, except for publication of new applications 18 months from filing

ii. Patent Enforcement

1. Court of Appeals for the Federal Circuit hears all appeals in patent cases, including cases with issues unrelated to patents
2. Patent has presumption of validity: burden is on challenger to prove that patent is invalid

iii. Patent Term

1. After June 8, 1995: 20 years from time of filing
2. Before June 8, 1995: 17 years from issue date
3. For applications pending on the transition date or patents in term: longer of the two terms
4. Provisional rights: upon publication of a U.S. application, applicant may send a copy to an infringer and obtain a reasonable royalty upon issuance of the patent
5. Can get extension if PTO takes too long to examine patent (or for certain pharmaceutical patents)

c. Miscellaneous

i. Patents unavailable for inventions dealing solely with nuclear weapons

ii. Special application process for applications related to national security

iii. The inventor is the owner of any patent issuing from the application absent a written agreement to the contrary

iv. Employment Doctrines

1. Hired to invent: where inventor was hired for the specific purpose of inventing something, the employer can be deemed to have an obligation of ownership from the employee
2. Shop right: if the employee used the employer’s time and materials to make the invention, the employer has implied royalty-free license to use the invention

II. Patentable Subject Matter
  a. Introduction
    i. What May Be Patented: § 101
      1. Process/Method of operation
      2. Machine
      3. Article of manufacture
      4. Chemical composition
    ii. *Diamond v. Chakrabarty (p.66)*: Anything under the sun made by man is patentable, including living genetically-engineered organisms
  b. The Bar to Patenting Laws of Nature, Physical Phenomena, and Abstract Ideas
    i. Historical Foundation:
      1. *O'Reilly v. Morse (p.78)*: The mere discovery of a scientific principle is unpatentable
      2. Patenting scientific principles would hamper scientific progress, which would contradict the policies of patents
      3. *Telephone Cases (p.90)*: Manipulation of a scientific principle in a manner that does not occur in nature may be patentable (e.g. telephone calls)
    ii. Patenting of Purified Natural Substances
      1. *Parke-Davis v. H.K. Mulford (p.97)*: A purified form of a natural substance (which does not appear naturally in a purified form) may be patented
      2. *Ex parte Latimer (p.102)*: Cellular tissue extracted from pine needles was not patentable because features derived from natural qualities, not because of applicant's actions
      3. Even if the substance is unpatentable, the process for extracting the substance will be patentable
    iii. *Funk Bros. Seed v. Kalo Inoculant (p.104)*: A bacteria performing its natural function without modification by the inventor is not patentable
    iv. *J.E.M. Ag. Supply v. Pioneer Hi-Bred (p.111)*: Hybrid plants fall under § 101 in addition to Plant Patent Act
  c. Software Patents
    i. *Gottschalk v. Benson (p.132)*: Mathematical formulas and algorithms may not be patented
    ii. *In re Beauregard (p.141)*: Printed matter exception
    iii. *Diamond v. Diehr (p.142)*: A process with a tangible result that includes a mathematical algorithm may be patented
    iv. *In re Bernhardt (p.152)*: A program embodied in a physical recording medium may be patented (it is physically different than a machine without the program)
    v. *In re Alappat (p.153)*: A combination of inter-related components in an electrical device, including a method implementing a mathematical formula, is patentable
    vi. Demise of the Limits: *State Street*
  d. Mental Steps: Mental steps or processes which can be performed in one's head, are not patentable
  e. Business Method Patents, Medical Procedures, and Other Disfavoured Areas
    i. *State Street Bank & Trust v. Signature Financial Group, Inc. (p.156)*: Business methods that produce a useful, concrete, and tangible result are patentable
    ii. *AT&T v. Excel Communications (p.163)*: No transformation of matter is required so long as there is a useful, concrete, and tangible result
    iii. Foreign Response
      1. Europe and Canada do not allow business method or software patents
      2. Australia permits both
    iv. Medical Procedures
      1. § 287(c)(1): For patents on 'medical activity', the health care practitioner and related health care entity may not be sued for infringement damages or remedies
      2. But infringement still applies to manufacturers and distributors
    v. Sports Methods: questions on whether sports method patents serve the purposes of patent law

III. Utility
    a. Operability
        i. Invention must operate (i.e. no perpetual motion devices)
        ii. PTO will generally accept that invention is operational unless it is fantastical (e.g. cold fusion, perpetual motion)
    b. Beneficial Utility
        i. Are inventions that are injurious to well-being, social policy, or morals of society patentable?
            1. *Lowell*: No
            2. *Juicy Whip*: Yes
        ii. *Lowell v. Lewis (p.217)*: A patent need not be more useful than the prior art
        iii. *Juicy Whip v. Orange Bang (p.219)*: An invention whose utility lies in appearing to be something it is not (i.e. is deceptive) is patentable
    c. Practical/Specific Utility
        i. *Brenner v. Manson (p.229)*: The invention must have utility as of the time the invention was made
        ii. *In re Brana (p.238)*: Models and in vitro tests may be used as evidence of utility
    d. Utility Standards: specific, substantial, and credible to a person in the art

IV. Disclosure and Enablement: § 112
  a. Enablement
    i. Specification must enable one of ordinary skill in the art to make and use the invention
    ii. PTO has the burden of showing non-enablement
    iii. Enablement must be shown at the time the invention was made
    iv. Undue Experimentation
      1. *The Incandescent Lamp Patent (p.263)*: The scope of the claims must be commensurate to the scope of the disclosure (claims for "fibrous materials" invalidated because disclosure only made reference to specific materials, e.g. wood)
      2. *In re Fisher (p.273)*: The scope of enablement is what is in the claim plus what is known to one of ordinary skill in the art (claim of infinite range struck down because specification only disclosed finite range)
      3. *Amgen v. Chubai Pharmaceutical (p.276)*: Claim struck down because it did not identify the proper analogues and the number of possible combinations was immense; even the inventor did not know which ones had the claimed properties
      4. *In re Goodman (p.278)*: Claim to proteins in "all plants" not enabled by specification discussing merely tobacco plants
    v. Use of Examples
      1. *In re Strahilevitz (p.291)*: Examples may be used in specifications to provide enablement (but are not required)
      2. Examples and experiments must be written in the past tense (exception: prophetic examples which are applications of the principle set forth in the specification)
    vi. Different requirements for different arts
      1. Mechanical arts: narrow claims require greater disclosure
      2. Chemical arts: narrow claims require less disclosure
  b. Written Description
    i. Proof that a later addition was supported in the original disclosure
    ii. Statutory Provisions
      1. § 120: Domestic Priority
        a. Invention disclosed in an application satisfying § 112(1) enablement
        b. A later application disclosing the same invention will have priority to the earlier application
        c. If both applications are pending in the office at the same time
      2. Continuations
        a. Claims can be drafted to cover a competitor's product as long as the specification supports the claims
        b. The new claims must meet § 112(1) enablement and written description requirements
      3. § 132: No amendment shall introduce new matter into the disclosure
    iii. *Vas-Cath v. Mahurkar (p.303)*: Claims not originally in the specification must have adequate support in the application. A prior application disclosing all the elements of a combination will support a claim to the combination
    iv. Pictures and drawings may be used to satisfy written description so long as they show all the claimed features
    v. A description that will inherently produce a result/compound adequately supports claims to the result/compound
    vi. *Gentry Gallery v. Berkline (p.315)*: A new claim will be invalidated if the specification clearly shows that the claimed features did not exist in the initial disclosure. A narrow disclosure may invalidate a later broader claim
  c. Definiteness: § 112, second paragraph
    i. *Orthokinetics v. Safety Travel Chairs (p.327)*: The definiteness standard is whether a person of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification

ii. The standard for § 112, second paragraph differs from the standard for § 112, first
iii. *Standard Oil v. American Cyanamid (p.331)*: All terms used in the claims must find support in the description; however, limitations in the description cannot be read into the claims
iv. Means-plus-function claims: If the claim is expressed as a means to produce a function, the scope of the claim is the corresponding means disclosed in the description plus equivalents
v. Most countries have this requirement

d. Best Mode
   i. The inventor must disclose the best mode (if any) for carrying out the invention
   ii. There is no requirement that the inventor specify which of several modes is the best as long as the best mode is included
   iii. *Randomex v. Scopus (p.337)*: Reference to a trade name may constitute the best mode where there are no suitable substitutes
   iv. Two-part test for best mode requirement (*Chemcast v. Arco Industries (p.343)*)
      1. At the time of filing the application, did the inventor know of a mode of practicing the claimed invention that he believed was better than any other (subjective)
      2. If the inventor did have such a preferred mode, does the application enable one of ordinary skill in the art to practice the best mode (objective)
   v. Inventor must disclose the best mode even if it is a trade secret
   vi. Readers may need to engage in significant experimentation to practice the best mode

V. Novelty: § 102
  a. Introduction
    i. Types of Novelty
      1. Novelty (events taking place before the invention): §§ 102(a), (e), (g)
      2. Statutory bar (absolute cut-off dates): §§ 102(b)-(d)
      3. Derivation: § 102(f)
    ii. The critical date of an invention depends on what subsection of § 102 is being considered
    iii. U.S. and the Philippines are the only first-to-invent countries
  b. Standards for Anticipation
    i. Identity Requirement
      1. Express anticipation: Prior art reference expressly sets forth the limitations of the claim (*In re Schreiber (p.373)*)
      2. Inherent anticipation: The prior art does not expressly set forth all of the limitations, but makes clear that the missing limitations are necessarily present in the thing described by the reference and it would be so recognized by a person of ordinary skill in the art (*In re Robertson (p.365)*). A compound that necessarily and inevitably forms as a result of natural processes anticipates (*Schering v. Geneva Pharm.*)
    ii. Accidental and Unknown Anticipations: A prior use that was accidental or unknown will not anticipate a claim (*In re Seaborg (p.375)*)
    iii. Enablement Standard for Anticipation
      1. *In re Hafner (p.380)*: A reference need not satisfy the requirements of § 112 to anticipate a claim
      2. Novelty ignores the principles or characteristics associated with a claimed structure
      3. *Titanium Metals v. Bunner (p.383)*: A reference that discloses a species anticipates a claim to the genus containing the species. The reverse is not true
  c. References under § 102(a)
    i. Domestic Inquiry: Known or Used by Others
      1. Known by Others
        a. *National Tractor Pullers v. Watkins (p.398)*: In order to be known by others, the knowledge must be public
        b. Knowledge by one person or a few people is insufficient
        c. Prior art must have its existence and relevance shown by clear and convincing evidence
        d. Witness testimony to invalidity must be corroborated
        e. A group of interested individuals who could have received the documents is enough to qualify as known to others (*Cooper Cameron v. Kvaerner*)
      2. Used by Others
        a. *Rosaire v. Baroid Sales Division (p.403)*: Experiments conducted out in the open, without any restrictions on who may view them, are public use regardless of who actually sees the use
        b. *W.L. Gore v. Garlock, Inc. (p.405)*: Non-secret use of a process in the usual course of producing articles for commercial purpose is a public use
    ii. Global Inquiries: Patents and Printed Publications
      1. Printed Publications
        a. *Jockmus v. Leviton (p.407)*: A catalogue is a printed publication
        b. *In re Hall (p.409)*: Graduate theses (or other publications) made available to the public in a library and catalogued in the general catalogue are printed publications, even if there is only one copy in the entire world
        c. *Cooper Cameron v. Kvaerner*: Documents released to outside contractors with confidentiality agreement unrelated to the disclosure in the documents are printed publications

        2. Patented
            a. A foreign document that grants the applicant a right to exclude others is a patent for the purposes of § 102(a). *Reeves v. United States Laminating (p.415)*
            b. Foreign patents may anticipate with their claims, but not with their disclosure
            c. American patents may anticipate with both claims and disclosure
- d. § 102(e)
    - i. *Alexander Milburn v. Davis-Cournonville (p.423)*: Origin of § 102(e). Legal fiction that patent applications should issue on the day they are filed, if they are valid
    - ii. § 102(e) date for reference is the U.S. filing date (not a foreign filing date)
- e. § 102(f): Derivation from Another
    - i. *Campbell v. Spectrum Automation (p.432)*: Where clear and convincing evidence (corroborated if oral) shows that the inventor derived his invention from another person who conceived it, the claim is invalid under § 102(f)
    - ii. *Agawam Co. v. Jordan (p.438)*: Suggestions from another person will not bar claims under § 102(f) unless they embrace the plan of the invention and would have enabled a person of ordinary skill in the art to construct and operate the invention
    - iii. Secrecy and foreign location of inventor's work are irrelevant under § 102(f) analysis
- f. Timing Issues: § 102(g) and Priority of Invention
    - i. Introduction
        1. § 102(g)
            a. In interference, another inventor involved in the proceeding establishes
                i. Before the first party's invention the invention
                ii. Was made by the other inventor
                iii. And not abandoned, concealed, or suppressed
            b. Before the applicant invented the invention, the invention was
                i. Made in this country by another who
                ii. Had not abandoned, concealed, or suppressed it
            c. For priority, consider
                i. Respective dates of conception and reduction to practice
                ii. Reasonable diligence of the first to conceive and last to reduce to practice from a time prior to the conception of the other
        2. Interferences: where two applications/patents claim the same invention
            a. No presumption of validity
            b. Interferences involving an application occur before Board
            c. Interferences involving two issued patents occur in district court
    - ii. Basic Rights of Priority
        1. *Townsend v. Smith (p.442)*: Where a party conceived and reduced the invention to practice before the conception of the other, the party's right to the patent will be upheld absent clearly proved abandonment
        2. *Christie v. Seybold (p.448)*: Whoever first reduces to practice has priority, unless the second to reduce to practice conceived of his invention before the first person reduced it to practice and was diligent from before the first reduction to practice until the second reduction to practice
        3. *Peeler v. Miller (p.456)*: Failure to act for a protracted period on an invention without a good excuse (poverty, sickness, etc.) will constitute abandonment, suppression, or concealment of the invention
        4. Inventions kept as trade secrets will likely violate § 102(g) as trade secrets require secrecy (suppression/concealment)
        5. Abandonment, suppression, and concealment come into play after reduction to practice
    - iii. Prior Art Uses of § 102(g)

1. *Dow Chemical v. Astro-Valcour (p.466)*: § 102(g) art may be used to invalidate an invention, even if the prior conceiver did not file for a patent. They fully appreciated what they had made and did not suppress it

iv. Conception

1. *Gould v. Schawlow (p.479)*: Conception requires evidence of complete conception of all elements of the claim, free from ambiguity or doubt
2. Notes and lab books depended upon must be enabling

v. Diligence

1. *Griffith v. Kanamaru (p.490)*: When determining whether an inventor was diligent, courts should take into account the reasonable and everyday problems of inventors
2. Waiting for a graduate student to matriculate and to secure funding are not sufficient reasons
3. Lack of profitability is not a sufficient reason

vi. Reduction to Practice

1. Types of Reduction to Practice
   a. Actual: Building and testing the invention; carrying out the steps and confirming that it works
   b. Constructive: Filing date of the patent application
2. *DSL Dynamic Sciences v. Union Switch & Signal (p.495)*: Tests may serve as reduction to practice
   a. Where the test was of an intended use
   b. The test sufficiently simulated the intended purpose to adequately show reduction to practice

g. Establishing a Date of Invention: Rule 131

i. Formal Requirements

1. Applies to prior art under §§ 102(a), (e) only
2. Two ways to prove
   a. Actual reduction to practice before reference date
   b. Conception before reference date plus diligence from before reference date to reduction to practice
3. Applicant must provide evidence of diligence
4. Clients in foreign countries can't go before 1/1/1996, except for NAFTA countries, where the date is 1993

ii. *In re Moore (p.503)*: Rule 131 affidavits need not show utility (at least in chemical arts) unless the reference at issue also shows utility

iii. If a reference does not disclose all of an invention, the inventor need only show reduction to practice/conception plus diligence for those elements recited in the reference

h. International Considerations

i. Foreign Activities to Establish Priority

1. The Paris Convention
   a. Persons filing in a foreign country have 12 months from the foreign filing date to file in the U.S. (6 months for design applications)
   b. The 12-month period starts once the first application claiming subject matter in the U.S. application is filed
   c. The U.S. application must have a claim of foreign priority within 4 months of filing
   d. For U.S. applicants filing in foreign countries, the 12-month period starts even when a provisional application is filed
   e. U.S. applicants must obtain a foreign filing license to file in foreign countries; usually comes with acknowledgement of filing or after 6 months
2. § 104
   a. Use or knowledge in a foreign country may not be used to invalidate a claim
   b. NAFTA countries are exempt as of 1993

c. WTO countries are exempt as of 1/1/1996

ii. Foreign Activities to Create Prior Art

1. § 102(a): Knowledge and Use "in this Country"

a. *Westinghouse v. General Electric (p.516)*: Reduction to practice in a foreign country is not "use" for the purposes of § 102(a)

2. § 102(e): "Filed in the United States"

a. *In re Hilmer (p.523)*: Foreign filing dates under § 119 may not be used for the purposes of § 102(e); the § 102(e) date is the date of the U.S. filing

iii. Obtaining Patents in Multiple Countries

1. The Paris Convention (see above): requires filing applications in every country where a patent is desired

2. Patent Cooperation Treaty

a. After filing U.S. application, file application with WIPO within one year of filing

b. Applicant has 30 months to enter national stage in member countries

c. Applications published 18 months after filing

d. Designated search authority will search the application and issue a report

e. Applicant has an opportunity to amend

f. Applicant may request preliminary application; search authority will issue a written opinion on patentability, which applicant may respond to

g. At end of 30-month time period, must enter national stage (hire foreign attorney, file foreign application, etc.)

- VI. Statistics Bars

vi. Compensation for use
vii. Extent of control

4. Third Party Statutory Bar Activity
   a. *Baxter International v. COBE Labs (p.602)*: Public use by a third party triggers the bar even if the third party did not believe the use was public
   b. *W.L. Gore v. Garlock (p.611)*: Secret use of a machine running a process is not a public use of the process
5. International Considerations
   a. Several countries do not have a one-year grace period; any use prior to the filing date will invalidate the patent
   b. EPO may use previously-filed unpublished patent applications for novelty purposes but not for obviousness purposes
   c. Some exceptions to EPO bars:
      i. Disclosure was an abuse by or in relation to applicant (e.g. theft, violation of NDA)
      ii. Disclosure at certain officially recognized exhibitions
   d. Europe: State of the art includes oral (unpublished) descriptions

c. Party-Specific Statutory Bars: §§ 102(c), (d)
   i. § 102(c): Abandonment
      a. *Macbeth-Evans v. General Electric (p.625)*: An inventor abandons an invention under § 102(c) when he acts in such a way as to evidence an intent to keep the invention secret
      b. Abandonment can occur at any time before filing, even in the one-year § 102(b) grace period
   ii. § 102(d): Prior Foreign Filing
      a. § 102(d) conditions
         i. Foreign patent issued before U.S. filing
         ii. Foreign patent application was filed more than 12 months prior to U.S. filing
      b. *In re Kathawala (p.635)*: A foreign patent is a patent when it issues, i.e. upon a formal bestowal of patent rights from the sovereign
      c. The foreign application must provide an opportunity to claim all aspects of the invention

VII. Nonobviousness
  a. Invention: Nonobviousness and "Invention"
    i. *Hotchkiss v. Greenwood (p.648)*: Inventions that are merely the work of a skilled mechanic are not worthy of patent protection (patent for replacing metal/wood knobs with clay knobs). Mere substitution of one piece for a known piece is not invention
    ii. *Great A&P Tea Co. v. Supermarket Equipment (p.661)*: A combination of old elements must contribute something new; patentability exists only where the whole exceeds the sum of the parts
  b. § 103 and the Basic *Graham* inquiry
    i. Obviousness exists as of the time the invention was made
    ii. *Graham v. Deere (p.670)*: Basic obviousness inquiry
      1. Scope and content of prior art
      2. Differences between prior art and claims at issue
      3. Level of ordinary skill in the art
    iii. *United States v. Adams (p.692)*: Inoperable inventions and disclosures that teach away from the claimed invention will not create obviousness
  c. Doctrines of Nonobviousness
    i. Suggestions in the Prior Art
      1. *In re Dembiczak (p.709)*: The prior art must have a suggestion or motivation to combine the references (*In re Lee*)
      2. Sources of the suggestion
        a. The prior art references themselves
        b. Knowledge of the person of ordinary skill in the art
        c. Nature of the problem to be solved
    ii. *Arkie Lures v. Gene Larew Tackle (p.719)*: References that teach away from the combination are evidence of nonobviousness
    iii. Factors Relevant to the Level of Skill in the Art
      1. Educational level of inventor
      2. Type of problems encountered in the art
      3. Prior art solutions to problem
      4. Rapidity with which innovations are made
      5. Sophistication of technology
      6. Educational level of active workers in the field
  d. Secondary Factors
    i. *Hybritech v. Monoclonal Antibodies (p.736)*: Commercial success must be due to the merits of the invention
    ii. Secondary factors of nonobviousness (*Hybritech*)
      1. Commercial success
      2. Long felt need in the art
      3. Failure by others
      4. Teaching away
      5. Licensing by others
      6. Copying by others
      7. Disbelief by others in the field
      8. Unexpected results
      9. Near-simultaneous invention
  e. *In re Winslow (p.757)*: The Winslow Tableau: Imagine the inventor having all the prior art in the field tacked up on the walls of his workshop
  f. Prior Art for the Purposes of § 103
    i. *Hazeltine Research v. Brenner (p.764)*: Patents should be considered for their obviousness value as of the filing date, not the issue date
    ii. *In re Bass (p.767)*: § 102(g) prior art may be used in § 103 rejections/invalidations
    iii. *Oddzon Products v. Just Toys (p.778)*: § 102(f) prior art may be used under § 103(a)
    iv. § 103(c): Prior art under §§ 102(e), (f), (g) may not be used under § 103 if the invention and the references were subject to an obligation of assignment at the time the invention was made

g. The Statutory Bars of § 102
    i. *In re Foster (p. 785)*: § 102(b) references may be used toward § 103, even if the reference is dated after the invention
h. Non-Analogous Arts Limitations
    i. *In re Clay (p. 798)*: Art from non-analogous arts may not be used for § 103(a)
    ii. Standards for analogous art:
        1. Whether the art is from the same field of endeavour, regardless of problem addressed
        2. If the reference is not within the field of the inventor's endeavour, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved