

Week 1

CARE Framework

- Consider (stakeholders and consequences)
 - What were the **anticipated** and **observed effects**?
 - What **additional details** would provide greater understanding of the situation?
- Analyze (how code applies to context)
 - What stakeholder **rights** were impacted?
 - What **technical facts** were most relevant to the actors' decisions?
- Review (possible actions)
 - What **responsibilities, authority, practices, or policies** shaped the actors' choices?
 - What **potential actions** could have changed the outcomes?
- Evaluate (decisions and future impact)
 - What actions (or lack of action) supported or violated the Code?
 - Are they **justified**?

Cognitive Bias

- Systems of Thinking
 - a. Short and fast decision making
 - **Cognitive bias** usually comes here
 - We use **Heuristics**
 - b. Thorough, logic-based decision making
- Heuristics
 - Mental short-cuts
 - Intuition-based
 - **Affect heuristics**
 - Influenced by emotions
- Cognitive Bias
 - **Systematic mismatch** between heuristics decision and the decision context
 - **Systematic error** in our thinking
 - **Optimism Bias**
 - Preference for thinking that things will work out for the best
 - Solution: **Red Team**
 - Have outsiders look at your project
 - **Groupthink**
 - Majority of people move in the same direction
 - Solution: **Pre-Mortem**
 - Pause group, think "what-if" if something goes wrong
 - **Anchoring Bias**
 - People get anchored to the first figure or result they see/hear
 - **Confirmation Bias**
 - **Selective** gathering and interpretation of evidence

Fallacies

- An error in reasoning
- 21-Ethical Fallacy Test
- Categories
 - **Formal**
 - Error in **logic**
 - **Appeal to Probability**
 - Assuming something is inevitable because it is possible
 - **Informal**
 - Error in **reasoning**
 - **Slippery Slope**
 - **First step** will lead to final unacceptable step
 - Strawman
 - Misrepresenting someone's argument by broadening or narrowing scope of a premise
 - Refuting a weaker version of the argument
 - Appeal to authority
 - Assertion is deemed true because of the position or authority of the person asserting it

Week 2

Ethical Norms

- Examples
 - **Consequentialism** or **Deontology**
 - Based on result of actions
 - **Act Utilitarianism**
 - Actions that would produce the greatest benefit (or utility/happiness) for the greatest number of people are morally correct
 - **Hedonic Calculus**
 - Algorithm to estimate amount of happiness in an action
 - **Utility**
 - Tendency of an object to **produce happiness** or **prevent unhappiness** for an individual or community
 - **Principle of Utility** [2]
 - An action is right/wrong to the extent that it increases/decreases the total happiness of the affected parties

- Potential weights (calculations) to increase/decrease particular pleasure/pain [2]
 - **Intensity**: Magnitude of experience
 - **Duration**: How long the experience lasts
 - **Certainty**: Probability it will actually happen
 - **Propinquity**: How close the experience is in space and time
 - **Fecundity**: Its ability to produce more experiences of the same kind
 - **Purity**: Extent to which pleasure is not diluted by pain & vice versa
 - **Extent**: Number of people affected
- Advantage [2]
 - It focuses on happiness
 - It is practical
 - It is comprehensive
- Disadvantage [2]
 - When performing the utilitarian calculus, unsure where to draw the line, yet where we draw the line can change outcomes
 - Impractical to put so much energy to each moral decision
 - Ignores our sense of duty
 - Cannot predict with certainty consequences of an action
 - Susceptible with the problem of moral lock
- **Virtue Ethics**
 - Measures actions against a set of virtues acquired from practice and experience
 - Honesty, Bravery, Generosity, kindness, etc
- Rule based
 - **Categorical Imperatives** by Immanuel Kant
 - Derived from pure reason, independent of consequences
 - Act only to the maxim by which you can at the same time will that it should become a universal law
 - Act so as to treat humanity, whether in your own person or in another, always as an end and never as only as a means
 - Addresses morality of conduct
 - Rule Utilitarianism
 - We adopt rules that, if everyone adopts it, lead to the greatest increase in
- Professional Ethics
 - A very specific ethical norm
 - Goal: place the needs of the public or client first before your own
 - Engineering design: utilitarian
 - Code of ethics: rule based

- Moral vs Ethics
 - Morals: a person's sense of what is right or wrong, based on culture or upbringing
 - Ethics: standards of right and wrong, devised by an outside party e.g. profession

Week 3

Professional Engineering Practice

- Self-regulation
 - Control entry into the profession and monitor activities of professionals
 - Professional Governance Act (PGA) is the legal basis of EGBC
- EGBC Code of Ethics Principle 2
 - Practice only in the fields where training and ability make the registrant professionally competent
 - Rational: to do otherwise would lower the value of engineering work – would be self-defeating
 - Universal: applies to every engineer or geoscientist in all situation
 - Kant would like these answers
- EGBC Code of Ethics Principle 1
 - Hold paramount the safety, health, and welfare of the public, including the protection of the environment and the promotion of health and safety in the workplace
 - The Public
 - Those who do not or could not know any better
 - This places a responsibility on the engineer to define his/her public
- Sorting Ethical dilemmas
 - Think of tensions as forming a triangle
 - Personal morality
 - Societal Ethics
 - Responsibilities of role at work
 - Conflict within or any sides of the triangle can be better understood by relying on the other dimensions
 - The third dimension could potentially be used as a tiebreaker when two elements are clashing
- Professionalism
 - Conduct, aim, or qualities that characterize a professional person
 - A set of behaviours believed to be appropriate for a particular occupation
- Roles and Responsibilities of Engineers
 - Demonstrating professionalism
 - Adhere to the EGBC Code of Ethics
 - Protection of Public
 - Minimize risks of failure impacting public safety
 - Minimize negative impacts on public safety that arises from failures
 - Serving the Public Interest
 - Benefits to the general public
 - Assessed by comparing benefits with costs to the public

- Regulation of Engineering in Canada
 - EGBC and other provincial/territorial associations are constituent members of *Engineers Canada*
 - Canadian Engineering Accreditation Board (CEAB)
 - Responsible for accrediting engineering programs across Canada
 - Assesses conformance based on
 - Graduate attributes
 - Students
 - Curriculum content and quality
 - Program environment
 - Canadian Engineering Qualifications Board (CEQB)
 - Responsible for developing national guidelines for professional engineering qualifications, standards of practice, ethics, and professional conduct
- EGBC
 - Forms of membership
 - Engineering Licensee
 - Licensed to practice within a prescribed scope of practice
 - P.Eng with non-practicing status
 - Non-resident Licensee
 - Licensed to practice in B.C.
 - Inter-association Mobility Agreement
 - Applicant who is a P.Eng or EIT in another province
 - International Agreement
 - Applicant with equivalent P.Eng title in another country
 - Provisional member
 - Applicant working towards the one year Canadian experience requirement

Conflict of Interest

- A situation where a professional has a special interest that influences the objective exercise of professional duties
- Special Interest usually:
 - Self-interests (job, career goals)
 - Loyalty to a group
 - Financial relationships
 - Emotional connection
- Professional duties
 - Duty of care
 - Standard of care
 - Maintain confidentiality
 - Impartiality

- Fiduciary duties
 - Duty arising out of obligation to act in the best interest of someone or some group
- Third parties who may rely on you for advice
- NOT
 - A conflicting interest
 - Conflicting legitimate objections
 - Ethical dilemma or conflict
- Types
 - Actual
 - Potential
 - Apparent
- They are inevitable
 - Automatic mental processes
 - Latent biases

Week 4

Whistleblowing

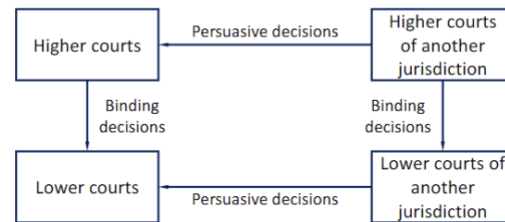
- The public exposure of an activity occurring within a private or public organization that is deemed illegal, unethical, incorrect, or that could endanger the public or the environment
- Fairness-loyalty tradeoff
- Personal factors that predict whistleblowing
 - Increased tenure of employment
 - Increased pay
 - Increased education
 - Male
- Giving individuals chance to blow whistle
 - Increases cooperation
 - Decreases selfishness

The Canadian Legal System

- Types of Law
 - Criminal Law
 - Harm to society that the government investigates and prosecutes
 - Civil Law
 - Dispute between private parties
- Types of Law Traditions
 - Common Law
 - Judge made law
 - Based on precedent (stare decisis)

- **Civil Law**
 - Codified Law
 - Inquisitorial
- Creating laws in Canada
 - Levels of power (Federal and Provincial responsibilities set in Constitution Act, 1867)
 - Federal
 - Responsibilities generally affect whole country
 - Provincial/Territorial
 - Responsibilities include education, health care, some natural resources, road regulations
 - Municipal
 - Receive authority from provincial governments
 - Parliament and provincial legislatures pass legislation
 - Judiciary
 - Series of independent courts
 - Interpret laws passed by Parliament and provincial legislatures
 - **Supreme Court of Canada**
 - Final court of appeal for all Canadian courts and administrative tribunals
 - Appeal by leave only
 - Not an automatic right
 - Decisions binding on all courts and administrative tribunals
 - Can only be overturned by subsequent decisions of the Supreme Court of Canada
 - **The Federal Court and Federal Court of Appeal**
 - Deals only with particular legal issues referred to in the legislation that created them
 - Nationally enforceable
 - **Provincial/Territorial Court of Appeal**
 - Hear appeals from decisions of the superior courts and further appeals of decisions originally made by the provincial/territorial courts
 - **Superior Courts** (Supreme Court/Court of King's Bench)
 - Can hear case in any area unless specifically limited to another level of court
 - Deals with
 - Serious criminal cases
 - Cases involving large sums of money
 - Cases that fall within special divisions established by the court
 - Appeal from a decision made by provincial/territorial court come here first
 - **Provincial/Territorial Courts**
 - Deals with
 - Most criminal offenses
 - Family law matters

- Young offenders (ages 12-17)
 - Traffic violations
 - Provincial/territorial regulatory offenses
 - Claims involving money
 - Under a certain amount, typically handled by a “**Small Claims Court**”
- Jurisprudence / Case Law / Precedent Law / **Stare Decisis** (to stand by things decided)
 - Decisions of provincial courts of appeal are binding on all courts in the province
 - Decisions of Federal Court of Appeal are binding on Federal Court
 - Decisions of Supreme Court of Canada are binding on all lower courts, including courts of appeal
 - Decisions from different jurisdictions can be persuasive but are non-binding
 - This structure leads to predictability and consistency in legal decisions.



- **Precedent**
 - A system where a court must decide subsequent cases in line with previous cases that deal with the same legal issue
- Dialogue between Courts and Legislatures
 - **Parliamentary Supremacy**
 - Legislatures can enact laws that supersede jurisprudence
 - Should comply with Canadian Charter of Rights and Freedoms
 - Judiciary interprets whether legislation complies with charter
 - Legislatures and Judiciary keep each other in check
- **Administrative Law**
 - Delegation by government of quasi-judicial powers to administrative tribunals (not part of the court system)
 - Members of tribunals are not judges
- Self-governing regulated profession
 - Granted authority by government statute to license professionals
 - Granted ability to discipline licensees
- EGBC
 - Derives its authority from Professional Governance Act (No longer the Engineers and Geoscientists Act, 1996)
 - Establishes bylaws (section 10) to govern how it operates and requirements for practicing members
 - Section 33(2): The discipline committee can impose fines or revoke license
- Rights of members (as they never set foot in court)
 - **Procedural Fairness**
 - Right to participate in the inquiry process in a meaningful way
 - Tribunals must not be biased and not have the appearance so

- **Standard of Review**
 - Courts can review decisions made by a tribunal
 - Depends on circumstances
 - Reasonableness
 - Correctness
 - If court finds a reasonable apprehension of bias, decision of tribunal will be void

Week 5

Contract Law

- Contracts are separate private “laws”
- All other laws continue to apply
- Contracts are **special** laws
 - **Freedom to Contract**
 - Created by two or more persons that want to do a deal
 - Contains one or more “contract laws” or agreements between signing parties
 - Defines binding rights and obligations of parties
 - **Privity of Contract**
 - Generally only applicable to contract parties
 - If one party fails to live up to the contract, aggrieved party can go to court
 - Courts and the government will enforce the innocent party’s rights (like breach of any other law)
 - **Specific Performance**
 - Courts are generally reluctant to force a party to do anything
 - Most disputes resolved by compensation for “damages”
- Contracts are **private** laws
 - Private persons can make up their own Laws
 - Parties can make law work to their personal benefit
 - Allows for flexibility and creativity in marketplace and community
 - Allows for certainty around expectations
 - Without knowledge of rules, parties can expose their entire business to risk
- Contract formation
 - A person makes an **OFFER** to another person **with the intention of forming a contract**
 - Must be a proposal intended as an offer whose acceptance leads to a contract
 - Offer does not need to include the word offer
 - Can be in writing
 - Can be oral
 - Can be email
 - Can be combination of some or all of these (chain of communications)

- **Advertisement**
 - Not all communications about a possible contract are offers
 - Generally not an offer, even when price is defined
 - An **invitation** for an interested party **to make an** offer
- **ACCEPTANCE** of offer by the other person
 - Contract not formed **unless and until** other party accepts the offer
 - Offer can be withdrawn any time before it is accepted
 - Validity
 - Offer may specify method of acceptance
 - Acceptance must meet conditions of offer
 - Acceptance **cannot be on different terms** than the offer
 - Offer must be **outstanding** at time of acceptance
 - Acceptance **immediately** creates contract
 - Too late to have second thoughts
 - It is of a **positive** nature
 - General rule: offer not considered accepted until offeror receives acceptance
 - Exception: **Post-box rule**
 - **Counter Offer**
 - If an interested party who receives an offer does not accept it completely but instead changes some terms of the offer:
 - This is the counter offer
 - Original offer is **no longer valid and outstanding**
 - **Crossing Offers**
 - Each side will be sending "Offers" simultaneously
 - Offers that would not lead to a finalized contract
 - At any time during this exchange one party accepts the other party's latest offer, a contract will spring to life
 - If you don't intend to make offers that might become contracts, make it obvious through appropriate words (e.g. "this is not an offer")
- Offer and acceptance include promise of some payment or benefit in exchange of offer (**CONSIDERATION**)
- Contract Types
 - **Unilateral**
 - **Acceptance by Performance**
 - An offer is accepted when offeree performs an act described in terms of offer
 - Do not require communication of acceptance before contract formation
 - E.g. offer of discounted price from coupons
 - Offeror not allowed to withdraw unless that right is reserved in a statement
 - **Bilateral**
 - Promise is made by offeree as a form of acceptance
 - A tentative promise – **a promise for a promise**

- **Consideration**
 - **Promissory/Equitable estoppel**
 - E.g. B made a gratuitous promise to A by agreeing to extend deadline.
 - Even without consideration to make the promise enforceable, promise should still be kept due to legal concept of “equity”
- Problems
 - Certainty of Terms and Implied Terms
 - Agreements to Agree
 - Misrepresentations
 - Termination of Contract
- **Unjust Enrichment**
 - Where one party is enriched at the expense of another without legal justification
 - The **three-part** test: The facts must display:
 - An enrichment
 - A corresponding deprivation
 - Absence of any juristic reason
 - **Law of Restitution**
 - Provides **compensation** for situations of unjust enrichment
 - Remedies
 - **Quantum Meruit**
 - Amount a person deserves for services rendered
 - **Constructive Trust**
 - The person who rendered substantial contributions to the unjustly enriched such that that property is truly owned by that person who rendered service

Procurement and Tenders

- Procurement
 - A **process** for an owner to select a contract party and award a contract
 - Special rules apply: The **Law of Tender**
 - Golden Rule
 - **The integrity of the bidding system must be protected**
 - Rationale
 - Replace negotiations with competition
- Process to create Tender Documents
 - Consider the Owner’s needs or objectives for the Contract
 - Draft contract should have:
 - Scope
 - Price
 - Schedule

- Results of Ron Engineering vs Queen:
 - **Contract A**
 - If there are outstanding obligations created by submission of a bid, then this contract forms between the Owner and each bidder that submitted a valid bid
 - **Contract B**
 - The ultimate contract awarded to the winning bidder
- **The Law of Tender**
 - Contract A, Contract B
 - **Duty of Fairness**
 - Bidders are dependent on owners administering procurements in a way that does not improperly favour or prejudice any one bidder
 - Imposed on any owner that does tenders
 - **NOT A DEFENSE: Trying to justify a violation of rules because the public is better served that way**
 - Can include:
 - **Privilege Clause**
 - “lowest bid need not necessarily be accepted”
 - Override custom of award to lowest bid
 - Can use to reject all bids, but careful **not to breach Contract A**
 - **Discretion Clause**
 - Reserves the right of owner, in its sole discretion, to waive minor irregularities and defects in a bid (**non-compliant bids**)
 - **Does not prevent later court review**
 - **Does not allow owner to enforce a contract with a materially non-compliant bid because no contract A arises**
 - **Exclusion/limitation of damage clause**
- Tender vs Request for Proposal
 - **Tender** -> competition where **design and scope** are **fully defined**
 - RFP -> competition where Owner invites **alternative** design and scope solutions
 - **Same legal rules apply** (Contract A and Contract B)
- Practical Tips
 - Request only essential information
 - Minimize “mandatory” information
 - Tender documents are “last chance”
 - Draft as an “Operating Agreement”
 - Make it difficult to be non-compliant
 - Follow Procedures designed to avoid problems
 - Draft for Clarity/Consistency and Organization
 - Amendment/Clarifications/Addenda
 - Evaluation/Selection Criteria
 - Post Award

- **Bid Shopping** (Stanco Projects, BCCA, 2006)
 - Practice of using bids as negotiating tool before award to get better price
 - A breach of Contract A
- Cancellation of Tender
 - Assume duty of fairness and good faith will survive
 - **Reject all bids**, re-design and re-tender, or negotiate to descope (starting with low compliant bidder)

Week 6

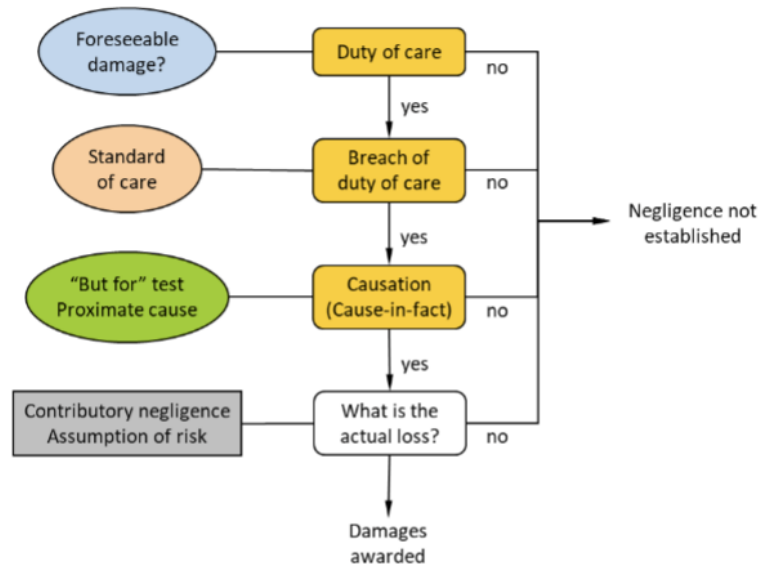
Torts

- **Common Law**
 - Judge-made law developed case-by-case (**caselaw**)
 - Regulates conduct **between people** (mostly)
 - Terms
 - **Plaintiff** π
 - Person who makes a claim in a lawsuit
 - **Defendant** Δ
 - Person being sued by plaintiff
 - **Appeal**
 - Action a person can take when they have lost a lawsuit to have case considered by a higher level of court
 - **Appellant**
 - Person who brings an appeal (and lost the original lawsuit)
 - **Respondent**
 - Person who defends against the appeal (and won the original lawsuit)
 - **Action**
 - Court proceeding
 - The lawsuit
 - **Damages**
 - Amount of money awarded by court to make up for losses
 - **Personal Property**
 - Almost anything with value and is not real estate (or related [chattels])
- Tort vs Crime
 - **Tort**
 - Wrongdoing involving a breach of **civil** duty owed to another party
 - Crime
 - Wrongdoing involving a breach of duty prescribed by the **state**
- Basis of Tort
 - **Fault**
 - Connection between actions of a person and resultant damage
 - **Strict Liability**
 - Liability without intent, or negligence, regardless of actual fault or precautions

- Elements of a Tort
 - Breach of an established common law duty
 - Intent (Usually)
 - Harm, loss, or damage
- Purpose
 - Restoration and compensation
 - To put the plaintiff back in the position they were in before the tort occurred
 - Can't get more out of lawsuit than what you had before harm occurred
 - Compensation by award of "damages" (money)
 - For egregious conduct, courts sometimes award aggravated or punitive damages
- Burden of Proof
 - On a balance of probabilities, >50%
 - Plaintiff has this
 - Criminal law
 - Needs to be beyond a reasonable doubt
- List of Torts
 - Intentional
 - Assault (threats)
 - Battery (physical contact)
 - False imprisonment
 - Intentional infliction of nervous shock
 - Conversion (stealing)
 - Intentional interference with contractual relations
 - Others
 - Defamation
 - Nuisance
 - Trespassing to lands, Chattels
 - Passing off
 - False imprisonment
 - Negligence
- Negligence
 - Every person owes a duty of care not to cause injury or damage to an individual or group whom they ought to reasonably anticipate would be injured/damaged by their careless act/omission
 - Test for Negligence
 - Duty of Care
 - Does the defendant owe the plaintiff a duty of care? If so, what is the nature of the obligation?
 - Breach of duty of care
 - If a duty of care exists, was it breached by defendant? Requires knowledge of standard of care

- **Causation**

- Was the breach of duty the cause of the plaintiff's loss? (**cause-in-fact**)



- **Duty and Standard of Care**

- Arises by virtue of obligations of the profession
 - Expectations determined by:
 - **Written standards** (of professional conduct)
 - **Expert opinions**

- To be found negligent, defendant must be seen to breach duty of care owed to plaintiff by **virtue of obligations to profession**, **specialized knowledge or skills involved**, prevailing **standards** of how this skill/knowledge is used

- Actual Loss

- Damages can be reduced:
 - By **contributory negligence** of plaintiff
 - If there was an agreement between plaintiff and defendant concerning assumption of risks

- **Negligent and Fraudulent Misrepresentation**

- An **untrue or misleading statement of fact** made by Party A to Party B, which induces Party B to enter a contract with Party A thereby causing Party B a loss or harm
 - May also include failure to disclose significant matters

- Third Party Liability

- Test of liability
 - Proximity of relationship between plaintiff and defendant
 - Mitigating considerations

- **Disclaimers**

- A way to avoid liability associated with use of a product

- **The learned intermediary**
 - Has the **duty to transmit** warning from expert to the ultimate consumer/user
 - Once informed of any danger associated with use of product, it does not automatically make a professional a learned intermediary
- **Vicarious Liability**
 - Employer may be held liable for negligence of employee
 - Test of employment
 - Degree of control by owner/employer over the person as to what and how work will be done
 - Ownership of tools/equipment
 - Opportunity for profit
 - Risk of financial loss
- Intentional Torts
 - **Private Nuisance**
 - Interference with occupier's use and enjoyment of his/her own land
 - **Trespass**
 - Entering property belonging to another without justification
 - **Defense of property**
 - Verbal request for trespasser to leave required before using force
 - **Necessity**
 - Trespass may be defensible if trespasser's presence is of necessity
 - **Legal Authority**
 - E.g. police officers with search warrants
 - **Defamation**
 - Making an untrue statement that causes injury to reputation of another
 - **Libel**
 - Written defamation
 - **Slander**
 - Spoken defamation
 - Defenses to the accusation of defamation
 - **Truth of statement**
 - Defendant must prove that statements are true
 - **Absolute privilege**
 - Complete immunity from liability to defamation exists for statements made in courts, parliament, inquiries, etc.
 - **Qualified privilege**
 - Immunity from liability provided a statement was made in good faith and with honest belief in accuracy of statement
 - **Injurious falsehood**
 - "defamation" of products and businesses that result in economic loss
 - **Trade libel**
 - Occurs when a person makes false statements disparaging a business and its goods or services, resulting to economic loss
 - Plaintiff must prove:

- Defendant made a false statement disparaging plaintiff's business, products, or services (e.g. competence of employees, viability of business)
 - Statement must have been made to a third party (to current/future customers)
 - Defendant knows that the statement was false or acted out of malice towards plaintiff
 - Damage to plaintiff's business must have occurred
- Defenses to charge of trade libel
 - Statement was true
 - Statement was made as a general comparison in the spirit of fair competition (implying superiority of defendant's products)
- Inducement to breach contract
 - A person (not a party to the contract) inciting/attempting to influence a contract does this
- Fiduciary Duty
 - Heightened duty of care resulting from power given to engineer
 - Characteristics of a fiduciary relationship
 - Fiduciary has scope for exercise of some discretion of power
 - Fiduciary can unilaterally exercise this power to affect beneficiary's interests
 - Beneficiary is peculiarly vulnerable to the fiduciary holding this power
 - Duties of Confidentiality
 - Conflict of Interest

Week 8

Engineering and Ethics Failures

- Kansas City Hyatt Walkway Collapse
- DC-10 Incidents
- Ford Pinto
 - Economic Theory of Negligence (Learned Hand Rule)
 - Defendant's duty to protect against injuries is a function of:
 - Probability of the accident (P)
 - Gravity of resulting injury (L)
 - Burden of adequate precautions (B)
 - Formalized as $PL > B$

Employment Law

- Sources
 - Legislation
 - Canada Labour Code; Canada Human Rights Act
 - For federally regulated industries

- BC Standards Act & Regulations; BC Human Rights Code
 - For other employees
 - The Common Law
- Minimum Standards
 - Cannot be contracted out
 - Wage (2019 -> \$13.85/hr)
 - Hours & Overtime (1.5x > 8 hrs; 2x > 12 hrs)
 - Vacation (1-4 years: 2 weeks; 5+ years: 3 weeks)
 - Termination and Notice (1 week per year of service)
 - Statutory holidays and pregnancy leave
 - Not applicable to P.Eng or EIT
- Occupational Health and Safety
 - WorkSafeBC
 - Workers have 3 fundamental rights
 - Right to participate
 - Right to know
 - Right to refuse unsafe work
 - If injured when working, cannot sue the employer. Compensation through WorkSafeBC
- Employees vs Independent Contractors
 - Employees
 - Entitled to statutory minimum standards
 - Cannot deduct expenses from income
 - Cannot usually work for other employers
 - Independent Contractors
 - Not entitled to statutory minimum standards
 - Can deduct expenses from income
 - Can work for other employers
 - For employer
 - Employee costs more and require more administration and withhold employee taxes
 - Distinguishing factors
 - Control
 - Ownership of tools
 - Chance of profit/loss
 - Integration
- Ending employment relationship
 - Employer can terminate employee with or without cause
 - Most termination is without cause
 - Needs minimum notice or a payment in lieu
 - Termination with just cause:
 - Rare
 - No requirement to provide notice
 - There must be serious misconduct
 - Generally requires a formal warning first

- No notice, no compensation
- When employee resigns, employee needs to give reasonable notice (usually 2 weeks)
- Common Law and Employment
 - Duty to mitigate damages
 - When employee is claiming wrongful dismissal, must make reasonable effort to seek other employment
 - Enforceability of non-competition and non-solicitation agreements
 - Restrictions on actions after employment ends
 - Non-solicitation
 - Cannot talk to clients/customers of former employer
 - Non-competition
 - Cannot obtain business from clients of former employer
 - Constructive dismissal
 - Employer can terminate relationship through conduct by:
 - Breaching a fundamental term of the contract
 - Conducting itself in a way that makes continued employment intolerable
 - Employee must notify employer of objections
 - Employees can then sue employer for wrongful dismissal
- Employment Contracts
 - A bilateral contract
 - When written contract is incomplete, common law will imply other terms
 - Confidential and Proprietary Information
 - Restrictive Covenants
 - See Non-competition above
 - Restrictions too broad geographically or too long in time will be unenforceable
 - Ownership of Intellectual Property
 - Patent Act
 - Inventor is deemed first owner of invention unless there is an agreement to contrary
- Duties of an Employer
 - Reasonable Notice
 - Terminologies
 - Severance
 - Any payment from employer to employee when employment terminated without cause
 - Termination Pay
 - Payment in lieu of notice
 - Bad Faith
 - Not defined definitively
 - When employer is found to be acting in bad faith, notice period increases
 - Not an independent obligation to not act in bad faith

- **Employment Standards Act of British Columbia**
 - Applies to all employees in BC unless exempted
 - Exemptions: Members of professional association (like EGBC)
 - But not excluded from protection under Human Rights Code or common law
 - Also includes maternal, parental leave
 - Employer not required to pay
 - Employee can claim benefits for these leaves under the Act
 - Overlap between Court and Act
 - Claim for damages for wrongful dismissal
 - Claim for damages for breach of term of any term of contract
 - Action in debt to recover amounts owing to the employee
- **Human Rights Code**
 - Discriminatory Publication
 - Prohibits any person from publishing/displaying before the public a sign, notice, symbol, or other representation indicating discrimination or an intent to discriminate against a person or class of persons in any manner prohibited by the Act
 - Discrimination in Employment Advertisements
 - Prohibits any person from publishing an ad that expresses a limitation, specification or preference as to race, colour, ancestry, place of origin, political belief, religion, marital status, physical or mental disability, sex, sexual orientation, or age (unless it is a bona fide occupational requirement)
 - Discrimination in Wages
 - Employer should not discriminate between male and female employees and prohibits lowering rate of pay of one employee to comply with above
 - Employee, if paid less than that agreed to in this section, is entitled to difference between amount paid and amount entitled together with costs, within **12 months**
 - Discrimination in Employment
 - Prohibits a person from refusing to employ/continue to employ a person/discriminating a person with respect to employment because of race, colour, ancestry, place of origin, political belief, religion, marital status, physical or mental disability, sex, sexual orientation, criminal conviction charge unrelated to employment, or age (**between 19 and 65**)
 - Intention
 - The Code applies to practices whether there is intention to discriminate or not
 - Bona Fide Occupational Qualification
 - Must be imposed honestly and in sincerely held belief that this is in the interest of adequate performance of the work involved
 - Also relates to assuring efficient and economical performance of job without endangering people
- **Workers' Compensation Act**
 - BC employers required to register with WorkSafeBC

- Allows workers to be compensated for lost wages and expenses resulting from workplace injuries and illnesses
- Bars employees from suing employers for additional money
- Also concerns occupational health and safety

Week 9

Business Organization

- Types
 - Sole Proprietorship
 - Sole owner responsible and personally liable for all debts and obligations
 - Advantage
 - Simple
 - Inexpensive
 - Disadvantage
 - Liability
 - Tax rates
 - May be deemed less professional and less legitimate
 - Difficulty in valuing business when it is sold
 - Partnership
 - Created by two or more people
 - Partners are responsible and personally liable for all debts and obligations
 - Partners share in profits as per their contractual agreements
 - Advantage
 - Simple
 - Inexpensive
 - Disadvantage
 - Liability
 - You are personally liable to partners and yourself
 - Incorporation/Corporation
 - Separate legal entity formed for purpose of carrying on business
 - Can be incorporated federally (under Canada Business Corporations Act) or provincially (Business Corporations Act)
 - Shareholders not personally liable for debts or liabilities of company
 - Advantage
 - Limit personal liability
 - Separate legal entity
 - Disadvantage
 - More expensive
 - Highly regulated
 - Co-operative
 - Owned and operated by a group of individuals for their own benefit
 - May be incorporated or unincorporated

- “One member, one vote” to elect a board of directors and make decisions
- Limited Liability Partnership
 - Part-partnership, part-corporation
 - All partners have limited liability like shareholders in a corporation
 - All partners participate in management of the business without exposing personal assets to business liabilities
- Limited Partnership
 - Limited partners provide only capital, but not involved in management
- Principal-Agent Relationship
 - Owners -> Principals
 - Skilled employees -> Agent
 - Typically established by an agreement such as an employment contract
 - Authority of Agent
 - Agent may be given authority to enter contracts with third parties
 - Rights and duties of such agreements become those of the principal
 - Agent has a duty not to act with a third party without approval of principal

IP Law

- Intellectual Property (IP)
 - A type of asset recognized to have value and thus receive legal protection
 - Non-tangible product of human intellect
 - A form of intellectual capital
- IP Strategy
 - Provides defensive and offensive business advantages
 - Defense
 - Defend against disruption
 - Assess risk
 - Mitigate risk
 - Offense
 - Support innovative culture
 - Revenue opportunities
 - Pre-empt competitors from obtaining protection
- IP rights are territorial (by country)
- Issues to Consider
 - Protection of IP
 - Ownership
 - Open-source
- Categories
 - Copyright
 - Exists in every original artistic work
 - Software and technical documentation fall here

- Owner has exclusive right to reproduce/distribute work
 - Protects expression of idea, not the underlying idea itself
 - Rights automatically conferred upon original creation
 - Term of protection: Life of author + 50 years
 - Registration in Canada is optional, but brings benefits
- Patents
 - Right to exclude others from making, using, and selling an invention
 - Invention
 - Any new and useful art, process, machine, manufacture, or composition of matter
 - Costly to acquire
 - A prohibitive right
 - If you make an improvement to a patented invention and obtain a patent for that, still need a license of owner of base patent invention to practice the improvements
 - Things to consider
 - Cost-Benefit Analysis
 - Detectability (of infringement)
 - Ease of Replication
- Designs
 - Protects visual and aesthetic features in a finished article
 - Does not protect functionality
 - Term: Generally 10-15 years
- Trademarks
 - Any word, symbol, design, etc. used as identifier of source of goods or services
 - Should be distinctive
 - Common law provides some protection for unregistered trademarks
- Ownership
 - Copyright
 - Generally owned by author unless created in course of employment or assignment to another party
 - Patents
 - Generally owned by inventor unless there is assignment to another party
- Timing of Filings
 - Must file patent or design application before earliest non-confidential disclosure
 - Grace periods
 - In Canada/U.S., within one year after earliest public disclosure of the invention
 - Failure to file in time -> loss of rights

Week 10

Indigenous Interests

- 1973 – Calder
 - Courts recognize Aboriginal Title to land existed prior to colonization
 - Not derived from colonial law
- 1990 – Sparrow
 - Established harvesting (fishing) as a constitutionally protected Aboriginal right
 - Established the Sparrow Test
 - Infringement
 - Creates undue hardship
 - Considered by court to be unreasonable
 - Prevents rights holder from exercising rights
 - When is infringement justified?
 - When there is a valid legislative objective (e.g. conservation)
 - First Nations must be consulted in advance
- 1997 – Delgamuukw
 - Recognizes Aboriginal rights including rights to land
 - The Crown has an obligation to consult
 - Oral testimony is legitimate form of legal evidence
 - Aboriginal rights can be infringed by Crown under certain circumstances
 - The Delgamuukw Test
 - Indigenous title to a certain tract of land exists based on sufficient, continuous, and extensive occupation
- 2004 – Haida & Taku
 - Courts provide guidance on consultation requirements
 - Asserted rights enough to trigger a duty to consult
 - Scope of duty to consult proportionate to potential impact
 - Duty of consultation rests solely on Crown
 - Crown can delegate procedural aspects of consultation to third party
 - Duty of accommodation for rights infringement rests with the Crown
- 2014 – Tsilqoht'in
 - Courts establish guidance on determination of Aboriginal Title and rights and benefits conferred by such title
 - Indigenous title lands subject to Crown laws and regulation provided they do not violate the Sparrow test

EDI in engineering

- Diversity in Workplace
 - Types
 - Personality
 - Conscientiousness
 - Agreeableness
 - Neuroticism
 - Openness
 - Extraversion
 - Internal Diversity
 - Situations a person is born into
 - E.g. Race, ethnicity, sexual orientation
 - External Diversity
 - Things related to a person but not characteristics one is born with
 - E.g. Personal interests, appearance, relationship status
 - Organizational Diversity
 - Varying in political systems, religions, economies, languages, etc.
 - Equity
 - Removal of systemic barriers and biases enabling all individuals to have equal opportunity to access and benefit from a system
 - Federally designated equity groups
 - Women
 - Indigenous people
 - Persons with disabilities
 - Members of visible minorities
 - Inclusion
 - Practice of ensuring that all individuals are valued and respected for their contributions and are equally supported
 - Importance
 - Varied perspectives
 - Better problem-solving
 - Positive reputation
 - Increased productivity
 - More job applicants
 - Increased safety benefits
 - Higher profits
 - Increased employee retention & better corporate culture
 - Discrimination
 - Types
 - Direct
 - Specifically exclude or impose extra burdens without a legitimate reason

- Adverse effect
 - Policy/law does not explicitly single anyone out but indirectly places certain groups at a disadvantage
 - Systemic
 - Consists of attitudes, behaviours, or policies that perpetuate a position of relative disadvantage on a certain group
 - Poisoned environment
 - Harassment
 - Occurs when a person is subjected to any unwanted behaviour that offends, demeans, or humiliates
- Bias
 - Conscious
 - Unconscious

[2] Act Utilitarianism (pages 71-76)

Quizzes

Week 2

1. Utility is the tendency of an object to produce happiness or prevent unhappiness for an individual or a community. **True**
2. A code of ethics is primarily a convention between professionals who want to cooperate to achieve the same ideal better than they could if they did not cooperate. **True**
3. Why might society recognize a profession such as engineering?
 - Because only through engineering will society achieve the goals of safe and sustainable living
 - Because engineers can be trusted to hold safety paramount
 - **Because engineers want to achieve ideals that society values.**
 - **Because engineers put society's interests before their own self-interest**
4. The primary characteristic of a professional is?
 - The skill with which s/he uses knowledge to serve the public.
 - The ability to communicate the best interpretation of information to the public who do not have the knowledge or expertise to judge such information.
 - The confidence with which s/he expresses opinions on technical or other specialized matters so that the public is reassured
 - **The ability to put the interests of the public ahead of personal interests.**
5. The typical response to the Bystander Trolley Scenario is to pull the lever. This is an example of?
 - Bravery
 - Following a rational rule
 - Stupidity
 - Morbid fascination
 - **Utilitarian thinking**
6. Act utilitarianism is the ethical theory that an action is good if its net effect (over all affected beings) is to produce more happiness than unhappiness. **True**
7. EGBC is responsible for holding paramount the safety, health, and welfare of the public. **False**
8. Rule violation in rule-based ethics is permissible _____.
 - when it results in good things for others
 - **if others can also violate the rule under the same circumstances**
 - in no situation
 - when it does not interfere with your emotional state
 - when it would not matter to anyone
9. What are each of the sides named in the ethical triangle?
 - **Responsibilities of your role at work**
 - **Societal ethics**
 - **Personal morality**

10. There should be no distinction between professional ethics and personal morality because the code of ethics applies to you personally once you become a registered engineer. **False**

Week 3 Quiz

1. A professional who has subconscious biases acquired through personal interests, will be aware of these and therefore able to control the effect of these biases on their professional responsibilities. **False**
2. A conflict of interest occurs when there is a clash between professional duties and one's personal morality. **False**
3. Primary interest refers to the principal goals of the profession or activity. **True**
4. Company M is asked to provide a feasibility study for an industrial project, including preliminary design, costs, etc. If the client likes the feasibility report that Company M submitted, the client may ask Company M to also bid on the final design and/or construction management.

What might be the issue with Company M completing BOTH the feasibility study and the final design?

- Their design may lack innovation, since Company M did the feasibility study, they may try to cut costs and not innovate during the final design.
- Company M may be unable to maintain confidentiality between their teams working on the preliminary and final designs, so they should not accept both contracts.
- Company M may not have the same level of expertise in both areas of feasibility study and the final design.
- **If Company M knows that there's a chance that they are awarded the final design contract, they might (or there might be a perception that they might) alter their feasibility study proposal to a design that would favour their company's skillset, so as to increase their chances of getting the final design contract. They should do one or the other, not both.**

5. Alberta, a professional engineer, works for company Z Inc. She is highly respected and clients often ask that she work on their projects. Alberta does volunteer work for an indigenous community organization. Very often some of the volunteer work requires her engineering and project management skills. Recently the community organization engaged A Inc, a competitor of Z Inc, in a long term contract related to infrastructure development in their community.

Alberta _____?

- is in a conflict of interest because A Inc might recruit her.
 - should disclose the potential conflict to her supervisor at Z Inc
 - could be facing a potential conflict of interest,
 - has nothing to be concerned about.
 - should disclose the potential conflict to the manager of the community organization,
 - should avoid any decisions or work related to the services provided by A Inc.
6. Engineer M works in company XYZ that develops and sells products and services to a wide variety of customers. Friend N runs ABC Services, a small company that sells a specialized product very different from those produced by XYZ. Engineer M has ideas for improving the product sold by ABC Services and offers to assist N. Engineer M develops the design on her own time using resources made available at ABC Services by N.

Is Engineer M in a conflict of interest with ABC and/or XYZ? No

Because the product is not a competitor for those sold by XYZ and M is not using XYZ resources, M's work on the product does not directly conflict with her obligations to her employer. However, it is best practice, and is legislated in some jurisdictions, for engineer M to notify her employer about these "moonlighting" activities. This is necessary so the employer can be advised of circumstances that might appear to be a conflict if discovered in the future. The best course of action is to make all parties aware of the situation at once and allow the parties the opportunity to be assured that a conflict does not exist.

But M may be conflicted as they may be in conflict with their employment contract, but no conflict of interest with XYZ or ABC.

7. Jill Deacon, a professional engineer, works as the director of the local government building department. Jill Deacon also has a part-time sole engineering practice (Deacon Engineering Inc.), whereby she recently prepared a set of structural engineering drawings for Stratus Ltd. The drawings must be approved by the local building department. Jill Deacon does not participate in the review or approval of the drawings but Jill Deacon's assistant, Mark Tumil, a professional engineer, reviews and approves the engineering drawings prepared by Jill Deacon.

Are Jill Deacon and Mark Tamil behaving unethically? **Yes**

Is there an actual conflict of interest? **Yes**

Jill and Mark are both behaving unethically. Jill seems unaware of the concept of a conflict of interest and entirely unaware on how to handle such situations. Jill was a representative of the local government building department and should act in the department's interests. However, she has a personal interest in having the drawings approved, and that personal interest has the potential to influence Mark's judgement. Hence, he should not be the one who reviews the drawings. In fact, his objectivity should be called into question.

Jill must have known that there would be an issue if she reviewed her own plans because she asked Mark to review her plans. However, in doing this, she made the issue worse in two ways: (1) she didn't inform her employer about the COI; and, (2) she asked someone she supervised to review her drawings. A subordinate is not capable of rendering objective judgement on the supervisor's work.

Both being professional engineers, they should both know the EGBC Code of Ethics. However, knowledge does not make a difference to someone who is willfully unethical. Nevertheless, for those who wish to do the right thing, knowledge is crucial.

8. Which of the following is an actual conflict of interest?

- **An engineer is a member of a committee that develops safety standards for equipment produced by her company and fails to disclose ways in which her company may benefit from recommendations drafted by the committee.**
- An engineer agrees to provide her services to two engineering companies who are bidding competitively for the same design contract.
- An engineer specifies equipment made by one manufacturer to different companies who compete in the same market.
- All the answers provided are correct.

9. What principle(s) of the EGBC code of ethics was (were) contravened by the engineer who inspected the Elliot Lake Mall building?

(Assume that Elliot Lake is in BC while answering this question, then clear your mind of that assumption).

- P3
- P4 & P5
- P2
- **P8 & P10**

10. Suppose a professional discloses a conflict of interest to a client. Assuming the client continues the relationship with the professional, the results might be?

The honesty exhibited by the disclosure would lead the client to have more confidence in decisions made or advice provided by the professional.

- The client would have no need to discount any advice provided by the professional.
- Oversight of the professional's work by another professional or by a professional association would be unnecessary.
- Bias in decision-making is mitigated or eliminated.
- The acceptance of the conflict by the client would lead the professional to become over-confident and believe that his/her decisions are free of bias.

Week 4 Quiz

1. Appeal of a decision made by the Supreme Court of Canada _____.

- is possible.
- can only be done if the Supreme Court grants permission.
- is not possible.

2. Administrative tribunals _____.

- derive their authority from a government statute
- may provide judgement on the practice of a professional but are not judges.
- might be associations whose purpose is to promote and advertize the specialized activities of their members.
- are secret associations of practicing professionals who regulate the activities of their members.
- might be associations who regulate specialized activities such as those of professionals.
- are not part of the court system but make important decisions.

3. If pertinent to a case, decisions from the Federal Court of Appeal may only influence decisions in provincial jurisdictions. **True**

Look closely at wording in the question: "If pertinent to a case"... "may only" ...

It is all about the wording in this question.

If pertinent to a case, decisions from the Federal Court of Appeal may only influence decisions in provincial jurisdictions.

The Federal Court and Federal Court of Appeal deal only with particular legal issues referred to in the legislation that created them. For example, the federal courts will hear disputes over government decisions regarding immigration, privacy, aboriginal rights, public service employment and intellectual property rights. The Federal Court of Appeal hears appeals from decisions of the Federal Court. Federal court decisions are nationally enforceable. CANLII page 10.

4. In a legal precedent system, the court decision of a previous case becomes binding on decisions in subsequent cases considered by the court or courts at a lower level if _____.
- the previous and subsequent cases deal with the same legal issue.
- the Supreme Court of Canada has considered and approved the decision of the previous case.
- a judge determines whether the issues of the previous case are pertinent.
- **there are no differences that allow the previous case and subsequent cases to be distinguished**
5. The possibility of receiving an award is a good motivation for blowing the whistle because, in addition to correcting the unsafe or unethical behavior of a company, it also provides a professional opinion that distinguishes between facts and assumptions in accordance with Principle 7 of the Code of Ethics. **False**
6. LeMessurier was successful in convincing lawyers that costly changes were needed to be made by _____.
- **confining himself to statistical probabilities.**
- **recognizing that he had a social obligation to do what was right.**
- **being a whistleblower on himself.**
- **utilizing a dispassionate tone with the apocalyptic thrust of his prophecy.**
- **presenting carefully qualified answers to seemingly simple questions.**

7. One piece of advice to those considering blowing the whistle is to remain anonymous, that is get the information out without identifying yourself, perhaps through a trusted friend, a reporter or even an anonymous remailing service on the Internet.

In the case of engineering, the problems with this might be?

- It would be difficult to explain technical complexity in an anonymous email.
 - A reporter may not completely understand the technical issues to communicate the problem effectively.
 - The specialized technical nature of the reported problem could lead to your identification.
 - If you are discovered and confidential information or trade secrets are in the information you provide, your employer could sue you.
8. Management of a chemical plant in BC formed a panel to carry out a technical review of the design of a processing system and its safety. The membership of the panel consists of most of the employee engineers and consultants who were involved in the design of the process, some independent experts, and one new employee who has a Masters degree in process design but is an Engineer in Training (EIT). The panel is chaired by an expert in process design who was one of the consultants involved in the design and construction of the system. With few exceptions, the chair has vetoed or significantly modified suggestions made by other members of the panel and is taking a lot of credit for the review. The EIT is not comfortable with this situation because it contravenes at least two principles of the code of ethics. She wants to express her concerns.

What is her best course of action?

- Report this to her supervisor because it is a contravention of Principle 8 of the Code of Ethics that could lead to an unsafe situation, a contravention of Principle 1 which is very serious.
- Report this situation inside the company via email and social media and also to appropriate external agencies because it is a clear illustration of the need to blow the whistle.
- Report the situation to her supervisor and if there are no changes to the panel makeup, report it to senior management, and if there is still no change, discuss the situation with EGBC.
- Report the situation to senior management because the actions of the chair constitute a conflict of interest and are unfair, both of which would reflect badly on the chemical plant management.

9. The engineer who was accused by the Quebec Order of Engineers of violating confidentiality by speaking to the press about structural damage to the Champlain Bridge _____.
- should have spoken to his superior before speaking to the press.
 - was concerned about the safety of motorists on the bridge.
 - should have asked for full scale testing of the expansion joint before speaking to the press.
 - should have made photographs of the damaged expansion joint instead of a video.
10. What factors inhibited whistle blowing by employees at Volkswagen?
- Retaliation against employees who raise concerns about the company's actions.
 - Fear-based corporate culture
 - Extended job protection only to internal whistleblowers who were covered by collective bargaining pacts and said the offer was good only for a very limited time.
 - Fear of getting fired, demoted or sidelined.
 - No wide-open door for internal whistleblowers

Week 5

1. A sent a text to B offering to sell her car for \$5000. B replied to the email saying "I'll give you \$4500 for the car." There was no response from A. Two days later, B sent another text saying "I've reconsidered and will buy your car for \$5000."

What statements apply in this situation?

Select the best answer.

- a. A is now obliged to sell her car to B since the result of B's reconsideration constitutes acceptance of the original offer to sell.
 - b. B's counter-offer of \$4500 ended A's original offer to sell for \$5000.
 - c. The result of B's reconsideration is a new offer to buy.
 - d. B must now buy the car from A since the second email constituted acceptance of the first offer to sell.
- b, c & d
 - c & d
 - a, b, c & d
 - b & c
 - a & c

2. A contract is a legal concept which comes into existence once certain elements are established. These certain elements are?

Select the best answer.

- a. Intention to create legal obligations.
- b. An agreement resulting from an offer (or offers) and acceptance.
- c. Consideration.
- d. The legal capacity to contract.
- e. Legality.

- b, c & d
- a, b, c & d
- a, b, c, d & e
- a, b, d & e
- a, b & d

3. During contract formation, what is the legal effect of a counter-offer?

- Nothing
- Rejection of the original offer by the offeree.
- The original offer is no longer valid.
- The original offeror becomes the offeree, and the original offeree becomes the offeror.

4. Offering free engineering advice or services to friends or friends of friends

Select the best answer.

- a. does not lead to an enforceable contract.
- b. is a form of insanity.
- c. is a gratuitous promise.
- d. is an excellent way to promote engineering to the general public.

- a, b, c & d
- c & d
- a, c & d
- a & d
- a & c

5. In Canada, if a bid is submitted in response to an invitation to tender issued by an Owner and the bid complies with the terms described in the invitation, the Owner and Bidder enter into a "Contract A". True

6. If a bidder is disqualified or unable to perform a contract, informing other bidders of the approximate value of the disqualified bid is _____.
○ a matter of professional courtesy and fairness.
○ an effective way to obtain the best price.
○ a form of bid shopping.
○ an effective way to ensure consistency in prices, especially the prices of sub-contractors involved in the bid.
7. The rules and legal precedents established for the tendering process apply to the main contractor as well as any sub-contractors involved in a bid. True
8. The purpose of inviting tenders is to replace competition with negotiation. False
9. The intent of a request for proposals is to discover the best way to do a project or a service whereas the intent of inviting tenders is to determine the best price for doing a project or service. True
10. John Jackson (an engineer, and a bonsai specialist) has a contract with Smith Landscaping to design and build a retaining wall on a ocean view property located on Quadra Island. John had completed the wall, and now was contracted to arrange large bonsai trees (carefully nurtured by John over the last 20+ years) on to the property by June 30th, 2023. John (and his trees) arrive to the island via boat on the morning of June 30th, and the trees (worth \$30,000 each) were loaded onto a five ton flat deck truck. John jumps into the front seat of the truck, and the driver, himself and the trees proceed along a gravel road to the ocean view property. The installation of these trees was the final step in beautifying the property in order to get it ready for a large July 1st party the following day. Along the journey, a culvert was washed out (from a storm the night before) and John is unable to get to the property to install the trees.

Select the best answer.

a. John was supposed to be present and be able to perform a certain obligation (installation of the trees) on June 30th; therefore, is in breach of his contract. He is found liable and as a result had to pay damages and expenses for the trees not being installed by June 30th, 2023.

b. John was supposed to be present and be able to perform a certain obligation (installation of the trees) on June 30th, but is unable to do so because a storm cut off all practical means of transportation to the job site. This is may be Force Majeure, which would forgive John's inability to perform as per his contract. He is not found liable and the job was rescheduled for the following morning.

Week 6

1. Is the lack of knowledge negligence? No

See: Hodgins v. Hydro-Electric Commission of Nepean (Ontario)

The only aspect of the tank failure that makes it a case of something more than mere negligence is the role played by metallurgy. The ductile-brittle transition of the low-manganese steel used in the tank was not understood at the time. Thus to the extent that the low temperature on the January day of the failure caused brittle fracture to occur, tank failure by brittle fracture was a "new failure mode," and the design of the tank involved an immature technology.

2. Product liability law is based on _____.
 - intellectual property law and contract law
 - employment law and tort law
 - a number of English court cases dating back to the early 20th century
 - **contract law and tort law**
3. To determine whether negligence has occurred, one must first determine _____.
 - the proper court of jurisdiction
 - the amount of compensation
 - **the nature and quality of the duty owed**
 - the previous record of the guilty party
4. The standard of care for engineers is _____.
 - **different from that of a reasonable person in the street**
 - the standard when there is any foreseeable chance of injury to clients.
 - the standard established by engineering design codes and provincial engineering associations
 - established by engineering professionals owing to the technical complexity of engineering
5. Engineers under contract to a client may owe a duty of care to third parties who work with the client if it can be foreseen that the third parties would rely on statements or actions by the engineers. **True**
6. Any liability incurred by product manufacturers for damage caused by design errors made by suppliers of components of the product is known as vicarious liability. **False**
7. In a tort case the court does not need to prove the allegations of the plaintiff beyond a reasonable doubt. **True**

8. A _____ would ask potential cheaters if they would want to live in a world where people cheated as they please.
- Atheist
 - Utilitarian
 - virtue Ethicist
 - ethical egoist
 - social contract theorist
 - **kantist**
9. Ethical behaviour in a profession such as engineering would be very homogeneous if it depended on what game strategy was being used by each professional during interactions with clients and other professionals. **False**
10. Which theorist would think that acts of cheating do not produce the greatest utility?
- An Ethical Egoist
 - A Virtue Ethicist
 - **A Utilitarian**
 - A Social Contract Theorist
 - A Kantist
 - An Atheist

Week 8

1. A contributing factor leading to the collapse of the walkways was the inadequacy of existing policies allowing the Engineer of Record to supervise and monitor approximately ten associate engineers who were each supervising six to seven projects concurrently. **True**

Gillum had begun his practice as a single engineer working independently, moved on to supervisor of 5–10 other engineers, and by the time of the Hyatt project was an engineer-of-record (sealer of plans) responsible for 50–100 engineers and specialists. Each of his approximately 10 associate engineers was supervising six or seven projects at a time; Gillum knew he “couldn’t personally design and supervise all of the engineers, technicians or experts required to do these structures.” Thus, he “made a practice of seeking out and hiring the best personnel available, those who possessed not only, [sic] technical smarts and ability, but . . . above all were conscious of the responsibility the structural engineer had, and willing to accept that responsibility.” Daniel Duncan was one of those trusted associates, an “exceptional engineer” (J. D. Gillum, personal communication, Sept. 14, 1994; “Petition” 1994, exhibit D, p. 5).

2. The Hyatt Regency design team members did bid for the work which guaranteed the owner the best price for the necessary trade skills. **False**

Design team members did not “bid” for the work. They were retained at an hourly rate (with a maximum fee) and thereby retain their independence because any profit they derive from their contract is not realistically contingent on the amount of time and effort devoted to the endeavor. The general contractor “bids” the project work competitively and all of its subcontractors likewise bid for the work. Competitive bidding guarantees the owner the best price for the necessary trade skills, but it is clear that this system exposes the owner to the risk of shoddy workmanship at the hands of contractors who are businessmen, bound ethically only by the rules of the marketplace. No statute similar to 327 regulates their conduct. Licensed professionals may be employed by the contractors, but they are no less subject to the motive of profit on behalf of their employer than any other employee. This built in conflict of interest, therefore, makes suspect any system which leaves the performance of professional engineering or architecture to such individuals and acknowledges the wisdom of the statutory scheme and construction system which presumes the lack of any such involvement.

3. The Kansas City Hyatt Walkway collapse, the DC-10 crashes, the fiery Ford Pinto, and the Algo Mall roof collapse in Elliot Lake are each due to circumstances and decisions that allowed dangerous designs to be built or risky situations to continue.

What might this suggest as considerations in engineering design?

Select the best answer.

- a. Failure is always possible.
- b. Engineers should expect success but design to mitigate the loss due to failure.
- c. Dangerous designs or risky situations can easily become the source of failure mechanisms.
- d. Decisions made at any level in an organization may be flawed.

- ☐ a, c, & d
- ☐ c & d
- ☐ b, c & d
- ☒ a, b, c, & d
- ☐ a & b

4. The basic statement of the economic theory of negligence (the Learned Hand rule) is a relationship between the expected harm and the costs of mitigating or avoiding the harm:

"If the expected harm, the product of its probability P and the consequence L , exceeds the cost to take a precaution, B , i.e., $B < PL$, there is an obligation to take the precaution. Liability results if the expected harm occurs and the precaution has not been taken".

The idea behind this inequality has been used as a means of deciding on implementation of safety measures.

What statements best characterize this idea?

Select the best answer.

- a. It is a mid 20th century concept that has no relevance in the 21st century.
- b. This makes sense but runs into ethical issues if loss of human lives are included in the expected harm
- c. The potential for punitive damages resulting from an expected harm makes it difficult to use this relationship for decision-making.
- d. It is a utilitarian concept entirely consistent with engineering decision-making.

- a & b
- a, b, c, & d
- b, c & d
- c & d
- **b & c**

5. Unless it is written, there can be no contract of employment. **False**
6. A person's criminal record is always grounds for not employing or continuing to employ the person. **False**
7. Unless there is a written agreement to the contrary, a regular engineering employee can resign from his/her position with a company, start up or join a competitor company, and immediately begin soliciting clients of his or her former employer as long as he/she does so without the use confidential information of the former employer. **True**
8. Which of the following is/are factor(s) in determining what is a reasonable notice period of termination of employment?
- **The employee's age**
 - All the answers provided are correct.
 - The employee's financial needs
 - Whether the employee has dependents

9. Termination without notice is _____.

- permissible if there is just cause.
- not permissible if the employee has a written contract.
- prohibited by statute.
- prohibited by common law.

10. Which of the following is not a basis for a claim of constructive dismissal?

Select the best answer.

- a. Remodelling of the office space to create an open office plan
- b. Change in the type of client served by the employer
- c. Reduction in duties or responsibilities as a result of personnel changes
- d. Implementation of an employee equity and diversity plan

- a, b, & d
- b, c, & d
- b & d
- a, b, c, & d
- a & b

Week 9

1. To register a patent one is required to file an application and pay a fee. **True**
2. A non-obvious improvement of a process or a machine cannot be patented in Canada. **False**
3. In Canada one must apply for copyright protection of any written work. **False**
4. Registering a trademark in Canada provides exclusive rights _____.
 - in the provinces where the trademark is used.
 - across Canada.
 - in specified local regions where the trademark is used.
 - all the answers provided are correct.
 - internationally.
5. A corporation is a separate legal entity that is formed for the purpose of carrying on business. **True**
6. A small group of engineers and scientists who work together on consulting or service contracts and who agree to share the fee revenue from these contracts (in proportion to the amount of work each performs on the contract) can be deemed a partnership. **False**
7. A disadvantage of a partnership is that it is expensive and complicated. **False**

8. The main disadvantage of a partnership is _____.
- shared management.
- the potential for unlimited and disproportionate liability.
- disagreement among the partners.
- the difficulty of terminating the partnership
9. A Canada issued patent does not stop a Japanese competitor from taking the information disclosed in the patent and practicing that invention in Japan. **True**
10. Patent protection may be particularly well-suited for rapidly developing and changing AI inventions. **False**

Week 10

1. What section of the Constitution Act of 1982 references Aboriginal Rights?
- 21
- **35**
- 29
- 15
2. What landmark case recognized oral testimony as valid evidence of Aboriginal title and rights?
- Spider
- **Delgamuukw**
- Calder
- Haida & Taku
3. Indigenous title & rights are a significant and necessary component of project scheduling and planning. **True**
4. Consider the following two statements:
- 1) The duty of consultation with indigenous peoples with respect to a proposed project rests with the Crown, but the Crown can delegate this duty to the proponent of the project.
- 2) Once consultation concerning a project on indigenous lands has been done and the project is permitted and underway, further consultation would be necessary if there are material changes to the project requiring issuance of a new permit.
- #1 is true, #2 is false.
- Both statements are false.
- #1 is false, #2 is true.
- **Both statements are true.**

5. The fact that all domestic UBC Engineering students pay the same amount of tuition for a course is an example of _____.
- Neither equity nor equality
 - **Equality**
 - Both equity and equality
 - Equity
6. Equity is _____.
- treating people equally
 - all the answers provided are correct.
 - **treating people fairly**
 - giving each person what they need
7. The advantages of a diverse workforce in an organization can be realized without the presence of inclusive practices because individual members of a diverse workforce would be more able to counter the effects of their potential biases.
False
8. Unconscious bias is a barrier to inclusion. **True**
9. There is a wide body of empirical evidence that suggests workplace diversity is a good predictor of above-average financial performance of a company because _____.

Select the best answer.

- a. it attracts socially responsible investors who are interested in companies that promote such things as the UN Sustainable Development Goals of Gender Equality and Reduced Inequality.
- b design or development teams in a diverse workplace are more likely to critically examine assumptions and available data.
- c. a diverse group will generate more ideas and convert them to new products or services which leads to increased revenue.
- d. a diverse group of employees is able to better predict the share performance of the company which allows management to avoid errors when making financial decisions because they become more aware of their potential biases.
- e. performance in a diverse organization improves because there is more opportunity for different perspectives to prevail.

- a, b & d
- c, d & e
- a, b, c, d & e
- a, b, c & d
- **b, c & e**
- a, b & e

10. Being inclusive includes _____?

Select the best answer.

- a. Self-reflection
- b. Implicitly
- c. Openness to differences
- d. Effective collaboration
- e. Courageous commitment
- f. Sympathy
- g. Cultural intelligence
- h. Empathy

- a, b, c, d, e, f, g & h
- a, c, d, e, g & h
- a, c, d, e, f, g & h
- c, d, e, g & h
- a, b, c, d, e & g
- a, c, e, f, g & h

Week 12

1. What are the “raw materials” in the innovation value chain?

- Seed money for high risk innovations
- Administrative support for research
- Ideas
- Skilled people
- Strategic innovation management plans

2. Innovation failure in a company results from _____.

Select the best answer.

- a. weak or no linkage between innovation and the strategies and goals of the company
- b. low salaries or poor employment conditions for innovators in the company
- c. insufficient investment in the development of innovations
- d. a poor track record of innovation in the company and in similar companies
- e. the lack of an “innovation premium” in the share price of the company
- f. not learning from ideas that failed in other companies

- a, b, c & e
- a, c & f
- b, c, d & e
- a, c, d & f
- c, d, e & f
- a, b, c, d, e, & f

3. Innovation can occur in _____.

- 1) product development
- 2) business models
- 3) delivery of large projects

- Only 1 and 3
- Only 1
- All of 1, 2 and 3 but the innovation process steps only apply to product development
- All of 1, 2 and 3

4. Ideas are important, but in order to become valuable they need to be _____, _____, and _____?

Select the best answer.

- a. optioned
- b. from outside the firm
- c. selected
- d. risk neutral
- e. developed
- f. from inside the firm
- g. scaled
- h. diverse
- i. paced

- a, d & f
- b, e & h
- c, e & g
- d, e & f
- b, g & i
- b, d & g

5. The owner-supplier relationship in a project can be structured to promote innovation and collaboration in project delivery _____.

- if the relationship provides incentives for the risks associated with project delivery to be shared with the owner and possibly other suppliers
- only for large projects located in the UK or in a Commonwealth country where the Heathrow Terminal 5 agreement provides a model
- only in cases where the supplier is not contributing to a complex part of the project.
- if the contract underlying the relationship prohibits either party from taking legal action in the event of a dispute

6. In 2007 Barrick, a Canadian gold mining company, offered a \$10M prize to anyone or any group who could devise a way to recover silver from ore at its Veladero gold mine in Argentina. (Gold and silver are chemically similar and hard to separate.) <https://www.barrick.com/news/news-details/2007/Barrick-Offers-US10-Million-for-Innovation-to-Unlock-the-Silver/default.aspx>. Links to an external site. Other gold mining companies have provided geological exploration data and offered monetary prizes to anyone who used the data to improve the definition of exploration targets. These are examples of _____.
- collaboration with an external network of entrepreneurs, inventors and suppliers.
 - none of the above
 - **idea generation by a group of volunteers**
 - efficient conversion of ideas for discovering and obtaining access to more reserves of metal
7. A company can use innovation to take advantage of opportunities in the market in which it operates or use it to counter competition in the market. **True**
8. Most companies have no shortage of formal systems for managing ideas. The number and diversity of people involved, however, can create a risk-neutral and bureaucratic process that grinds execution to a halt. **False**
9. The innovation value chain presents innovation as a sequential, two-phase process. **False**
10. Crossing the Chasm refers to getting an innovation past the early adopter stage into the mainstream market and is therefore analogous to the Diffusion stage of the innovation value chain. **True**

Final Exam

1. Uncertainty often affects an ethical decision _____.
 - if not enough analysis has been done.
 - **always.**
 - only if rule-based ethics is used.
 - in professional ethics.
 - if results-based ethics is used.
2. What is the best reason for a professional to follow a code of ethics?
 - To avoid potential professional liability.
 - Professional registration requires it.
 - **Cooperation with other professionals to serve the ideal of public safety.**
 - It is in the self-interest of the professional to do so.
3. Which of the following is an actual conflict of interest?
 - Any one of the answers given.
 - **An engineer is a member of a committee that develops safety standards for equipment produced by her company and fails to disclose ways in which her company may benefit from recommendations drafted by the committee.**
 - An engineer specifies equipment made by one manufacturer to different companies who compete in the same market.
 - An engineer agrees to provide her services to two engineering companies who are bidding competitively for the same design contract.
4. The Engineers and Geoscientists of British Columbia is given authority from:
 - **The Professional Governance Act**
 - The Provincial Minister of Justice
 - The Canadian Engineering Accreditation Board
 - A model of total self-governance by the EGBC
5. The training and experience of an individual who calls herself an engineer provides the distinction between simply doing engineering and actually practicing engineering. **False**
6. A registered engineer must always be prepared to be held accountable for his/her actions and decisions made while practicing engineering. **True**

7. Under what circumstances does the court system of a province consider the professional conduct of a registered engineer?
- If they are established by a provincial government statute.
 - **The court system of the province never considers this.**
 - Only when an engineer is on trial for criminal activity related to his/her professional practice.
 - If the Supreme Court of the province grants them entry into the court system.
8. Stare decisis means to stand by a previous decision and is a mechanism for the development of civil law. **False**
9. In Canada when the facts of Case A are like the facts of Case B, the judge in Case B may be required to follow the ruling of Case A if the ruling in Case A is from:
- courts at a similar level in the same province.
 - courts at a similar level in countries that practice common law.
 - a higher court in other provinces.
 - **a higher court in the same province.**
10. It is possible for an engineering company to terminate a contract with an unscrupulous client by simply telling the client that it no longer intends to be bound by the contract. **True**
11. The duty of confidentiality of an engineer to his/her client does not end once the contract between them is terminated. **True**
12. In what way does contract law differ from tort law?
- **Contract law concerns a relationship between at least two parties.**
 - Lawsuits related to contract law can be tried in both civil and criminal court.
 - Tort law is derived mainly from statutes.
 - Contracts are always written.
13. Engineering services offered by means of a verbal agreement and for no consideration are called gratuitous promises and do not constitute an enforceable contract. **True**
14. A professional engineer can be liable for omitting to mention something relevant when providing an opinion to a client. **True**

15. What are the elements that must be present for a plaintiff in a negligence tort case to succeed in court?

Select the best answer.

- a. A duty of care
- b. Presence of a neighbour as a witness
- c. Breach of the duty of care
- d. Causation of a legally recognized loss
- e. A professional's opinion

- c & d
- b, d & e
- a, b, c & d
- a & e
- a, c & d
- c, d & e
- a, b, c, d, & e

16. In Canada, registration as a professional engineer with a provincial association absolves the engineer from a duty in tort because the association is responsible for ensuring high skill levels of its members. **False**

17. The key factor found in fraudulent misrepresentation that is not present in negligent misrepresentation is:

- a false or misleading representation is made.
- the person making the representation knew it was false or misleading.
- the person to whom the representation was made relied or acted upon the representation.
- damage resulted from relying or acting upon the representation.

18. As an employee, you always own the rights to any inventions or other intellectual property you develop while employed. **False**

19. An employee who is wrongfully or constructively dismissed must take steps to find alternative employment in order to minimize the losses caused by the dismissal. **True**

20. Mary, a professional engineer, worked for a truck manufacturer and was the project leader for a team that was responsible for the design of the wheel base of a robotic truck. Near the end of the project, Mary became ill and was away from work for three weeks. Despite her illness, Mary monitored the project by telephone, email communications, and Web-Conferencing with her team. On her return, she was assigned a set of distinctly different tasks with the team and she reported to her replacement. In addition, she discovered that her personal items from her previous work station had been moved to another location. When she brought this issue up with her manager, she was told that this move was permanent and to get on with being "the team player she is known to be".

Which are relevant in this situation?

Select the best answer.

- a. Mary could consider this to be a case of constructive dismissal and elect to resign and sue her employer for wrongful dismissal.
- b. If necessary, Mary could rely on the Employment Standards Act if she forwarded a grievance against her former employer.
- c. If Mary resigned she would have a duty to find employment and minimize the loss of income.
- d. Mary's manager thought the change was reasonable because the person who replaced Mary had training in project management and would be a better project leader.

- b, c, & d
- a & c
- a, b, c & d
- a, c & d
- b & d

21. Aboriginal title to a specific piece of land is based on the existence of three conditions since before European sovereignty. Which of the following is not a condition for Aboriginal title?

- Utilization of the lands for continuous period.
- The sole occupation of the lands in question.
- Proof that the lands have significant sacred interest to the Indigenous Nation.
- Occupation of the lands to a sufficient extent.

22. Section 35 of the Constitution Act of 1982 recognized and affirmed Aboriginal rights, but the Delgamuukw v. British Columbia case of 1997 established a definitive test for Aboriginal title, i.e., for the ownership of traditional lands. True

23. A duty to consult with a First Nations community can be triggered when the community asserts its rights to title. True

24. What is innovation?

- A new idea successfully applied
- Creativity
- Invention
- A patent

25. Patents are a secondary resource. False

26. Which engineer was known specifically to have used language that was characteristic of engineering communication when dealing with a possible disaster? Their language is a model of clarity, marked by dispassion, backing of claims with evidence, and refusal to venture into unjustifiable speculations.

- Jack Gillum
- William LeMessurier
The Citicorp Building Case - See William LeMessurier and Clear Engineering Language (Irish and Weiss, 2013)
- Hemanth Kap-panna
- Allan McDonald
- Fred Lang
- Gregory Suanders
- Robert Wood

27. Nathan, an engineer at COI Enterprises (the most prestigious engineering firm in the country, and very much in demand by many clients) was offered a gift by a potential client (Jacob, from ANC Inc). Nathan has an interest in travel, and Jacob offered him a private tour of a ghost town in BC. If you were in Nathan's position, what should you consider when assessing the appropriateness of the gift?

- You can accept the gift because of the long hours you have worked on a project.
- There is nothing to assess, as gifts are okay.
- There is nothing to assess, as you would deem the gift as a conflict of interest; therefore, unacceptable and refuse it.
- The size of the gift.
- The timing of the gift.
- If knowledge of the gift became public, would it be embarrassing for you or for TOP?

28. Kim is a senior field engineer with the BC Ministry of Forests and is partially responsible for the approval of road applications from timber licensees, which included selecting new roads to be constructed and establishing budgets for each. Kim has been working at the Ministry for over 15 years. Kim used her position at BC Ministry of Forests to help her daughter Anju get a summer job as a road application reviewer.

Which type of conflict of interest does the above example illustrate?

- Using your employer's property for private advantage.
- Outside employment or moonlighting.
- Self-dealing.
- Accepting benefits.

29. Jim, a mechanical engineer at JD Engineering provided designs for wooden walkways (over ponds) on multiple projects, despite not being qualified as a structural engineer. Jim's designs seemed to be lacking some critical load calculations needed, especially when some of walkways will face a high traffic load.

Which principle of the EGBC Code of Ethics did Jim breach or not comply to when he designed the wooden walkways?

- Principle 2
#2 "practice only in those fields where training and ability make the registrant professionally competent".

The Registrant should have acknowledged that they lacked the expertise to complete these designs and either refrained from accepting this project or ensured that an independent professional structural engineer took over responsibility for the walkways.

- Principle 3
- Principle 11
- Principle 8

30. The purpose of a union is the same as professional association. False