

Module 4 – Professional Law and Ethics for Engineers

- 1) Common law is based on
 - (a) Ethics
 - (b) Laws that are commonly known
 - (c) The rules of the House of Commons
 - (d) Laws created by a legislative body
 - (e) Court decisions that establish precedents

- 2) Common Law principle says that:
 - (a) You have the right to enjoy your own property.
 - (b) Your right to enjoy your property ends when it impairs the rights of others.
 - (c) You have the right to damage the property of others.
 - (d) Your right to enjoy your own property ends when you give your property away.
 - (e) (a) and (b)
 - (f) (c) and (d)

- 3) By common law, are you allowed to play your music whenever and wherever you want?
 - (a) Yes, so long as it is quiet
 - (b) Yes, I can do what I want
 - (c) No, there are times and places when it would infringe on the rights of others
 - (d) a and b
 - (e) none of the above

- 4) Which of the following is true about common law?
 - (a) Common law principles are constant over time
 - (b) Common law principles are made by judges
 - (c) Common law principles are the basis for many of today's legal decisions
 - (d) all of the above
 - (e) none of the above

- 5) Which of the following is true about tort law?
 - (a) politicians create tort law in statutes
 - (b) interference with persons, property or reputation are key elements
 - (c) Duty of care is covered by tort law
 - (d) all of the above
 - (e) none of the above

- 6) A tort
 - (a) is a liability

- (b) is a civil wrong involving damage to a person
 - (c) includes fraud
 - (d) none of the above
 - (e) a, b and c
- 7) Tort law includes:
- (a) Interference with reputation, which is called slander or libel.
 - (b) Disagreements over the terms of a contract.
 - (c) Failure to take reasonable care
 - (d) The self-governance of the engineering profession
 - (e) all of the above
 - (f) a and c only
- 8) A tort is a civil wrong that does not typically include
- (a) product liability
 - (b) nuisance
 - (c) negligence
 - (d) fraud
 - (e) malice
- 9) The Professional Engineer's Act defines the "practice of professional engineering" as:
- (a) any act of designing, evaluating, reporting that requires the application of engineering principles
 - (b) any act of composing or advising that requires the application of engineering principles
 - (c) any act of directing or supervising that requires the application of engineering principles
 - (d) any act where where safeguarding of life, health and property or public welfare is concerned
 - (e) all of the above
 - (f) a and d only
- 10) The Professional Engineers Ontario Code of Ethics requires the practitioner to act with:
- (a) Fairness and loyalty to the practitioner's associates, employers, clients, subordinates and employees
 - (b) Fidelity to public needs
 - (c) Devotion to high ideals of personal honour and professional integrity
 - (d) Knowledge of developments relevant to the services offered
 - (e) Competence in the performance of all services
 - (f) all of the above
 - (g) b, c, d and e only

- 11) A Professional Engineer in Canada must have a valid license to perform engineering services
(a) True
(b) False
(c) Not always, it depends on the specific circumstances
- 12) A Licensed Professional Engineer must expose unprofessional, dishonest or unethical conduct by any other practitioner
(a) True
(b) False
(c) Only if it poses a risk to public welfare
- 13) You are only bound by codes of ethics if you are a licensed engineer; otherwise you are free to provide services anyway you like.
(a) True
(b) False
- 14) A licensed professional engineer must:
(a) Be competent to perform to a level expected by other members of the profession
(b) Provide opportunity for professional development and advancement of the practitioner's associates and subordinates
(c) Extend the effectiveness of the profession through the interchange of engineering information and experience
(d) (a) and (b)
(e) (b) and (c)
(f) (a), (b) and (c)
- 15) Licensed professional engineers must maintain:
(a) A Certificate of Authorization and errors and omissions insurance
(b) A minimum "C" average mark upon graduation
(c) Records of any ethical dilemmas for a minimum of 14 years
(d) Up-to-date knowledge about new technologies, regulations, methods and practices for any services the engineer provides
(e) Subscriptions to the "Gazette" (Engineers Ontario magazine)
(f) (a) and (d)
- 16) According to the PEO Code of Ethics, a Professional Engineer shall:
(a) permanently display their licence
(b) avoid or disclose potential conflicts of interest
(c) work well with other professionals
(d) not pay or accept commissions
(e) all of the above
(f) all of the above and more

- 17) Most professional dilemmas occur in situations that are
- (a) Legal and ethical
 - (b) Illegal but ethical
 - (c) Legal but unethical
 - (d) Illegal and unethical
 - (e) a and c
- 18) The duty of an Engineer towards other Engineers includes
- (a) Maintaining silence regarding their professional errors or omissions
 - (b) Avoiding unfair competition or injury to their reputation or business
 - (c) Reviewing and reporting on their professional performance when asked by the manager
 - (d) a, b and c
 - (e) b and c
- 19) Which of the following may be viewed as causing an ethical dilemma?
- (a) Environmental impacts
 - (b) Client requests for engineering services that do not meet standards of practice
 - (c) Conflicts between stakeholder constraints
 - (d) Bilateral contracts between the designer and the client
 - (e) Human error
- 20) What is true about self governing professions?
- (a) Society bestows status on professions
 - (b) Professionals are expected to act in an appropriate manner
 - (c) Professionals need to maintain esteem in order to retain their status
 - (d) Professions are responsible for discipline and sanctions of their members
 - (e) All of the above
 - (f) b, c and d only
- 21) Why is engineering a “self-governing profession”?
- (a) All professions are self-governing
 - (b) All of the “Learned Professions” are self-governing
 - (c) Special knowledge is required, so a jury of laypersons would not necessarily be able to make an appropriately informed decision on an engineering case
 - (d) There were no other options available when the Professional Engineers Act was written

- (e) (b) and (c)
- (f) (a), (b) and (c)

- 22) Accreditation of an engineering program in Canada requires that all graduating students must have an ability to apply professional ethics.
- (a) True
 - (b) False
- 23) A Professional Engineer has a duty to
- (a) Their employer
 - (b) Their client
 - (c) The owners of the company
 - (d) Protect the public welfare
 - (e) All of the above
- 24) A Professional's Engineer's paramount duty is to
- (a) Their employer
 - (b) Their client
 - (c) The owners of the company
 - (d) Protect the public welfare
 - (e) All of the above
- 25) In light of your answer to the previous two questions, consider the following Case Study. The largest real estate developer in Canada retained your engineering consulting firm to provide environmental consulting services associated with redevelopment of a large parcel of formerly industrial land to posh condominium apartments. Your boss is excited about the project because it is a large revenue generator, and will increase the firm's market profile. You are managing a staff of field sampling technicians, and one of them identified a series of old transformers stored in an abandoned warehouse at the site. Based on the manufacturer and serial numbers on the transformers, they probably contain polychlorinated biphenyls (PCBs). After a discussion with your field crew, you collectively design an appropriate study to collect and analyze samples of the transformers, building surfaces, soil and groundwater, and an associated cost estimate and schedule. Your client is not pleased because the additional cost will significantly erode his profit margin on the development, and your boss is furious because of the client is not happy. After work, you boss asks you to leave the information about the transformers out of your report. What is the best course for you to take?
- (a) Follow orders. If you don't do what your boss tells you, he could fire you or impede your career progress.

- (b) Go ahead and collect some samples, once they are analyzed, the results will show there is a problem, and the client can't deny the potential risk anymore.
 - (c) Remind your boss about the Engineer's duty to public welfare, and the health implications of PCB exposure. Without a sampling and analysis program, the potential risks cannot be appropriately assessed. If your boss and client do not agree and still want to suppress the information about the transformers, remind them you have an ethical duty to protect the public health and welfare and are required to contact the Professional Engineers Ontario office and report the situation and ask for a review by the disciplinary committee. If needed, report the issue to the PEO Disciplinary Committee and cooperate with the investigation, accepting the outcome regardless of whether the committee supports your position or not. As an employee, you have rights and cannot be fired for calling PEO with a disciplinary complaint. If you find that future career opportunities are limited, remind your employer that exercising your professional duty to the public welfare cannot be used to justify inhibiting your career progress. You may need to consult an employment equity lawyer. Depending on the outcome, you may need to be prepared to pursue employment elsewhere.
 - (d) Resign and let your boss decide how to deal with his own ethical dilemmas.
 - (e) Call the local newspaper and tell them you have a front-page story for them.
- 26) Professional Codes of Ethics in the US and Canada have the following in common:
- (a) emphasizing integrity and honesty
 - (b) protection of whistleblowers
 - (c) guidelines or standards on how to behave with respect to clients, the profession, the law and the public
 - (d) a and b
 - (e) a and c
 - (f) a, b and c
- 27) Statutory law is based on
- (a) common law
 - (b) laws which are commonly known
 - (c) Municipal laws
 - (d) laws created by a legislative body
 - (e) court decisions
- 28) Moonlighting is

- (a) Working during off-hours on the employer's projects, but without financial compensation
 - (b) Providing services during off-hours to entities other than one's employers
 - (c) Working overtime at late hours at the office and getting rewarded by the employer
 - (d) The employer's right to ask their employees to stay long hours if they have not completed their tasks during regular work hours
 - (e) a and d
- 29) A design engineer may address many legal and ethical issues, however these do not include:
- (a) reviewing a design project, protecting intellectual property
 - (b) determining if a contractor should be paid
 - (c) preparing a contract to secure services, offering legal council
 - (d) bribing subcontractors in order have work completed on schedule
 - (e) managing a project to avoid the possibility of a product lawsuit
- 30) What is the primary reason for engineers to be ethical?
- (a) If you are not ethical, you will go to jail
 - (b) The public has bestowed upon engineers the right to self-governance and responsibility over public safety, so they must be able to trust engineers to do the right thing
 - (c) Engineers that are ethical gain a better reputation and better job offers
 - (d) (a), (b) and (c)
 - (e) (b) and (c) only
 - (f) none of the above
- 31) You are an engineer who works for the provincial government, but you hope to leave soon for a higher-paying job with Orlando Corporation. You are advising a committee that is considering three bids for constructing a new government building. One bid comes from Orlando, and you think that Orlando's bid is the best. Which of the following actions is ethical?
- (a) Tell the committee you think Orlando's bid is best and why, as long as you are still employed by the provincial government, that is your job.
 - (b) Tell the committee you think Orlando's bid is best, but let them know you are considering going to work for Orlando and let them decide whether to accept your opinion or not
 - (c) Decline to offer your opinion and tell the committee that you are declining to avoid a possible conflict of interest
 - (d) Tell the committee all three bids are equally good
 - (e) Any of the above
 - (f) (b) or (c)

- 32) Now you are an engineer working for Orlando Corporation. Your team is now preparing another bid for construction of another government building for submission to the same provincial government agency that you used to work for. You are still friends with an engineer working for the government agency, and during conversation you discover that he will be advising the government committee on which bid is the best. Which of the following actions is ethical?
- (a) Offer to take him fishing on Lake Ontario on Orlando's private yacht to have the opportunity to provide more information to help him make his decision
 - (b) Maintain your friendship, but don't talk with your friend about the proposal at all, just prepare and submit your best proposal, and wait for the government agency to contact you
 - (c) Make a point of telling your friend all the reasons why Orlando would be the best firm for the job, as long as you do it outside of regular business hours.
 - (d) Ask your friend for information regarding the other companies that are submitting proposals to gain an advantage in the proposal you submit
 - (e) Any of the above
 - (f) (b) and (c)

Case Studies

Professional Case Study #1

Company A is an established, employee-owned engineering consulting firm with 1,000 employees in 24 offices. Company B is a small firm (25 employees in one office), with compatible services, and the two firms merge for business reasons.

Both companies have provided services to a government research funding organization for several years. Company A

conducted large research programs, and Company B provided technical review of proposals and reports of the researchers, including Company A.

After the merger, the research organization still wants to work with the individuals that performed and reviewed the research.

Questions

- Does this pose an ethical dilemma? Why?
- What can or should be done to maintain professional ethical standards moving forward?
- What are the pros and cons of these alternatives?

Professional Case Study #2

Two engineering consulting firms were asked to submit a proposal to solve a challenging problem. Firm A had a proposal with no clear strategy or logic, but very low hourly billing rates. Firm B had a very clever strategy, a clear and logical sequence of events, and a convincing story that indicated they would solve the problem much more directly; however, their hourly rates were higher.

The client for the project selected Firm A, gave them the proposal from Firm B, and asked them to implement the study using their low hourly rates.

Questions

- Is the client's conduct ethical?
- If you worked for Firm A, what would you do about it and why?
- If you worked for Firm B, what would you do about it and why?
- Is there a "win-win" option that meets ethical standards?

Professional Case #3

Company A provides mobile laboratory services for environmental consulting companies. Their business is cost effective only if they process a large number of samples every day. In the past, they have argued strenuously against regulatory policies and guidelines put in place to assure and control the quality of environmental monitoring data, which is time-consuming to implement and counter-productive to their business model. A senior member of Company A was also previously indicted for falsifying data.

Company A is retained by an environmental consulting Company B to work on a project for Client C. The results of their sampling and analysis show concentrations much lower than historic data, and Company B uses this data to recommend that the site cleanup activities be terminated. Client C retains Company D for an independent technical review of the data and recommendations.

Company D is aware of the reputation and previous indictment of Company A. Upon review of the field sampling methods, they find a procedural problem that would result in a low bias in the data.

Questions

- What are the ethical duties of Company D?
- What is the appropriate response for Company B?
- What is the appropriate response for Company A?

Review Questions

- 1) Explain the difference between Common Law and Tort Law.
- 2) What is a Learned Profession?
- 3) Why are Learned Professions self-regulating?
- 4) List the key elements of the Engineer's Code of Practice.
- 5) Explain how the Professional Engineer's Act relates to the ethics of safety, health and environment.