

# National Professional Practice Exam (NPPE) Syllabus

## Overview

This document provides additional descriptions of the information required of candidates to learn in preparation for taking the NPPE. The descriptions of each syllabus area are not meant to be exhaustive of the information that a candidate should learn about each syllabus area, however the descriptions should provide some assistance in focusing the study of candidates preparing for the NPPE. Candidates are expected to know all the material covered in the study material for each syllabus subject area and demonstrate this knowledge sufficiently on the NPP Examination.

## I Professionalism

### I.1 Definition and Interpretation of Professionalism and Professional Status

- The defining elements of a professional (the context is that of the self-regulating professions: engineers, geoscientists, doctors, lawyers, and such versus other occupations):
  - Have advanced technical knowledge and skills that the public takes on trust
  - Give service to the public and in the public interest
  - Are bound by a distinct ethical code
  - Belong to self-governing organizations that regulate the profession to maintain standards
    - Right to self-regulate is earned
    - Requires participation of members to fulfill self-regulating function
  - Undergo long and intensive preparation
  - Require continued study and development

### I.2 The Role and Responsibilities of Professionals in Society

- Skilled and regulated practice
- Personal accountability and responsibility for own professional practice
- Accountable for the professional practice of those under their supervision
- Dependence on the confidence of stakeholders: employers, clients, authorities, public
- Justify and uphold trust from the stakeholders
- Protection of the public
  - Definition of *the public* in different circumstances – general public, client, employer, fellow workers
  - Definition of *protection* – physical safety, physical protection, physical failures, environmental protection, economic safety

### I.3 Engineering and Geoscience Professions in Canada; Definitions and Scopes of Practice

This topic is considered at a high level. What is considered is: who, what, when, source of authority, reason for, etc. Detailed processes and requirements are considered in other syllabus sections.

- Provincial and territorial associations
  - authority to license and self-regulate the professions
  - authority to discipline and enforce
  - jurisdiction and independence between associations

- Right to title and exclusive scope of practice
- Definition of engineering – “advising, evaluating, designing ..... matter, materials, ....math, chemistry, physics ...”
- Definition of geosciences – “advising, evaluating, interpreting ..... earth sciences ..... discovery development .....math, chemistry, physics ...”
- Professional seals
- Engineers Canada and Geoscientists Canada – association of associations – non-regulatory – create standards and guidelines – accreditation roles
- Brief histories
- The iron and earth rings

#### **I.4 The Value of Engineering and Geoscience Professions to Society**

- Economic benefits of work and projects
- Technology application
- Technology research and development
- Infrastructure development
- Energy research, development, production and generation
- Products research and development
- Manufacturing and processing
- Resource research and development
- Limits and sustainability

## **II Ethics**

### **II.1 The Role of Ethics in Society; Cultures and Customs**

- Ethics – the study of right and wrong (morality)
- Moral principles are developed by societies and groups
- Laws of a society flow from its moral principles

### **II.2 Ethical Theories and Principles**

- Recognition that there are different and contrasting ethical theories/perspectives that can result in different outcomes each considered correct within the given theory.
- Ethics applied to professional issues from the perspectives of the classical and modern theories.
- The ethical perspectives/theories that form the basis in establishing the Code of Ethics for the professions and that guide disciplinary actions.
- Ethical Perspectives/Theories – Classical  
(Exam candidates are not required to know these theories by rote but rather should recognize the principles of the different theories in application.)

- Greater good/maximum benefit – utilitarianism
- Duty
- Human rights
- Virtue

### **II.3 Codes of Ethics of Professional Engineers and Geoscientists in Canada**

- Source and legal authority of the codes of ethics
  - derived from the acts
  - status
- Understanding of the core tenets:
  - Protect the health, safety and welfare of the public
  - Have regard for the public
  - Practice only in areas of competence
  - Conduct themselves with integrity, honesty, fairness and objectivity in their professional activities
  - Compliance with applicable statutes, regulations and bylaws
  - Uphold and enhance the honour, dignity, and reputation of their professions
  - Avoid conflicts of interest
  - Maintain competence of self and of subordinates
  - Present the possible consequences of ignoring professional judgments
  - Report illegal or unethical professional decisions or practices
  - Promote the equitable treatment of all individuals
- Use of the codes of ethics in regulating the professions
- Recognition that minor differences exist between associations

### **II.4 Common Ethical Issues and Dilemmas; Making Ethical Decisions**

- Issues and cases concerning ethical dilemmas looked at through the lens of the code of ethics and other approaches to seek solutions
  - Conflict of interest from the perspective of ethical dilemmas, solutions, and decisions
  - Conflicts between technical authority and management authority
  - Duty to report / whistle blowing as an ethical dilemma
  - Loyalty to the employer
  - Limiting practice to areas of competence
  - Plagiarism and copyright infringement
  - Professional responsibility vs employment issues
  - Professional competence
  - Reviewing work of others
  - Confidentiality
  - Foreign assignments

### **III Professional Practice**

#### **III.1 Professional Accountability for Work, Workplace Issues, Job Responsibilities, and Standards of Practice**

- Professional responsibility for work
  - How it comes into being
  - Where it rests
  - Responsibility for work of junior members and subordinates
  - Responsibility for work created by several members in multiple disciplines
- The corporate world
  - Corporate ethics and pressures on the professional
  - Corporate responsibilities and loyalty vs professional responsibilities
  - Confidentiality vs professional responsibilities, transparency or accountability
  - Confidentiality or ownership of data and knowledge
- Due diligence
- Globalization
  - Responsibilities of international work (when laws differ, what governs?)
  - Responsibilities of using products and knowledge developed internationally
- Legality
  - Practise within the boundaries and intents of the law
  - Meet the spirit of the law
- Professional responsibilities in developing software
- Relying on work prepared by others

#### **III.2 The Role and Responsibilities of Professionals to Employers and Clients**

- Duty to the employer/client
- Loyalty, confidentiality, competence, diligence
- Conflict of interest
  - recognition of
  - avoidance of
  - expected conduct when in a conflict of interest
- Personal interest vs employer's/client's interest
- Duty to the employer/client vs duty to the public
- Professional environment and development
  - recognition of the code of ethics by the employer as necessary to support professionals in their work and career

### **III.3 Relations with Other Professionals and Non-Professionals; Business Practices**

- Roles of technicians, technologists, scientists in multidisciplinary teams
- Respect and consultation with other professions
- Reviewing the work of another professional
- Need to consult with experts outside of own field of practice

### **III.4 Statutory and Non-Statutory Standards and Codes of Practice**

- Professional, legal, social
- Generally accepted professional practices
- Finality and interpretation
- Limitation of standards
- The role of standards (international, national, government)
- Legal authority responsible for codes (provincial, national, municipal)
- Application of codes and standards
- Standard and code setting bodies

### **III.5 Risk Management, Insurance, Quality Management and Due Diligence**

- Risk Management
  - General principles and benefits (basic requirement of public protection)
  - Legal framework (general)
  - Overview of current methods of analysis
    - Risk assessment
    - Hazard identification
    - Types of hazards
    - Types of risks
    - Analysis and estimation
    - Evaluating the risks
  - Risk management for professional practice
  - Transfer, retention and monitoring of risk
  - Hazard reduction and failure analysis
  - Case studies
- Insurance
  - Commercial general insurance (purpose)
  - Professional errors and omissions insurance
    - Purpose – what is covered
    - Statute of limitations – retroactive date
    - Compulsory vs optional (where so)
    - Corporate vs individual
    - Consultant vs employee
- Quality Management

- General principles (basic requirement of public protection)
- Legal framework (general)
- Overview of quality management standards
- Overview of current methods of analysis (ISO, 6Sigma, CSA, LEAN, TQM)
- Application to professional practice
  - Management of technical quality
  - Communication and records
- Due Diligence
  - Concept and requirements
  - Concepts of foreseeability, preventability, controllability

### **III.6 Environmental Responsibilities and Sustainable Development**

As considered from a non-politicized perspective.

- Understanding environmental and sustainability issues in the field of expertise
- Use of environmental or sustainability specialists when necessary
- Application of professional and responsible judgment to environmental and sustainability considerations
- Ensuring that environmental planning and management are implemented
- Consideration of environmental costs when evaluating the economic viability of projects
- Recognition of the value of environmental efficiency and sustainability
- Responding to environmental concerns in a timely fashion
- The desire to meet or exceed regulatory environmental and sustainability requirements
- Working with others to improve environmental understanding and sustainability practices
- Examples and case studies

### **III.7 Use of Software, Computers and Internet-based Tools; Liability for Software Errors**

- Validation of (analysis and design) software
  - Responsibility for the outputs of software
- The role of computers in professional practice
- Respect of copyright law: software piracy and plagiarism
- Computer system security from the perspective of licensed professionals
- Internet ethics (harassment, courtesy, "netiquette")

### **III.8 Document Authentication and Control**

- Authentication of documents

- Use of stamp or seal, verification stamps
- Electronic authentication of documents
- Review of documents
- Document revision control
- As-built drawings – responsibility for
- Record keeping and turning over records when required
- Preservation of records in a usable format (8" floppies, faded paper, etc.)
- Responsibility for control of personal stamp or seal

### **III.9 Duty to Inform; Whistleblowing**

- To clients or employers, regulatory agencies, the public
- Communicate openly, honestly and truthfully (the WHOLE story)
- Whistleblower protection

### **III.10 Communication**

- Legal, Ethical, and Practical Aspects of Communication
  - Benefits and problems of internet based communications
  - Issues concerning electronic documents and records
  - Proper use of the professional title
- The Professional Relationship
- Communication Skills (meta aspects)
  - Important aspects of technical writing and reports
  - Important aspects of presentations
  - Oral communication
  - Technical writing
  - Internet communication
  - Languages

## **IV Law for Professional Practice**

### **IV.1 The Canadian Legal System**

- The Canadian Constitution
- The Canadian court system
- The creation of law
- Common law – what it is and where it applies
  - case law and the role of precedent
- Civil Code in Quebec – as compared to Common Law
- Claims and disputes
- International law
- Some additional items
  - Types of law: private vs public, criminal law, civil law, administrative law



- Constitutional framework
- Charter of Rights and Freedoms

## IV.2 Contract Law - Elements, Principles, and Applications

- Essential elements of contracts
  - General principles of contract formation – invitation to treat, offer, acceptance
  - Consideration
- Agreements to agree, letters of intent, memorandum of understanding
- Amendment of contracts
- Waiver and estoppel
- Quantum meruit
- Breach of contract
- Remedies for breach of contract; damages
- Termination of contract
- Repudiation and anticipatory breach
- Principles of interpretation of contracts
- Agency and authority
- Using contractual terms to manage risk
  - Changed circumstances
  - Conditional agreements
  - Limitation of liability clause
  - Exemption clause
  - Liquidated damages clause
  - Transfer of risk and obligation
  - Indemnification clauses
- Misrepresentations and important mistakes
- Selected contract topics and issues
  - Procurement approaches and methods
  - The formal tendering and bid process
  - Qualifications based selection (QBS) in hiring consultants
  - Project delivery
  - International and interprovincial trade agreements
  - Requirements of writing for certain contracts to be enforceable (statute of frauds)
- Specific types of contracts
  - Common and standard clauses
  - Standard form contracts
  - Fixed price; time and charges, unit rate, etc.
  - Professional service agreements
  - Licensing agreements

- Design and build

### **IV.3 Tort Law – Elements, Principles, and Applications**

- Definition of torts
- Categories and types of torts
  - Negligence
  - Trespass
  - Nuisance (Rylands v. Fletcher)
  - Defamation
- Negligence
  - Steps to negligence action
  - Professional standard of care
- Duty to warn (of impending danger)
- Professional liability – negligent misstatement
  - To clients
  - To third parties
  - Disclaimers
- Products liability
- Managing tort risk in professional practice
- Common issues in contract and tort
  - Concurrent liability in contract and tort
  - Limitation periods
  - Joint and several liability
  - Vicarious liability
  - Codes and standards

### **IV.4 Civil Law in Quebec**

- Contracts (conditions of formation of contracts, interpretation of contracts, effects of contracts)
- Civil liability (conditions of liability, contractual liability, extra-contractual liability, modalities of obligations: solitary, joint, divisible and indivisible)
- Performance of obligations (right to enforce performance, default, specific performance, resolution or termination of contracts, extinction of obligations)
- Contract of enterprise or for services (nature and scope of the contract, rights and obligations of the parties)

### **IV.5 Business, Employment, and Labour Law**

- Business organizations: forms, advantages and disadvantages
- Labour Law
  - Trade unions and collective agreements
  - Layoffs and seniority

- Employment Law
  - Implied terms
  - Restrictive covenants
  - Employment standards legislation
  - Termination
  - Independent contractor vs. employee
- Human rights in the context of employment
  - The Charter of Rights and Freedoms

#### **IV.6 Dispute Resolution**

- Litigation
- Arbitration
- Negotiation
- Mediation

#### **IV.7 Intellectual Property (Patents, Trade Secrets, Copyright, Trademarks); Intellectual Property Issues**

- Patents
- Trade Secrets
- Copyright
  - As related to professional designs and documents
  - In relation to Software
- Trademarks
- Intellectual Property Issues
  - Software issues
  - The creation and ownership of intellectual property
    - Assignment and licensing
    - Consultant versus employee

#### **IV.8 Expert Witness**

- Role
- Neutrality
- Fees

#### **IV.9 Bonds and Construction Liens**

- Bonds
  - Roles and responsibilities of parties
  - Indemnities
  - Types
    - Bid
    - Performance
    - Payment

- Construction Liens
  - Making a claim
  - Who may claim
  - Holdbacks

#### **IV.10 International Law**

- Trade agreements
- Human rights
- Environmental
- Laws of jurisdiction
- Applicability of home code of ethics, Engineering & Geoscience Act, regulations and bylaws
- International treaties and organizations (tax, goods)
- Registration requirements (licensure), codes, laws, regulations,
- Work permits

#### **IV.11 Environmental Law**

- Federal and provincial laws
- Jurisdiction
- Environmental offences
- Duty to report
- Site assessments and audits
- The environmental assessment process

#### **IV.12 Workers Compensation and Occupational Health & Safety**

(Of concern is that which is common for all engineering and geoscience associations in Canada)

- Occupational health and safety law
  - Federal and Provincial Law
    - Criminal code provisions
  - Responsibilities
  - Role of the prime contractor
  - When an accident occurs
  - OH&S Regulators
- Worker's compensation law
  - Torts
  - Worker insurance for injuries
  - Prevention of worker lawsuits against employers

#### **IV.13 Human Rights and Privacy Legislation**

- Human rights
- The Charter of Rights and Freedoms

- Privacy law

#### **IV.14 Further Areas of Law**

- Real property and chattels
- Delay and impact claims
- Aboriginal Law
- Securities Law

### **V Professional Law**

#### **V.1 The Acts, Regulations, and Bylaws of Provincial and Territorial Associations**

- Self-regulation; the associations
- The acts, regulations and other laws
- Right to title
- Definitions of engineering and geosciences
- Scope of practice
- The role of Engineers Canada and Geoscientists Canada

#### **V.2 Admission to the Professions**

- Meaning of licensure
- Registration
  - Experience
  - Academics
  - Examinations
- Interprovincial mobility agreements; international agreements
- Licensing of Corporations
  - Permit to Practice, Certification of Authorization, for consultants and firms.

#### **V.3 Illegal Practice, Enforcement Against Unlicensed Practice, and Misuse of Title**

- Practice related
- Title related

#### **V.4 Professional and Technical Societies**

- Purpose and benefits
- Comparison with the regulatory associations

## **VI Regulation of Members & Discipline Processes**

### **VI.1 Discipline Procedures**

- Unprofessional conduct
- Unskilled practice
- Purpose, procedure, consequences
  - Response to complaints (from clients, public, fellow members, etc.)
  - Response to unethical or unskilled practice
  - Consequences of unethical practice or unskilled practice

### **VI.2 Practice Review of Individuals**

- Purpose, procedure, consequences

### **VI.3 Practice Review of Firms**

- Purpose, procedure, consequences

### **VI.4 Continuing Professional Development**

(The common high level requirements across all engineering and geoscience associations in Canada)

- Purpose
- Requirements