



Minerva Canada Safety Management Education Inc.

1. Risk Management Module:

This module introduces the subject of Risk Management, which is considered the heart of all safety programs in all sectors. The steps are common: hazard identification, determination of the magnitude of the hazard consequence, determination of the hazard probability, determination of the risk, then making a decision as to whether the risk is acceptable or not and how to deal with the changing the process to reduce the risk or managed the residual risk.

2. Hazard and Risk Identification:

This module will help to distinguish between hazard and risk. Hazard is an intrinsic property of a material or process. One needs to know that a material or process may have multiple hazards. Risk is a measure of the consequence of a hazard, in terms of magnitude and probability. It is important to understand that a hazardous situation may have multiple outcomes, each of which has a different consequence and probability, and hence pose different risks.

3. Process Safety Management:

In most industrialized countries, process safety management (PSM) is mandated by legislation. This is not the case in Canada, due to our confederation approach to government. This module will introduce PSM and how this management system helps to properly manage process hazards. Some of the elements covered in this module are, maintenance of documents, a document management of change system, mandatory contractor safety training, and regular audits of the process.

4. Electrical Safety, Hazardous Energy:

This is an advanced module for use by electrical engineering students and it covers the hazards and issues of electrical safety to a deeper level then the introductory e-learning module that the Electrical Safety Authority had developed.

5. Fire, Dust Hazards and Explosions:

This module will introduce the issue of fire and explosion engineering principles, and then link to dust explosions and cover general principles used to prevent such events.

6. Radiation Safety:

This module is a specialist level module. This module will introduce students to radiation, and it will be a particular interest to students entering into sustainable energy world, where nuclear power will be a part of the approach to reducing greenhouse gases.

7. Robotics Safety:

This module will introduce students to the popular subject of robotics and mechatronics safety, and the system to be used when working with robotics. Robotics safety operates with a set of principles, primarily around separating the robotic action from the operator.

8. Engineering Ethics, Public Safety Module:

This module will be an introductory module that relates the theory of safety to the higher ethical principles. In general, engineering is all about protecting public safety, whether it is through preventing faulty products, or faulty operations, or hazardous releases. Environment, health and safety all tie closely to engineering ethics.

Each provincial governing body has fundamental ethical canons that are used to define a code of ethics. This module uses the canons of APEGM, the Manitoba professional association. The canons of ethics across Canada reflect similar concepts and ideas.

9. Quantitative Risk Assessment Module:

Once hazards have been identified, the risk can often be calculated. In this module, the concept of the event trees will be introduced, as it provides the means for identifying the sequence of events that leads to a hazardous outcome, and also to identify the probabilities. In addition, the standard methods for estimating the hazard magnitude will be introduced.

10. Codes, Standards Regulations:

In today's economic world, most new hires work for small firms, with little opportunity for mentoring. It is essential that the materials in this module be transferred to students prior to graduation.