



International Diploma in Risk Management

Specialist module: Risk Management in Architecture, Engineering and Construction

Module aims

The aims of this module are to expand students' understanding of risk management in its specific implementation within the architecture, construction and engineering industries. This can include structures from roads to retail, civils to commercial, oil rigs to airports, houses to hospitals, bridges to buildings and tunnels to towers. In fact, it includes any work carried out within the built environment, whether pre, during or post construction and whether private or publically funded. The risk management process in the architecture, engineering and industries differs very little from any other industry, but its implementation is affected by many issues ranging from culture to contract, attitude to aptitude and programme to pricing. In industries where there is often a great deal of uncertainty, with large potential threats, few opportunities and usually a relatively small return, risk management must be kept simple, flexible and, overall, fit for purpose. This module aims to provide guidance on effective implementation of the process for the architecture, construction and engineering industries. For the purposes of this module the phrase 'architecture, engineering and construction industries' has been shortened to AEC industries.

In particular, the objectives of the module are to help students in architecture, engineering and construction: -

- To develop appropriate techniques for risk management
- To identify and prioritise key issues regarding risk management
- To investigate and analyse the process of risk management
- To demonstrate the applicability of risk management to any size of venture
- To demonstrate that risk management needs to be fit for purpose
- To demonstrate how risk management can be used as an integral part of the decision making process

Module syllabus

Unit One: Mapping risk management to the architecture, engineering and construction processes - This unit provides an overview on how and where risk management links into the 'construction' process

Unit Two: Human Elements - This unit explains how risk management relies on people and the understanding of people; how risk management is effectively a change management process; how people's perceptions and their attitude to risk and risk management affect the effective implementation of the process; how commitment can really make a difference; risk ownership; and who is responsible for the effective implementation of risk management

Unit Three: Proper planning prevents poor performance – This unit underlines the need to properly plan for the effective implementation of the risk management process through the life of a venture; emphasises the use of objectives as a guide to the risk management process and as a way of staying on track, taking into account scope and brief, value management, and relevant constraints and assumptions

Unit Four: Identification and qualitative assessment of risks – This unit looks at the common identification techniques; the use of structured naming conventions (especially cause, risk and effect); the testing of assumptions; when identification should take place in construction and engineering process; and the use of categories. It also considers the use of specific rating scales to help put a measure of objectivity into subjective assessments. This includes an understanding of what inherent, gross, current, target, post, residual or net ratings are and when is the right time to use them. Finally, it considers the use of risk registers, what data should be captured and what formats can be used.

Unit Five: The quantitative assessment of risk – This unit considers the use of quantitative techniques for the evaluation of risk. It introduces probabilistic techniques such as stochastic simulation (e.g. Monte Carlo analysis) and explains their contribution and appropriate use in dealing with uncertainty. The unit considers what risks should be priced; what is the difference between discrete contingency and uncertainty pricing; how to use figures that are useful and meaningful in quantifying risk; and how to understand and use the information that is produced.

Unit Six: Responding to risk - This unit considers the appropriate responses to risks, both threats and opportunities; when and how risk should be allocated and which parties should be given ownership. The role of different procurement routes is examined, as well as how contracts allocate and deal with risk as one of their primary functions. Particular consideration is given to the treatment of risk during the tender / proposal period. It also considers what insurances are typically available and what they mean, both in terms of procuring the insurance and the ability to claim on them. Finally, key risk indicators are considered and their use in helping to measure the success of planned actions.

Unit Seven: Risk and the project structure: procurement and supply chains - This unit starts by considering procurement. The role and rationale of different procurement options is examined, and as part of this particular consideration is given to the basis of the financing of AEC ventures. Finally, the ever-increasing phenomenon of outsourcing, and the importance of supply chains is considered, since supply chain risk is an important, yet often ignored element in risk management.

Unit Eight: The 'Management' in risk management - This unit explains what needs to be reviewed, monitored and reported; how to sustain the risk management process throughout the life of the project; how risks can be escalated; what needs to be included in End Life Forecasts; how risk contingency drawdown procedures can be used; how risk management is an integral part of decision making; and how feedback can make a difference.

Unit Nine: Other risk related issues - This unit reviews other issues to be considered, such as: the need for business continuity, emergency response, health and safety, environmental management, reputation management, and other related issues.