Summary statement form

Knowledge Assessment

Complete your summary statement on how you meet the competency standard.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of Applicant:** |  | **Membership number or date of birth:** |  |

# knowledge Assessment elements

You’ll need to demonstrate your equivalent knowledge in eight areas, known as elements. The elements are determined by the knowledge profile expected of a graduate of Washington Accord-accredited qualification.
Each element is described below, together with the performance indicators we’re looking for. You’ll need to provide evidence for at least a majority of each element’s performance indicators.
You can find more information about the whole process on the following [assessment guidance](https://www.engineeringnz.org/knowledge/assessment-guidance/).

**WARNING**: Having your Knowledge Assessment written by another person or persons (this includes all hiring or use of any third-party professional writers/companies to assist or complete your documentation) constitutes unethical behaviour and may result in serious consequences including but not limited to: 1) immediate rejection of the application along with the imposition of a stand-down period before you can reapply or 2) reporting of your details to Immigration New Zealand.

|  |
| --- |
| Element 1 – natural sciences knowledgeA systematic, theory-based understanding of the natural sciences applicable to the discipline eg calculus-based physics. |
| Performance Indicators* Fundamental quantitative knowledge underpinning nature and its phenomena.
* Knowledge of the physical world including physics, chemistry and other areas of physical or biological science relevant to your discipline.
* Knowledge of key concepts of the scientific method and other inquiry and problem-solving processes.
 |
| A brief summary of how you meet the requirements under this element |
| Please reference the evidence you wish to provide for this element (name of evidence; page number) |

|  |
| --- |
| Element 2 – Mathematical KnowledgeConceptually-based mathematics, numerical analysis, statistics and formal aspects of computer and information science to support analysis and modelling applicable to the discipline. |
| Performance Indicators* Knowledge of mathematics, statistics and numerical methods that supports the development or application of models that replicate ‘real world’ behaviours.
* An understanding of the assumptions behind theoretical models and their impacts in the development and use of those models.
* Ability to organise and analyse a data set to determine its statistical variability.
* Knowledge of trigonometry, probability and statistics, differential and integral calculus, and multivariate calculus that supports the solving of engineering problems.
* Basic knowledge of computer programming.
 |
| A brief summary of how you meet the requirements under this element |
| Please reference the evidence you wish to provide for this element (name of evidence; page number) |

|  |
| --- |
| ELEMENT 3 – ENGINEERING FUNDAMENTAL KNOWLEDGEA systematic, theory-based formulation of engineering fundamentals required in the engineering discipline. |
| Performance Indicators* Ability to define key factual information in core areas of fundamental engineering knowledge relevant to your engineering discipline.
* Evidence of sufficient depth of knowledge of engineering fundamentals to demonstrate an ability to think rationally and independently within and outside a chosen field of specialisation.
* Evidence of sufficient breadth of knowledge of engineering concepts and principles to allow subsequent professional development across a broad spectrum of engineering.
* Ability to apply knowledge of engineering fundamentals to solve complex engineering problems relevant to your discipline.
 |
| A brief summary of how you meet the requirements under this element |
| Please reference the evidence you wish to provide for this element (name of evidence; page number) |

|  |
| --- |
| ELEMENT 4 – SPECIALIST ENGINEERING KNOWLEDGEEngineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline, much is at the forefront of the discipline. |
| Performance Indicators* Evidence of sufficient depth of knowledge to support practice within one or more recognised field of engineering.
* Evidence of a systematic understanding of the coherent body of knowledge related to a particular field of engineering; its underlying principles and concepts; its usage and applications; and analytical and problem-solving techniques.
* Ability to apply specialist engineering knowledge to solve complex engineering problems.
 |
| A brief summary of how you meet the requirements under this element |
| Please reference the evidence you wish to provide for this element (name of evidence; page number) |

|  |
| --- |
| ELEMENT 5 – DESIGN PROCESS KNOWLEDGEKnowledge that supports engineering design in a practice area. |
| Performance Indicators* Ability to undertake research and analysis to support the design process.
* Ability to investigate a situation or the behaviour of a system and identify relevant causes and effects.
* Ability to develop from first principles and construct mathematical, physical and conceptual models of situations, systems and devices, with a clear understanding of the assumptions made in development of such models.
* Application of technical knowledge, design methods and appropriate tools and resources to design components, systems or processes to meet specified criteria.
* Ability to analyse the advantages and disadvantages of alternative design options to support the development of an optimised design alternative.
* Ability to analyse the constructability or manufacturing feasibility of a project or product.
* Experience of personally conducting a significant design exercise, providing evidence of the consideration of various realistic constraints, such as safety, reliability, ethics, economic factors, aesthetics and social impact.
* Ability to apply appropriate design methods in solving complex engineering problems.
 |
| A brief summary of how you meet the requirements under this element |
| Please reference the evidence you wish to provide for this element (name of evidence; page number) |

|  |
| --- |
| ELEMENT 6 – ENGINEERING PRACTICE KNOWLEDGEKnowledge of engineering practice (technology) in the practice areas in the engineering discipline. |
| Performance IndicatorsTools and technologies* Awareness of critical issues affecting current technical and professional practice.
* Awareness of current tools of analysis, simulation, visualisation, synthesis and design, particularly computer-based models and packages, and competence in the use of a representative selection of these.
* Appreciation of the accuracy and limitations of such tools and the assumptions inherent in their use.
* Knowledge of materials and resources relevant to the discipline and their main properties and ability to select appropriate materials and techniques for particular objectives.
* Knowledge of a wide range of laboratory procedures relevant to the discipline and a clear understanding of the principles and practices of laboratory safety.
* Knowledge of current types of systems, equipment, information technology, and specifications that accomplish specific design objectives.

Communication* Write correspondence that clearly and concisely communicates facts and circumstances related to a project, product, or process.
* Plan, prepare and deliver an oral presentation, with appropriate visual aids and other supporting materials.
* Communicate effectively with both technical and non-technical individuals and audiences.

Engineering management principles and economic decision making* Apply appropriate tools and techniques to monitor project schedules and costs.

**Teamwork*** Operate as an effective team member or leader of a multidisciplinary team.
 |
| A brief summary of how you meet the requirements under this element |
| Please reference the evidence you wish to provide for this element (name of evidence; page number) |

|  |
| --- |
| ELEMENT 7 – ENGINEERING IN SOCIETY KNOWLEDGE Comprehension of the role of engineering in society and identified issues in engineering practice in the discipline: ethics and the professional responsibility of an engineer to public safety; the impacts of engineering activity: economic, social, cultural, environmental and sustainability. |
| Performance Indicators* Demonstration of ethical behaviour in accordance with ethical codes of conduct and established norms of professional conduct.
* Evidence of making ethical decisions and regulating one’s own professional conduct in accordance with a relevant code of ethical conduct.
* Implementation of appropriate health and safety practices.
* Awareness of the social and environmental effects of their engineering activities.
* Awareness of sustainable technologies and sustainable development methodologies.
* Ability to identify risks as a consequence of engineering compromises made as a result of project or business constraints, and understanding of techniques to mitigate, eliminate or minimise risk.
* Knowledge of appropriate risk management techniques used to assess the accuracy, reliability and authenticity of information.
* Understanding of the role of quality management systems tools and processes.
 |
| A brief summary of how you meet the requirements under this element |
| Please reference the evidence you wish to provide for this element (name of evidence; page number) |

|  |
| --- |
| ELEMENT 8 – RESEARCH BASED KNOWLEDGEEngagement with selected knowledge in the research literature of the discipline. |
| Performance Indicators* Advanced knowledge in at least one area within your discipline, to a level that engages with current developments in that area.
* Understanding of how new developments relate to established theory and practice and to other disciplines with which they interact.
* Describe advancements in engineering research and technology and science in a particular area of engineering practice.
* Commitment to lifelong learning.
 |
| A brief summary of how you meet the requirements under this element |
| Please reference the evidence you wish to provide for this element (name of evidence; page number) |