Summary statement form

Knowledge Assessment

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

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| **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.

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| Element 1 – natural sciences knowledge A 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) |

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| Element 2 – Mathematical Knowledge Conceptually-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) |

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| ELEMENT 3 – ENGINEERING FUNDAMENTAL KNOWLEDGE  A 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) |

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| ELEMENT 4 – SPECIALIST ENGINEERING KNOWLEDGE  Engineering 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) |

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| ELEMENT 5 – DESIGN PROCESS KNOWLEDGE  Knowledge 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) |

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| ELEMENT 6 – ENGINEERING PRACTICE KNOWLEDGE  Knowledge of engineering practice (technology) in the practice areas in the engineering discipline. |
| Performance Indicators  Tools 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) |

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| 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) |

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| ELEMENT 8 – RESEARCH BASED KNOWLEDGE  Engagement 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) |