# **CENG – AHEP SYNOPSIS FORMS**

### The purpose of the Technical Report is to demonstrate that you have acquired the equivalent level of technical knowledge and understanding of scientific and engineering principles to the same level as those who fulfil the academic benchmark i.e. an integrated Master’s degree, as described in the [Accreditation of Higher Education Programmes](https://www.engc.org.uk/media/3464/ahep-fourth-edition.pdf) 4th edition (AHEP) document

The AHEP document forms part of the standard used by the UK engineering profession to assess the competence and commitment of individual engineers and technicians. It was developed collaboratively, in consultation with engineers representing the breadth of the profession: from industry, academia and many different disciplines and specialisms.

The criteria against which candidates are assessed against in their Technical Report application are categorised under five engineering-specific areas of learning, as outlined in AHEP. Please refer to the M1-M18 learning outcomes on pages 32-37 for further guidance.

1. Science and mathematics
2. Engineering analysis
3. Design and innovation
4. The engineer and society
5. Engineering practice

The AHEP Synopsis Forms must describe *clearly and concisely* how you propose to fulfil each of these learning outcomes within your full Technical Report. To assist you, the sub-categories for each of the general learning outcomes are summarised at the top of each form.

**The forms should not exceed 1500 words in total.**

You and your sponsor should ensure that your Synopsis Forms are grammatically correct and free of spelling mistakes.

**Application Process**

Your Stage 1 Technical Report application should consist of the following documentation:

* A completed Stage 1 Technical Report Application Form
* A copy of the initial assessment e-mail from CIHT
* Your AHEP Synopsis Forms (1500 words max)
* A copy of your CV. This should cover your relevant academic qualifications as well as your work experience to date.
* CPD record (a minimum of 25 hours per year for **each** of the two years prior to the date of your application)

Your Stage 1 Technical Report submission can be submitted at any time throughout the year and should be sent to education@ciht.org.uk for an administrative check, **as one continuous PDF file**. Once an administrative check has been completed, you will be provided with further details on how to pay the Stage 1 Assessment fee.

**CIHT: AHEP SYNOPSIS FORM 1 (CEng)**

Number of words used for AHEP Synopsis Form 1: **…….**

**SCIENCE AND MATHEMATICS**

The study of engineering requires a substantial grounding in engineering principles, science and mathematics commensurate with the level of study.

* **M1 – Science, mathematics and engineering principles:** Apply a comprehensive knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Much of the knowledge will be at the forefront of the particular subject of study and informed by a critical awareness of new developments and the wider context of engineering.

**Please outline the evidence that you propose to use in your Technical Report to demonstrate how you fulfil this learning outcome.**

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**CIHT: AHEP SYNOPSIS FORM 2 (CEng)**

Number of words used for AHEP Synopsis Form 2: **…….**

**ENGINEERING ANALYSIS**

Engineering analysis involves the application of engineering concepts and tools to analyse, model and solve problems. At higher levels of study engineers will work with information that may be uncertain or incomplete

* **M2 – Problem Analysis:** Formulate and analyse complex problems to reach substantiated conclusions. This will involve evaluating available data using first principles of mathematics, statistics, natural science and engineering principles, and using engineering judgment to work with information that may be uncertain or incomplete, discussing the limitations of the techniques employed.
* **M3 – Analytical tools and techniques:** Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed.
* **M4 – Technical Literature:** Select and critically evaluate technical literature and other sources of information to solve complex problems.

**Please outline the evidence that you propose to use in your Technical Report to demonstrate how you fulfil this learning outcome.**

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**CIHT: AHEP SYNOPSIS FORM 3 (CEng)**

Number of words used for AHEP Synopsis Form 3: **…….**

**DESIGN AND INNOVATION**

Design is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges commensurate with the level of study.

* **M5 – Design:** Design solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.
* **M6 – Integrated/systems approach** – Apply an integrated or systems approach to the solution of complex problems.

**Please outline the evidence that you propose to use in your Technical Report to demonstrate how you fulfil this learning outcome.**

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**CIHT: AHEP SYNOPSIS FORM 4 (CEng)**

Number of words used for AHEP Synopsis Form 4: **…….**

**THE ENGINEER AND SOCIETY**

Engineering activity can have a significant societal impact and engineers must operate in a responsible and ethical manner, recognise the importance of diversity, and help ensure that the benefits of innovation and progress are shared equitably and do not compromise the natural environment or deplete natural resources to the detriment of future generations.

* **M7 – Sustainability:** Evaluate the environmental and societal impact of solutions to complex problems (to include the entire lifecycle of a product or process) and minimise adverse impacts.
* **M8 – Ethics:** Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct.
* **M9 – Risk:** Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity.
* **M10 – Security:** Adopt a holistic and proportionate approach to the mitigation of security risks.
* **M11 – Equality, diversity and inclusion:** Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.

**Please outline the evidence that you propose to use in your Technical Report to demonstrate how you fulfil this learning outcome.**

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**CIHT: AHEP SYNOPSIS FORM 5 (CEng)**

Number of words used for AHEP Synopsis Form 5: **…….**

**ENGINEERING PRACTICE**

The practical application of engineering concepts and tools, engineering and project management, teamwork and communication skills. Engineers also require a sound grasp of the commercial context of their work, specifically the ways an organisation creates, delivers and captures value in economic, social, cultural or other contexts.

* **M12 – Practical and workshop skills:** Use practical laboratory and workshop skills to investigate complex problems.
* **M13 –** **Materials, equipment, technologies and processes:** Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations.
* **M14 – Quality management:** Discuss the role of quality management systems and continuous improvement in the context of complex problems.
* **M15 – Engineering and project management:** Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights.
* **M16 – Teamwork:** Function effectively as an individual, and as a member or leader of a team. Evaluate effectiveness of own and team performance.
* **M17 – Communication:** Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used.
* **M18 – Lifelong learning:** Plan and record self-learning and development as the foundation for lifelong learning/CPD.

**Please outline the evidence that you propose to use in your Technical Report to demonstrate how you fulfil this learning outcome.**

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