Chartered Engineer
Start your journey...

Chartered Engineers are characterised by their ability to develop appropriate solutions to engineering problems, using new or existing technologies, through innovation, creativity and change. Many physicists move into engineering at some point in their career, and so the Institute of Physics is happy to offer CEng to suitably qualified and experienced members.

To be eligible for CEng you will need to be a full member of the Institute of Physics (MInstP or FInstP) – you can submit your Membership and Chartership applications at the same time if necessary. Member guidelines can be found at www.iop.org/membership.

Requirements
The basic requirements are that you have a degree in physics or a related subject and have sufficient work experience to enable you to provide evidence of having acquired the CEng competences AND of sustained work at a responsible level. Please read these guidelines before applying. Further advice is available from our website, or you can contact the Professional Development team by e-mail: cpd@iop.org or call +44(0)20 7470 4800.

Chartered Engineer – CEng

1. Read the guidance notes
2. Do you meet the requirements?
3. Choose two supporters
4. Write your professional review report
5. Update your CV
6. Complete the application form
7. Application and interviewer’s recommendations considered by panel of peers
8. You receive notification of the decision
9. Decision verified by Engineering Council (UK)
10. If successful, you will now be invoiced for the initial registration fee

In this pack...
This pack contains everything you need to make your application for CEng.

Guidance notes:
1. How to apply? – and subscription fee information
2. Educational requirements
3. Professional experience
4. Choosing your supporters
5. How can I tell if my degree is accredited?
6. The Professional Review report
7. Attending your interview
8. How are applications assessed?
9. How long will my application take to process?
10. Application checklist

Key sections:
- CEng technical report
- CEng Professional Review Report
- Guidance on Responsible Experience
- Application Form
1. How to apply and fee information

All candidates must submit:

- an application form, including supporter details;
- a current CV;
- degree certificates
- organisational chart;
- professional review report (see relevant key section of these guidelines);

Some candidates will also need:

- technical report;
- covering letter explaining your choice of supporters.

Unfortunately, we will have to return incomplete or overlong applications to you.

The IOP has now moved over to online applications. Paper applications are only accepted under exceptional circumstance and do take longer to process.Paper applications can be sent to; cpd@iop.org or you can send a printed copy to:

Chartership Officer
The Institute of Physics
76 Portland Place
London W1B 1NT

If you have any questions, please telephone +44 (0)20 7470 4800 or e-mail cpd@iop.org.

Subscriptions

Current subscription fees are available on our website at https://www.iop.org/membership/rates/page_56634.html

<table>
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<tr>
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(£47.80 in first year of registration).

CEng fees are passed in full to the Engineering Council.

2. Educational requirements

All candidates are required to demonstrate that they have the breadth and depth of engineering knowledge that is required for a Chartered Engineer (CEng). There are two ways to do this:

Standard route

You provide evidence that you hold an ECUK accredited MEng in engineering. You provide evidence that you hold and ECUK accredited MEng or equivalent degree. To establish whether your Masters is accredited by ECUK please visit their website.

Non-standard route (Technical Report Option)

You demonstrate that you have knowledge equivalent to an accredited engineering degree through completion of the CEng technical report – the template can be found later in this application pack.

It is unusual for the Institute to receive applications from people with engineering degrees and as a result, we are very used to guiding people with physics degrees towards Chartered Engineer (CEng).

Whichever route you follow you will be asked to attend for interview to discuss your knowledge in greater depth.

2.1 Technical Report Option

How do I show MEng equivalence?

All candidates without an accredited MEng degree, even those very senior in the engineering community, need to demonstrate equivalent underpinning engineering knowledge. Assessment of MEng equivalence is done on an individual case basis, and although it may at first sight appear daunting, it has already been shown that large numbers of physicists working as engineers are able to demonstrate MEng equivalence with little difficulty.

To demonstrate MEng equivalence, applicants with degrees in physics need to show that they have compensated for any deficiencies in their study of engineering (at BEng degree level, for example) that they may not have had the opportunity to experience in their study for a physics degree. They also need to show that they have made up for the “enhanced and extended” education in engineering, equivalent to that which would have been embodied in the final year of an accredited MEng degree. Unfortunately, a PhD or MSc in physics or engineering does not automatically fulfil this requirement.

There are several ways in which this can be achieved. The route we recommend is known as the “Technical Report Option”. The Institute piloted this route for the Engineering Council and we are able to guide our members towards Chartered Engineer in this way.

These are the main features often identified to be missing from a physics degree that need to be accounted for in the technical report:

- Vocational aspects of an engineering degree. For most of our members this will be gained naturally during the responsible experience period.
- In-depth study in a field of engineering (corresponding to the enhanced and extended part of the MEng). For most members this is likely to occur naturally as part of the employment.

The technical report must cover engineering projects. We expect you to be able to base your report on reports or publications written as part of your employment. It has to cover work of a professional standard worthy of a Chartered Engineer. We understand that there are often issues to do with commercial awareness and so on, so we understand reports may need to be censored to remove areas of particular sensitivity.

It is very important that you emphasise the engineering applications and the design elements of your work. The report needs to substantiate your ability to undertake individual project work (although this may be part of a larger project) and to undertake group projects. Unfortunately we will have to return reports in excess of this length to you for editing, which will delay your application.

To help you we have designed a technical report template (CEng technical report), which can be found towards the end of these guidelines.

Where you are writing this report afresh, from the beginning, you will obviously be able to emphasise strongly your own role in projects. If you are using previously written reports and papers to make up the body of your technical review report you will probably need to write additional “bridging” sections that emphasise your own role, especially in a group project. The Institute is happy to accept reports that consist of both previously published work and new passages mixed together.

We appreciate that the report may contain some confidential information. This confidentiality will be honoured and the technical report will not be photocopied or distributed externally. The technical report is discussed prior to the professional review interview and will therefore be seen by the two interviewers, the assessing panel and appropriate staff members only.
3. Professional experience

3.1 How many years’ work experience do I need?
There is no minimum amount of work experience but generally members of this Institute need four or five years’ post-education experience before they are ready to apply for CEng. This is because candidates need to demonstrate all the CEng competences and have an additional sustained period of work at a responsible level. Candidates may not gain all the necessary skills within this minimum time so do not feel disappointed if it takes you a year or two longer.

See the document “Guidance on responsible work experience” in the Professional Review Report. to assess whether you believe you meet the required criteria for CEng.

3.2 Professional competence
All candidates are required to demonstrate the professional competences and responsible professional experience required of a Chartered Engineer.

The Engineering Council has produced a list of 17 competence and commitment statements for CEng, which are given in the next section. These have to be met during employment, ideally through participation in a company training scheme accredited by this Institute or another engineering institution. However, it is recognised that many physics graduates become engineers gradually over a number of years without undertaking formal training or participating in a professional development scheme so do not worry if this does not apply to you.

We expect you to interpret these statements in the context of your job. While everyone has to satisfy each of the major headings A–E, we realise that within each heading you are likely to be stronger in some areas than others.

We ask that you demonstrate competence in a range of engineering work that has required exercise of your independent technical judgement, and some direct responsibility for resources, taking account of financial, commercial, safety, statutory and national considerations. Your experience needs to range across several aspects of design, construction, manufacture, operation or maintenance of products, systems or services. No potential Chartered Engineer is expected to cover this entire range, although the interviewers will expect to see a balance in your application.

3.3 Competences for Chartered Engineer (CEng)

A. Use a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology.

A1 Maintain and extend a sound theoretical approach in enabling the introduction and exploitation of new and advancing technology.

This could include an ability to:
- identify the limits of your own personal knowledge and skills;
- strive to extend your own technological capability;
- broaden and deepen your own knowledge base through research and experimentation.

A2 Engage in the creative and innovative development of engineering technology and continuous improvement systems.

This could include an ability to:
- assess market needs and contribute to marketing strategies;
- identify constraints and exploit opportunities for the development and transfer of technology within your chosen field;
- promote new applications when appropriate;
- define quality standards, programme and budget within legal and environmental impact.

B. Apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.

B1 Identify potential projects and opportunities.

This could include an ability to:
- establish and help develop solutions to meet users’ requirements;
- consider and implement new and emerging technologies;
- enhance engineering practices, products, processes, systems and services;
- use own knowledge of the employer’s position to assess the viability of opportunities.

B2 Conduct appropriate research, and undertake design and development of engineering solutions.

This could include an ability to:
- identify and agree appropriate research methodologies;
- allocate and manage resources;
- develop the necessary tests;
- collect, analyse and evaluate the relevant data;
- undertake engineering design;
- prepare, present and agree design recommendations, with appropriate analysis of risk, and taking account of cost, quality, safety, reliability, appearance, fitness for purpose, security, intellectual property (IP) constraints and opportunities, and environmental impact.

B3 Manage implementation of design solutions and evaluate their effectiveness.

This could include an ability to:
- ensure that the application of the design results in the appropriate practical outcome;
- implement design solutions, taking account of critical constraints, including due concern for safety and sustainability;
- determine the criteria for evaluating the design solutions;
- evaluate the outcome against the original specification;
- actively learn from feedback on results to improve future design solutions and build best practice.

C. Provide technical and commercial leadership.

C1 Plan for effective project implementation.

This could include an ability to:
- systematically review the factors affecting the project implementation including safety and sustainability considerations;
- define a holistic and systematic approach to risk identification, assessment and management;
- lead on preparing and agreeing implementation plans and method statements;
- ensure that the necessary resources are secured and brief the project team;
- negotiate the necessary contractual arrangements with other stakeholders (client, subcontractors, suppliers, etc).

C2 Plan, budget, organise, direct and control tasks, people and resources.

This could include an ability to:
- set up appropriate management systems;
- define quality standards, programme and budget within legal and environmental impact.
This could include an ability to:
- Comply with the relevant codes of conduct.
- Ensure that variations from quality standards, programme and budgets are identified, and that corrective action is taken.
- Gather and evaluate feedback, and recommend improvements.

**C3 Lead teams and develop staff to meet changing technical and managerial needs.**

This could include an ability to:
- Agree objectives and work plans with teams and individuals;
- Identify team and individual needs, and plan for their development;
- Reinforce team commitment to professional standards;
- Lead and support team and individual development;
- Assess team and individual performance, and provide feedback.

**C4 Bring about continuous improvement through quality management.**

This could include an ability to:
- Promote quality throughout the organisation and its customer and supplier networks;
- Develop and maintain operations to meet quality standards;
- Direct project evaluation and propose recommendations for improvement.

**D. Demonstrate effective interpersonal skills.**

**D1 Communicate in English with others at all levels.**

This could include an ability to:
- Lead, chair, contribute to and record meetings and discussions
- Prepare communications, documents and reports on complex matters
- Exchange information and provide advice to technical and non-technical colleagues.

**D2 Present and discuss proposals.**

This could include an ability to:
- Prepare and deliver presentations on strategic matters
- Lead and sustain debates with audiences
- Feed the results back to improve the proposals
- Raise the awareness of risk.

**D3 Demonstrate personal and social skills.**

This could include an ability to:
- Know and manage own emotions, strengths and weaknesses
- Be aware of the needs and concerns of others, especially where related to diversity and equality
- Be confident and flexible in dealing with new and changing interpersonal situations
- Identify, agree and lead work towards collective goals
- Create, maintain and enhance productive working relationships, and resolve conflicts.

**E. Demonstrate personal commitment to professional standards, recognising obligations to society, the profession and the environment.**

**E1 Comply with the relevant codes of conduct.**

This could include an ability to:
- Comply with the Institute of Physics’ code of conduct. The code of conduct can be found on our website at www.iop.org/about/royal_charter/page_38389.html – please read it before completing your application;
- Lead work within all relevant legislation and regulatory frameworks, including social and employment legislation.

**E2 Manage and apply safe systems of work.**

This could include an ability to:
- Identify and take responsibility for own obligations for health, safety and welfare issues
- Ensure that systems satisfy health, safety and welfare requirements
- Develop and implement appropriate hazard identification and risk management systems and culture
- Manage, evaluate and improve these systems
- Apply a sound knowledge of health and safety legislation.

**E3 Undertake engineering activities in a way that contributes to sustainable development.**

This could include an ability to:
- Operate and act responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously
- Use imagination, creativity and innovation to provide products and services which maintain and enhance the quality of the environment and community, and meet financial objectives
- Understand and secure stakeholder involvement in sustainable development
- Use resources efficiently and effectively.

**E4 Carry out and record CPD necessary to maintain and enhance competence in own area of practice including:**

This could include an ability to:
- Undertake reviews of own development needs
- Plan how to meet personal and organisational objectives
- Carry out planned (and unplanned) CPD activities
- Maintain evidence of competence development
- Evaluate CPD outcomes against any plans made
- Assist others with their own CPD.

**E5 Exercise responsibilities in an ethical manner.**

The Engineering Council provides examples of the type of experience that might help candidates acquire these competences on their website. Applicants should read the current UK-SPEC Edition 3 at http://www.engc.org.uk/standards-guidance/standards/uk-spec/ before completing their application.

4. **Choosing your supporters**

Applications for CEng need two supporters who can verify the information in the application and comment on your suitability for CEng.

Please consider the following when choosing your supporters:
- Both supporters should be Chartered Engineers, although they do not have to hold their registration with the Institute of Physics;
- Between them, your supporters must know the entirety of your initial professional development and responsible experience;
- Normally one supporter should be outside your work place. The panel request this to ensure independence of opinion. There are circumstances where this might not be possible. In these cases a sponsor from within your company, but outside your department, is acceptable;
- Both supporters should know you for at least one year;
- Remember that you must not be related to either of your supporters.

We know that it may be difficult for some applicants to find supporters...
who fulfil all of the criteria, and know their work well. In these cases, occasionally the panel will accept applications from people who have only one Chartered Engineer supporting them, or where a third supporter is provided. In these cases, non Chartered Engineer supporters should be of similar professional standing and be entirely familiar with your work (e.g. your line manager). You will need to include a covering letter explaining your choice.

Further guidance on choosing your supporters can be found online at www.iop.org/membership/chartered/index.html.

5. How can I tell if my degree is accredited?
The exemplifying qualification for CEng is an accredited MEng degree. The database of accredited engineering degrees can be found on the Engineering Council’s website at www.engc.org.uk. Anyone (this includes most IOP candidates) not holding an accredited MEng needs to demonstrate equivalent underpinning knowledge and understanding of engineering principles. This is done via the submission of a technical report about which you will be interviewed.

If you have a degree from outside the UK or Ireland you can ask the Institute to compare it to UK degrees using an international database, found at www.narc.org.uk. The Institute subscribes to this well respected database and uses it to judge the level of your qualification. If you have no degree but substantial work experience you may still apply – please contact us via cpd@iop.org for more information.

6. The professional review report
Some institutes ask you to present a portfolio of evidence when you apply for chartered status. We think that while you should definitely have a portfolio and should regularly record the skills you have learnt (rather than just the courses you might have been on), we do not need to see the whole thing.

We ask every applicant to send us a professional review report. This report, explained in the next section, summarises and links your experiences to the competences for CEng. It also highlights how you have gained experience at a responsible level and provides us with a very accurate snapshot of your career at the time of application.

We do need to check the information provided, but rather than ask you for lots of counter-signatures we just ask you to choose two supporters who can verify the information you have given us.

6.1 Your professional review report
All candidates have to complete one of these no matter how much experience they have. The report should be structured as follows:

- introduction – outlining your current role and its engineering content;
- initial professional development (IPD) – specifying the experience you have gained in the competence areas and how this experience relates to engineering (if this is not obvious);
- responsible experience – giving at least three examples of how you are using and applying your knowledge and skills to work as an engineer at a professional level. These examples should post-date the experiences used to demonstrate IPD and be spread over at least a two-year period to show that you have been working at a responsible level for a sustained period of time;
- continuing professional development (CPD) – outlining future career development and plans that will ensure you maintain your competence as an engineer/physicist working in engineering.

To help you write this report we have provided a template that is included later in this application pack. You do not have to use the template, but not using it might mean your application takes longer to assess. The recommended limit is 3000 words.

Applicants who have successfully completed a training scheme accredited for CEng do not need to include an IPD section in their report. You should provide the details of your scheme leader in the fields provided. Your scheme leader will be contacted by the Institute to verify your successful completion of the programme. Applicants should ensure that they demonstrate how their responsible experience has developed from the competencies gained during their training scheme.

7. Interviews
Whichever route you follow will be asked to attend an interview to discuss your knowledge in greater depth.

If you need to submit evidence of MEng equivalence you will have a technical report interview followed by a professional review interview. You will only proceed to the professional review interview if the interviewers are satisfied that you have demonstrated MEng equivalence. Both interviews take around 45 minutes to complete with a break in between. If you do not need to demonstrate MEng equivalence you will only have a professional review interview.

Interviews are arranged regularly throughout the year; the exact frequency depends on demand and the availability of interviewers. They are most often held in London, but, where practical, they also take place throughout the UK and Ireland and can be conducted over video calling for overseas applicants.

8. How are applications assessed?
Each application is peer reviewed by a panel of seven members who are also Chartered Engineers as well as your two interviewers. The panel assess the information in the application, the comments of the interviewers and the comments of the supporters. These are then compared with the requirements for Chartered Engineer. The panel will choose to accept, reject or defer the application.

Occasionally applications are deferred to allow the candidate an opportunity to supply additional information. Other deferrals are generally due to insufficient responsible experience. Where an application is deferred or rejected the applicant will always receive a letter explaining the reason for this.

9. How long will my application take to be processed?
The average process time for an application is approximately four months. The time an application will take to be processed will vary depending on a number of different factors. This will include:

- whether we have to contact you for missing information or documentation;
- how long your supporters take to get back to us;
- how long the panel takes to deliberate over your application.
The following document has been written to help candidates applying for chartered status to know what is expected of them. The examples listed below are by no means exhaustive and the Institute has a flexible attitude towards different approaches to responsibility. **No candidate is expected to show evidence of all of these criteria.**

If you have any questions not answered by the advice here then please contact the professional development team at cpd@iop.org.

**Summary**

Your knowledge and experience must reflect a broad view of your employer and work environment. The main facets you will need to show evidence of are:

- CPD aimed at developing a deep specialism and/or broad knowledge across a physics-related area;
- ability to carry out complex tasks in a fully flexible and adaptable manner;
- beginning to gain greater skills in dealing with customers/colleagues/students;
- identifying new opportunities for both your own development and that of the organisation;
- working to support the aims of your organisation and to promote it within your sector;
- starting to demonstrate leadership qualities and to take on team-leader responsibilities;
- aspects of people development;
- management of risk.

The following are ways in which the above criteria can be shown. **As before, this list is not exhaustive and no candidate is expected to be able to provide evidence in all these areas.** All candidates are expected to exhibit skills from the “common” examples.

**General**

- leads or manages a small study, research or project team;
- works independently;
- identifies new opportunities and is consulted on technical, research or business plans;
- can make appropriate use of financial/budgetary information;
- responds to the needs of customers/colleagues/students;
- proactive in making changes, allowing for needs for quality standards and continuous improvement;
- encourages flexibility from others;
- proactive in encouraging others to seek out, record and share new knowledge;
- manages and applies safe systems of work;
- familiarity with intellectual property (IP) issues.

**Functional**

- applies knowledge in a broad range of contexts within accepted practice and procedure;
- offers professional advice in complex situations, maintaining professional integrity;
- applies project management principles, identifying milestones and juggling resources;
- works using delegation without abdicating responsibility;
- makes reliable and consistent judgements, where there are few guidelines or precedents;
- carries out risk-assessment on projects;
- promotes team spirit and keeps others focused on tasks ahead.

**Technical**

- applies knowledge creatively in a broad range of complex and non-routine contexts, including design and development, though still within a framework of accepted practice and procedure;
- has a growing ability to bridge between technical areas;
- demonstrates technical integrity in approach and ability to meet technical scrutiny;
- oversees the technical aspects of projects, both programs and standards of work;
- shares technical information and ensures the passing on of lessons learned.

**Academic**

- lecturing at an undergraduate level in pure and applied physics;
- contributing to the design of post- or undergraduate courses;
- collaborating with industry and the wider physics community;
- lecturing to peers at academic events;
- publishing in peer-reviewed journals.