

# PROFESSIONAL DESIGNATIONS IN PHYSICS: CANADA AND AROUND THE WORLD

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Physics is an integral part of our day-to-day life. It is heavily embedded in our idea of systemic development, provides the foundations for many scientific disciplines, and enhances living standards and the quality of life through innovative research and technological advances. Achieving excellence and recognition together in the field of Physics is no less a daunting task as it does not solely depend on developing a good understanding of the subject: it also requires an exceptional ability to communicate and disseminate knowledge and understanding to the outside world, to the public and to the scientific community.

A professional designation at a glance may offer that key element of excellence and recognition to a certain extent. Other than establishing the bar of academic excellence, it may also signify a necessary core of competence and professional standards of an individual in the field. Due to these factors, professional designations in the dawn of the 21<sup>st</sup> century have acquired a reasonably high importance, not only from a “recognition” point of view but also from an employment perspective. While these are normally earned from a university or a professional society specializing in a specific field, there are various types of certifications that offer specific designations to be used after an individual’s name.

It is a matter of considerable interest that the number of professionals in today’s economies acquiring such designations is steadily rising. Although this growth may be largely attributed to factors that arise due to changing employment situations and a thirst for recognition and achievement, there are nonetheless several tangible benefits associated with it. Since these certifications are

portable, they are not employment-specific as they are not associated with a certain job. Popular certifications in Physics have either been created or affiliated with professional organizations with an interest to recognize individuals in their area of expertise. Accordingly, these designations are renewed periodically depending upon their validity, and applicants are expected to show evidence of continued learning as a part of the renewal process. For obvious reasons, this article will remain focused on professional designations in Physics; however, it will provide a limited account of other popular designations for information and comparative analysis.

## PROFESSIONAL DESIGNATIONS IN PHYSICS IN NORTH AMERICA, EUROPE AND OTHER PARTS OF THE WORLD

One of the popular designations in Physics in North America, called “Professional Physicist,” (P.Phys.) is offered by the Canadian Association of Physicists (CAP). Similarly, other well known designations, such as “Chartered Physicist” (CPhys) and “Fellow, Institute of Physics,” (FInstP) offered by the Institute of Physics (IoP) are popular around Europe and other countries.

### Professional Certifications and the Standard of Chartered Status

A professional certification signifies a commitment to the profession that helps employers to choose the best. This is a part of an ongoing process, as one needs to maintain a professional certification through professional learning activities on a continual basis. This also confirms to employers that an individual is committed and competent, and this enhances the individual’s employability and likelihood for promotion. Similarly, chartered status is the aspiration of members engaged at the leading edge of all fields of physics and its applications.

Achieving chartered status is considered prestigious, as it denotes a high level of expertise and specialized knowledge in the area, along with professional competence. The requirements for attaining and maintaining chartered status have significantly advanced since the inception of this title and have always been a part of a continuous review process. From an employer’s perspective, chartered professionals are efficient and valuable for employment for good business reasons. They can provide expert

### SUMMARY

**Professional designations around the world have attained widespread recognition and credibility in identifying a standard level of skills, experience and expertise of individuals. This article reviews how these increasingly popular titles have created a positive impact in the workplace by promoting merit and excellence.**

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advice and professional judgment, based on their excellent skills. Thus, the holders of chartered status and professional designation titles are considered not only to be cost-effective and outcome-oriented, they are also well-qualified to take a holistic approach in providing reasonable solutions.

#### **Designation Offered by the CAP**

The Canadian Association of Physicists (CAP) offers the professional designation P.Phys. to its members who meet certain academic and professional standards. Historically, this program was approved in 1997 and later launched in 1999 at the CAP Congress held at the University of New Brunswick, with the first designation being awarded to Nobel Laureate Bertram Brockhouse during the Congress. Since then, considerable efforts have been made to ensure the quality and applicability by including a Professional Practice Examination and a specific code of ethics for the members of the P.Phys. community. The “Professional Physicist” designation certifies that an individual is qualified, experienced, and therefore capable of making appropriate decisions in her/his area of expertise. From the employment perspective, the designation not only helps in identifying the professional standard of an individual, it also confirms to employers and the public a high level of competence and credibility in the field. P.Phys. holders in general are expected to contribute to the development of Physics and strive to enhance knowledge in Physics. P.Phys. holders agree to uphold the CAP’s code of professional ethics and conduct and must recertify their P.Phys. title every five years by submitting documentation demonstrating that they are making efforts to stay current (professional development) and active in their field. P.Phys. designation indicates that holders of this title are well-qualified and that they possess effective communications skills and outside-the-box thinking that distinguish them from the crowd. In addition, the P.Phys. certification is not limited to pure academics, but extends its horizons to physics careers in government, industry, and other areas where training in Physics is used on a regular basis.

#### **Designations Offered by IoP**

Another widely recognized professional designation, Chartered Physicist (CPhys), is exclusive to the Institute of Physics (IoP), in the UK. CPhys is a chartered status and a professional qualification that indicates the highest standards of professionalism, up-to-date expertise, quality and safety, and a capacity to exercise leadership and undertake independent practice. According to the IoP, the title carries with it a commitment to keep pace with advancing knowledge and with the increasing expectations that society has of professionals. Chartered Physicists agree to abide by a code of conduct that requires members to show not only a high level of professionalism, but also to continually advance their competence through continuing professional development (CPD). For this reason, Chartered Physicists are expected to revalidate their CPhys title by submitting an up-to-date CV and CPD record every three years. In addition, the IoP confers Fellowships to those who have made an outstanding contribution to their profession.

Holders of this designation are popularly known as Fellows of the Institute of Physics (FInstP). Fellowship indicates a very high level of achievement in physics and an outstanding contribution to the profession. Fellows are entitled to use the designatory letters “FInstP” after their name.

Thus, the Institute’s professional designations CPhys and FInstP come as a feather in one’s cap. The titles CPhys and FInstP remain not only popular and highly recognized in academia, but are also well-known in industry and research organisations as important recognitions and honors.

#### **DISSEMINATION AND SCIENTIFIC OUTREACH**

Dissemination and outreach activities are essential components of a professional organization in order to promote and popularize its professional designation. It is a well-known fact that both the IoP and the CAP are highly active in disseminating knowledge and scientific outreach, thereby helping to enhance physics research and education. For example, there are a number of resources available to IoP and CAP members on a regular basis. There is a regular array of activities organized by the CAP and IoP through their groups/divisions and, in the case of IoP, branches that include a series of interesting events in relation to Physics developments. These may include, but are not limited to, scientific meetings, education & career events, policy discussion meets, public and outreach activities, business briefings and invitation-only events for businesses, etc. As briefly mentioned earlier, both the IoP and the CAP are highly involved in policy discussions and activities that may include briefings to explain physics-related issues to key stakeholders and responses to government consultations. They also undertake a variety of other activities and outreach programmes to the public. One interesting aspect confirms the concept that IoP resources are not limited to higher-education academia, and a suitable access along with easy communicative link is available for physicists in Primary Schools too. IoP ensures that there are number of activities in the area for engaging physicists at the school level that include Curriculum Development Initiatives, Affiliated Schools Scheme, and Professional Development Courses etc. Similarly, the CAP also organizes various outreach activities that help spread physics news and its applications throughout academia and schools on a regular basis.

#### **CERTIFICATIONS IN ALLIED AREAS OF PHYSICS**

At this time, professional certifications in allied areas of physics appear to be limited to Medical Physics designations, although other physics sub-disciplines, like meteorologists and oceanographic scientists, are exploring the possibility of introducing a professional designation in their subfield. Within the medical physics community, the professional designations are widely administered by certification bodies, rather than through the professional association. In these cases, there is

usually a symbiotic relationship between the two independent organizations. In the US, the American Board of Radiology (ABR) approves professional certification in Medical Physics. In Canada, the Canadian College of Physicists in Medicine (CCPM) offers certification of competence in clinical medical physics. European Commission Directives govern Medical Physics Experts in Europe and the European Federation of Organizations for Medical Physics (EFOMP) certifies the knowledge skills and competences of individuals. In the UK, the process of accreditation and certification is through the Scientist Training Programme (STP) that leads to accreditation with the Institute of Physics and Engineering in Medicine (IPEM). In order to advance services and professional standards in medical physics, the Australian College of Physical Scientists & Engineers in Medicine (ACPSEM) is the professional body that oversees the education and accreditation of medical physicists in Australia and New Zealand.

### OTHER POPULAR PROFESSIONAL DESIGNATIONS

There is considerable growth in professional and chartered designation titles in all possible areas of Physical Sciences, Arts, Finance and Medicine.

The popular professional designations PE and P.Eng. denote the status of a professional engineer in US and Canada respectively. These are highly regarded and regulated. The Canadian Engineering Accreditation Board (CEAB) accredits all Canadian undergraduate engineering programs whereas parallel functions are performed by the Accreditation Board of Engineering and Technology (ABET) in the United States. The Statistical Society of Canada offers two levels of accreditation: the entry-level Associate Statistician (AStat), and the Professional Statistician (PStat) which requires six years of professional experience. In the US, the American Institute of Chemists (AIC) offers Certified Professional Chemist (CPC) and Certified Chemical Engineer (CChE) designations to recognize chemists and chemical engineers who have a certain level of education and experience. In Canada the Professional Chemist designation (PChem) is administered by the Association of the Chemical Profession for each province that has established specific procedures and requirements for license or registration within that province.

Chartered status, in particular, is a common and well-known credential for professions in the UK and Europe where specific skills and professionalism is required. For example, the title Chartered Biologist is a British professional qualification in biology where members use the designation CBiol after their names. Similarly, Chartered Chemist (CChem) is a chartered status awarded by the Royal Society of Chemistry (RSC) in the UK, the Royal Australian Chemical Institute (RACI) in Australia and the Institute of Chemistry Ceylon (ICChemC) in Sri Lanka. Furthermore, Chartered Scientist (CSci) and Chartered Engineer (CEng) are professional designations offered by the Science Council in the UK and by the

Engineering Council UK (ECUK) respectively. Chartered Statistician (CStat) is a professional qualification in statistics offered by the Royal Statistical Society in the UK with post-nominal letters CStat. Last but not the least, Chartered Mathematician is a professional qualification that comes with the title CMath offered by the Institute of Mathematics, UK.

### CONCLUSION

In general, professional designations are common and well-known credentials which are an effective means to convey professional competence in a bird's eye view. Thus, it may be reasonable to address certain aspects of professional designations in terms of their current role, requirements, and practices.

With respect to the Canadian P.Phys. designation in particular, as the CAP is growing, so is the acceptance of P.Phys. amongst professionals in Canada and the US. Most of the universities and academic institutions in North America do recognize the credibility and competence of this designation. There is a need to create a stronger credible impact of P.Phys. in professional and scientific circles in order for it to be widely recognized and valued, especially amongst industries and applied technical institutions. In addition, at this time the popularity of P.Phys. in other parts of the world remains limited. This is expected to change as more Canadian physics graduates obtain this designation and work outside of Canada.

Another dominant factor affecting a more rapid recognition of the P.Phys. and CPhys designations is that, unlike professional engineering designations which are a regulated requirement to practice engineering, professional physics designations are not needed to practice physics. Gaining widespread recognition of the value and significance of these physics designations is a very important aspect related to enhancing the impact of the designation on employment opportunities within the physics profession. While it is hard to disseminate and depict a futuristic view of a similar regulated fate for professional designations in physics, physics as a discipline is growing, and in anticipation, the sky is the limit. The time is not too far away when professional physics designations like P.Phys. and CPhys will be a standard part of professional practice.

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**FURTHER READING**

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The Institute of Physics (IoP) webpage: <http://www.iop.org/>  
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