

1 **History of Education and History of the PhD, education research of James E Curtis Jr, Wikipedia.org**

2 **Doctor of Philosophy**

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4 "PhD" redirects here. For other uses, see PHD.

5 A Doctor of Philosophy (PhD, Ph.D., or DPhil; Latin Philosophiae Doctor) is the highest academic degree awarded by
6 universities in most countries. Ph.D.s are awarded for programs across the whole breadth of academic fields. The
7 completion of a Ph.D. is often a requirement for employment as a university professor, researcher, or scientist in many
8 fields. Individuals who have earned a Doctor of Philosophy degree may, in most jurisdictions, use the title of "Doctor"
9 (often abbreviated "Dr.") or, in non-English speaking countries, variants such as "Dr. phil." with their name, and may use
10 post-nominal letters such as "Ph.D.", "PhD" (depending on the awarding institute).[1]

11 The requirements to earn a Ph.D. degree vary considerably according to the country, institution, and time period, from
12 entry-level research degrees to higher doctorates. During the studies that lead to the degree, the student is called a
13 doctoral student or Ph.D. student; a student who has completed all of their coursework and comprehensive examinations
14 and is working on their thesis/dissertation is sometimes known as a doctoral candidate or Ph.D. candidate (see: all but
15 dissertation). A student attaining this level may be granted a Candidate of Philosophy degree at some institutions.

16 A Ph.D. candidate must submit a project, thesis or dissertation often consisting of a body of original academic research,
17 which is in principle worthy of publication in a peer-reviewed journal.[2] In many countries, a candidate must defend this
18 work before a panel of expert examiners appointed by the university. Universities sometimes award other types of
19 doctorate besides the Ph.D., such as the Doctor of Musical Arts (D.M.A.) for music performers and the Doctor of
20 Education (Ed.D.) for professional educators. In 2005 the European Universities Association defined the Salzburg
21 Principles, ten basic principles for third-cycle degrees (doctorates) within the Bologna Process.[3] These were followed in
22 2016 by the Florence Principles, seven basic principles for doctorates in the arts laid out by the European League of
23 Institutes of the Arts, which have been endorsed by the European Association of Conservatoires, the International
24 Association of Film and Television Schools, the International Association of Universities and Colleges of Art, Design and
25 Media, and the Society for Artistic Research.[4]

26 In the context of the Doctor of Philosophy and other similarly titled degrees, the term "philosophy" does not refer to the
27 field or academic discipline of philosophy, but is used in a broader sense in accordance with its original Greek meaning,
28 which is "love of wisdom". In most of Europe, all fields (history, philosophy, social sciences, mathematics, and natural
29 philosophy / natural sciences)[5] other than theology, law, and medicine (the so-called professional, vocational, or
30 technical curriculum) were traditionally known as philosophy, and in Germany and elsewhere in Europe the basic faculty of
31 liberal arts was known as the "faculty of philosophy".

32

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94 **Terminology**

95 The degree is abbreviated PhD (sometimes Ph.D. in North America), from the Latin Philosophiae Doctor, pronounced as
96 three separate letters.[6][7][8] The abbreviation DPhil, from the English 'Doctor of Philosophy',[9] is used by a small
97 number of British universities, including Oxford and formerly York and Sussex, as the abbreviation for degrees from those
98 institutions.[10]

99 **History**

100

101 ***Medieval and early modern Europe***

102 In the universities of Medieval Europe, study was organized in four faculties:

103 the basic faculty of arts, and the three higher faculties of

104 theology,

105 medicine, and

106 law (canon law and civil law).

107 All of these faculties awarded intermediate degrees (bachelor of arts, of theology, of laws, of medicine) and final degrees.

108 Initially, the titles of master and doctor were used interchangeably for the final degrees—the title Doctor was merely a

109 formality bestowed on a Teacher/Master of the art—but by the late Middle Ages the terms Master of Arts and Doctor of

110 Theology/Divinity, Doctor of Law, and Doctor of Medicine had become standard in most places (though in the German

111 and Italian universities the term Doctor was used for all faculties).

112 The doctorates in the higher faculties were quite different from the current Ph.D. degree in that they were awarded for

113 advanced scholarship, not original research. No dissertation or original work was required, only lengthy residency

114 requirements and examinations. Besides these degrees, there was the licentiate. Originally this was a license to teach,

115 awarded shortly before the award of the master or doctor degree by the diocese in which the university was located, but

116 later it evolved into an academic degree in its own right, in particular in the continental universities.

117 According to Keith Allan Noble (1994), the first doctoral degree was awarded in medieval Paris around 1150.[11] The

118 doctorate of philosophy developed in Germany as the terminal Teacher's credential in the 17th century (c. 1652).

119 There were no PhDs in Germany before the 1650s (when they gradually started replacing the MA as the highest

120 academic degree; arguably one of the earliest German PhD holders is Erhard Weigel (Dr. phil. hab., Leipzig,

121 1652).[citation needed]

122 In theory, the full course of studies might, for example, lead in succession to the degrees of Bachelor of Arts, Licentiate of

123 Arts, Master of Arts or Bachelor of Medicine, Licentiate of Medicine, Doctor of Medicine. But before the early modern era,

124 there were many exceptions to this. Most students left the university without becoming masters of arts, whereas regulars

125 (members of monastic orders) could skip the arts faculty entirely.[12][13][14]

126

127 ***Educational reforms in Germany***

128 This situation changed in the early 19th century through the educational reforms in Germany, most strongly embodied in
129 the model of the University of Berlin, founded and controlled by the Prussian government in 1810. The arts faculty,
130 which in Germany was labelled the faculty of philosophy, started demanding contributions to research,[15] attested by a
131 dissertation, for the award of their final degree, which was labelled Doctor of Philosophy (abbreviated as Ph.D.)—originally
132 this was just the German equivalent of the Master of Arts degree. Whereas in the Middle Ages the arts faculty had a set
133 curriculum, based upon the trivium and the quadrivium, by the 19th century it had come to house all the courses of study
134 in subjects now commonly referred to as sciences and humanities.[16] Professors across the humanities and sciences
135 focused on their advanced research.[17] Practically all the funding came from the central government, and it could be cut
136 off if the professor was politically unacceptable.[relevant? – discuss][18]

137 These reforms proved extremely successful, and fairly quickly the German universities started attracting foreign students,
138 notably from the United States. The American students would go to Germany to obtain a Ph.D. after having studied for a
139 bachelor's degrees at an American college. So influential was this practice that it was imported to the United States, where
140 in 1861 Yale University started granting the Ph.D. degree to younger students who, after having obtained the bachelor's
141 degree, had completed a prescribed course of graduate study and successfully defended a thesis or dissertation containing
142 original research in science or in the humanities.[19] In Germany, the name of the doctorate was adapted after the
143 philosophy faculty started being split up — e.g. Dr. rer. nat. for doctorates in the faculty of natural sciences — but in most
144 of the English-speaking world the name "Doctor of Philosophy" was retained for research doctorates in all disciplines.

145 The PhD degree and similar awards spread across Europe in the 19th and early 20th centuries. The degree was
146 introduced in France in 1808, replacing diplomas as the highest academic degree; into Russia in 1819, when the
147 Doktor Nauk degree, roughly equivalent to a PhD, gradually started replacing the specialist diploma, roughly equivalent to
148 the MA, as the highest academic degree; and in Italy in 1927, when PhDs gradually started replacing the Laurea as the
149 highest academic degree.[citation needed]

150

151 ***History in the United Kingdom***

152 Research degrees first appeared in the UK in the late 19th century in the shape of the Doctor of Science (DSc or ScD)
153 and other such "higher doctorates". The University of London introduced the DSc in 1860, but as an advanced study
154 course, following on directly from the BSc, rather than a research degree. The first higher doctorate in the modern sense
155 was Durham University's DSc, introduced in 1882.[20] This was soon followed by other universities, including the
156 University of Cambridge establishing its ScD in the same year and the University of London transforming its DSc into a
157 research degree in 1885. These were, however, very advanced degrees, rather than research-training degrees at the PhD
158 level—Harold Jeffreys said that getting a Cambridge ScD was "more or less equivalent to being proposed for the Royal
159 Society".[21]

160

161 Finally, in 1917 the current degree of Ph.D. was introduced, along the lines of the American and German model, and
162 quickly became popular with both British and foreign students.[22] The slightly older degrees of Doctor of Science and
163 Doctor of Literature/Letters still exist at British universities; together with the much older degrees of Doctor of Divinity
164 (DD), Doctor of Music (DMus), Doctor of Civil Law (DCL) and Doctor of Medicine (MD) they form the higher
165 doctorates, but apart from honorary degrees they are only infrequently awarded.

166 It should be noted that in the English (but not the Scottish) universities the Faculty of Arts had become dominant by the
167 early 19th century. Indeed, the higher faculties had largely atrophied, since medical training had shifted to teaching
168 hospitals,[23] the legal training for the common law system was provided by the Inns of Court (with some minor
169 exceptions, see Doctors' Commons), and few students undertook formal study in theology. This contrasted with the
170 situation in the continental European universities at the time, where the preparatory role of the Faculty of Philosophy or
171 Arts was to a great extent taken over by secondary education: in modern France, the Baccalauréat is the examination
172 taken at the end of secondary studies. The reforms at the Humboldt University transformed the Faculty of Philosophy or
173 Arts (and its more recent successors such as the Faculty of Sciences) from a lower faculty into one on a par with the
174 Faculties of Law and Medicine.

175 There were similar developments in many other continental European universities, and at least until reforms in the early
176 21st century many European countries (e.g. Belgium, Spain, and the Scandinavian countries) had in all faculties triple
177 degree structures of bachelor (or candidate) — licentiate — doctor as opposed to bachelor — master — doctor; the
178 meaning of the different degrees varied a lot from country to country however. To this day this is also still the case for the
179 pontifical degrees in theology and canon law: for instance, in Sacred theology the degrees are Bachelor of Sacred
180 Theology (STB), Licentiate of Sacred Theology (STL), and Doctor of Sacred Theology (STD), and in Canon law:
181 Bachelor of Canon Law (JCB), Licentiate of Canon Law (JCL), and Doctor of Canon Law (JCD).

182

183 ***History in the United States***

184 A Yale University PhD diploma from 1861.

185 Until the mid-19th century, advanced degrees were not a criterion for professorships at most colleges. That began to
186 change as the more ambitious scholars at major schools went to Germany for 1 to 3 years to obtain a Ph.D. in the
187 sciences or humanities.[24][25] Graduate schools slowly emerged in the United States. In 1861, Yale awarded the first
188 three earned Ph.D.s in North America to Eugene Schuyler, Arthur Williams Wright, and James Morris Whiton,[26]
189 although honorary Ph.D.s had been awarded in the U.S. for almost a decade, with Bucknell University awarding the first to
190 Ebenezer Newton Elliott in 1852.[27]

191

192 In the next two decades, NYU, the University of Pennsylvania, Harvard, and Princeton also began granting the degree.
193 Major shifts toward graduate education were foretold by the opening of Clark University in 1887, which only offered
194 graduate programs and the Johns Hopkins University which focused on its Ph.D. program. By the 1890s, Harvard,
195 Columbia, Michigan and Wisconsin were building major graduate programs, whose alumni were hired by new research
196 universities. By 1900, 300 Ph.D.s were awarded annually, most of them by six universities. It was no longer necessary
197 to study in Germany.[28][29] However, half of the institutions awarding earned Ph.D.s in 1899 were undergraduate
198 institutions that granted the degree for work done away from campus.[27] Degrees awarded by universities without
199 legitimate Ph.D. programs accounted for about a third of the 382 doctorates recorded by the U.S. Department of
200 Education in 1900, of which another 8–10% were honorary.[30]

201 At the start of the 20th century, U.S. universities were held in low regard internationally and many American students
202 were still traveling to Europe for Ph.D.s. The lack of centralised authority meant anyone could start a university and award
203 Ph.D.s. This led to the formation of the Association of American Universities by 14 leading research universities
204 (producing nearly 90% of the approximately 250 legitimate research doctorates awarded in 1900), with one of the
205 main goals being to "raise the opinion entertained abroad of our own Doctor's Degree".[30]

206 In Germany, the national government funded the universities and the research programs of the leading professors. It was
207 impossible for professors who were not approved by Berlin to train graduate students. In the United States, by contrast,
208 private universities and state universities alike were independent of the federal government. Independence was high, but
209 funding was low. The breakthrough came from private foundations, which began regularly supporting research in science
210 and history; large corporations sometimes supported engineering programs. The postdoctoral fellowship was established by
211 the Rockefeller Foundation in 1919. Meanwhile, the leading universities, in cooperation with the learned societies, set up
212 a network of scholarly journals. "Publish or perish" became the formula for faculty advancement in the research
213 universities. After World War II, state universities across the country expanded greatly in undergraduate enrollment, and
214 eagerly added research programs leading to masters or doctorate degrees. Their graduate faculties had to have a suitable
215 record of publication and research grants. Late in the 20th century, "publish or perish" became increasingly important in
216 colleges and smaller universities.[31]

217

218 **Requirements**

219 *A South African PhD graduate, photograph not shown*

220 Detailed requirements for the award of a Ph.D. degree vary throughout the world and even from school to school. It is
221 usually required for the student to hold an Honours degree or a Master's Degree with high academic standing, in order to
222 be considered for a Ph.D. program.[citation needed] In the US, Canada, India, and Denmark, for example, many
223 universities require coursework in addition to research for Ph.D. degrees. In other countries (such as the UK) there is
224 generally no such condition, though this varies by university and field.[32] Some individual universities or departments
225 specify additional requirements for students not already in possession of a bachelor's degree or equivalent or higher. In
226 order to submit a successful Ph.D. admission application, copies of academic transcripts, letters of recommendation, a
227 research proposal, and a personal statement are often required. Most universities also invite for a special interview before
228 admission.

229 A candidate must submit a project or thesis or dissertation often consisting of a body of original academic research, which
230 is in principle worthy of publication in a peer-reviewed context.[2] In many countries a candidate must defend this work
231 before a panel of expert examiners appointed by the university; in other countries, the dissertation is examined by a panel
232 of expert examiners who stipulate whether the dissertation is in principle passable and any issues that need to be
233 addressed before the dissertation can be passed.

234 Some universities in the non-English-speaking world have begun adopting similar standards to those of the anglophone
235 Ph.D. degree for their research doctorates (see the Bologna process).[33]

236 A Ph.D. student or candidate is conventionally required to study on campus under close supervision. With the popularity of
237 distance education and e-learning technologies, some universities now accept students enrolled into a distance education
238 part-time mode.

239 In a "sandwich Ph.D." program, Ph.D. candidates do not spend their entire study period at the same university. Instead,
240 the Ph.D. candidates spend the first and last periods of the program at their home universities, and in between conduct
241 research at another institution or field research.[34] Occasionally a "sandwich Ph.D." will be awarded by two
242 universities.[35]

243 **PhD confirmation**

244 A PhD confirmation is a preliminary presentation or lecture that a PhD candidate presents to faculty and possibly other
245 interested members.[where?] The lecture follows after a suitable topic has been identified, and can include such matters as
246 the aim of the research, methodology, first results, planned (or finished) publications, etc.

247 The confirmation lecture can be seen as a trial run for the final public defense, though faculty members at this stage can
248 still largely influence the direction of the research. At the end of the lecture, the PhD candidate can be seen as
249 "confirmed" – faculty members give their approval and trust that the study is well directed and will with high probability
250 result in the candidate being successful.

251 In the United States, this is generally called advancing to Candidacy, the confirmation event being called the Candidacy
252 Examination.
253

254 **Value and criticism**

255 Ph.D. students are often motivated to pursue the Ph.D. by scientific and humanistic curiosity, the desire to contribute to
256 the academic community, service to others, or personal development. A career in academia generally requires a Ph.D.,
257 though, in some countries, it is possible to reach relatively high positions without a doctorate. In North America,
258 professors are increasingly being required to have a Ph.D., because the percentage of faculty with a Ph.D. is used as a
259 university ratings measure.[36]

260

261 The motivation may also include increased salary, but in many cases, this is not the result. Research by Casey suggests
262 that, over all subjects, Ph.D.s provide an earnings premium of 26% over non-accredited graduates, but notes that
263 master's degrees provide a premium of 23% and a bachelor's 14%. While this is a small return to the individual (or
264 even an overall deficit when tuition and lost earnings during training are accounted for), he claims there are significant
265 benefits to society for the extra research training.[37] However, some research suggests that overqualified workers are
266 often less satisfied and less productive at their jobs.[38] These difficulties are increasingly being felt by graduates of
267 professional degrees, such as law school, looking to find employment. Ph.D. students often have to take on debt to
268 undertake their degree.[39][40]

269 A Ph.D. is also required in some positions outside academia, such as research jobs in major international agencies. In
270 some cases, the Executive Directors of some types of foundations may be expected to hold a Ph.D.[citation needed] A
271 Ph.D. is sometimes felt to be a necessary qualification in certain areas of employment, such as in foreign policy think-
272 tanks: U.S. News wrote in 2013 that "[i]f having a master's degree at the minimum is de rigueur in Washington's foreign
273 policy world, it is no wonder many are starting to feel that the Ph.D. is a necessary escalation, another case of costly
274 signaling to potential employers." [41] Similarly, an article on the Australian public service states that "credentialism in the
275 public service is seeing a dramatic increase in the number of graduate positions going to PhDs and masters degrees
276 becoming the base entry level qualification." [42]

277 The Economist published an article in 2010 citing various criticisms against the state of Ph.D.s. These included a
278 prediction by economist Richard B. Freeman that, based on pre-2000 data, only 20% of life science Ph.D. students
279 would gain a faculty job in the U.S., and that in Canada 80% of postdoctoral research fellows earned less than or equal
280 to an average construction worker (\$38,600 a year). According to the article, only the fastest developing countries (e.g.
281 China or Brazil) have a shortage of Ph.D.s.[38]

282 The U.S. higher education systems often offers little incentive to move students through Ph.D. programs quickly, and may
283 even provide incentive to slow them down. To counter this, the United States introduced the Doctor of Arts degree in
284 1970 with seed money from the Carnegie Foundation for the Advancement of Teaching. The aim of the Doctor of Arts
285 degree was to shorten the time needed to complete the degree by focusing on pedagogy over research, although the
286 Doctor of Arts still contains a significant research component. Germany is one of the few nations engaging these issues,
287 and it has been doing so by reconceptualising Ph.D. programs to be training for careers, outside academia, but still at
288 high-level positions. This development can be seen in the extensive number of Ph.D. holders, typically from the fields of
289 law, engineering, and economics, at the very top corporate and administrative positions. To a lesser extent, the UK
290 research councils have tackled the issue by introducing, since 1992, the EngD.[citation needed][clarification needed]

291 Mark C. Taylor opined in 2011 in Nature that total reform of Ph.D. programs in almost every field is necessary in the
292 U.S. and that pressure to make the necessary changes will need to come from many sources (students, administrators,
293 public and private sectors, etc.).[43] Other articles in Nature have also examined the issue of PhD reform.[44][45][46]

294 Freeman Dyson, professor emeritus at the Institute for Advanced Study in Princeton, is opposed to the Ph.D. system does
295 not have a Ph.D. degree.[47]

296

297 **National variations**

298 In German-speaking nations; most Eastern European nations; successor states of the former Soviet Union; most parts of
299 Africa, Asia, and many Spanish-speaking countries, the corresponding degree to a Doctor of Philosophy is simply called
300 "Doctor" (Doktor), and the subject area is distinguished by a Latin suffix (e.g., "Dr. med." for Doctor medicinae, Doctor of
301 Medicine; "Dr. rer. nat." for Doctor rerum naturalium, Doctor of the Natural Sciences; "Dr. phil." for Doctor philosophiae,
302 Doctor of Philosophy; "Dr. iur." for Doctor iuris, Doctor of Laws).[48]

303

304 **Degrees around the globe**

305 The UNESCO, in its International Standard Classification of Education (ISCED), states that: "Programmes to be classified
306 at ISCED level **8** are referred to in many ways around the world such as PhD, DPhil, D.Lit, D.Sc, LL.D, Doctorate or
307 similar terms. However, it is important to note that programmes with a similar name to 'doctor' should only be included in
308 ISCED level **8** if they satisfy the criteria described in Paragraph 263. For international comparability purposes, the term
309 'doctoral or equivalent' is used to label ISCED level **8**".[49]

310

311 **Argentina**

312 *Admission*

313 In Argentina, the admission to a Ph.D. program at public Argentine University requires the full completion of a Master's
314 degree or a Licentiate degree. Non-Argentine Master's titles are generally accepted into a Ph.D. program when the
315 degree comes from a recognized university.

316 *Funding*

317 While a significant portion of postgraduate students finance their tuition and living costs with teaching or research work at
318 private and state-run institutions, international institutions, such as the Fulbright Program and the Organization of
319 American States (OAS), have been known to grant full scholarships for tuition with apportions for housing.[50]

320 *Requirements for completion*

321 Upon completion of at least two years' research and coursework as a graduate student, a candidate must demonstrate
322 truthful and original contributions to his or her specific field of knowledge within a frame of academic excellence.[51] The
323 doctoral candidate's work should be presented in a dissertation or thesis prepared under the supervision of a tutor or
324 director, and reviewed by a Doctoral Committee. This Committee should be composed of examiners that are external to
325 the program, and at least one of them should also be external to the institution. The academic degree of Doctor,
326 respective to the correspondent field of science that the candidate has contributed with original and rigorous research, is
327 received after a successful defense of the candidate's dissertation.[52]

328

329 **Australia**

330 *Admission*

331 Admission to a Ph.D. program in Australia requires applicants to demonstrate capacity to undertake research in the
332 proposed field of study. The standard requirement is a bachelor's degree with either first-class or upper second-class
333 honors. Research master's degrees and coursework master's degrees with a 25% research component are usually
334 considered equivalent. It is also possible for research master's degree students to 'upgrade' to Ph.D. candidature after
335 demonstrating sufficient progress.

336 *Scholarships*

337 Ph.D. students are sometimes offered a scholarship to study for their Ph.D. degree. The most common of these are the
338 government-funded Australian Postgraduate Award (APA), which provides a living stipend to students of approximately
339 A\$25,800 a year (tax-free). APAs are paid for a duration of 3 years, while a 6-month extension is usually possible
340 upon citing delays out of the control of the student.[53] Some universities also fund a similar scholarship that matches the
341 APA amount. Due to a continual increase in living costs, many Ph.D. students are forced to live under the poverty
342 line.[54] In addition to the more common APA and university scholarships, Australian students have other sources of
343 scholarship funding.

344 *Fees*

345 Australian citizens, permanent residents, and New Zealand citizens are not charged course fees for their Ph.D. or research
346 master's degree, with exception to the student services and amenities fee (SSAF) which is set by each university and
347 typically involves the largest amount allowed by the Australian government. All fees are paid for by the Australian
348 government, except for the SSAF, under the Research Training Scheme.[55] International students and coursework
349 master's degree students must pay course fees unless they receive a scholarship to cover them.

350 *Requirements for completion*

351 Completion requirements vary. Most Australian Ph.D. programs do not have a required coursework component. The credit
352 points attached to the degree are all in the product of the research, which is usually an 80,000-word thesis that makes a
353 significant new contribution to the field. The Ph.D. thesis is sent to external examiners who are experts in the field of
354 research and who have not been involved in the work. Examiners are nominated by the candidate's university and their
355 identities are often not revealed to the candidate until the examination is complete. A formal oral defence is generally not
356 part of the examination of the thesis, largely because of the distances that would need to be traveled by the overseas
357 examiners. Recent pressure on higher degree by research (HDR) students to publish has resulted in increasing interest in
358 Ph.D by publication as opposed to the more traditional Ph.D by dissertation [56].

359

360 **Canada**

361 This section does not cite any sources. Please help improve this section by adding citations to reliable sources. Unsourced
362 material may be challenged and removed. (November 2017) (Learn how and when to remove this template message)

363 *Admission*

364 Admission to a doctoral programme at a Canadian university usually requires completion of a Master's degree in a related
365 field, with sufficiently high grades and proven research ability. In some cases, a student may progress directly from an
366 Honours Bachelor's degree to a Ph.D. program; other programs allow a student to fast-track to a doctoral program after
367 one year of outstanding work in a Master's program (without having to complete the Master's).

368 An application package typically includes a research proposal, letters of reference, transcripts, and in some cases, a writing
369 sample or Graduate Record Examinations scores. A common criterion for prospective Ph.D. students is the comprehensive
370 or qualifying examination, a process that often commences in the second year of a graduate program. Generally,
371 successful completion of the qualifying exam permits continuance in the graduate program. Formats for this examination
372 include oral examination by the student's faculty committee (or a separate qualifying committee), or written tests designed
373 to demonstrate the student's knowledge in a specialized area (see below) or both.

374 At English-speaking universities, a student may also be required to demonstrate English language abilities, usually by
375 achieving an acceptable score on a standard examination (for example the Test of English as a Foreign Language).
376 Depending on the field, the student may also be required to demonstrate ability in one or more additional languages. A
377 prospective student applying to French-speaking universities may also have to demonstrate some English language ability.

378 *Funding*

379 While some students work outside the university (or at student jobs within the university), in some programs students are
380 advised (or must agree) not to devote more than ten hours per week to activities (e.g., employment) outside of their
381 studies, particularly if they have been given funding. For large and prestigious scholarships, such as those from NSERC
382 and Fonds québécois de la recherche sur la nature et les technologies, this is an absolute requirement.

383 At some Canadian universities, most Ph.D. students receive an award equivalent to part or all of the tuition amount for the
384 first four years (this is sometimes called a tuition deferral or tuition waiver). Other sources of funding include teaching
385 assistantships and research assistantships; experience as a teaching assistant is encouraged but not requisite in many
386 programs. Some programs may require all Ph.D. candidates to teach, which may be done under the supervision of their
387 supervisor or regular faculty. Besides these sources of funding, there are also various competitive scholarships, bursaries,
388 and awards available, such as those offered by the federal government via NSERC, CIHR, or SSHRC.

389 *Requirements for completion*

390 In general, the first two years of study are devoted to completion of coursework and the comprehensive examinations. At
391 this stage, the student is known as a "Ph.D. student" or "doctoral student". It is usually expected that the student will have
392 completed most of his or her required coursework by the end of this stage. Furthermore, it is usually required that by the

393 end of eighteen to thirty-six months after the first registration, the student will have successfully completed the
394 comprehensive exams.

395 Upon successful completion of the comprehensive exams, the student becomes known as a "Ph.D. candidate". From this
396 stage on, the bulk of the student's time will be devoted to his or her own research, culminating in the completion of a
397 Ph.D. thesis or dissertation. The final requirement is an oral defense of the thesis, which is open to the public in some, but
398 not all, universities. At most Canadian universities, the time needed to complete a Ph.D. degree typically ranges from four
399 to six years.[citation needed] It is, however, not uncommon for students to be unable to complete all the requirements
400 within six years, particularly given that funding packages often support students for only two to four years; many
401 departments will allow program extensions at the discretion of the thesis supervisor and/or department chair. Alternate
402 arrangements exist whereby a student is allowed to let their registration in the program lapse at the end of six years and
403 re-register once the thesis is completed in draft form. The general rule is that graduate students are obligated to pay
404 tuition until the initial thesis submission has been received by the thesis office. In other words, if a Ph.D. student defers or
405 delays the initial submission of their thesis they remain obligated to pay fees until such time that the thesis has been
406 received in good standing.

407

408 **Colombia**

409 *Admission*

410 In Colombia, the Ph.D. course admission may require a master's degree (Magister) in some universities, specially public
411 universities. However, it could also be applied for a direct doctorate in specific cases, according to the jury's
412 recommendations on the thesis proposal.

413 *Funding*

414 Most of postgraduate students in Colombia must finance their tuition fees by means of teaching assistant seats or research
415 works. Some institutions such as Colciencias, Colfuturo, and Icetex grant scholarships or provide awards in the form of
416 forgivable loans.[57]

417 *Requirements for completion*

418 After two or two and a half years it is expected the research work of the doctoral candidate to be submitted in the form of
419 oral qualification, where suggestions and corrections about the research hypothesis and methodology, as well as on the
420 course of the research work are performed. The Ph.D. degree is only received after a successful defense of the candidate's
421 thesis is performed (four or five years after the enrollment), and most of the times also requiring the most important
422 results having been published in at least one peer-reviewed high impact international journal.

423 *Finland*

424 In Finland, the degree of filosofian tohtori (abbreviated FT) is awarded by traditional universities, such as University of
425 Helsinki. A Master's degree is required, and the doctorate combines approximately 4–5 years of research (amounting to
426 3–5 scientific articles, some of which must be first-author) and 60 ECTS points of studies.[58] Other universities such
427 as Aalto University award degrees such as tekniikan tohtori (TkT, engineering), taiteen tohtori (TaT, art), etc., which are
428 translated in English to Doctor of Science (D.Sc.), and they are formally equivalent. The licentiate (filosofian lisensiaatti or
429 FL) requires only 2–3 years of research and is sometimes done before an FT.

430

431 **France**

432 *History*

433 Before 1984 three research doctorates existed in France: the State doctorate (doctorat d'État, the old doctorate
434 introduced in 1808), the third cycle doctorate (doctorat de troisième cycle, created in 1954 and shorter than the State
435 doctorate) and the diploma of doctor-engineer (diplôme de docteur-ingénieur created in 1923), for technical research.
436 After 1984, only one type of doctoral degree remained, called "doctorate" (Doctorat). The latter is equivalent to the
437 Ph.D.

438 *Admission*

439 Students pursuing the Ph.D. degree must first complete a master's degree program, which takes two years after graduation
440 with a bachelor's degree (five years in total). The candidate must find funding and a formal doctoral advisor (Directeur de
441 thèse) with an habilitation throughout the doctoral program.

442 The Ph.D. admission is granted by a graduate school (in French, "école doctorale"). A Ph.D. candidate can follow some
443 in-service training offered by the graduate school while continuing his or her research at laboratory. His or her research
444 may be carried out in a laboratory, at a university, or in a company. In the last case, the company hires the candidate and
445 he or she is supervised by both the company's tutor and a lab's professor. The validation of the Ph.D. degree requires
446 generally 3 to 4 years after the master's degree.

447 *Funding*

448 The financing of Ph.D. research comes mainly from funds for research of the French Ministry of Higher Education and
449 Research. The most common procedure is a short-term employment contract called doctoral contract: the institution of
450 higher education is the employer and the Ph.D. candidate the employee. However, the candidate can apply for funds from
451 a company who can host him or her at its premises (as in the case where Ph.D. candidates do their research in a
452 company). As another encountered situation, the company and the institute can sign together a funding agreement so that
453 the candidate still has a public doctoral contract, but is daily located in the company (for example, it is particularly the case
454 of (French) Scientific Cooperation Foundation). Many other resources come from some regional/city projects, some
455 associations, etc.

456

457 **India**

458 *Admission*

459 In India, generally, a master's degree is required to gain admission to a doctoral program. Direct admission to a Ph.D.
460 programme after bachelors is also offered by the IITs, the IIITs, the NITs and the Academy of Scientific and Innovative
461 Research. In some subjects, doing a Masters in Philosophy (M.Phil.) is a prerequisite to starting a Ph.D. For
462 funding/fellowship, it is required to qualify for the National Eligibility Test for Lectureship and Junior Research fellowship
463 (NET for LS and JRF)[59] conducted by the federal research organisation Council of Scientific and Industrial Research
464 (CSIR) and University Grants Commission (UGC).

465 In the last few years, there have been many changes in the rules relating to a Ph.D. in India.[citation needed] According to
466 the new rules described by UGC, universities must have to conduct entrance exams in general ability and the selected
467 subject. After clearing these tests, the shortlisted candidates need to appear for an interview by the available
468 supervisor/guide. After successful completion of the coursework, the students are required to give presentations of the
469 research proposal (plan of work or synopsis) at the beginning, submit progress reports, give a pre-submission
470 presentation and finally defend the thesis in an open defence viva-voce.[citation needed]

471

472 **Germany**

473 *Admission*

474 In Germany, admission to a doctoral program is generally on the basis of having an advanced degree (i.e., a master's
475 degree, diplom, magister, or staatsexamen), mostly in a related field and having above-average grades. A candidate must
476 also find a tenured professor from a university to serve as the formal advisor and supervisor (Betreuer) of the dissertation
477 throughout the doctoral program called Promotion. This supervisor is informally referred to as Doktorvater or
478 Doktormutter, which literally translate to "doctor's father" and "doctor's mother" respectively.

479 While most German doctorates are considered equivalent to the PhD, an exception is the medical doctorate, where
480 "doctoral" dissertations are often written alongside undergraduate study. The European Research Council decided in
481 2010 that those doctorates do not meet the international standards of a PhD research degree.[60][61] There are
482 different forms of university-level institution in Germany, but only professors from "Universities" (Univ.-Prof.) can serve
483 as doctoral supervisors – "Universities of Applied Sciences" (Fachhochschulen) are not entitled to award doctorates,[62]
484 although some exceptions apply to this rule.[63]

485 *Structure*

486 Depending on the university, doctoral students (Doktoranden) can be required to attend formal classes or lectures, some of
487 them also including exams or other scientific assignments, in order to get one or more certificates of qualification
488 (Qualifikationsnachweise). Depending on the doctoral regulations (Promotionsordnung) of the university and sometimes
489 on the status of the doctoral student, such certificates may not be required. Usually, former students, research assistants or
490 lecturers from the same university, may be spared from attending extra classes. Instead, under the tutelage of a single
491 professor or advisory committee, they are expected to conduct independent research. In addition to doctoral studies, many
492 doctoral candidates work as teaching assistants, research assistants, or lecturers.

493 Many universities have established research-intensive Graduiertenkollegs ("graduate colleges"), which are graduate schools
494 that provide funding for doctoral studies.

495 *Duration*

496 The usual duration of a doctoral program largely depends on the subject and area of research; but, often three to five
497 years of full-time research work are required.

498 In 2014, the median age of new Ph.D. graduates was 30.4 years of age.[64]

499 USSR, Russian Federation and former Soviet Republics

500 *Globe icon*

501 The examples and perspective in this article or section might have an extensive bias or disproportional coverage towards
502 one or more specific regions. Please improve this article or discuss the issue on the talk page. (November 2017) (Learn
503 how and when to remove this template message)

504 The degree of Candidate of Sciences (Russian: **КАНДИДАТ НАУК**, Kandidat Nauk) was the first advanced research
505 qualification in the former USSR (it was introduced there in 1934) and some Eastern Bloc countries (Czechoslovakia,
506 Hungary) and is still awarded in some post-Soviet states (Russian Federation, Belarus, and others). According to
507 "Guidelines for the recognition of Russian qualifications in the other countries", in countries with a two-tier system of
508 doctoral degrees (like Russian Federation, some post-Soviet states, Germany, Poland, Austria and Switzerland), should be
509 considered for recognition at the level of the first doctoral degree, and in countries with only one doctoral degree, the
510 degree of Kandidat Nauk should be considered for recognition as equivalent to this Ph.D. degree.

511 As most education systems only have one advanced research qualification granting doctoral degrees or equivalent
512 qualifications (ISCED 2011,[65] par.270), the degree of Candidate of Sciences (Kandidat Nauk) of the former USSR
513 counties is usually considered at the same level as the doctorate or Ph.D. degrees of those countries.[66][67]

514 According to the Joint Statement by the Permanent Conference of the Ministers for Education and Cultural Affairs of the
515 Länder of the Federal Republic of Germany (Kultusministerkonferenz, KMK), German Rectors' Conference (HRK) and
516 the Ministry of General and Professional Education of the Russian Federation, the degree of Kandidat Nauk is recognised
517 in Germany at the level of the German degree of Doktor and the degree of Doktor Nauk at the level of German
518 Habilitation.[68][69] The Russian degree of Kandidat Nauk is also officially recognised by the Government of the French
519 Republic as equivalent to French doctorate.[70][71]

520 According to the International Standard Classification of Education (ISCED) 2011, for purposes of international
521 educational statistics, Kandidat Nauk (Candidate of Sciences) belongs to ISCED level 8, or "doctoral or equivalent",
522 together with Ph.D., D.Phil., D.Litt., D.Sc., LL.D., Doctorate or similar. It is mentioned in the Russian version of ISCED
523 2011 (par.262) on the UNESCO website as an equivalent to Ph.D. belonging to this level.[65] In the same way as
524 Ph.D. degrees awarded in many English-speaking countries, Kandidat Nauk (Candidate of Sciences) allows its holders to
525 reach the level of the Docent.[72] The second doctorate[66] (or post-doctoral degree)[73][74] in some post-Soviet
526 states called Doctor of Sciences (Russian: **ДОКТОР НАУК**, Doktor Nauk) is given as an example of second advanced
527 research qualifications or higher doctorates in ISCED 2011[65] (par.270) and is similar to Habilitation in Germany,
528 Poland and several other countries.[66][74] It constitutes a higher qualification compared to Ph.D. as against the
529 European Qualifications Framework (EQF) or Dublin Descriptors.[74]

530 About 88% of Russian students studying at state universities study at the expense of budget funds.[75] The average
531 stipend in Russia (as of August 2011) is \$430 a year (\$35/month).[76] The average tuition fee in graduate school is
532 \$2,000 per year.[77]

533

534

535 **Italy**

536 *History*

537 The Dottorato di ricerca (research doctorate), abbreviated to "Dott. Ric." or "Ph.D.", is an academic title awarded at the
538 end of a course of not less than three years, admission to which is based on entrance examinations and academic rankings
539 in the Bachelor of Arts ("Laurea Triennale") and Master of Arts ("Laurea Magistrale" or "Laurea Specialistica"). While the
540 standard Ph.D. follows the Bologna process, the M.D.-Ph.D. programme may be completed in two years.

541 The first institution in Italy to create a doctoral program (Ph.D.) was Scuola Normale Superiore di Pisa in 1927 under
542 the historic name "Diploma di Perfezionamento".[78][79] Further, the research doctorates or Ph.D. (Dottorato di ricerca)
543 in Italy were introduced by law and Presidential Decree in 1980,[80][81] referring to the reform of academic teaching,
544 training and experimentation in organisation and teaching methods.[82][83]

545 Hence, the Superior Graduate Schools in Italy[84] (Scuola Superiore Universitaria),[85] also called Schools of Excellence
546 (Scuole di Eccellenza)[84][86] such as Scuola Normale Superiore di Pisa and Sant'Anna School of Advanced Studies still
547 keep their reputed historical "Diploma di Perfezionamento" Ph.D. title by law[79][87] and MIUR Decree.[88][89]

548 *Admission*

549 Doctorate courses are open, without age or citizenship limits, to all those who already hold a "laurea magistrale" (master
550 degree) or similar academic title awarded abroad which has been recognised as equivalent to an Italian degree by the
551 Committee responsible for the entrance examinations.

552 The number of places on offer each year and details of the entrance examinations are set out in the examination
553 announcement.

554

555 **Poland**

556 A doctoral degree (Pol. doktor), abbreviated to Ph.D. (Pol. dr) is an advanced academic degree awarded by universities in
557 most fields[90][91][92][93][94] as well as by the Polish Academy of Sciences,[95] regulated by the Polish parliament
558 acts[96] and the government orders, in particular by the Ministry of Science and Higher Education of the Republic of
559 Poland. Commonly, students with a master's degree or equivalent are accepted to a doctoral entrance exam. The title of
560 Ph.D. is awarded to a scientist who 1) completed a minimum of 3 years of Ph.D. studies (Pol. studia doktoranckie; not
561 required to obtain Ph.D.), 2) finished his/her theoretical and/or laboratory's scientific work, 3) passed all Ph.D.
562 examinations, 4) submitted his/her dissertation, a document presenting the author's research and findings,[97] 5)
563 successfully defended his/her doctoral thesis. Typically, upon completion, the candidate undergoes an oral examination,
564 always public, by his/her supervisory committee with expertise in the given discipline.

565

566 **Ukraine**

567 Starting in 2016,[98] in Ukraine Doctor of Philosophy (PhD, Ukrainian: **Доктор філософії**) is the highest
568 education level and the first science degree. PhD is awarded in recognition of a substantial contribution to scientific
569 knowledge, origination of new directions and visions in science. A PhD degree is a prerequisite for heading a university
570 department in Ukraine. Upon completion of a PhD, a PhD holder can elect to continue his studies and get a post-
571 doctoral degree called "Doctor of Sciences" (DSc. Ukrainian: **Доктор наук**), which is the second and the highest
572 science degree in Ukraine.

573

574 **Scandinavia**

575 The doctorate was introduced in Sweden in 1477 and in Denmark–Norway in 1479 and awarded in theology, law, and
576 medicine, while the magister’s degree was the highest degree at the Faculty of Philosophy, equivalent to the doctorate.

577 Scandinavian countries were among the early adopters of a degree known as a doctorate of philosophy, based upon the
578 German model. Denmark and Norway both introduced the Dr. Phil(os). degree in 1824, replacing the Magister’s degree
579 as the highest degree, while Uppsala University of Sweden renamed its Magister’s degree Filosofie Doktor (fil. dr) in
580 1863. These degrees, however, became comparable to the German Habilitation rather than the doctorate, as
581 Scandinavian countries did not have a separate Habilitation.[99]

582 The degrees were uncommon and not a prerequisite for employment as a professor; rather, they were seen as distinctions
583 similar to the British (higher) doctorates (D.Litt., D.Sc.). Denmark introduced an American–style Ph.D. in 1989; it
584 formally replaced the Licentiate’s degree and is considered a lower degree than the dr. phil. degree; officially, the ph.d. is
585 not considered a doctorate, but unofficially, it is referred to as “the smaller doctorate”, as opposed to the dr. phil., “the
586 grand doctorate”. Holders of a ph.d. degree are not entitled to style themselves as “Dr.”[100] Currently Denmark
587 distinctions between the dr. phil. as the proper doctorate and a higher degree than the ph.d., whereas in Norway, the
588 historically analogous dr. philos. degree is officially regarded as equivalent to the new ph.d.

589 In Sweden, the doctorate of philosophy was introduced at Uppsala University’s Faculty of Philosophy in 1863. In
590 Sweden, the Latin term is officially translated into Swedish filosofie doktor and commonly abbreviated fil. dr or FD. The
591 degree represents the traditional Faculty of Philosophy and encompasses subjects from biology, physics, and chemistry, to
592 languages, history, and social sciences, being the highest degree in these disciplines. Sweden currently has two research–
593 level degrees, the Licentiate’s degree, which is comparable to the Danish degree formerly known as the Licentiate’s degree
594 and now as the ph.d., and the higher doctorate of philosophy, Filosofie Doktor. Some universities in Sweden also use the
595 term teknologie doktor for doctorates awarded by institutes of technology (for doctorates in engineering or natural science
596 related subjects such as materials science, molecular biology, computer science etc.). The Swedish term fil. dr is often also
597 used as a translation of corresponding degrees from e.g. Denmark and Norway.

598

599 **Spain**

600 Doctoral degrees are regulated by Real Decreto (Royal Decree in Spanish) R.D. 99/2011 from the 2014/2015
601 academic year.[101] They are granted by a university on behalf of the King, and its diploma has the force of a public
602 document. The Ministry of Science keeps a National Registry of Theses called TESEO.[102]

603 All doctoral programs are of a research nature. A minimum of three years of study are required, in one stage only:

604 A 3-year (or longer) period of research. Extensions may be requested for maximum 5 years. The student must write his
605 thesis presenting a new discovery or original contribution to science. If approved by her or his "thesis director (or
606 directors)", the study will be presented to a panel of 5 distinguished scholars. Any doctor attending the public
607 presentations is allowed to challenge the candidate with questions on his research. If approved, he will receive the
608 doctorate. Four marks can be granted: Unsatisfactory, Pass, Satisfactory, and Excellent. "Cum laude" (with all honours, in
609 Latin) denomination can be added to the Excellent ones if all five members of the tribunal agree.[103]

610 A doctoral degree is required to apply to a long-term teaching position at a university.

611 The social standing of doctors in Spain is evidenced by the fact that only Ph.D. holders, Grandees and Dukes can take
612 seat and cover their heads in the presence of the King.[104] All Doctor Degree holders are reciprocally recognized as
613 equivalent in Germany and Spain ("Bonn Agreement of November 14, 1994").[105]

614

615 **United Kingdom**

616 *Admission*

617 Universities admit applicants to Ph.D. programs on a case-by-case basis; depending on the university, admission is
618 typically conditional on the prospective student having completed an undergraduate degree with at least upper second-
619 class honours or a postgraduate master's degree but requirements can vary.

620 In the case of the University of Oxford, for example, "The one essential condition of being accepted ... is evidence of
621 previous academic excellence, and of future potential." [106] Some UK universities (e.g. Oxford) abbreviate their Doctor
622 of Philosophy degree as "DPhil", while most use the abbreviation "PhD"; these are in all other respects equivalent.
623 Commonly, students are first accepted onto an MPhil or MRes programme and may transfer to Ph.D. regulations upon
624 satisfactory progress, this is sometimes referred to as APG (Advanced Postgraduate) status. This is typically done after one
625 or two years and the research work done may count towards the Ph.D. degree. If a student fails to make satisfactory
626 progress, he or she may be offered the opportunity to write up and submit for an MPhil degree as is the case at the
627 King's College London and University of Manchester. In many universities, the MPhil is also offered as a stand-alone
628 research degree.

629 Ph.D. students from countries outside the EU/EFTA area are required to comply with the Academic Technology Approval
630 Scheme (ATAS), which involves undergoing a security clearance process with the Foreign Office for certain courses in
631 medicine, mathematics, engineering and material sciences. [107][108] This requirement was introduced in 2007 due to
632 concerns about overseas terrorism and weapons proliferation. [108]

633 *Funding*

634 In the United Kingdom, funding for Ph.D. students is sometimes provided by government-funded Research Councils or the
635 European Social Fund, usually in the form of a tax-free bursary which consists of tuition fees together with a
636 stipend. [109] Tuition fees are charged at different rates for "Home/EU" and "Overseas" students, generally £3,000–
637 £6,000 per year for the former and £9,000–14,500 for the latter (which includes EU citizens who have not been
638 normally resident in the EEA for the last three years), although this can rise to over £16,000 at elite institutions. Higher
639 fees are often charged for laboratory-based degrees. [110][111]

640 The stipend is around £13,000 per year for three years, [109] (sometimes higher by £2,000–3,000 in London),
641 whether or not the degree continues for longer (within the usual four-year span). This implies that the fourth year of
642 Ph.D. work is often unfunded. A very small number of scientific studentships are sometimes paid at a higher rate – for
643 example, in London, Cancer Research UK, the ICR and the Wellcome Trust stipend rates start at around £19,000 and
644 progress annually to around £23,000 a year; an amount that is tax and national insurance free. Research Council
645 funding is sometimes 'earmarked' for a particular department or research group, who then allocate it to a chosen student,
646 although in doing so they are generally expected to abide by the usual minimum entry requirements (typically a first
647 degree with upper second class honours, although successful completion of a postgraduate master's degree is usually
648 counted as raising the class of the first degree by one division for these purposes). The availability of funding in many
649 disciplines (especially humanities, social studies and pure science [citation needed] subjects) means that in practice only

650 those with the best research proposals, references and backgrounds are likely to be awarded a studentship. The ESRC
651 (Economic and Social Science Research Council) explicitly state that a 2.1 minimum (or 2.2 plus additional master's
652 degree) is required—no additional marks are given for students with a first class honours or a distinction at masters level.
653 Since 2002, there has been a move by research councils to fund interdisciplinary doctoral training centres which
654 concentrate resources on fewer higher quality centres.

655 Many students who are not in receipt of external funding may choose to undertake the degree part-time, thus reducing
656 the tuition fees, as well as creating free time in which to earn money for subsistence. Students may also take part in
657 tutoring, work as research assistants, or (occasionally) deliver lectures, at a rate of typically £12–14 per hour, either to
658 supplement existing low income or as a sole means of funding.[112]

659 *Completion*

660 Ph.D. gown, University of Cambridge, *photograph not shown*

661 There is usually a preliminary assessment to remain in the program and the thesis is submitted at the end of a three- to
662 four-year program. These periods are usually extended pro rata for part-time students. With special dispensation, the final
663 date for the thesis can be extended for up to four additional years, for a total of seven, but this is rare.[113] For full-time
664 Ph.D.s, a 4-year time limit has now been fixed and students must apply for an extension to submit a thesis past this
665 point. Since the early 1990s, British funding councils have adopted a policy of penalising departments where large
666 proportions of students fail to submit their theses in four years after achieving Ph.D.-student status (or pro rata
667 equivalent) by reducing the number of funded places in subsequent years.[114] Inadvertently, this leads to significant
668 pressure on the candidate to minimise the scope of projects with a view on thesis submission, regardless of quality, and
669 discourage time spent on activities that would otherwise further the impact of the research on the community (e.g.
670 publications in high impact journals, seminars, workshops). Furthermore, supervising staff are encouraged in their career
671 progression to ensure that the Ph.D. students under their supervision finalise the projects in three rather than the four
672 years that the program is permitted to cover. These issues contribute to an overall discrepancy between supervisors and
673 Ph.D. candidates in the priority they assign to the quality and impact of the research contained in a Ph.D. project, the
674 former favouring quick Ph.D. projects over several students and the latter favouring a larger scope for their own ambitious
675 project, training, and impact.[citation needed]

676 There has recently been an increase in the number of Integrated Ph.D. programs available, such as at the University of
677 Southampton. These courses include a Master of Research (MRes) in the first year, which consists of a taught component
678 as well as laboratory rotation projects. The Ph.D. must then be completed within the next 3 years. As this includes the
679 MRes all deadlines and timeframes are brought forward to encourage completion of both MRes and Ph.D. within 4 years
680 from commencement. These programs are designed to provide students with a greater range of skills than a standard
681 Ph.D., and for the university, they are a means of gaining an extra years' fees from public sources.

682 *Other doctorates*

683 In the United Kingdom, Ph.D. degrees are distinct from other doctorates, most notably the higher doctorates such as
684 D.Litt. (Doctor of Letters) or D.Sc. (Doctor of Science), which may be granted on the recommendation of a committee of

685 examiners on the basis of a substantial portfolio of submitted (and usually published) research. However, some UK
686 universities still maintain the option of submitting a thesis for the award of a higher doctorate.

687 Recent years have seen the introduction of professional doctorates (D.Prof or ProfD), which are the same level as Ph.D.s
688 but more specific in their field.[1 1 5] These tend not to be solely academic, but combine academic research, a taught
689 component and a professional qualification. These are most notably in the fields of engineering (Eng.D.), education
690 (Ed.D.), educational psychology (D.Ed.Psych), occupational psychology (D.Occ Psych.) clinical psychology (D.Clin.Psych.),
691 health psychology (DHealthPsy), social work (DSW), nursing (DNP), public administration (DPA), business administration
692 (DBA), and music (DMA). These typically have a more formal taught component consisting of smaller research projects,
693 as well as a 40,000–60,000-word thesis component, which together are officially considered equivalent to a Ph.D.
694 degree.

695

696 **United States**

697 In the United States, the Ph.D. degree is the highest academic degree awarded by universities in most fields of study.
698 There are 282 universities in the United States that award the Ph.D. degree, and those universities vary widely in their
699 criteria for admission, as well as the rigor of their academic programs.[116]

700 *Requirements.*

701 U.S. students typically undergo a series of three phases in the course of their work toward the Ph.D. degree. The first
702 phase consists of coursework in the student's field of study and requires one to three years to complete. This often is
703 followed by a preliminary, a comprehensive examination, or a series of cumulative examinations where the emphasis is on
704 breadth rather than depth of knowledge. The student is often later required to pass oral and written examinations in the
705 field of specialization within the discipline, and here, depth is emphasized. Some Ph.D. programs require the candidate to
706 successfully complete requirements in pedagogy (taking courses on higher level teaching and teaching undergraduate
707 courses) or applied science (e.g., clinical practice and predoctoral clinical internship in Ph.D. programs in clinical,
708 counseling, or school psychology).[citation needed]

709 Another two to eight years are usually required for the composition of a substantial and original contribution to human
710 knowledge in the form of a written dissertation, which in the social sciences and humanities typically ranges from 50 to
711 450 pages. In many cases, depending on the discipline, a dissertation consists of a comprehensive literature review, an
712 outline of methodology, and several chapters of scientific, social, historical, philosophical, or literary analysis. Typically,
713 upon completion, the candidate undergoes an oral examination, sometimes public, by his or her supervisory committee
714 with expertise in the given discipline.

715 Typically, Ph.D. programs require applicants to have a bachelor's degree in a relevant field (and, in many cases in the
716 humanities, a master's degree), reasonably high grades, several letters of recommendation, relevant academic coursework,
717 a cogent statement of interest in the field of study, and satisfactory performance on a graduate-level exam specified by the
718 respective program (e.g., GRE, GMAT).[117][118]

719 Depending on the specific field of study, completion of a Ph.D. program usually takes four to eight years of study after the
720 Bachelor's Degree; those students who begin a Ph.D. program with a master's degree may complete their Ph.D. degree a
721 year or two sooner.[119] As Ph.D. programs typically lack the formal structure of undergraduate education, there are
722 significant individual differences in the time taken to complete the degree. Overall, 57% of students who begin a Ph.D.
723 program in the US will complete their degree within ten years, approximately 30% will drop out or be dismissed, and the
724 remaining 13% of students will continue on past ten years.[120]

725 The number of Ph.D. diplomas awarded by US universities has risen nearly every year since 1957, according to data
726 compiled by the US National Science Foundation. In 1957, US universities awarded 8,611 Ph.D. diplomas; 20,403 in
727 1967; 31,716 in 1977; 32,365 in 1987; 42,538 in 1997; 48,133 in 2007,[121] and 55,006 in
728 2015.[122]

729 Funding. Ph.D. students at U.S. universities typically receive a tuition waiver and some form of annual stipend.[citation
730 needed] Many U.S. Ph.D. students work as teaching assistants or research assistants. Graduate schools increasingly[citation

731 needed] encourage their students to seek outside funding; many are supported by fellowships they obtain for themselves or
732 by their advisers' research grants from government agencies such as the National Science Foundation and the National
733 Institutes of Health. Many Ivy League and other well-endowed universities provide funding for the entire duration of the
734 degree program (if it is short) or for most of it.[citation needed]

735 *Models of supervision*

736 At some universities, there may be training for those wishing to supervise Ph.D. studies. There is now a lot of literature
737 published for academics who wish to do this, such as Delamont, Atkinson, and Parry (1997). Indeed, Dinham and Scott
738 (2001) have argued that the worldwide growth in research students has been matched by increase in a number of what
739 they term "how-to" texts for both students and supervisors, citing examples such as Pugh and Phillips (1987). These
740 authors report empirical data on the benefits that a Ph.D. candidate may gain if he or she publishes work, and note that
741 Ph.D. students are more likely to do this with adequate encouragement from their supervisors.

742 Wisker (2005) has noticed how research into this field has distinguished between two models of supervision: The
743 technical-rationality model of supervision, emphasising technique; The negotiated order model, being less mechanistic and
744 emphasising fluid and dynamic change in the Ph.D. process. These two models were first distinguished by Acker, Hill and
745 Black (1994; cited in Wisker, 2005). Considerable literature exists on the expectations that supervisors may have of
746 their students (Phillips & Pugh, 1987) and the expectations that students may have of their supervisors (Phillips & Pugh,
747 1987; Wilkinson, 2005) in the course of Ph.D. supervision. Similar expectations are implied by the Quality Assurance
748 Agency's Code for Supervision (Quality Assurance Agency, 1999; cited in Wilkinson, 2005).

749

- 750 International PhD equivalent degrees**
- 751 Afghanistan: داکټر
- 752 Albania: Doktorature (Dr.)
- 753 Algeria: Doctorat, دکتوراه
- 754 Argentina: Doctorado (Dr.)
- 755 Armenia: գիտությունների թեկնածու, դոցենտ
- 756 Austria: Doktor (Dr., plural: DDr.)
- 757 Azerbaijan: Doktorantura (Dr.)
- 758 Bangladesh: Doctorate
- 759 Belarus: кандидат наук
- 760 Belgium (Dutch-speaking): Doctor
- 761 Belgium (French-speaking): Doctorat
- 762 Bosnia and Herzegovina: Doktor
- 763 Brazil: Doutorado
- 764 Bulgaria: Доктор
- 765 Burma: □□□□□□□□□□
- 766 China: 博士 (Bo-shi)
- 767 Chile: Doctorado
- 768 Colombia: Doctorado
- 769 Costa Rica: Ph.D. or Doctorado (Dr.)
- 770 Croatia: Doktor
- 771 Czech Republic: CSc. and DrSc. was used till 1998, since 1998 Ph.D. written as Ph.D. is used
- 772 Denmark: Licentiate, Magister, Ph.D. (the doctorates are higher degrees)
- 773 Dominican Republic: Doctorado
- 774 Ecuador: Doctorado
- 775 El Salvador: Doctorado
- 776 Egypt: Doctorat, دکتوراه
- 777 Estonia: Doktor (Dr)
- 778 Ethiopia: ጸሐፊ, Doctor (Ph.D., Dr.)
- 779 Finland: Filosofian tohtori and any degree of tohtori
- 780 France: Doctorat
- 781 Germany: Doktor
- 782 Greece: Διδακτορικό
- 783 Hong Kong: 博士 (Doctor)
- 784 Hungary: Doktor (Dr.)
- 785 India: Doctorate
- 786 Indonesia: Doktor
- 787 Iran: دکتورا (Doctora)
- 788 Iraq: دکتوراه (Duktorah)
- 789 Ireland: an Doctúireacht
- 790 Israel: דוקטוראט ("doctorat")
- 791 Italy: Dottorato di ricerca
- 792 Japan: 博士 (hakushi)
- 793 Jordan: دکتوراه (Doktorah)
- 794 Korea: 박사 (baksa)
- 795 Kuwait: دکتوراه (Dektoraah)
- 796 Kurdistan: دکتوراه (Doktorah)
- 797 Latin America: Doctorado/Doctorate
- 798 Latvia: Zinātnu doktors
- 799 Lebanon: دکتوراه (doktorah)
- 800 Lithuania: Daktaras
- 801 Macau: 博士 (Doutoramento)
- 802 Macedonia: Докторат
- 803 Malaysia: Doktor Falsafah
- 804 Mauritius: Doctor of Philosophy (PhD)
- 805 Mexico: Doctorado
- 806 Mongolia: Эрдэмтэн
- 807 Morocco: Doctorat
- 808 Nepal: Doctor
- 809 Netherlands: Doctor
- 810 Nigeria: Doctor of Philosophy (Ph.D.)
- 811 Norway: Magister, Licentiate, doctorates (traditionally considered higher degrees), Ph.D.
- 812 Pakistan: Doctor
- 813 Palestine: دکتوراه (doktorah)
- 814 Paraguay: Ph.D. or Doctorado (Dr.)
- 815 Peru: Doctorado
- 816 Philippines: Doktor
- 817 Poland: Doktor
- 818 Portugal: pt:Doutoramento
- 819 Romania: Doctorat
- 820 Russia: кандидат наук (PhD junior grade), ru: Доктор наук (PhD senior grade)
- 821 Saudi Arabia: دکتوراه
- 822 Singapore: Doctor
- 823 Serbia: Доктор

824 Slovakia: CSc. was used during communism and some years in 90s, now Ph.D. written as Ph.D. is used; DrSc. is a higher
825 degree.
826 Slovenia: Doktor znanosti
827 Spain: Doctorado
828 Sweden: Filosofie doktor (fil.dr., FD)
829 Switzerland: Doctorat (Dr)
830 Syria: دكتوراه (doktorah)
831 Taiwan : 博士
832 Thailand: ดุษฎีบัณฑิต
833 Tunisia: دكتوراه (doktorah)
834 Turkey: Doktora
835 United Arab Emirates: ar: دكتوراه (doktorah)
836 United Kingdom: Doctor of Philosophy (PhD, doctor, the abbreviation DPhil is used only by the University of Oxford and
837 the University of Sussex)
838 United States: Doctor of Philosophy (PhD)
839 Ukraine: uk: Доктор філософії (PhD)
840 Uruguay: Doctorado
841 Uzbekistan: Fan nomzodi (CSc.)
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860 University 'should divert the stream' of American aspirants to the German universities' degree of philosophiae doctor by
861 opening the DLitt to persons offering a suitable dissertation nine terms after graduation. Apart from a successful move led
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