

I. The Application Process

1. The US system of higher education

In the United States, a **college** refers to a higher education institution that offers a 4-year program and grants only bachelor's degrees. A college can be independent, or it can be part of a university. A **university** is usually a larger institution, often made up of specialized schools or colleges, that grants **graduate degrees** as well as **bachelor's degrees**. Americans say they are "in college", no matter which type of institution they attend. Americans will hardly ever say they were at university, but rather "I went to X university/college".

There are over 4,300 accredited colleges or universities (including branch campuses or satellite locations) in the United States (referred to as the American higher education system, roughly speaking, 1,600 public colleges, 1,700 private nonprofit schools, and about 1,000 for-profit schools), all with different entrance requirements, tuition fees and course specialties. Higher education institutions in the U.S. are not centrally organized or managed, but are accredited on a national or regional level by independent accrediting bodies.

They also come in many different sizes from the vast **state universities** with enrollment in the tens of thousands, to small **private colleges** with fewer than one thousand students. Public universities are state universities, whose reputation may not always be as high as private universities. Sometimes the varied naming systems make it hard to tell public universities apart from similarly named private universities. For example, the University of Pennsylvania is an Ivy League university, whereas Pennsylvania State University is a state one. On the other hand, University of California is comprised of a dozen public colleges, the most reputed of which are UCB (Berkeley), UCLA, and UCSD (San Diego). Besides the University of California system, you find the Cal State system. There is some overlap in selectivity but generally it is harder to get into a UC than a Cal State school. In New York State, the State University of New York (SUNY) system has several flagships, including Binghamton University, University at Albany, and University at Buffalo, Stony Brook University, and a very large number of other colleges. Big league universities such as Brown, MIT, Harvard, Stanford Columbia are private.

Besides the quality teaching, the main difference between public and private universities is the **tuition fees**: tuition fees are much higher for private universities than for public ones. That is because public schools are funded mainly by local and state governments, whereas private colleges are supported primarily by their own endowment funds (Harvard's endowment is over 53,2bn dollars, Princeton 26bn, MIT 127,4bn (2021 figures), for example, compared to University of California's

22,1bn), donations and students' tuition fees. Private universities receive virtually no state or federal money. **Research universities** (which are committed to research as their central part of their mission) can also apply to federal and private agencies for research grants (from the National Institutes of Health, National Science Foundation, National Institute for the Humanities, Department of Justice, Education Department, and other federal agencies). Research universities can be public or private. **Private colleges** may receive contributions from individual donors - perhaps in exchange for getting buildings named after themselves. **Public colleges** also receive donations. In-state residents receive favorable tuition rates at public universities based on the premise that their tax dollars fund the state governments. Private colleges, on the other hand, are more expensive because they rely more heavily on students' tuition payments to cover their operating expenses. Yet, if private colleges and universities may be more costly to attend, they frequently offer more substantial tuition discounts than do public universities. On the other hand, British universities are far less expensive than American colleges.

The **Ivy League** (an athletic conference) refers to eight top private universities in the Northeastern United States. The **eight members** are Brown University, Columbia University, Cornell University, Dartmouth College, Harvard University, the University of Pennsylvania, Princeton University, and Yale University. Ivy League has connotations of academic excellence, highly selective admission, and social elitism. Seven of the eight schools were founded during the colonial period (Cornell was founded in 1865). Those schools are usually viewed as the most prestigious. MIT and Stanford often outperform them, though. Admission rates to an Ivy university is between 4,5% (Harvard) and 10% (Cornell). For instance, for the Class of 2021, 39,506 students applied to Harvard University of which 2,056 students were accepted, yielding an overall acceptance rate of 5.2%. The equivalent in Britain would be **Oxbridge**, a portmanteau of Oxford and Cambridge, the two oldest universities in the United Kingdom. The name has implications of superior social or intellectual status or elitism. At the undergraduate level, candidates may not apply to both Oxford and Cambridge in the same year, with a few exceptions. The term **Loxbridge** refers to the golden triangle of London, Oxford, and Cambridge but is much less used.

The perceived **prestige factor** plays a huge role in the students' admission aspirations. Public universities typically are lower in the college rankings than private schools, and frequently have less selective admissions criteria. Private colleges may employ more distinguished faculty or publish influential academic research more often. The quality of education received at a private institution is not necessarily superior to that which can be obtained at a public school, but graduates of highly-ranked or "prestigious" colleges are typically more sought after in the job market. Yet, students should be aware that what matters is not so much a brand name as the quality of a **specific department**. Some public colleges and universities carry as much prestige as the more exclusive private schools. A case in point is the university of California. Similarly, studying computer science at the University of Washington may be as competitive as gaining admission to Carnegie Mellon University¹.

1. I do not have a specific list of universities in mind. Stanford, Caltech, MIT, UC Berkeley, Columbia and CMU are certainly up there, but I am not particularly referring to any particular list of graduate school rankings. In a more general sense, I am writing about schools where the default attitude of the admissions committee is "rejected, unless strongly proved otherwise" rather than "let's give him/her the benefit of the doubt". These schools tend to follow a risk minimization policy, and if in doubt, they would deny admission to a candidate rather than risk diluting the quality of the incoming batch.

An alternative to four-year institutions is the junior or **community college**, an institution that offers two-year degree programs in general or technical education. Students who complete the course of study are such an institution earn an **associate's degree** (A.A.) in either the arts or sciences. These institutions are also much less expensive than four-year colleges. Many students transfer to a four-year institution after receiving an associate degree, as a way of completing their general education requirements more cheaply.

Americans do not **specialize** in a subject until late, often until their last two years at college or university. Getting a master's degree is the beginning of specialization. Therefore, a bachelor's degree from an American institution does not generally represent the same degree of specialized knowledge in a subject area that other bachelor's degrees from other countries represent.

The primary goal of a college education is not mainly to produce brilliantly educated people with narrow, specialized skills. Rather, it is to produce broadly educated people with strong leadership skills who can contribute to society by getting a job. Among the qualities the university values: collaborative spirit, intellectual curiosity, practical intelligence, analytical strength, creativity to generate new solutions to existing challenges, growth in personal and professional endeavors, drive and determination to put one's stamp on the world. These attributes make students intellectual leaders.

The American **school year** usually starts in late August or early September and runs through to early or mid-June. The school year is divided into 2 semesters or 4 terms (the term "quarter" is usually reserved to the business world). Some MSc programs may start as early as August and include what they call math boot camps. In general, 180 days of class time are required by law. In the quarter system, the school year is three periods of roughly 10 weeks (fall, winter, spring) with a summer quarter offered but not required. In the semester system, there are two semesters of 14 weeks each, usually a break for the month of January, when optional short classes are offered.

A college education is almost indispensable for any sort of professional career. After getting a high school education, practically anybody can go to college or university. Once a student chooses a few likely colleges, the application process can begin. A college application gives details of a student academic record and also covers the extracurricular activities and volunteer organizations a student may have participated in, any honors received, and even part-time or vacation jobs he or she may have held. It helps to have more on one's application than just good grades, in so far as Americans value well-rounded people. Having an excellent academic record is one thing, being involved in activities, especially those that serve the community, is added value.

Many universities will look at a student's college exam scores. The college's catalog will tell students the minimum scores necessary for admission. Many colleges will ask a potential student to come for an interview before offering final admission, or entice you with fellowships so that you will accept admission.

In the U.S. (2021 figures):

- There are about 12,000 graduate programs.
- 1.98 million college graduates earn bachelor's degrees.
- 820,100 graduates earn master's degrees.
- 184,070 earn doctorate or professional degrees.

- 18.3% of college graduates earn degrees in STEM fields.
- 1.2% of people in the United States graduate from a postsecondary or postgraduate program each year.
- Worldwide, the United States of America ranks 19th in college graduation rates. Australia has the most educated population in the world. (<https://educationdata.org/number-of-college-graduates>)

2. The UK system of higher education

The British university system goes back to the eleventh century and has produced some of the major developments in western science, medicine, art and philosophy.

There are some **160 universities** in the UK, the oldest being the University of Oxford (1096). A vast majority are **public universities**, meaning that they receive funding (including budgets for PhD studentships) from the UK Government. British universities are free to pursue their own research objectives, but the amount of funding each receives is partly based on regular assessments of its performance as part of the Research Excellence Framework (REF). The REF examines the research a university is producing as well as its impact on society in general. There is a small number of private universities that tend to specialize in business and law. Note that there might be slightly different systems in England, Scotland, Wales and Northern Ireland. Yet doctoral studies work pretty similarly everywhere.

Most UK universities award their academic doctorates as PhD qualifications. However, some institutions (Oxford) award a DPhil instead. The two degrees stand for the same thing.

UK universities are loosely organized into different groups. The most common ones are:

- The ancient universities comprise seven institutions including Oxford, Cambridge, St Andrews, Glasgow, Aberdeen and Edinburgh as well as Trinity College Dublin (Ireland). Some ancient universities award their doctorates as a DPhil rather than a PhD.
- The Russell Group is a self-selected association of 24 public universities across the UK. The group is self-selecting and represents the country's leading research universities including of the best ranked British universities. They award the majority of UK PhDs.
- The red brick universities (campuses were built from red brick) are another informal grouping based on history rather than collective organization. They include nine civic universities founded during the nineteenth-century industrial revolution, originally designed for the education of middle-class youth and therefore usually nonresidential and serving a large city.
- 'Post-92' is used to describe universities that were originally polytechnics (higher education institutions with a focus on teaching and training rather than research) before being granted full university status in 1992. Many of these 'ex-poly' universities actually have long and proud histories and are now some of the UK's most innovative research centres.

There are other universities, called **plate-glass universities**, established or promoted to university status in the 1960s. The name comes from their modern architectural design, that includes plate glass in steel or concrete. University of York, East Anglia or Warwick are cases in point, named after the county or wider area they serve.

In the **UK**, higher education often begins with a three-year bachelor's degree. Master's degrees are either taught or by research. Doctoral level research degrees usually take at least three years. Tuition fees for first degrees in public universities are up to £9,250 per academic year for English, Welsh and European Union students. Higher education in England is provided by Higher Education (HE) colleges, university colleges, universities and private colleges. Students normally enter higher education as undergraduates from age 18 onwards, and can study for a wide variety of vocational and academic qualifications.

The UK academic year runs from September to June, but the lack of formal teaching in British doctoral programs means that PhD students can, in principle, start at any point in the calendar year. At the **University of Cambridge**, for example, the academic year commences on 1st October and finishes on 30th September each year. The year is divided into three terms, with a Long vacation: Michaelmas term (October – December) – Lent term (January – March) (also at Lancaster University and LSE) – Easter term (April – June) – Long vacation (July – September). At the **University of Oxford** (and the University of Dublin), you have the Michaelmas term (roughly Oct-early Dec), the Hilary term (called Epiphany term at Durham University) (Jan-March), named after St Hilary of Poitiers (c. 310 – c. 367) and the Trinity term (Apr-June).

Also note that Oxford and Cambridge have a collegiate structure. When you apply to a postgraduate degree, you will have to select one college where you will live, socialise and do most of your studying. The college you choose won't affect your chance of getting a place. If your department makes you an offer of a place, you are guaranteed a college place as well. You can express your preference for a college or let the program choose one for you. For more information, see each college website.

In the UK (2021 figures):

- 817,340 students graduate from postsecondary and postgraduate programs annually.
- 418,700 annual bachelor program graduates.
- 253,670 annual master program graduates.
- 29,470 annual doctoral program graduates.
- The most educated people aged 65 and older live in the United Kingdom.

3. A few definitions

An **undergraduate degree** is a bachelor's degree.

Graduate degrees comprise master's degrees and PhDs.

Postgraduate programs (UK term) (**graduate programs** in the U.S.) are undertaken after completing an **undergraduate degree** (*i.e.* BS degrees), or, for some careers, on the basis of relevant work experience.

A **postgraduate degree** (**graduate degree**) is an academic title that students earn when they have completed their **bachelor**. In the UK a postgraduate degree is a “catch all” term for all degrees higher than undergraduate degrees. Postgraduate programs include graduate certificates, graduate diplomas, masters and doctorates.

In the U.S., you go to **graduate school** (grad school) for an MSc or a PhD. A **freshman** (UK **fresher**) is a first-year student. A **sophomore** is a second-year student. A **junior** is a third-year student and a **senior** a fourth-year student.

There are three types of postgraduate degree: MS and MA degrees, doctorate degree (PhD) and specialist degrees and MBAs meant to broaden your knowledge in a given field. Masters courses are usually one year long either in the U.S. or in the UK (with some exceptions, like architecture, for example, which are 2-3 years long).

A **course** is a set or series of classes on a particular subject or one area of study, leading to an exam or qualification. Required courses are also called **core courses**. **Elective courses** give students a chance to deepen or learn about other subjects that interest them in a given curriculum. In the United States, a course is named after an abbreviation of the major and then given a 3- to 4-digit number (FIN289, for example). This is called **course numbering**. Some courses can be taken online. In the UK (and in Australia), a course is the entire program of studies required to complete a university degree. Words such as **unit** or **module** are then used to refer to an academic course as used in North America and the rest of Europe. This corresponds roughly to an academic **major** in the United States system.

A **major** (US) (degree course, UK) is a specialized area of study. Another word for major is **concentration**. A **double major** combines two areas of interest. A **minor** is related to an academic subject and requires fewer courses than a major. It is a secondary subject that complements the major.

Class is used to describe a particular instance of a course. Most of the time, class is used to informally describe a course. For example, students may ask, "How many classes are you taking?" A class is the particular time and day that a lesson takes place. Class (UK) may also be short for **classification**, the level of award of a degree (eg 2:1 or Upper Second). Last, a **class** (US) may refer to a **cohort** (UK) (=promotion).

Lessons are taught within class. They are the building blocks of a course that are taught during class.

A **lecture** takes place in a large room (lecture hall) with theatre-like seating. A professor stands in the front and talks for most of the time. Students take notes.

A lecture can be supplemented with a **discussion**, also called a **section**. It is a small setting that is more like a classroom. In discussions, you talk with peers, go over homework, ask questions and work with a teacher's assistant.

A **seminar** is when a faculty meets with a small group of students. Seminars are typical in graduate school.

In a **tutorial** course, a small number of students work on a topic and meet with the instructor weekly for discussion and guidance.

A **lab** is where students apply what they learn in class by practicing hands-on in a lab setting. A laboratory **rotation** (US and UK) allows students to conduct research in a lab of a faculty member.

Rotations last between six and eight weeks and help students, especially PhD students make informed decisions regarding the research group they wish to join.

A **studio** (arts and humanities) is where students apply theory from class to their work.

A **syllabus** [pl. syllabuses or syllabi] is a guide to a course and what is expected from the student. It is usually handed out by a professor at the beginning of a course. It includes course policies, rules and regulations, required textbook and assignments.

A **curriculum** [pl. curriculums or curricula] is the subjects comprising a course of study in a school or college and the learning objectives. This is the academic content taught in a course or program. (*cursus* in French).

In the U.S., a **credit** is roughly equal to one hour of class time (in general 30 credit-hours per academic year). In the semester system, the word **unit** or **semester credit hour** (SCH) is preferred. Most UK universities use the European ECTS system (European Credit Transfer and Accumulation System or the Credit Accumulation and Transfer Scheme (CATS)).

In the UK, a **dissertation** is an extended subject on a topic as agreed between the student and the faculty. It is an extended piece of writing done at the end of a master's degree. It is normally applied to a doctorate. It is to be distinguished from the **doctoral dissertation**.

Both a thesis and a dissertation are considered as a final project and required to graduate respective programs.

Completion of a doctoral program requires submission and defense of a **dissertation** (the **viva**). A dissertation is a piece of scholarly writing that accounts for your research work throughout the doctoral program. It develops a unique concept and defends it on the basis of theoretical and practical results.

In the United States, the definition of a **thesis** [pl. theses] is almost the opposite of that in Europe. It is a critically written scholarly piece of research work. It refers only to the **master's degree** requirement. (Thesis is also used to describe a cumulative project for a bachelor's degree: senior thesis or senior project done in the senior year before graduation). A thesis is supposed to be an original paper presenting a proposition. It is about 100 pages long and shorter than a dissertation. A thesis is presented at the culmination of a master's program and allows students to showcase their knowledge and expertise within the subject matter they have been studying as part of the program.

In the UK, the term **thesis** is usually associated with PhDs and research master's degrees, while dissertation is the more common term for a substantial project submitted as part of a taught master's degree or an undergraduate degree (*e.g.* MSc, BA, BSc...).

A **doctoral thesis** is a focused piece of original research which is performed in order to obtain a PhD. It is about 300 pages long. In the U.S., a PhD consists in writing between three to six published and peer-reviewed papers in A-scholarly journals.

In Europe the original distinction between a thesis and a dissertation has been largely retained. A doctoral thesis is a focused piece of original research which is performed in order to obtain a PhD. A dissertation is part of a broader post-graduate research project.

A **capstone course**, also known as **capstone unit**, **capstone module**, **capstone project**, **capstone subject**, or **capstone experience**, is the culminating experience of an educational program. It may also be referred to as **senior seminar** (in the U.S.) or **final year project** (more common in the UK). A capstone is an independent assignment that serves as a culminating academic and intellectual experience for students, typically during their final year (It is called a capstone because it represents a crowning achievement as a capstone does in architecture).

Faculty (the / a) (American English) are people who teach in a university, college, or US high school, or in one of its departments. To be a faculty member = to be teaching, to be a professor. Also, **academic staff**. A top math faculty = a top math professor.

Rolling admission process. Applicants need to make a difference between rolling admission and regular admission. Colleges with rolling admissions (mostly in the UK) review applications as they are sent in (from July until April) vs waiting to evaluate all applications after a set deadline. It is the “first come first serve principle”. Other colleges may set priority deadlines (prospective students who submit an application by this deadline are guaranteed to receive an admissions decision by a specific date) and cutoff dates beyond which admissions are closed. Schools will continue to evaluate applications until they have filled all the slots for their incoming class. A qualified candidate who waits until the 11th hour to apply may be more likely to get denied, so it’s recommended to not wait too long to submit your application.

4. The admissions committee (adcom)

All applications for graduate studies go through the grinding mill of an admissions committee. An admissions committee consists mainly of faculty members from the department and occasionally a few students already in the graduate program. The applications are split up among the committee members in a way such that each application has at least more than one reviewer. Each file is read by a minimum of **three people**, sometimes including a student member (usually a PhD student), a faculty member, a staff member and the Director of Admissions. If there is no consensus among the reviewers, the file automatically goes to a fourth and occasionally a fifth reader. It is a thorough and fair process. Do not listen to those who say that the SOP is hardly ever read. It is definitely one of the four pillars of your application (along with transcripts, CV, letters of recommendation).

The decision-making process is a multi-stage process. For utilizing the committee members’ time most efficiently, there is usually a preliminary round where a lot of the applications are weeded out, based on some requirements that the committee thinks of as minimum expectations for a student at their university. These could be cut offs on GRE, GPA, TOEFL or in some cases, criteria such as not considering an applicant who already has a graduate degree in the same or related field. The ones that go through this filter are the true potential candidates and get reviewed more rigorously by the committee. The review process typically ends with a committee meeting where the final shortlisting

is done to reach the admission target for the academic year, with a few more being chosen for the waitlist.

If you mention that you would be interested in working with a specific faculty member, your application might be forwarded to her/him and she/he will be required to provide feedback. Beware of mentioning only one faculty in the SOP as it might be possible that a faculty member has decided to take a sabbatical, or no longer takes students or has transferred to another position elsewhere.

5. The application process

The application process to American or British graduate programs is arduous and **time consuming**. It is more than just writing a personal statement. The decision to apply must be thought out long before the process actually begins. So, start the process as early as you can, and gather together all the necessary material you will need for the application. Naturally, when you apply to a master's degree, you can't apply to a discipline completely unrelated to your bachelor's. Or you can apply, but nothing guarantees you will get accepted. You would be hard put to be accepted into a Biology program if all the courses you followed were in OR, FE or ML. You need the right base to build an education on. You cannot throw yourself into a pool when you do not know how to swim.

You will have to:

- prepare and take the required standardized **language tests** (GRE/GMAT/TOEFL/IELTS). You will probably have to sit them more than once to meet the standards of each program. The sooner you get ready, the better off you will be;
- create an online **application account** with each school;
- create a **CV** that matches the expectations of the admissions committee;
- draft, polish an **application essay**, personal statement, statement of objectives or statement of purpose as well as a personal history statement (many versions will be necessary before reaching an acceptable draft) or a diversity statement;
- get **advice** and **tips** from faculty, students in or graduates from the programs you are applying to. If necessary, you can also ask advice from the departments themselves;
- secure **letters of recommendation** from faculty members, researchers and other people (tutors, supervisors)—and sometimes write those letters yourself because professors and managers will tell you they are too busy to deal with them;
- translate original **transcripts** from your preparatory program or university and convert the grades into letters (on a maximum GPA of 4.0 for US programs. For some UK programs see the relevant classification below).
- sometimes upload your files and/or sending paper-based material through snail mail via a guaranteed carrier;
- fill up the **application online** before the deadlines; and given the complexity of the US system *vs* the French system, it takes a while to clear all questions;
- pay the **application fee** (usually \$150) for each school;
- prepare for the **videos** and **interviews** in the best of cases; there may be as many as three interviews (technical, behavioral, right fit);

- prepare for the **quantitative assessment tests** mandated by some universities, such as MIT Sloan (MFin program, Princeton’s Bendheim Center for Finance, amongst others);
- draft some **additional essays** ahead of interviews or as part of the interviews;
- research and draft **scholarship** applications and possibly prepare interviews;
- apply for a **visa** and meet visa officers. Once you have gained admission to a US program, the university will send an I-20 form for you to fill up that is necessary to have an F-1 visa. You will have to set a date to meet with the visa authorities and pay a fee. (<https://studyinthestates.dhs.gov/students>)

Naturally, all this will be done concurrently to your present workload, project work, exam preparation, applications for internships, knowing full well that the grades you will have obtained by the end of the semester might well be sent to the admissions offices as additional material or requested by them for your admission.

Keep a careful record of all actions taken in that direction. Do not wait until the last days to apply online as servers tend to be bug prone in the final hours of the application process. If the school uses a rolling basis admission process, admissions staff read and process applications as they come. The longer you wait before submitting the more likely chances are that all the slots will have been filled. If the school uses a fixed date system, the essays may or may not be read all at one time. In any case, it is your responsibility to make sure you have sent all the documents and complied with the deadlines.

Graduate application timeline

April/May	Start thinking about a program abroad, and who the potential recommenders might be – Start securing LORs – Start studying for GRE/TOEFL/IELTS – Reach out to faculty in your university to ask for advice on grad schools
May/June	Draw up a list of potential programs (reach and safety schools) and research relevant faculty – Retrieve and translate transcripts from undergraduate institution – Send them back to school for validation
July/August	Draft SOP and scholarship essays – Take language tests
July/Sept	Talk to faculty – Read papers
Sept/Oct	Applications open – Start them – Provide biographical information – Write resume – Make contact with students and professors at your prospective schools
Nov	Make final edits – Check with recommenders
Oct/Dec	Submit applications and essays – Keep copies of every section for your records – Verify that your recommendations have been sent
Jan/Feb	Quantitative assessment tests – Interview and video process
Feb/March	Admission results (admission/rejection/waitlisting) – Early deadlines
April 15	Deadline for admission selection and your final answer