



**Informed  
Choices**

A Russell Group guide  
to making decisions  
about post-16 education

2016/17  
Fifth edition

## Preface

How to use this guide

Foreword

The Russell Group

Acknowledgements

Index

## Post-16 qualifications and how they are organised

## Pre-16 qualifications and university entry

## Making your post-16 subject choices

## Subjects required for different degree courses

## How subject choices can affect your future career options

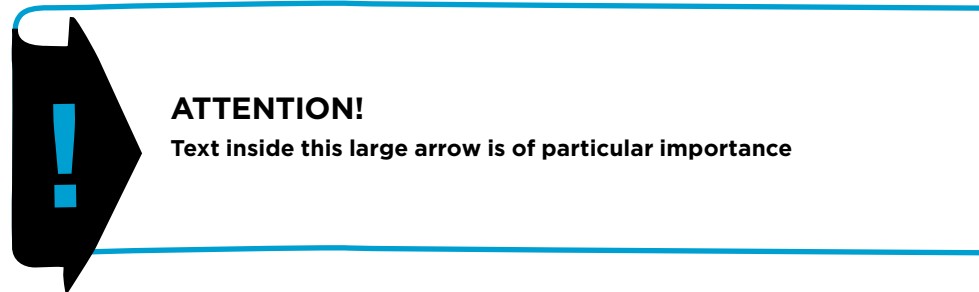
## The five-point plan for making your post-16 choices

## Abbreviations

## Links

## How to use this guide

To make this document easier to use, the following design elements have been adopted:



- **URL links which direct you to websites appear in a different text style, as in [domain.ac.uk](#). These are clickable.**
- **Links which navigate to other sections of the document appear in a different text style, as in [» chapter name](#).**
- **You can move forwards and backwards between pages by:**
  - using the left and right arrow keys on your keyboard**
  - using the left and right buttons on your mouse**
  - using the wheel on your mouse**
  - using the red and yellow arrows in the top-left corner of the page**
- **You can go to specific sections by clicking on a link in the list of content in the left-hand sidebar.**
- **To access a printer-friendly version of this guide, click the printer icon on the navigation bar on the left.**

## Foreword

Welcome to the fifth edition of *Informed Choices*. We hope that you will find this a helpful guide as you consider the best courses and subjects for you to study in the sixth form or at college. We also hope that your parents or carers, teachers and advisers who are helping you make these important decisions will find it useful too.

The Russell Group of Universities has produced this guide because we think that it is really important for all young people — especially those whose parents didn't go to university — to have clear information about how the subjects that they choose to study in the sixth form or at college can affect their options at university and their chances in life. That way, they can make well-informed decisions.

As a group of 24 leading universities in the UK, we want to help ensure that young people are well-informed. We have developed this guidance in close consultation with admissions staff and managers in all Russell Group universities and with very helpful advice from the Institute of Career Guidance.

When it comes to choosing your A-levels or other advanced level qualifications, it can be tempting simply to choose subjects that you enjoy and which interest you. But it's also important to think a bit further ahead and to consider what you might want to do in the future.

If the idea of going to university appeals — whether or not you know which subject you want to study — having the right information now will give you more options when the time comes to make up your mind. There's no getting away from the fact that the subjects you study in the sixth form or at college will determine which degree courses will be open to you in future.

For some degrees you will be required to have studied a particular subject or subjects beforehand. It is really important that you do not make things harder for yourself by choosing subjects which won't equip you for your chosen university course or show your talent for a particular subject.

If you don't yet know what you'll want to study at university, there are some subjects which will keep your degree options open until you decide which course to take. This guide will help you to see which advanced level subjects — which we call 'facilitating subjects' — open doors to more degrees and more professions than others. It's not about 'hard' or 'soft' subjects, but those which keep your options open.

---

## Preface

How to use this guide

Foreword

The Russell Group

Acknowledgements

Index

---

## Post-16 qualifications and how they are organised

---

## Pre-16 qualifications and university entry

---

## Making your post-16 subject choices

---

## Subjects required for different degree courses

---

## How subject choices can affect your future career options

---

## The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

## Foreword (continued)

Although choosing the right subjects to study in the sixth form or at college is an important first step towards university, it doesn't guarantee you a place on your chosen course. Entry to Russell Group universities, in particular, can be highly competitive. Your exam results are vitally important, but they are only one of several things universities will take into account when they consider your application.

Russell Group universities take a range of factors and information into account to ensure that we can identify the candidates with the most ability and potential to excel on our courses — whatever their social or educational background.

Russell Group universities are absolutely committed to doing everything possible to ensure students have clear information on typical university entrance requirements. We hope that you find this guide useful, and wish you every success in your studies.

## The Russell Group

The Russell Group represents ►► **24 leading UK universities** which are committed to maintaining the very best research, an outstanding teaching and learning experience for students of all backgrounds and unrivalled links with business and the public sector.

Visit <http://www.russellgroup.ac.uk> to find out more.

A black callout box with a white exclamation mark inside, pointing towards the right. The box is surrounded by a blue border.

### ATTENTION!

**All Russell Group universities provide detailed information about entry requirements on their websites or in their prospectuses. Although there are common themes, entry requirements (even for very similar courses) can vary from one university to another so you should only use the information provided in *Informed Choices* as a general guide. As your plans become firmer, it's essential that you check with the university to be sure that you are aware of the most up-to-date entry requirements for your chosen course.**

---

## Preface

How to use this guide

Foreword

The Russell Group

Acknowledgements

Index

---

## Post-16 qualifications and how they are organised

---

## Pre-16 qualifications and university entry

---

## Making your post-16 subject choices

---

## Subjects required for different degree courses

---

## How subject choices can affect your future career options

---

## The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

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— **Preface**

- How to use this guide
- Foreword
- The Russell Group
- Acknowledgements
- Index

— **Post-16 qualifications and how they are organised**

— **Pre-16 qualifications and university entry**

— **Making your post-16 subject choices**

— **Subjects required for different degree courses**

— **How subject choices can affect your future career options**

— **The five-point plan for making your post-16 choices**

— **Abbreviations**

— **Links**

**Index**

**Preface**

How to use this guide

- 1 Foreword
- 3 The Russell Group
- 4 Acknowledgements
- 6 Index

**8 Post-16 qualifications and how they are organised**

- 9 Standard and advanced level qualifications
- 10 A-levels
- 12 Scottish Highers, Advanced Highers and Baccalaureates
- 13 Advanced Welsh Baccalaureate
- 14 International Baccalaureate Diploma
- 15 Cambridge Pre-U
- 16 Extended Project Qualification
- 17 Core Maths qualifications
- 18 Vocational options

**38 Subjects required for different degree courses**

**52 How subject choices can affect your future career options**

- 53 Graduate occupations
- 54 Professional careers

**22 Pre-16 qualifications and university entry**

- 23 General entrance requirements
- 24 Changes to GCSEs
- 24 The English Baccalaureate
- 25 Curriculum for excellence
- 25 Requirements for specific subjects

**26 Making your post-16 subject choices**

- 28 If I know what I would like to study at university, what subjects do I need to take at advanced level?
- 29 What subjects can give me the most options?
- 31 Do I need to study three facilitating subjects at A-level to go to a Russell Group university?
- 32 What if the facilitating subjects don't appeal to me?
- 32 Are there subjects that universities don't accept?
- 33 How do certain subject combinations relate to university courses?
- 36 Choices for entry to universities in Scotland

**56 The five-point plan for making your post-16 choices**

**58 Abbreviations**

**60 Links**

- 63 Useful contact details

---

## Preface

---

### Post-16 qualifications and how they are organised

Standard and advanced level qualifications

A-levels

Scottish Highers, Advanced Highers and Baccalaureates

Advanced Welsh Baccalaureate

International Baccalaureate Diploma

Cambridge Pre-U

Extended Project Qualification

Core Maths qualifications

Vocational options

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---


### The five-point plan for making your post-16 choices

---

### Abbreviations

---

### Links



# Post-16 qualifications and how they are organised

## Standard and advanced level qualifications

There are different qualification systems in place in different parts of the UK but there are a lot of similarities in the way they are organised.

You will generally study for your first qualification at around age 14–16. In this guide we refer to these qualifications as **standard level qualifications**.

These standard level qualifications include:

- **GCSEs and IGCSEs**
- **National 5 in Scotland**
- **Welsh Baccalaureate National**
- **The International Baccalaureate Middle Years Programme**

As you progress through your studies, you are likely to focus on a narrower range of subjects for advanced level qualifications.

These **advanced level qualifications** include:

- **AS- and A-levels**
- **Highers, Advanced Highers and Scottish Baccalaureate in Scotland**
- **Welsh Baccalaureate Advanced**
- **International Baccalaureate Diploma Programme**

In terms of qualifications, entry to university is determined mainly on the basis of performance in advanced level qualifications but grades achieved in standard level qualifications may be taken into account and there are sometimes specific subject or grade requirements at this level.

Some schools enter pupils early for GCSE, AS-level and A-level. You should be aware that some universities or their individual subject departments (for example Medicine) may want to see that you have taken a number of advanced level qualifications all at the same time; for example, they may want to see three A-levels taken in Year 13. This can be because they want to know that you can comfortably manage a workload of this size in your advanced level studies. Admissions policies may therefore differ in relation to A-levels taken early, and whether these are included in offers made or not.

For example, some courses which typically make a conditional offer of AAB may take account of an A-level A grade achieved at the end of Year 12 and, as a result, make a conditional offer of AB for A-levels taken in year 13. Other courses may still make a conditional offer of AAB on subjects taken at the end of Year 13 and will not include the A-level already taken in their conditional offer. If you think that this may affect you, it is important to check the admissions policy for the courses and universities that you are interested in applying to.

—  
**Preface**

—  
**Post-16 qualifications and how they are organised**

- Standard and advanced level qualifications
- A-levels
- Scottish Highers, Advanced Highers and Baccalaureates
- Advanced Welsh Baccalaureate
- International Baccalaureate Diploma
- Cambridge Pre-U
- Extended Project Qualification
- Core Maths qualifications
- Vocational options

—  
**Pre-16 qualifications and university entry**

—  
**Making your post-16 subject choices**

—  
**Subjects required for different degree courses**

—  
**How subject choices can affect your future career options**

—  
**The five-point plan for making your post-16 choices**

—  
**Abbreviations**

—  
**Links**

As well as your advanced level qualifications you might also consider the Extended Project Qualification (EPQ) which provides the opportunity to develop valuable independent study and research skills. Russell Group universities value the EPQ which can be drawn upon in your personal statement and at interview to provide evidence of enthusiasm for your chosen subject. Some Russell Group universities may also include the EPQ in their offers – check individual university guidance for more information.

You should be aware that, on top of academic requirements, some universities require applicants to sit admission tests for certain courses. Be sure to check entry requirements and guidance on university websites.

**A-levels**

The structure of A-levels in England is changing between September 2015 and September 2017. Newly structured A-levels are being introduced in three phases as shown in the table below:

Newly structured A-levels to be taught from...	
<b>September 2015</b>	Art and Design, Biology, Business, Chemistry, Computer Science, Economics, English Language, English Language and Literature, English Literature, History, Physics, Psychology, Sociology
<b>September 2016</b>	Ancient Languages (Classical Greek, Latin), Dance, Drama and Theatre, Geography, Modern Foreign Languages (French, German, Spanish), Music, Physical Education, Religious Studies
<b>September 2017</b>	Accounting, Ancient History, Archaeology, Classical Civilisation, Design and Technology, Electronics, Environmental Science, Film Studies, Further Mathematics, Geology, Government and Politics, History of Art, Law, Mathematics, Media Studies, Music Technology, Philosophy, Statistics

A full timeline of qualification reform is available on the UCAS website: <https://www.ucas.com/advisers/guides-and-resources/qualification-reform/qualification-reform-timeline>

Under the old structure A-levels were made up of the AS-level and A2, with each part contributing 50% to the overall A-level grade. In newly structured A-levels students will be examined at the end of a (typically) two-year course. AS-levels will be standalone qualifications and will no longer contribute to the overall A-level grade.

For the purposes of applying to university, where the AS-level is taken as a standalone qualification, it will be worth 40% of an A-level. As a result of this repositioning, universities may no longer accept two AS levels in place of one A-level in their offers.

It's important to note that, generally speaking, Russell Group universities make offers of places based on three A-level grades. However, some courses at some universities (for example some Medicine degrees) also ask for a fourth AS-level and some universities see particular educational value in students taking AS-levels. You should therefore check entry requirements and guidance on university websites when deciding whether or not to take additional AS subjects.

Russell Group universities are used to assessing applications in a wide range of contexts and understand that schools and colleges may differ in how they deliver the curriculum. They are committed to treating all applicants fairly so if it has not been possible for you to take AS-levels or a fourth AS subject, make sure this is noted in your academic reference.

You can find a list of useful links on the Russell Group website: <http://russellgroup.ac.uk/for-students/how-do-russell-group-universities-view-the-as-level/>

UCAS also provide useful information on their website: <https://www.ucas.com/advisers/guides-and-resources/qualification-reform/applying-he-reformed-qualifications>

**Practical Science**

From 2015, if you take a science A-level in England you will receive a separate 'pass'/'not classified' mark for the practical element. This will not contribute towards the overall A-level grade and there is no direct relationship between the science practical grade and examination grade, although the examination will draw upon the practical experiences of a learner.

If you are applying with a science A-level some universities will require a 'pass' in the practical as well as setting an overall grade requirement even if you are not applying for a science related degree course. Other universities may only require a pass if you are applying for certain courses (for example engineering or science degrees) and some may make no requirements on the practical element. It is important to check individual university websites for guidance.

---

## Preface

---

### Post-16 qualifications and how they are organised

Standard and advanced level qualifications

A-levels

Scottish Highers, Advanced Highers and Baccalaureates

Advanced Welsh Baccalaureate

International Baccalaureate Diploma

Cambridge Pre-U

Extended Project Qualification

Core Maths qualifications

Vocational options

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

### Abbreviations

---

### Links

---

### How are A-levels organised in Wales and Northern Ireland?

A-levels offered by the exam boards in Wales and Northern Ireland are also being gradually reformed. Some of the new A-levels in Wales are already being taught, with more due to be introduced in 2017. In Northern Ireland all of the new A-levels were brought in for first teaching in 2016.

In both Wales and Northern Ireland the new A-levels will continue to be made up of the AS-level and the A2. However, the weighting of the AS will change, with revised AS levels contributing 40% to the overall A-level grade.

### If I want to apply to university, what do I need to think about when making my AS- and A-Level choices?

Subject requirements and the number of qualifications required for entry will vary between universities, therefore it's also important to check individual university websites for further details on their entry criteria.

Your choice of subjects will be key to determining the university courses open to you. The guidance provided in this booklet on [▶ subject requirements](#) will help you to make informed choices about your A-level subjects.

Students in Wales studying A-levels as part of the Advanced Welsh Baccalaureate Skills Challenge Certificate should also read the guidance on page 13.

## Scottish Highers, Advanced Highers and Baccalaureates

### How are they organised?

Under the Curriculum for Excellence the combination of qualifications you will study in your senior phase (S4 to S6) will depend on the school you attend.

Typically, you will study towards four or five Highers over your fourth and/or fifth years of secondary school (S4 and/or S5). Some students may take a combination of Highers and Advanced Highers between S4 and S6 and some may also study for the Scottish Baccalaureate. For more information see [www.educationscotland.gov.uk](http://www.educationscotland.gov.uk)

Highers usually consist of units of work set and marked by teachers and an external examination.

Advanced Highers are usually made up of three units achieved by passing an internal assessment which may consist of coursework, tests or practical work and a fourth unit which is assessed externally, usually through an examination or project. Before taking an Advanced Higher, you will normally have studied the subject at Higher level.

There are four Scottish Baccalaureates – one in Science, one in Languages, one in Expressive Arts, and one in Social Sciences. Students study Mathematics or English/Gàidhlig, two courses from a list of eligible subjects, and undertake an interdisciplinary project. Two out of the three courses must be at Advanced Higher level with the remaining course at Higher level.

### If I want to apply to university, what do I need to think about when making my Scottish Higher subject choices?

How you approach your choice of Highers and/or Advanced Higher subjects may depend on whether you are thinking of studying at a Scottish university or whether you want to study in other parts of the UK.

Many universities in England, Wales and Northern Ireland accept Scottish Highers for entry to their degree programmes. However, for many courses at Russell Group universities you will also be asked for one or more Advanced Higher in addition to your Highers so it's advisable to check entry requirements at a fairly early stage.

If you are looking to progress to a Scottish university it is likely that the entry requirements will be expressed in terms of Highers but may also include Advanced Highers, for example for Medicine. Achievement of Advanced Highers in relevant subject areas may make direct entry to the second year of a degree programme a possibility.

When selecting your choice of study for the senior phase it is very important to research the entry requirements of any universities you may be interested in. Scottish universities traditionally seek breadth of study as a preparation for the first year of undergraduate study and may require you to demonstrate achievement across four subjects, or more if over two sittings.

Please see the guidance later in this booklet on [▶ subject requirements](#) for additional information to support your choices.

## Advanced Welsh Baccalaureate

### How is it organised?

The Advanced Welsh Baccalaureate consists of two parts:

**Core “Skills Challenge Certificate”:** consisting of three Challenges and an Individual Project, graded A\*-E.

**Supporting qualifications:** GCSE English Language or GCSE Welsh Language at grade A\*-C, GCSE Mathematics – Numeracy at grade A\*-C, and two A-levels (or their equivalents) graded A\*-E.

The Advanced Welsh Baccalaureate allows direct entry to university.



## Preface

### Post-16 qualifications and how they are organised

Standard and advanced level qualifications

A-levels

Scottish Highers, Advanced Highers and Baccalaureates

Advanced Welsh Baccalaureate

International Baccalaureate Diploma

Cambridge Pre-U

Extended Project Qualification

Core Maths qualifications

Vocational options

### Pre-16 qualifications and university entry

### Making your post-16 subject choices

### Subjects required for different degree courses

### How subject choices can affect your future career options

### The five-point plan for making your post-16 choices

### Abbreviations

### Links

### If I want to apply to university, what do I need to think about when making my Advanced Welsh Baccalaureate choices?

Your choice of options will be key to determining the university courses open to you. **Generally speaking**, alongside a good pass in the Core, universities will expect you to be taking two or three A-levels (equivalents such as BTEC may also be acceptable) as part of your Welsh Baccalaureate. Please see university websites for further details on A-level requirements, and the guidance later in this booklet on [▶ subject requirements](#) for additional information to support your choices.

## International Baccalaureate Diploma

### How is it organised?

The International Baccalaureate (IB) Diploma programme comprises:


- **Six subjects, chosen from across the different subject groups**
  - Three studied at higher level (courses representing 240 teaching hours)
  - Three studied at standard level (courses representing 150 teaching hours)
- **Three compulsory core components**
  - An extended essay
  - A course on the Theory of Knowledge
  - A component called 'creativity, action, service' which requires that students actively learn from the experience of doing real tasks beyond the classroom.

### ATTENTION!

**Although it is possible to seek certification of individual subjects studied, many universities require completion of the full Diploma for admissions purposes and will not accept individual IB certificates.**

### If I want to apply to university, what do I need to think about when making my IB choices?

The International Baccalaureate is well-established as a qualification, having been offered in international schools worldwide for many years. In recent years, a growing number of UK schools have started to offer the International Baccalaureate as an alternative to A-levels.



**University Admissions staff have a lot of experience of assessing IB applicants and are more than happy to accept it for university entry purposes.**

If you are studying for the IB, your choice of higher level subjects will be key to determining the university courses open to you. The guidance provided in relation to [▶ subject requirements](#) shows which degree courses are likely to require an advanced level qualification in a certain subject. For IB applicants this guidance can be used to identify the degree courses most likely to require you to have studied a certain subject at the higher level within the IB.

Individual higher level subjects may also be taken as standalone qualifications. These may be accepted in combination with A-levels or other Level 3 qualifications. Check entry requirements carefully before choosing this as an option.

It is less usual for universities to require particular subjects at standard level within the IB although you should always check entry requirements carefully before applying to be certain of this.

## Cambridge Pre-U

The Cambridge Pre-U is a qualification aimed particularly at 16–19 year olds who want to go on to university.

### How is it organised?

You will typically choose up to four Pre-U Principal Subjects to study over a two-year period. In each subject you will sit one set of exams at the end of the two years of study.

## Preface

### Post-16 qualifications and how they are organised

Standard and advanced level qualifications

A-levels

Scottish Highers, Advanced Highers and Baccalaureates

Advanced Welsh Baccalaureate

International Baccalaureate Diploma

Cambridge Pre-U

Extended Project Qualification

Core Maths qualifications

Vocational options

### Pre-16 qualifications and university entry

### Making your post-16 subject choices

### Subjects required for different degree courses

### How subject choices can affect your future career options

### The five-point plan for making your post-16 choices

### Abbreviations

### Links

If you are aiming to obtain a Cambridge Pre-U Diploma, you will need to take:

- **Any three Principal Subjects, and**
- **The Global Perspectives and Research (GPR) course.**

Your final Diploma mark will be based on the total of the scores for your three Principal Subjects and the core component, GPR.

Individual Pre-U subjects can also be taken in combination with other qualifications such as A-levels. Within the Cambridge Pre-U Diploma it is possible to substitute one or two of the Principal Subjects for A-levels.

### If I want to apply to university, what do I need to think about when choosing my Pre-U Principal Subjects?

Although it is a relatively new qualification, universities are already familiar with the Pre-U and are happy to consider candidates applying with the Cambridge Pre-U Diploma or one or more Principal Subjects in combination with A-levels. It is likely that universities will expect you to have studied at least three Principal Subjects and/or A-levels. (It is not a good idea for you to be examined in the same subject for both Pre-U and A-level.)

Your choice of Principal Subjects will be key to determining the university courses open to you. The guidance provided in relation to subject requirements shows which degree courses are likely to require an advanced level qualification in a certain subject. For Pre-U applicants this guidance can be used to identify the degree courses most likely to require you to have studied a certain Pre-U Principal Subject. Not all universities will necessarily include the GPR component in offers.

### Extended Project Qualification

The Extended Project Qualification (EPQ) is equivalent in size to half an A-level and is available as a standalone qualification. It is a single piece of work of a student's choosing that requires evidence of planning, preparation, research and independent learning. The piece of work could be:

- **A research based written report**
- **A production (e.g. a fashion show or charity event) and accompanying written report**
- **An artefact (e.g. a piece of music, art or product) and accompanying written report**

Undertaking this kind of work considerably improves students' skills in time management, academic writing, referencing, and critical analysis, amongst others.

For this reason the EPQ is valued by Russell Group universities and some may include it as part of an offer made to a student (for example in place of a fourth AS-level). You should check university websites for degree entry requirements.

Even if not included in formal offers, taking an EPQ can be viewed favourably by Russell Group universities. You can talk about it in your application and at interview to demonstrate interest and aptitude for your chosen degree course; if your EPQ topic is not obviously linked to the degree you're applying for make sure you explain how the skills you've developed are relevant.

### Core Maths qualifications

'Core Maths' refers to a group of mathematics qualifications available in England. They are designed for students who have achieved a grade A\*-C in GCSE, and wish to continue studying maths but are not taking it at AS or A-level.

There is more information on the Core Maths qualifications at: <http://www.core-maths.org/about-core-maths/students/>

Russell Group universities value mathematics skills for many different degree courses and many have GCSE or equivalent requirements. Mathematical and statistical problem solving, data analysis and interpretation skills can be useful for a wide variety of undergraduate degrees, and a Core Maths qualification may help you to improve and maintain these skills, especially if you are not taking AS or A-level Maths/ Further Maths.

In certain circumstances, for example if a student has not met a minimum GCSE maths requirement, some universities may also consider achievement in a Core Maths qualification instead. You should check individual university websites for more information.

Many degree courses require A-level or AS-level Maths and sometimes Further Maths as part of their entry requirements.



**It is very important to be aware that where a university requires AS- or A-level Maths or Further Maths, a Core Maths qualification is not a suitable substitute.**

---

## Preface

---

### Post-16 qualifications and how they are organised

Standard and advanced level qualifications

A-levels

Scottish Highers, Advanced Highers and Baccalaureates

Advanced Welsh Baccalaureate

International Baccalaureate Diploma

Cambridge Pre-U

Extended Project Qualification

Core Maths qualifications

Vocational options

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

### Abbreviations

---

### Links

## Vocational options

When it comes to choosing your post-16 qualifications and subjects your school or college may offer a variety of vocational options. Some universities consider vocational qualifications for entry to some courses and a growing number of students are entering higher education with a mixture of academic and vocational qualifications.

It is very important to know, however, that vocational qualifications are not always a suitable pathway towards studying for a degree at a Russell Group university. Certain vocational qualifications may only be suitable for selected degree subjects or may not meet the criteria for entry at all.

Where vocational qualifications are accepted, some universities specify they must be studied alongside other academic qualifications like A-levels, and certain GCSE or other standard level requirements may apply; doing a vocational course will not exempt you from these requirements. It may also be the case that a university only accepts vocational qualifications in certain subjects. It is very important that you check entry requirements for individual universities to find out their position on accepting vocational qualifications.

## BTEC qualifications

BTECs are vocational qualifications that come in many different subjects, sizes and at different levels. Some BTEC qualifications have recently been redesigned with the aim of making them better suited to preparing students for higher education. It is becoming increasingly common for students to take vocational qualifications, like BTECs, alongside A-levels.

### I am thinking about studying for a BTEC qualification - what are the issues when it comes to university application?

Entry requirements vary between courses and between universities. Some BTEC qualifications only allow progression onto certain degree courses.

However, although BTECs have recently been redesigned it is very important to know that they may not be considered suitable preparation for many Russell Group degree courses. If you intend to study at a Russell Group university we would advise you to check entry requirements carefully to see whether a BTEC would be a suitable route for the degree you are interested in applying to.

As with other qualifications, it is likely that in order to meet the entry requirements you will need to achieve very high grades. A few universities specify their requirements in terms of performance in individual units rather than on the basis of the overall grade(s). Some universities will only accept BTECs in certain subjects and you may also be required to have studied other qualifications such as A-levels alongside a BTEC qualification. You should check individual university websites for guidance.

## OCR Level 3 Cambridge Technicals and other 'technical' qualifications

Like the BTEC qualifications, OCR Level 3 Cambridge Technicals are available in many subjects and in different sizes (meaning the amount of study and assessment time varies between qualifications). They too, have recently been redesigned to make them more suitable for progression to higher education and can also be combined with academic qualifications such as A-levels.

All of the same comments we make above regarding BTECs are applicable to the OCR Cambridge Technicals. It should be noted that other 'Technical' qualifications are available and if you are considering studying for these you should contact the university that you are thinking of applying to in order to discuss their suitability for entry.

## Technical Baccalaureate (TechBacc)

The TechBacc is a school/college performance measure and is not a qualification. Students achieve the TechBacc if they successfully complete all of the following:

- **An approved level 3 technical qualification**
- **A Level 3 Mathematics qualification, such as A-level Maths or 'Core Maths'**
- **The extended project (EPQ).**

As the TechBacc is not a qualification in its own right it is unlikely that Russell Group universities would make offers on the basis of 'achieving the TechBacc'. You may, however, be made an offer on the basis of some or all of the qualifications which make up the TechBacc. You should contact the universities you are considering applying to for further guidance.

—  
**Preface**

—  
**Post-16 qualifications and how they are organised**

Standard and advanced level qualifications

A-levels

Scottish Highers, Advanced Highers and Baccalaureates

Advanced Welsh Baccalaureate

International Baccalaureate Diploma

Cambridge Pre-U

Extended Project Qualification

Core Maths qualifications

Vocational options

—  
**Pre-16 qualifications and university entry**

—  
**Making your post-16 subject choices**

—  
**Subjects required for different degree courses**

—  
**How subject choices can affect your future career options**

—  
**The five-point plan for making your post-16 choices**

—  
**Abbreviations**

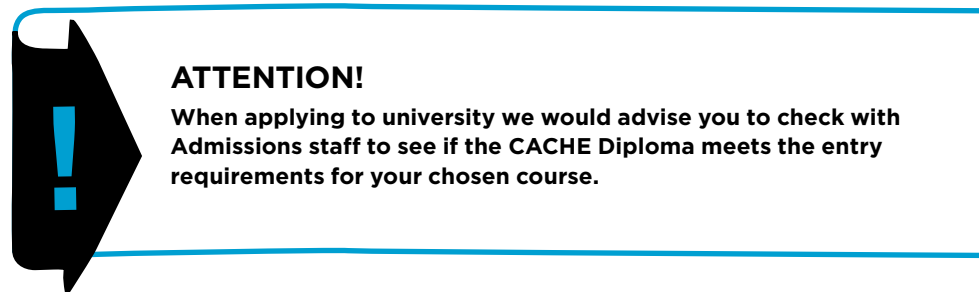
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**Links**

## CACHE Level 3 Diplomas

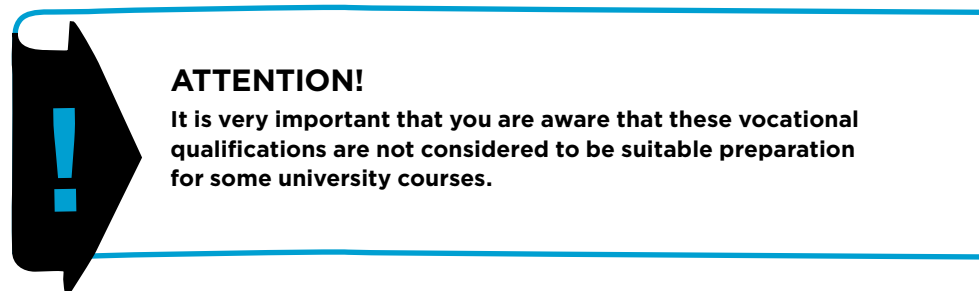
The CACHE Diplomas in Child Care and Education and Early Years Education and Care are qualifications focusing on knowledge and understanding of child development and education, awarded by the Council for Awards in Care, Health and Education.

### **If I want to apply to university what are the issues if I choose the CACHE Level 3 Diploma?**

While these courses enable you to become fully qualified as a child care worker, they are also a route to some university courses. Students with high grades and the relevant GCSE passes do progress onto some (but a limited number of) courses at Russell Group universities, such as Childhood Studies, Sociology and subjects allied to Medicine, for example Nursing. Where this is possible, there is very often some sort of link between the content of the CACHE course and the intended degree course, for example CACHE contains Sociology which would be relevant to a degree in Sociology.



**ATTENTION!**  
When applying to university we would advise you to check with Admissions staff to see if the CACHE Diploma meets the entry requirements for your chosen course.



**ATTENTION!**  
It is very important that you are aware that these vocational qualifications are not considered to be suitable preparation for some university courses.

---

## Preface

---

## Post-16 qualifications and how they are organised

---

### Pre-16 qualifications and university entry

General entrance requirements

Changes to GCSEs

The English Baccalaureate

Curriculum for Excellence

Requirements for specific subjects

---

## Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

# Pre-16 qualifications and university entry

## Pre-16 qualifications and university entry

When applying to a competitive university and especially for a very competitive course at a competitive university, it is important that you consider all the aspects of the entry requirements, including the qualifications typically taken before you are 16.

### General entrance requirements

Universities may ask for a specific number of GCSEs (or their equivalent). For example, a number of medical courses ask for five (sometimes more) A\* grades.

GCSE English or another standard level equivalent is very often required at grade C at least. At many universities, this is a universal entry requirement for any course. Mathematics is also often required at grade C at least.

Currently University College London (UCL) is the only Russell Group institution to require a Modern Foreign Language GCSE at grade C or above for all of its programmes. However, if you did not take a Modern Foreign Language GCSE, or if you got a D grade or below, you can still apply to any UCL degree programme, and it won't negatively affect your application. You will not be rejected just because you don't have it but you will need to complete a short course certificate in a Modern Foreign Language or undertake a half course unit during your studies at UCL.

Please see <http://www.ucl.ac.uk/prospective-students/undergraduate/application> for more details.

Although only UCL has a formal requirement in place, Modern Foreign Language qualifications are valued by admissions tutors across the Russell Group.

Some degree courses have grade requirements for particular subjects at GCSE. For many courses a B grade at least in GCSE Mathematics is needed with science and engineering courses in particular often specifying this.

Equally, courses such as Business and Psychology, which may attract applicants who aren't necessarily strong mathematicians, can ask for a B grade in GCSE Mathematics and, in some cases, sciences.

A number of institutions ask that grades and number of subjects are achieved at one sitting. Some do not accept 're-sits' at GCSE or standard level qualifications. If you think this might affect you and a university's published admissions policy is not clear, it is sensible to check with Admissions staff before applying.

## Preface

### Post-16 qualifications and how they are organised

### Pre-16 qualifications and university entry

General entrance requirements

Changes to GCSEs

The English Baccalaureate

Curriculum for Excellence

Requirements for specific subjects

### Making your post-16 subject choices

### Subjects required for different degree courses

### How subject choices can affect your future career options

### The five-point plan for making your post-16 choices

### Abbreviations

### Links



## ATTENTION!

**Achieving a qualification a year early will not give you an advantage if it results in you achieving a lower grade. Similarly, studying for more GCSEs at the expense of getting high grades in a smaller number is not advantageous.**

## Changes to GCSEs

GCSEs in England are going through a process of reform. A number of revised GCSEs were brought in 2015 and 2016 with further subjects to be phased-in from 2017. Instead of the previous A\*-G system, the new GCSEs will be graded 9-1, with 9 being the highest grade.

The old and the new grading systems are not directly comparable which means that universities are working to review their GCSE requirements under the new system. For example a C grade can be aligned with both a 4 and a 5 and equivalencies will vary from one university to another.

Students in Wales and Northern Ireland will continue to undertake GCSEs graded A\*-G, so universities and colleges will display GCSEs both alphabetically and numerically. However, universities and colleges will be clear about their criteria in their entry requirements.

You should always check individual university websites for more detail on their grade requirements for GCSEs.

There is more information on qualification reform on the UCAS website: <https://www.ucas.com/advisers/guides-and-resources/qualification-reform>

## The English Baccalaureate

The English Baccalaureate was introduced as a performance measure for schools in England in the 2010 performance tables. It is not a qualification. The measure recognises where pupils have achieved a C grade or better at GCSE in English, Mathematics, History or Geography, two sciences and a Modern or Ancient Language. From 2014 Computer Science has been included as a science option in the English Baccalaureate performance measure.

As this document demonstrates, the English Baccalaureate includes academic subjects highly valued by the Russell Group, but it is not currently required for entry to any Russell Group university. As mentioned above, most universities require English and Maths. A few may also require a Modern Foreign Language. Successful applicants are

normally expected to have achieved good grades in a range of subjects at GCSE or equivalent, and to meet any specific requirements for their chosen course.

## Curriculum for Excellence

If you are a student in Scotland, your learner journey may bypass National 5 qualifications. If this is the case a university may require that National 5 requirements qualifications are met at Higher or Advanced Higher level instead. You should check with individual universities for more information.

## Requirements for specific subjects

The GCSE or other standard level entrance requirements for individual degree courses are quite varied. In some cases, a particular subject or grade is required at standard level if it isn't being offered at advanced level. The summary below gives an idea of some of the GCSE requirements that you might come across for certain degree courses. Remember that these are only examples and requirements can differ from one university to another. It's important to check university websites for detailed requirements before applying.

- **Applicants to study Medicine, Dentistry and Veterinary Science are usually required to have very good GCSE results in Maths, Science and English.**
- **Applicants to study Teacher Training are required to have a minimum grade C in GCSE Maths, Science and English. Some universities may ask for a minimum of grade B.**
- **For a degree in English, universities often look for applicants to have a GCSE in a modern or classical language.**
- **For a Business degree, sometimes a grade A, or more often at least a grade B, in GCSE Maths is required.**
- **A grade B in Maths is often required for a degree in Psychology, and a grade B in Science may sometimes be required.**
- **To study a science subject at university (including Biology, Chemistry or Physics) applicants who are not offering Maths at advanced level will often need to have achieved a minimum of a grade C in Maths at GCSE.**

---

## Preface

---

## Post-16 qualifications and how they are organised

---

## Pre-16 qualifications and university entry

---

## Making your post-16 subject choices

If I know what I would like to study at university, what subjects do I need to take at advanced level?

What subjects can give me the most options?

Do I need to study three facilitating subjects at A-level to go to a Russell Group university?

What if the facilitating subjects don't appeal to me?

Are there subjects that universities don't accept?

How do certain subject combinations relate to university courses?

Choices for entry to universities in Scotland

---

## Subjects required for different degree courses

---

## How subject choices can affect your future career options

---

## The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

# Making your post-16 subject choices

Three reasons you may want to continue to study a subject at a higher level are:

- **You have enjoyed and been good at the subject in the past, and think you will achieve a high grade in it.**
- **You need this subject to enter a particular career or course.**
- **You have not studied the subject before but you have looked into it and think it will suit your strengths.**

Three further considerations should be taken into account:

- **Some subjects are distinctly more difficult at an advanced level than at standard level.**
- **Make sure you get your facts straight. There are many misconceptions about subjects required for courses and careers.**
- **Don't take an uninformed risk. What is the new subject actually about?**

The most important thing that your teachers will be looking for as you make your choices is evidence: either evidence that you are *good enough* to take the subject at advanced level, or evidence that you are *interested enough* in a subject to take it at advanced level if you have not studied it before.

It is important to consider which subjects you think you will achieve high grades in. Low grades are as much a barrier to entry to university as choosing unsuitable subjects for your chosen degree can be.

Another factor to consider if you are aiming for incredibly competitive courses at university, such as Medicine, is that you may require a very high performance in standard level qualifications. Does your performance to date match your ambition?

You should try to find out as much as possible about the post-16 options you are considering. For example, make sure you properly research what you will be studying and speak to teachers or current students to find out more details.

It is important that your decisions are taken on the basis of accurate information and clear thinking. Whatever you choose now will commit you to certain directions at university and perhaps rule out certain careers. As much as you may wish to remain cool about this decision, it *does matter*.

## Preface

### Post-16 qualifications and how they are organised

### Pre-16 qualifications and university entry

### Making your post-16 subject choices

If I know what I would like to study at university, what subjects do I need to take at advanced level?

What subjects can give me the most options?

Do I need to study three facilitating subjects at A-level to go to a Russell Group university?

What if the facilitating subjects don't appeal to me?

Are there subjects that universities don't accept?

How do certain subject combinations relate to university courses?

Choices for entry to universities in Scotland

### Subjects required for different degree courses

### How subject choices can affect your future career options

### The five-point plan for making your post-16 choices

### Abbreviations

### Links

## If I know what I would like to study at university, what subjects do I need to take at advanced level?

### Subject requirements

If you know what you wish to study at university and want to know what subjects you will need to have studied in preparation, you will find detailed information on each university's entry requirements on university websites and on the [UCAS website](#). This section will give you some idea of general patterns.

Some degrees will be open to you whatever subjects you choose to study for your advanced level qualifications or at Higher Level (for IB or Scottish students). Just try to make sure that you stick to the ► [five-point plan](#) on page 56.

Also some courses will be happy with a subject at a lower level (for example, at AS-level instead of A-level or at Standard Level rather than Higher Level in the IB). This will be something to check before you apply

Some popular degrees will normally be open to you without any specific subject background. Examples include:

Accountancy, Anthropology, Archaeology, Business Studies, History of Art, Law, Management Studies, Media Studies, Philosophy, Politics, Psychology, Religious Studies/Theology, Sociology, Surveying.

### ATTENTION!

Although they may not be specified as required subjects, many successful applicants to the above courses do have advanced level qualifications in at least two of the facilitating subjects (see below). Some of these courses may still have a preference for some of the facilitating subjects and one or two universities may be more prescriptive in their subject requirements – check the Entry Profiles on UCAS Course Search.

For a general guide as to the likely requirements for different degree courses, you can refer to ► [subjects required for different degree courses](#).

## Which subjects can give me the most options?

Many courses at university level build on knowledge and skills which you will gain while still at school. Where this is the case, universities need to make sure that all the students they admit have prepared themselves in the best way to cope with their chosen course. For this reason, some university courses may require you to have studied a specific subject prior to entry, others may not. However, there are some subjects that are required more often than others. These subjects are sometimes referred to as **facilitating subjects**.

Subjects that can be viewed as facilitating subjects are:

- **Mathematics and Further Mathematics**
- **English Literature**
- **Physics**
- **Biology**
- **Chemistry**
- **Geography**
- **History**
- **Languages (Classical and Modern)**

**You don't necessarily need to have studied three facilitating subjects at A-level. Some courses require one or two facilitating subjects, whilst for other courses there are no specific subject requirements. If you don't know what you want to study then it's a really good rule of thumb that taking two facilitating subjects will keep a wide range of degree courses open to you.**

There are some advanced level subjects which provide suitable preparation for entry to university generally, but which we do not include within the facilitating subjects, because there are relatively few degree programmes where an advanced level qualification in these subjects would be a requirement for entry. Examples of such subjects include Economics, Religious Studies and Welsh. Advanced-level Welsh has separate curricula for first- and second-language Welsh speakers. The former develops literary and linguistic skills equivalent to those in advanced-level English; the latter develops skills equivalent to those in Modern Languages. Both routes are suitable preparation for university study in Wales and elsewhere in the United Kingdom.



## Preface

### Post-16 qualifications and how they are organised

### Pre-16 qualifications and university entry

### Making your post-16 subject choices

If I know what I would like to study at university, what subjects do I need to take at advanced level?

What subjects can give me the most options?

Do I need to study three facilitating subjects at A-level to go to a Russell Group university?

What if the facilitating subjects don't appeal to me?

Are there subjects that universities don't accept?

How do certain subject combinations relate to university courses?

Choices for entry to universities in Scotland

### Subjects required for different degree courses

### How subject choices can affect your future career options

### The five-point plan for making your post-16 choices

## Abbreviations

## Links

There are more examples of subjects which are considered useful for certain degrees in the ► [subjects required for different degree courses](#) section of this guide.



### ATTENTION!

**If you wish to study Music or Art at university, advanced level qualifications in Music or Art are usually required.**

You will probably have many other subjects open to you at advanced level but, unlike the facilitating subjects listed above, they are unlikely to be required for any particular degree course and so choosing them doesn't increase your options at university.

By choosing facilitating subjects at advanced level, you will have a much wider range of options open to you at university. An advanced level qualification in any facilitating subject will keep open to you a number of degree courses. At some universities, a qualification in the subject is a requirement for entry to the course. At other universities, it may not be a requirement for the course, but will still be useful to gain entry.

Of course, by choosing facilitating subjects you are not restricted to applying for degree courses which require those subjects. For example, even if you study three facilitating subjects at advanced level, you would still be able to apply to study Law at university (for which most universities do not require any specific advanced level subjects). So, by choosing facilitating subjects you are keeping open as many options as possible.

For information about the different degree courses open to applicants with each of the facilitating subjects listed above, you can refer to the [UCAS website](#) and university websites. For some of the most popular degree courses, you can also refer to the ► [subjects required for different degree courses](#).

## Do I need to study three facilitating subjects at A-level to go to a Russell Group university?

It really depends what you want to study at university. In most cases, three facilitating subjects are not required for entry to a degree at a Russell Group university – but many courses do require you to have studied one or more facilitating subjects. That's why we recommend you choose these subjects at advanced level, when you probably aren't yet 100% sure what you'll want to study at university, and therefore which subjects will be required.

Some Medicine and other science courses, for example, may require three specific subjects.

Others, like Engineering and some other science courses, may need more than one facilitating subject. If you want to study a joint honours degree such as French and History, or Maths and Geography, you may need both subjects. But for some degrees only one facilitating subject is required and there are also courses with no specific requirements or where subjects are desirable but not an absolute requirement.

If you know what you want to study then check the entrance requirements.

However, if you're not certain about what degree you want to do then facilitating subjects will keep your options open. Put simply, the more you do the more courses will be available to you.

If you take three facilitating subjects, you'll have the largest number of degree courses to choose from further down the line – all the courses which require one or more of your subjects as well as those which have no specific subject requirements. Taking two facilitating subjects will also keep a wide range of degree courses and career options open to you.

If you are considering choosing subjects which are not facilitating subjects, bear in mind that not all advanced level subjects are considered by every selective university to be good preparation for their courses (see below).



### ATTENTION!

**If you decide not to choose one or more of the facilitating subjects at advanced level, many degrees at competitive universities will not be open to you**

---

## Preface

---

### Post-16 qualifications and how they are organised

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

If I know what I would like to study at university, what subjects do I need to take at advanced level?

What subjects can give me the most options?

Do I need to study three facilitating subjects at A-level to go to a Russell Group university?

What if the facilitating subjects don't appeal to me?

Are there subjects that universities don't accept?

How do certain subject combinations relate to university courses?

Choices for entry to universities in Scotland

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

## What if the facilitating subjects don't appeal to me?

If you are thinking of taking more than two subjects which are not **▶ facilitating subjects** please do consider the following:

- **In many countries all 16- and 17-year olds have to study Mathematics, their home language, a science and a foreign language.**
- **Have you considered why you do not wish to study a facilitating subject? Are you looking for a change? Or are you trying to avoid a challenge? In other words, have you thought your decision through carefully?**
- **The jump between standard and advanced level qualifications can be demanding, even in subjects that you have studied before. If you are starting a particular subject from scratch, you are taking a risk that you won't enjoy the subject, or will find it particularly difficult. Take more than one new subject and you multiply the risk.**
- **Many specialist courses at advanced level take the majority of their course content from ▶ facilitating subjects (for example, Sports Studies is based heavily on Biology). If you choose to study the facilitating subject rather than the specialist subject you will still learn the specialist information but you will also gain greater flexibility in your university choices.**

## Are there subjects that universities don't accept?

Critical Thinking, Citizenship Studies and General Studies are usually better taken only as an 'extra', rather than as one of the advanced level subjects on which your university application will be relying.

Some universities publish lists of non-preferred subjects, or subjects that are only suitable if taken in combination with others.

One of the best ways to keep your options at university open is to choose your advanced level subjects from the list of **▶ facilitating subjects**. If you are not sure of what to study at university, why not think about your two favourite subjects from the facilitating subjects list? The section on **▶ which subjects can give me the most options?** may help you choose.

## How do certain subject combinations relate to university courses?

If you know what degree subject you would like to study you should check our guidance on subjects required for different degree courses.

If you are not sure what degree subject you might be qualified for, it is a good idea to consider the broad ways in which certain subject combinations at advanced level tend to relate to broad groups of university degree courses.

For those studying for AS and A-levels, the most common patterns are described in detail below. The issues for students studying for an IB or for Highers are similar but the structure of these qualifications means that there is less pressure to focus on a relatively narrow range of subjects.

This doesn't provide an exhaustive list of all the degree options which are open to you but should give you an idea of the degrees which students with certain A-level combinations most commonly enter.

You should be aware that some courses at some universities may view certain combinations of subjects as "narrow". For example some courses may not accept two similar A-levels as part of a three subject mix. Therefore you should check university entrance requirements carefully.

## The scientist

**Typical A-levels include: Chemistry, Biology, Physics, Mathematics, Further Maths**

**Possible degree options include: Sciences, Mathematics, Engineering**

For the sake of maintaining a wider outlook on life, many students in this category will replace one of the sciences with an arts/humanities subject or a social science (indeed, some universities encourage this). So, often the choice will look more like this: Chemistry, Mathematics, Physics with an arts/social science/humanity/creative subject as an AS/IB standard level subject or to broaden the range of subjects studied.

The person who made this choice, however, would have to look at the implications of not doing Biology AS- (or equivalent). When considering such implications, it is worth noting that, in the science field at university, many degrees fall into one of two camps: Biological/Life Sciences and Physical Sciences. More guidance is given below.

Students who are very good at maths may well do Further Mathematics (this is often now done in the same option block as Mathematics).

If I know what I would like to study at university, what subjects do I need to take at advanced level?

What subjects can give me the most options?

Do I need to study three facilitating subjects at A-level to go to a Russell Group university?

What if the facilitating subjects don't appeal to me?

Are there subjects that universities don't accept?

How do certain subject combinations relate to university courses?

Choices for entry to universities in Scotland

### ATTENTION!

Some Maths courses may require both Maths and Further Maths. But for some other degree courses, such as Medicine, some universities will not consider both Maths and Further Maths as part of a three subject combination. Check entry requirements carefully.

## Biological/Life Sciences

**Typical A-levels include: Chemistry, Biology**

**Possible degree options include: Biological/Life Sciences**

Students who take Chemistry and Biology have access to a huge range of degrees, including those leading to a definite career path (for example, Medicine, Dentistry, Veterinary Science, Pharmacy, Dietetics) and those based on research (for example, Biochemistry, Biomedical Materials Science, Pharmacology).

## Physical Sciences

**Typical A-levels include: Mathematics, Physics, another science subject**

**Possible degree options include: Engineering (mechanical, electronic/electrical and civil), Physics, Materials Science**

Physical Sciences degrees involve the practical application of Mathematics and Physics.

If you are a very talented scientist/mathematician, it is important that out of the four available sciences – Biology, Chemistry, Maths (which includes both Mathematics and Further Mathematics) and Physics – you should choose three.

### ATTENTION!

If you are applying with a science A-level some universities will require a 'pass' in the practical as well as setting an overall grade requirement. You should check individual university websites for guidance.

## Essays, essays, essays

**Typical A-levels include: mainly arts/humanities and social sciences**

**Possible degree options include: a wide range of arts/humanities, social sciences and business degrees**

Let's imagine that you do History, English Literature, Politics and Sociology at advanced level. Your degree at university might well follow on from one of these subjects – you could do a degree in History, Politics, English Literature or Sociology.

You could also do a degree in another arts/humanities subject (for example, Philosophy). Or you could do a degree in another social science (for example, Psychology). Or you could do a degree in something more vocational (for example, Law or Management Sciences) – there are many options open to you.

## The linguist

**Typical A-levels include: a language**

**Possible degree options include: a wide range of language degrees**

There are many language degrees open to students who have studied one language at advanced level. Some universities offer courses where you can begin a language from scratch.

Some students will emphasise their linguistic abilities by doing not one but two foreign languages. Students that study languages are highly sought after by universities for language degrees or courses with a language component.

## The artist

**Typical A-levels include: creative subjects e.g. music, art or drama**

**Possible degree options include: degrees relating to those A-level subjects**

If you have talent in music you may well want to study it at university. If so, it is important that you take Music to advanced level (along with performance grades).

Music Technology A-level may not be considered suitable for Music degrees, so it's important to check whether this will meet the requirements of the courses and institutions you are interested in.

---

## Preface

---

### Post-16 qualifications and how they are organised

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

If I know what I would like to study at university, what subjects do I need to take at advanced level?

What subjects can give me the most options?

Do I need to study three facilitating subjects at A-level to go to a Russell Group university?

What if the facilitating subjects don't appeal to me?

Are there subjects that universities don't accept?

How do certain subject combinations relate to university courses?

Choices for entry to universities in Scotland

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

If you have a talent in art you may well be thinking about an art foundation course as a precursor to a degree programme. You might want to consider an advanced level qualification in either Art or Art and Design. Either of these will provide you with the basis for your portfolio, which you will need to gain entry to an art foundation course.

For Drama, many universities don't require you to have specific subjects at advanced level. However, some do have subject specific entry requirements so do check carefully. In addition, some universities may ask you to attend an audition/workshop/interview. Preparation for such auditions can be gained from many different out-of-school activities, from drama and dance groups within school and, of course, from your school leaving qualifications themselves.

## Choices for entry to universities in Scotland

Scotland has two Russell Group institutions: the University of Edinburgh and the University of Glasgow.

Scottish degrees traditionally take four years of study. This differs from elsewhere in the UK, but is a long-established model. In the arts, engineering, sciences and social sciences you will typically take a broad range of subjects in your first two years before going on to specialise in your final two years.

The typical 4-year Scottish degree enables you to experience new subjects without committing long term; to discover which subjects are best suited to you and tailor your degree accordingly; and to study a breadth of subjects. In some cases, it is possible to apply for direct entry into the second year of a degree programme, meaning you can graduate with an Honours degree after three years of study. Direct-entry eligibility is normally based on high attainment in A-levels, Advanced Highers or their equivalent.

Because of this broad-based degree structure, in order to be admitted to a Scottish university, you will usually be expected to demonstrate breadth in your studies at school or college. By developing different academic skills and knowledge, you will be well prepared for university-level study in a range of subjects.

There are exceptions to the traditional broad-based Scottish degree. Most vocational and professional courses, including Dentistry, Medicine, Veterinary Medicine and Architecture, offer only limited flexibility and opportunities for personal choice. Some professional subjects and some science degrees take more than four years to complete.

For the subjects most likely to be required for entry to a Scottish university see section ► [If I know what I would like to study, what subjects do I need?](#)

## Further questions?

The [Russell Group](#) website has answers to frequently-asked questions about qualifications and subject choice. You may also want to contact universities directly if you have questions about entry requirements for particular degree courses – some useful contacts are on pages 61-63.

# Subjects required for different degree courses

You will see below the advanced level subjects which are most commonly essential requirements for different degree courses.

## ATTENTION!

If you know you want to apply for a certain degree, you must take these essential subjects at advanced level. To maximise your chances of gaining a place at a competitive university, you would also be wise to choose one or more of the other useful subjects for the degree in question.

If you are not sure what you want to study at university, choosing facilitating subjects will keep your options open. These are the subjects which are most often required for entry to selective universities. They are:

- **Mathematics and Further Mathematics**
- **English Literature**
- **Physics**
- **Biology**
- **Chemistry**
- **Geography**
- **History**
- **Languages (Classical or Modern)**  
See page 29-32 for more guidance on ► [facilitating subjects](#)

You should be aware that some courses at some universities may view certain combinations of subjects as “narrow”. For example some courses may not accept two similar A-levels as part of a three subject mix. Therefore you should check university entrance requirements carefully.

Please note that the entrance requirements for individual universities and courses will vary and this list covers only the most popular courses. Not every course is available at Russell Group universities. You are therefore advised to use this guide in conjunction with more detailed information on the [UCAS website](#), and on university websites.

---

## Preface

---

### Post-16 qualifications and how they are organised

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

### Accountancy (also Banking/Finance/Insurance)

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Usually none, although one or two universities require Mathematics.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Mathematics, Business Studies (AGCE, National and Diploma), and Economics.

### Actuarial Science/Studies

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Mathematics

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Further Mathematics, Economics, Business Studies (AGCE, National and Diploma).

### Aeronautical Engineering

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Mathematics and usually Physics.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Further Mathematics, Design Technology, Computing/Computer Science.

### American Studies

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Requirements vary but English and/or History are often asked for.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Politics

### Anthropology

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

None

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

A small number of courses like a science AS-level such as Biology. Sociology is also very relevant.

### Archaeology

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

None

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Geography, History or science subjects can all be useful.

### Architecture

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Some courses say they want an arts/science mix. Some may require Art.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Art, Mathematics, Design Technology and Physics. AGCE or National Art and Design may also be useful at some universities. Do note that a portfolio of drawings and ideas may be asked for.

### Art and Design

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Art or Design Technology including AGCE/National (to give you the portfolio to get onto an Art Foundation Course, though sometimes AGCE/National Art and Design applicants go straight onto a degree).

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Design Technology, Art & Design. Do note that most entrants onto Art and Design degrees will have done a one-year Art Foundation Course after completing Year 13.

### Biochemistry

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Always Chemistry and some universities will say you must have Biology as well, while some will say Chemistry plus one from Mathematics/Physics/Biology. Doing Chemistry, Biology and Mathematics or Physics will keep all Biochemistry courses open to you.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Biology, Mathematics, Further Mathematics, Physics, Computing/Computer Science.

### Biology

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Biology, usually Chemistry. A few universities specify two sciences.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Mathematics or Physics, Computing/Computer Science.

### Biomedical Sciences (including Medical Science)

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Normally two from Biology, Chemistry, Mathematics and Physics. Chemistry is essential for some courses.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Mathematics, Further Mathematics, Biology, Chemistry, Physics.

---

## Preface

---

### Post-16 qualifications and how they are organised

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

### Business Studies

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

None

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Mathematics, Business Studies (AGCE, National and Diploma) and Economics.

### Chemical Engineering

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Mathematics, usually Chemistry and sometimes Physics as well.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Physics, Biology, Further Mathematics, Computing/Computer Science.

### Chemistry

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Chemistry and occasionally Mathematics. Most courses require Chemistry and would like Mathematics and one other science subject (for example, Physics or Biology).

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Mathematics, Further Mathematics, Physics, Biology, Computing/Computer Science.

### Childhood Studies

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

None

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

CACHE, Psychology, Sociology, AGCE/National/Diploma Health and Social Care.

### Civil Engineering

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Mathematics, in many cases Physics. Sometimes one of Physics or Chemistry.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Further Mathematics, Chemistry, Biology, Computing/Computer Science, Design Technology, Geography.

### Classical Studies

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

For Classics courses Latin or Ancient Greek are required. For Classical Studies and Classical Civilisation courses most subjects will be considered.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Modern Foreign Language, English Literature, History, Classical Civilisation. Do note that there are some Classics courses which will allow you to start Latin and/or Classical Greek from scratch.

### Computer Science

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

For some courses, Mathematics. For some courses Computing/Computer Science.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Mathematics, Further Mathematics, Computing/Computer Science, Physics, Philosophy, ICT.

### Dentistry

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Chemistry and Biology for most courses, but some require Mathematics or Physics as well.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Mathematics, Physics, Further Mathematics.

### Dietetics

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Chemistry, Biology.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Mathematics

### Drama

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Some courses require English Literature and for a few courses English and/or Theatre Studies.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

English Literature, English Literature and Language, Theatre Studies.

---

## Preface

---

### Post-16 qualifications and how they are organised

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

### Economics

[ESSENTIAL ADVANCED LEVEL QUALIFICATIONS](#)

Usually Mathematics.

[USEFUL ADVANCED LEVEL QUALIFICATIONS](#)

Economics, Computing/Computer Science, History, Business Studies.

### Education

▶ [See Teacher Training](#)

### Electrical/Electronic Engineering

[ESSENTIAL ADVANCED LEVEL QUALIFICATIONS](#)

Mathematics, usually Physics.

[USEFUL ADVANCED LEVEL QUALIFICATIONS](#)

Further Mathematics, ICT, Design Technology, Computing/Computer Science.

### Engineering (General)

[ESSENTIAL ADVANCED LEVEL QUALIFICATIONS](#)

Mathematics and Physics.

[USEFUL ADVANCED LEVEL QUALIFICATIONS](#)

Further Mathematics, Design Technology, Computing/Computer Science.

### English

[ESSENTIAL ADVANCED LEVEL QUALIFICATIONS](#)

English Literature or combined English Language & Literature (some courses will accept English Language).

[USEFUL ADVANCED LEVEL QUALIFICATIONS](#)

History, Religious Studies, a foreign language.

### Environmental Science/Studies

[ESSENTIAL ADVANCED LEVEL QUALIFICATIONS](#)

Many courses will ask for two from Biology, Chemistry, Mathematics, Physics and Geography.

[USEFUL ADVANCED LEVEL QUALIFICATIONS](#)

Another facilitating subject, particularly a science.

### European Studies

[ESSENTIAL ADVANCED LEVEL QUALIFICATIONS](#)

A Modern Foreign Language.

[USEFUL ADVANCED LEVEL QUALIFICATIONS](#)

Another Modern Foreign Language, English Literature, History, Politics.

### French

[ESSENTIAL ADVANCED LEVEL QUALIFICATIONS](#)

French

[USEFUL ADVANCED LEVEL QUALIFICATIONS](#)

Another Modern Foreign Language, English Literature, History, Politics.

### Geography

[ESSENTIAL ADVANCED LEVEL QUALIFICATIONS](#)

Most degrees require Geography.

[USEFUL ADVANCED LEVEL QUALIFICATIONS](#)

Some Geography BSc (science) degrees prefer one from Biology, Chemistry, Mathematics or Physics.

### Geology/Earth Sciences

[ESSENTIAL ADVANCED LEVEL QUALIFICATIONS](#)

Usually two from Mathematics, Physics, Chemistry and Biology.

[USEFUL ADVANCED LEVEL QUALIFICATIONS](#)

Geography, Geology, Computing/Computer Science.

### German

[ESSENTIAL ADVANCED LEVEL QUALIFICATIONS](#)

German (a handful of universities offer the opportunity to study German from scratch, without German A-level).

[USEFUL ADVANCED LEVEL QUALIFICATIONS](#)

Another Modern Foreign Language, English Literature, History, Politics.



---

## Preface

---

### Post-16 qualifications and how they are organised

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

### History

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Most degrees require History.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Economics, English Literature, Philosophy, Politics, Sociology, Theology/Religious Studies, a modern or classical language.

### History of Art

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

None

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Art, English Literature, History, Theology/Religious Studies, History of Art, French, German, Spanish, Italian.

### Italian

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Italian or another language such as French, German or Spanish.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Another Modern Foreign Language, English Literature, History, Politics.

### Law

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Usually none, although a few universities require English.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

History; other facilitating subjects.

There really are no essential subjects for Law. Maybe one choice should involve ► **essay** or report writing. History gives you good relevant skills for Law but is not essential.

### Management Studies

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Sometimes Mathematics.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Mathematics, Economics, Business Studies (AGCE, National and Diploma).

### Materials Science (including Biomedical Materials Science)

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Normally two from Chemistry, Mathematics, Physics, Biology (also Design Technology for some universities).

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Chemistry, Design and Technology, Further Mathematics, Computing/Computer Science.

### Mathematics

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Mathematics and sometimes Further Mathematics.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Further Mathematics, Physics, Computing/Computer Science.

### Mechanical Engineering

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Mathematics, usually Physics.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Further Mathematics, Design Technology, Computing/Computer Science. Mechanical Engineering departments may have a preference for Mathematics A-levels with a strong mechanics component.

### Media Studies (including Communication Studies)

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

A few courses ask for English or Media Studies.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

English, Media Studies, Sociology, Psychology.

### Medicine

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

If you do Chemistry, Biology and one from Mathematics or Physics you will keep all the medical schools open to you. If you do Chemistry and Biology you will keep open the vast majority. If you do Chemistry and one from Mathematics and Physics you will limit your range of choices much more.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Further Mathematics or a contrasting (non-science) subject, Computing/Computer Science.

---

## Preface

---

### Post-16 qualifications and how they are organised

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

### Music

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

For most traditional courses, Music and Grade VII/VIII, although some universities will consider candidates without A-level Music.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Some universities have a preference for at least one

▶ [essay-based subject](#)

### Nursing and Midwifery

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Usually Biology or another science.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Biology, CACHE, Sociology, Psychology, Chemistry, Mathematics, Physics.

### Occupational Therapy

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Some courses ask for Biology.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Psychology, Physical Education, Sociology or another science.

### Optometry (Ophthalmic Optics)

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Two from Biology, Chemistry, Mathematics or Physics (some courses prefer Biology as one of the choices).

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Further Mathematics, Computing/Computer Science.

### Orthoptics

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Biology

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Chemistry, Mathematics, Physics, Computing/Computer Science.

### Philosophy

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

None

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Mathematics, Classical Civilisations, Philosophy and Religious Studies/Theology.

### Physics

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Mathematics, Physics.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Further Mathematics, Chemistry, Computing/Computer Science.

### Physiotherapy

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Most courses will consider you with just Biology. However, some also require a second science from Chemistry, Mathematics or Physics.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Chemistry, Mathematics, Physics, Psychology.

### Planning

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Sometimes Geography.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Geography, Mathematics, Economics.

### Politics

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Usually none

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Politics, History, Philosophy, Law, Sociology, Economics, English Literature, Religious Studies, Business Studies.

---

## Preface

---

### Post-16 qualifications and how they are organised

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

### Psychology

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

A few courses ask for one from Biology, Chemistry, Mathematics, Physics.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Biology, Mathematics, Psychology, Sociology, Computing/Computer Science.

### Religious Studies/Theology

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

None

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Religious Studies/Theology, Philosophy, English Literature, History

### Sociology

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

None

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Sociology, Psychology, Geography, Computing/Computer Science.

### Spanish

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Spanish (some degrees will also consider French, German or Italian).

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Another Modern Foreign Language, English Literature, History, Politics.

### Speech Therapy

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Some universities want a science such as Biology, Chemistry or Physics. Some specify Biology, but some degrees will consider candidates with none of these.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

A modern foreign language (for example, French, German, Spanish, Italian), English Language (and Literature), Psychology.

### Sports Science/Physical Education

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

Many courses want to see one from Biology/Chemistry/Mathematics/Physics (some courses will treat Physical Education as a science equivalent).

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Physical Education, Psychology.

### Surveying

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

None

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

For some types of Surveying e.g. Building Surveying, Mathematics and Physics could be helpful. For Estate Management (General Practice Surveying) most A-level combinations will be considered.

### Teacher Training (Primary and/or Secondary)

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

At least one from Art, Biology, CACHE, Chemistry, Computing, Design and Technology, Drama (Theatre Studies), English, French, Geography, German, History, ICT, Italian, Mathematics, Music, Physics, Physical Education, Religious Studies (Theology), Spanish.

CACHE meets the entry requirements for early years Primary Teaching and a large number of Primary Education Teacher Training Degrees.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Another of the subjects listed above.

### Veterinary Science

#### ESSENTIAL ADVANCED LEVEL QUALIFICATIONS

You should do Chemistry and Biology and one from Mathematics/Physics so that you have all universities open to you.

#### USEFUL ADVANCED LEVEL QUALIFICATIONS

Further Mathematics

# How subject choices can affect your future career options

## Graduate occupations

In the 1960s, 70s and 80s graduates represented only a very small percentage of the school-leaving population: 8%. Now it is more than 40%. Being a graduate no longer makes you part of a small elite and taking advanced level qualifications is now very common. You now need to think about what sort of graduate you may become.

There are now five major types of graduate occupation:<sup>1</sup>

- **Traditional graduate occupations**  
There are established professions for which, historically, the normal entry route has been via an undergraduate degree programme. Examples are Barristers, Doctors, Engineers, Higher Education and Secondary Education Teachers, and Research Scientists.
- **Modern graduate occupations**  
The newer professions, particularly in management, IT and creative vocational careers, are areas which graduates have been entering since educational expansion in the 1960s. Examples are Accountants, Computer Programmers, Primary School Teachers, and Journalists.
- **New graduate occupations**  
There are areas of employment, many in new or expanding occupations, where the route into the professional area has recently changed such that it is now via an undergraduate degree programme. Examples are Marketing Managers, Physiotherapists, Nursing, and Computer Games Designers.
- **Niche graduate occupations**  
There are occupations where the majority of incumbents are not graduates, but within which there are stable or growing specialist niches which require higher level skills and knowledge. Examples are Leisure Centre Managers, Hotel Managers, and Retail Managers.
- **Non-graduate occupations**  
Non-graduate occupations are those for which a degree is not generally required. However, it may still be appropriate for graduates to enter these jobs.

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<sup>1</sup> Elias, P, and Purcell, K. Researching Graduate Careers Seven Years On, Research Paper No. 6, SOC (HE): A classification of occupations for studying the graduate labour market, March 2004

### ATTENTION!

While you may be aware of the subject requirements of a well known career such as Medicine, other career-related requirements may be less well-known. Did you know, for example, that some of the new graduate occupations such as Computer Games Design can prefer a facilitating subject such as Maths, as well as a Design subject?

If you have some career ideas already, you should check entry requirements in related degree subjects on the [UCAS website](#) in the [Course Search section](#). See also the [Best Course 4 Me website](#) for advice on careers and university courses.

### Professional careers

As explained above, a wide range of graduate occupations are in professional areas.

A profession is a job or an occupation that requires a certain level of specialist training. People working in each profession (called professionals) are required to demonstrate expertise and specialised knowledge, as well as ethical behaviour. Professions are almost always regulated in some way, either by law or through membership of a professional body. Professions offer some of the highest graduate earnings, as well as the opportunity to enjoy a challenging career in an area where you'll become a recognised expert.

Some of the most well-known professionals are doctors, solicitors and accountants but in fact there are several hundred different professions covering a huge range of sectors including building, engineering, business, education, technology, hospitality, sciences, the environment, finance, research, information, health, and culture.

If you already have some idea of the business or industrial sector you want to go into, you are advised to explore the options it offers for a professional career. If you want to enter a profession this may influence your choice of degree course, and possibly also your choice of advanced level qualifications.

For example, if you are interested in engineering, you could learn more about the many different disciplines within engineering, the various routes into the engineering profession, and the academic and professional qualifications you will need to achieve in order to become a practising engineer.

For many professionals, a university degree is the first step towards entering their chosen profession. In terms of qualifying as a professional, there are often advantages to doing a degree course which is accredited or certified by the relevant professional body. Some accredited programmes provide a recognised fast-track route to professional status, whilst others offer exemptions from certain professional examinations.

### ATTENTION!

Not all degree courses are accredited by the relevant professional body. If you are hoping to do a degree leading to a professional qualification you are advised to check with the university or with the professional body itself to see which courses have the necessary accreditation from the professional body.

If you are hoping to enter a profession, you should try to ensure that your choices for post-16 education will give you the best possible preparation for the degree and professional qualifications you will need for your chosen career.

More information about professional careers and training can be found on the following websites.

Total Professions [www.totalprofessions.com/home](http://www.totalprofessions.com/home)

Careers Service Northern Ireland [www.nidirect.gov.uk/index/informationand-services/education-and-learning/careers.htm](http://www.nidirect.gov.uk/index/informationand-services/education-and-learning/careers.htm)

Skills Development Scotland [www.myworldofwork.co.uk/](http://www.myworldofwork.co.uk/)

Careers Wales [www.careerswales.com](http://www.careerswales.com)

# The five-point plan for making your post-16 choices

- 1. Know what you want to study? – Check out the entry requirements**  
If you have a university course which you are keen on, have you checked the relevant university website or [UCAS course search](#) to find out whether this course requires certain subjects at advanced level?
- 2. Not sure yet? – Keep your options open!**  
If you are not sure about what course you want to study at university, have you tried to choose at least two facilitating subjects (Maths, Further Maths, English Literature, Physics, Biology, Chemistry, Geography, History, Languages)?

## ATTENTION!

These facilitating subjects (Maths, Further Maths, English Literature, Physics, Biology, Chemistry, Geography, History, Languages) are the subjects most likely to be required or preferred for entry to degree courses, and choosing them will keep more options open to you at university.

To get a rough idea of the options the different facilitating subjects will give you in applying to university, you can look at the [UCAS website](#) or university websites, or guidance on [subjects required for different degree courses](#).

- 3. GCSEs and other standard level qualifications matter...**  
Make sure you understand [the GCSE or standard level requirements for entry to a competitive university](#). Universities have reviewed their entry requirements following the introduction of reformed GCSEs in England and you should check university websites for guidance. Are you on track to achieve the standard level grades to progress onto the course/courses that you want to do at advanced level and the university course that you may choose to do?
- 4. Think balance**  
Do you have a balance of subject choices that reflects your abilities, strengths and interests? Have you considered [how certain subject combinations relate to university courses?](#)
- 5. Make sure you know WHY**  
If you want to take a subject that you have not studied before, can you talk for a minute on what this subject is about? Try and unpick why you wish to study this subject. It's not enough to say 'It's interesting', 'I think I'll like it' or 'It will be fun'. You may also find it useful to refer to guidance on [making your post-16 subject choices](#), and [how your choices will affect your future career options](#).

— **Preface**

— **Post-16 qualifications and how they are organised**

— **Pre-16 qualifications and university entry**

— **Making your post-16 subject choices**

— **Subjects required for different degree courses**

— **How subject choices can affect your future career options**

— **The five-point plan for making your post-16 choices**

— **Abbreviations**

— **Links**

# Abbreviations

<b>AGCE</b>	Applied General Certificate of Education (Double award)
<b>BTEC</b>	Business and Technician Education Council (merged into Edexcel in 1996)
<b>CACHE</b>	Council for Awards in Care, Health and Education
<b>EPQ</b>	Extended Project Qualification
<b>GCSE</b>	General Certificate of Secondary Education
<b>IB</b>	International Baccalaureate
<b>ICT</b>	Information and Communication Technologies
<b>IGCSE</b>	International General Certificate of Secondary Education
<b>IT</b>	Information Technology
<b>NVQ</b>	National Vocational Qualification
<b>OCR</b>	Oxford Cambridge and RSA Examinations
<b>S4</b>	Fourth year of secondary school (Scotland)
<b>S5</b>	Fifth year of secondary school (Scotland)
<b>S6</b>	Sixth year of secondary school (Scotland)
<b>UCAS</b>	Universities & Colleges Admissions Service
<b>VCE</b>	Vocational Certificate of Education

---

## Preface

---

## Post-16 qualifications and how they are organised

---

## Pre-16 qualifications and university entry

---

## Making your post-16 subject choices

---

## Subjects required for different degree courses

---

## How subject choices can affect your future career options

---

## The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

Useful contact details



# Links

The following organisations can provide additional advice to students making decisions about their post-16 education:

### Conservatoires Admissions Service (UK)

[www.cukas.ac.uk](http://www.cukas.ac.uk)

### Gov.UK

#### University and higher education

[www.gov.uk/browse/education/universities-higher-education](http://www.gov.uk/browse/education/universities-higher-education)

#### Apprenticeships, 14 to 19 education and training for work

[www.gov.uk/browse/education/find-course](http://www.gov.uk/browse/education/find-course)

#### National Careers Service

<https://nationalcareersservice.direct.gov.uk>

#### Education Scotland

[www.educationscotland.gov.uk/inspectionandreview/reports/index.asp](http://www.educationscotland.gov.uk/inspectionandreview/reports/index.asp)

#### The Education and Training Inspectorate

<https://www.etini.gov.uk/>

#### LearnDirect

[www.learndirect.co.uk](http://www.learndirect.co.uk)

#### National Apprenticeship Service

[www.apprenticeships.org.uk](http://www.apprenticeships.org.uk)

#### Ofsted

[www.ofsted.gov.uk/resources/outstanding-providers](http://www.ofsted.gov.uk/resources/outstanding-providers)

#### Prospects

[www.prospects.ac.uk/types\\_of\\_jobs.htm](http://www.prospects.ac.uk/types_of_jobs.htm)

[www.prospects.ac.uk/options\\_with\\_your\\_subject.htm](http://www.prospects.ac.uk/options_with_your_subject.htm)

#### Skills Funding Agency

<http://www.gov.uk/government/organisations/skills-funding-agency>

#### Student Awards Agency for Scotland

[www.saas.gov.uk](http://www.saas.gov.uk)



---

## Preface

---

### Post-16 qualifications and how they are organised

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

Useful contact details

**Student Finance in England**  
[www.gov.uk/student-finance](http://www.gov.uk/student-finance)

**Student Finance NI**  
[www.studentfinancenl.co.uk](http://www.studentfinancenl.co.uk)

**Student Finance Wales**  
<http://www.studentfinancewales.co.uk>

**Total Professions**  
[www.totalprofessions.com](http://www.totalprofessions.com)

**UCAS**  
[www.ucas.com](http://www.ucas.com)

## Useful contact details

**University of Birmingham**  
[admissions@bham.ac.uk](mailto:admissions@bham.ac.uk)  
[www.birmingham.ac.uk/undergraduate/index.aspx](http://www.birmingham.ac.uk/undergraduate/index.aspx)

**University of Bristol**  
[ug-admissions@bristol.ac.uk](mailto:ug-admissions@bristol.ac.uk)  
[www.bristol.ac.uk/study](http://www.bristol.ac.uk/study)

**University of Cambridge**  
[admissions@cam.ac.uk](mailto:admissions@cam.ac.uk)  
[www.undergraduate.study.cam.ac.uk](http://www.undergraduate.study.cam.ac.uk)

**University of Cardiff**  
[www.cardiff.ac.uk/for/prospective/undergraduate/questions/contact-us.html](http://www.cardiff.ac.uk/for/prospective/undergraduate/questions/contact-us.html)  
[www.cardiff.ac.uk/for/prospective/undergraduate](http://www.cardiff.ac.uk/for/prospective/undergraduate)

**University of Edinburgh**  
[www.ed.ac.uk/studying/undergraduate/contacts](http://www.ed.ac.uk/studying/undergraduate/contacts)  
[www.ed.ac.uk/studying/undergraduate](http://www.ed.ac.uk/studying/undergraduate)

**University of Exeter**  
[ug-ad@exeter.ac.uk](mailto:ug-ad@exeter.ac.uk)  
[www.exeter.ac.uk/undergraduate/applications](http://www.exeter.ac.uk/undergraduate/applications)

**University of Glasgow**  
[student.recruitment@glasgow.ac.uk](mailto:student.recruitment@glasgow.ac.uk)  
[www.gla.ac.uk/undergraduate/degrees](http://www.gla.ac.uk/undergraduate/degrees)

**Imperial College London**  
[www3.imperial.ac.uk/registry/admissions](http://www3.imperial.ac.uk/registry/admissions)

**King's College London**  
[www.kcl.ac.uk/study/ug/contacts.aspx#admissions](http://www.kcl.ac.uk/study/ug/contacts.aspx#admissions)  
[www.kcl.ac.uk/study/ug/admissions/Index.aspx](http://www.kcl.ac.uk/study/ug/admissions/Index.aspx)  
[prospective@kcl.ac.uk](mailto:prospective@kcl.ac.uk)

---

## Preface

---

### Post-16 qualifications and how they are organised

---

### Pre-16 qualifications and university entry

---

### Making your post-16 subject choices

---

### Subjects required for different degree courses

---

### How subject choices can affect your future career options

---

### The five-point plan for making your post-16 choices

---

## Abbreviations

---

## Links

Useful contact details

**University of Leeds**  
[study@leeds.ac.uk](mailto:study@leeds.ac.uk)  
[www.leeds.ac.uk/info/20011/undergraduate](http://www.leeds.ac.uk/info/20011/undergraduate)

**University of Liverpool**  
<http://ask.liv.ac.uk>  
[www.liv.ac.uk/study/undergraduate](http://www.liv.ac.uk/study/undergraduate)

**London School of Economics and Political Science**  
[ug.admissions@lse.ac.uk](mailto:ug.admissions@lse.ac.uk)  
[www.lse.ac.uk/study/undergraduate/undergraduateHome.aspx](http://www.lse.ac.uk/study/undergraduate/undergraduateHome.aspx)

**University of Manchester**  
[www.manchester.ac.uk/study/undergraduate/contact-us](http://www.manchester.ac.uk/study/undergraduate/contact-us)  
[www.manchester.ac.uk/study/undergraduate](http://www.manchester.ac.uk/study/undergraduate)

**Newcastle University**  
[www.ncl.ac.uk/undergraduate/contact](http://www.ncl.ac.uk/undergraduate/contact)  
[www.ncl.ac.uk/undergraduate/apply](http://www.ncl.ac.uk/undergraduate/apply)

**University of Nottingham**  
[undergraduate-enquiries@nottingham.ac.uk](mailto:undergraduate-enquiries@nottingham.ac.uk)  
[www.nottingham.ac.uk/ugstudy](http://www.nottingham.ac.uk/ugstudy)

**University of Oxford**  
[www.ox.ac.uk/study](http://www.ox.ac.uk/study) [study@ox.ac.uk](mailto:study@ox.ac.uk)

**Queen Mary University of London**  
[admissions@qmul.ac.uk](mailto:admissions@qmul.ac.uk)  
[www.qmul.ac.uk/undergraduate](http://www.qmul.ac.uk/undergraduate)

**Queen's University Belfast**  
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<http://www.qub.ac.uk/Study/Undergraduate>


**University of Sheffield**  
[www.sheffield.ac.uk/contact/prospective](http://www.sheffield.ac.uk/contact/prospective)  
[www.sheffield.ac.uk/undergraduate](http://www.sheffield.ac.uk/undergraduate)

**University of Southampton**  
[admissions@southampton.ac.uk](mailto:admissions@southampton.ac.uk)  
[www.southampton.ac.uk](http://www.southampton.ac.uk)

**University College London**  
[study@ucl.ac.uk](mailto:study@ucl.ac.uk)  
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**University of Warwick**  
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[www2.warwick.ac.uk/study/undergraduate](http://www2.warwick.ac.uk/study/undergraduate)

**University of York**  
[ug-admissions@york.ac.uk](mailto:ug-admissions@york.ac.uk)  
[www.york.ac.uk/study/undergraduate](http://www.york.ac.uk/study/undergraduate)

**The Russell Group**  
[www.russellgroup.ac.uk](http://www.russellgroup.ac.uk)  
[enquiries@russellgroup.ac.uk](mailto:enquiries@russellgroup.ac.uk)  
 [@RussellGroup](https://twitter.com/RussellGroup)

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Please note that we cannot offer individual advice on GCSE, A-level or degree course subject choice.

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—  
**Preface**

—  
**Post-16 qualifications  
and how they are organised**

—  
**Pre-16 qualifications  
and university entry**

—  
**Making your post-16  
subject choices**

—  
**Subjects required for  
different degree courses**

—  
**How subject choices can affect  
your future career options**

—  
**The five-point plan for making  
your post-16 choices**

—  
**Abbreviations**

—  
**Links**

# RUSSELL

University of Birmingham

University of Bristol

University of Cambridge

Cardiff University

Durham University

University of Edinburgh

University of Exeter

University of Glasgow

Imperial College London

King's College London

University of Leeds

University of Liverpool

London School of Economics  
and Political Science

University of Manchester

Newcastle University

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