

# Revision Toolkit





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# Planning your revision

When you've got exams ahead of you, it can be tempting to spend all hours in the library cramming, or putting off revision, overwhelmed by the amount of work you have to do. Neither approach will leave you feeling in control, confident in what you've learned and ready to take on your exams.

Instead, start by planning your revision so that you make best use of your time....

## 1. Decide what you're going to revise

Gather your course material and lecture notes together. Other sources of information you could revise from include:

- **your notes on course texts**
- **completed and marked assignments**
- **assignment topics you didn't choose and accompanying advisory notes**
- **handouts or exercises from tutorials or lectures**
- **past exam papers**

*"Employ a range of sources for exam preparation," advises Dr Pietro Tricoli, a Senior Lecturer from the School of Electronic, Electrical and Systems at the University of Birmingham. "Lecture notes and slides are great as a starting point, but they need to be integrated with textbooks and journal articles. Sometimes even the news can be very helpful. Did you read an article mentioning a new technology that you are studying for your exam?"*

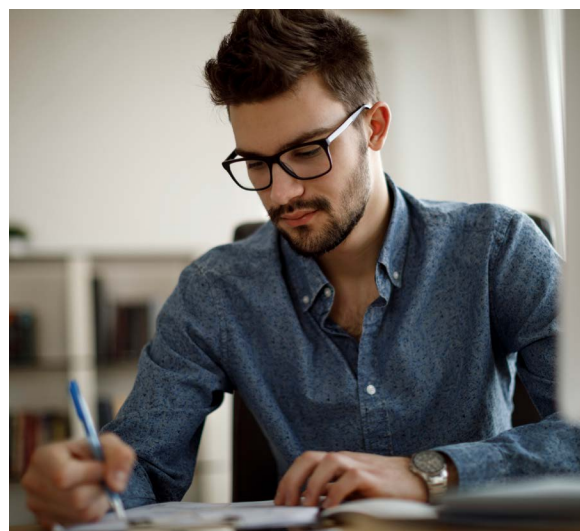
Once you've gathered all your material, make a list of course topics. You might want to look at past exam papers to see which topics on your list appear and how often. If it's a reoccurring topic and you have plenty of material on it, this is one you'll want to revise.

## 2. That advice about starting your revision early... listen to it!

You've heard that old advice about leaving yourself plenty of time to revise and not cramming at the last minute. Well it turns out that it's backed by research.

A team of cognitive psychological scientists — known as The Learning Scientists (2016) — have discovered that one of the most effective ways to learn is by *"spacing out your study over time"*. They say:

- **Start planning early for exams and set aside a little bit of time every day. Five hours spread over two weeks is better than the same hours all at once.**
- **Review information from each class, but not immediately after class.**
- **After you review information from the most recent class, make sure to go back and study important older information to keep it fresh.**





### 3. Put together your master plan

You've got a list of course topics you need to revise. By putting them in a timetable, you can be sure you'll cover them in time for your exams. Paul Ellet (2018) from Which? University suggests a simple technique for creating your revision timetable:

- **Divide however long you have until your exams by how many subjects you study.**
- **Divide all the topics and areas you need to cover accordingly.**

Schedule topics according to how close the exams are, how difficult you find them, and what time of day it is. If you work best in the morning, study your tough topics then; otherwise start with something easier.

Leave a few gaps in your timetable so that as exams get closer, you have time to go back over key information or things that you find challenging.

### 4. Use tech to help you plan

You could spend a good chunk of your revision period counting out the days until your exam and drawing up a revision plan. Or you could let online tools do the work for you! Here are a few of the popular options out there:

- **Get Revising study planner — with The Student Room's online tool, you can build a revision timetable in 15 minutes, set email reminders to keep you motivated and update the timetable using a drag and drop functionality.**
- **My Study Life (iOS, Google Play) — an app that allows you to schedule exams and revision tasks for specific exams, as well as all your classes and homework. Your study activities are stored in the cloud, making them available on any device, wherever you are.**
- **Pomodoro Technique® Timer — not so much for creating a revision timetable, but for organising your study sessions. Use this timer to divide your work into focused 25-minute sessions, each followed by a short break.**

# How to revise effectively, according to science

So you want to know the most effective way to revise? Various cognitive psychologists are interested in this area too, and have carried out their own studies and reviewed decades of research on how we learn. Here's a quick summary of their conclusions:

## 1. Test yourself

Cover your notes and write out everything you know about a topic, then check to see if you were correct. Quiz yourself with flash cards (key term on one side, answer on the other), or try a selection of exercises and practice exam questions without looking at the answers. However you test yourself, the research stresses that it's a far more effective technique than just reading and taking notes.

**Why does it work?** *"This process of retrieving makes the information more retrievable later,"* say The Learning Scientists (2016b). *"...You're more likely to remember the information later, and also more likely to be able to use and apply the information in new situations."*

## 2. Search for links and explanations

Think about why a particular fact is true or why a process works the way it does. Also consider how this information is similar and different to other information you already know. If you're studying an abstract concept, link it to an example in the real world, such as something from your own experience.

**Why does it work?** Professor John Dunlosky (2013), from Kent State University, says these strategies can *"promote learning and comprehension and boost problem-solving performance"* because *"they encourage students to actively process the content they are focusing on and integrate it with their prior knowledge."*

## 3. Study words and pictures

Where you find words alongside images, take in both! Try looking only at the images and explaining them in your own words or draw an image to match the words you're reading.

**Why does this work?** *"When you have the same information in two formats – words and visuals - it gives you two ways of remembering the information later on,"* say The Learning Scientists (2016c).

## 4. Mix it up in your study sessions

You might think that focusing on one concept for hours at a time is going to drill it into your head. Think again! Psychologists say that switching between ideas in one study session is more effective, especially if you go back over ideas in different orders and find links between ideas as you switch between them. Make sure you spend enough time on each idea so that you understand it though.

**Why does this work?** According to The University of Arizona (2016), mixing up of your study (or "interleaving") *"forces the brain to continually retrieve because each practice attempt is different from the last, so rote responses pulled from short-term memory won't work. Cognitive psychologists believe that interleaving improves the brain's ability to differentiate, or discriminate, between concepts and strengthens memory associations."*

## 5. Don't stick to rereading notes and highlighting

Research suggests that although these are popular revision techniques, they're not all that effective.

**Why don't they work?** *"Rereading does not always enhance students' understanding of what they read, so any benefits of rereading may not be longlasting,"* says Dunlosky (2013). He adds: *"Focusing on individual concepts while highlighting can mean that students spend less time thinking about the connections across concepts."*

**But wait... does that mean abandoning your trusty highlighter?** Dunlosky (2013) says not, but he urges students to use rereading and highlighting as a starting point. *"After they read and highlight, they should then restudy the material using more effective strategies,"* he says.



# — Tips from engineering lecturers and students

## Test your understanding of lemmas and theorems

*"I still follow the advice I was given as a student to go over lemmas and theorems," says Dr Iñaki Esnaola, a Senior Lecturer from the University of Sheffield. "Read the statement, understand what the assumptions are and what is the main result, then try to prove it to yourself without looking at the actual proof. In my experience, once in a while I will get to the answer, but more often than not I will get stuck. Once I am out of ideas, I then look at the proof provided by the authors, and it is during that 'aha!' moment that I feel like I am really understanding the result."*

## Remember the jargon, graphs and equations

*"A useful exercise is to randomly open the lecture notes and pick one subject. Then close the notes and try to write as much as possible on that subject — but make sure you include any relevant equations and graphs," says Dr Pietro Tricoli, a Senior Lecturer from the University of Birmingham. "Then check the accuracy. Look at how much course jargon you included, whether the curve on your graph is accurate and the axes are labelled correctly. With mathematical equations, check that you've used the same units on the left-hand and right-hand side and that you've added up quantities of the same nature."*



## Eliminate distractions

*"This might sound trivial, but it is generally very easy to lose concentration with things like notifications on your phone or a friend passing by," says engineering student Kamilla Aliakhmet. "There are special apps that ensure that you cannot use your phone for a certain duration. If you do not need your phone at all, set it to a flight mode. Also find the place where you study best. If not your room, then the library, a coffee shop or a study room on campus."*

# Why you should revise in a group (sometimes)

When your friend suggests a group revision session, do you take them up on it as a change of scenery from hours alone in your room? Or do you cringe at the thought of others distracting you, leading you off on tangents and raising the stress levels? Don't dismiss it straight away. There's evidence to suggest that when group work is done well and is mixed in with individual study, it can help you to get ready for exams. Here's what an effective group revision session could do for you:

## Gain a deeper understanding of the material

Discussing ideas with others can help you to understand them better. Dr Sawyer (2004) at Washington University St Louis, found that over the course of a group study session, students increasingly looked up from their notebooks at other members of the group, rather than reading notes off the page.

*"That pattern of looking down, thinking about what the professor had said and then looking up and putting it into their words, we felt that was a big explanation for why group studying was helping them learn the material at a deeper level,"* says Sawyer (see Schoenherr 2006).

## Fill in gaps in your revision

So there's a topic you need to revise, but those notes from last semester's lecture aren't helping? Or there's information that you've read and re-read, but you still can't get your head around it? A group study session is the perfect opportunity to share notes and tackle some of the areas your struggling with together.



## Commit that information to memory

Talk through a topic with someone, teach it to them or quiz each other — and that person will provide you with more cues for remembering the information than if you were studying alone. You might also find that you better recall conversations with people than information you've read.

## Keep the motivation up

Let's face it... hours ahead of you, working alone with just your notes for company is boring and demotivating. Breaking up your individual study sessions by working with a group, or even in a pair, makes revision more interesting. Plus if you set a date with others to revise, you've got accountability – don't turn up and you'll be letting them down.

## Cover more material

If you've got a lot to revise and you're running out of time, try dividing up the workload amongst the group and briefing each other on topics. Teaching others is a pretty effective way of absorbing information. Scientists call it the 'protégé effect', observing that students enlisted to tutor others work harder to understand the information, recall it more accurately and apply it more effectively (Paul, A M 2011).

# How to form a successful revision group



## But what about the downsides of group revision?

We know where you're coming from – there's the risk of distractions, people who don't pull their weight, the logistical nightmare of finding a time when everyone can meet. These are important things to consider and if you feel that the people or subject just won't work in a group setting, then don't do it!

If you're keen to give group revision a try though, here are some tips:

- **Keep it small** — any more than four people and organising the group (as well as keeping it on track during a revision session) gets difficult.
- **Someone to organise, someone to lead** — someone needs to provide a meeting place, time and what you're going to cover so that it actually happens. It's also helpful to have someone who's willing to lead conversations and moderate contributions, so the discussion doesn't go off topic.
- **Agree on an objective** — before you start revising, agree on what you want to achieve. That way by the end of the session, you'll know whether the group has been successful or not!
- **Come prepared** — review your lecture notes and come with ideas about what you want to discuss. You could divide up topics to study between you and then teach each other. Either way, encourage everyone to actively participate.
- **Keep it short (with breaks)** — give yourself enough time to cover the material without rushing through it, but not so much time that you can let yourself be unproductive. Try two to three hours and schedule in some breaks for socialising to avoid burnout.
- **Summarise contributions** — at the end of the session, everybody should be able to summarise the major points on a topic. Keep it as a verbal summary or write it up and share with the rest of the group.



# 8 exam techniques to transform your grades

Exam day has arrived. You've revised — but we all know that passing exams takes more than just having the answers in your head. Here we discuss techniques that will help you succeed in exams, with some input from those who know exams all too well — university lecturers.

## 1. Read the instructions

The exam begins and you may be conscious of others turning over the paper and writing furiously, but stop... and take some time to read the instructions. How many questions do you have to answer? If there are sub-questions, do you have to answer them all or just one? Are there any questions at the back of the paper which you could easily miss?

## 2. Manage your time... it's precious

So you're clear on how many questions you have to answer and the marks allocated to each. Divide your time accordingly and leave 5-10 minutes to check your answers at the end. You could write down how much time you want to give each question, so that you have a reminder for when you need to move on to the next question.

*"Don't copy out lines of text or graphs from the exam question," says Dr Pietro Tricoli, a Senior Lecturer at the University of Birmingham. "Time in exams is very limited and you want to use it for your answers."*

## 3. Read the question carefully

Once you've chosen a question, read it again to make sure you fully understand what it's asking you. It may help to underline the instruction words.

*"The question may look similar to one you've seen in past exam papers, but in reality, the nature of the question is often different — so be careful!" says Dr Tricoli.*

## 4. Get to the point

It may be tempting to demonstrate your knowledge by writing about everything you've revised in relation to the question...but resist that temptation!

*"Get straight to the point of the question, rather than trying to write about everything," says Dr Tricoli. "Very often questions give you the opportunity to demonstrate how you can link elements of knowledge, rather than testing the amount of knowledge you have."*

## 5. Don't forget your academic writing skills

If it's an essay, structure it as you would your coursework — with an introduction, a well-reasoned argument and a conclusion. Where you discuss the ideas and theories of other people, name those people, and back up your statements with examples.

Dr Tricoli says that student engineers can draw on examples from the world around them. *"At the end of the day, engineers design things we use in our day-to-day life,"* he says. *"So if you've seen something in life that is relevant to the question, it is reasonable to refer to it."*

## 6. Extra time? Give those difficult questions a try

*"Try those mathematical questions, even if you did not solve a similar example in your preparation,"* says Dr Tricoli. *"Engineers are often required to make assumptions, so this will probably be required for design-oriented questions. These questions do not usually have a unique answer; rather you will be tested on your ability to make reasonable assumptions and develop a coherent design methodology."*

## 7. Running out of time? Get down key information

You look up at the clock and the panic sets in, as you realise that you will not be able to write another essay in the five minutes you have left. Rather than speed-write illegible paragraphs, note down a short overview of what you would have covered if you'd had the time.

## 8. Remember the true meaning of exams

Here's something to think about before entering the examination room and once it's all over.... exams are not there to trick or torture you.

*"Rather than fearing them, I encourage my students to take them as an opportunity to demonstrate that they have acquired the learning outcomes on the module,"* says Dr Iñaki Esnaola, a Senior Lecturer at the University of Sheffield. *"It is an occasion to exhibit knowledge, analytical skills and creative skills that emerge as a result of the hard work during the semester. Most academics are delighted to see the progress of their students and the exam is just a mechanism to learn that!"*

# Coping with exam stress

Exams can be stressful. At times, you may feel unable to cope with the revision or worry about passing exams and getting the required marks to achieve your degree or desired job. The stress can even affect you physically, interfering with your sleep, appetite and ability to perform.

Talking about stress often helps to relieve it, and there are many organisations who are prepared to listen.

Your university website is your first point of call — universities typically offer counselling, student advice services, support networks and more. If your university doesn't offer the support you need, or you'd just prefer to look elsewhere, below are a few relevant links:



## Foothold

Our Benevolent Fund supports IET members and their families with a range of needs, including providing counselling services for anyone who is going through a difficult time.



## Student Minds

A UK student mental health charity which provides advice on exam stress, runs support programmes and signposts support that you can find at your university and elsewhere.



## Times Higher Education

Provides information on managing stress and finding little ways to eliminate the risk of burnout.



## The Student Room

An online student community, which provides discussion forums and information on identifying and managing stress.

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