Lab 1

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About us

Jan Derrfuss (module convenor)

Email Jan

Student office hour: Thursday, 12-1pm in room LG43

Jan is a cognitive neuroscientist from Bamberg, Germany. He initially studied architecture in Dresden, quit after a year, then did an internship at the now closed Cotswold Community in Ashton Keynes, Wiltshire, before returning to Germany to study psychology in Landau in der Pfalz. He completed his PhD at the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig and has been working at the University of Nottingham since 2013. His main research interests are cognitive control, working memory, and performance monitoring.

Jonathan Stirk

Email Jonathan

Student office hour: Tuesday, 2-3pm in room A14

Jonathan is a cognitive psychologist with interests in attention and emotion. He studied Combined Science (Psychology/Biology) at Leicester University, and after a period as a research assistant examining aspects of game theory, he completed a PhD looking at how virtual reality could be used to investigate spatial cognition. He has been an assistant professor at Nottingham for over 15 years!

The demonstrators

Demonstrators are PhD candidates with a background in Psychology. Together with the lecturers, demonstrators will answer your questions, give you feedback and mark your work. This year's demonstrators are:

- Aditi Jain
- Alexia Jeayes
- Ayesha Mohamed Sherief
- Chhanda Karmaker
- Isabelle Chastney
- Jacob Juty
- James Kennaway
- Natasha Stevenson
- Patricia Radu
- Rachel Grasmeder Allen
- Sophie Orchard
- Tobias Meeks

You can find contact information for the demonstrators on Moodle in the section "Contact the lecturers and demonstrators".

How to use this book

General information

The Hitchhiker's Guide (HHG) is an online book created using an open-source authoring and publishing system called Quarto. We hope that by publishing the HHG in HTML format, it will be more easily accessible—e.g. to vision-impaired or dyslexic students.

If you have dyslexia, you might be interested in this list of Chrome extensions for people with dyslexia. If you have any suggestions on how to improve the accessibility further, please send Jan an email.

Searching the HHG

A very useful feature of the HHG is that is searchable. Please make ample use of the search feature available in the upper left corner of the window (when using a laptop or desktop computer; on mobile devices, the search icon is in the upper right corner):

The Hitchhiker's Guide to PSGY1001

🔍 Search

Preface

1 Weekly overview

2 Module calendar

Progress tracking

Some of the HHG chapters require self-study. These parts are marked with a □ icon. Once you have completed these parts, confirm their completion in the Moodle section HHG Self-Study Completion Tracking.

Online vs. PDF version

This book is designed to be an interactive learning experience and is best viewed in its **online HTML format**. The online version includes features that are not available in a static format, such as:

- Interactive quizzes and exercises
- Embedded applications
- A full-text search function

For convenience, we also provide a **PDF file** for each lab class, which is ideal for offline reading and printing. You can find download links within the weekly overview chapter. Please be aware that the features mentioned above, emojis, collapsible sections and cross-references to other parts of the book are not working in the PDF. We recommend using the online version as your primary resource.

Current and older HHG versions

Note that the most current version of the HHG will always be available at this link: `https://psychology.nottingham.ac.uk/staff/lpzjd/psgy1001`

If you would like to access the version of HHG that was current when you were in Year 1 in future academic years, modify the link by adding the year in which you started like this: `https://psychology.nottingham.ac.uk/staff/lpzjd/psgy1001-25`

Lab classes

Lab class

Here are some key details about lab classes:

- You will have weekly 90-minute lab classes. The lab classes will take place in room A20/21 in the Psychology building.
- Labs are non-compensatable. This means you have to pass this module in order to progress to Year 2.
- Lab class attendance is mandatory and will be recorded.
- Under exceptional circumstances, we may allow you swap your lab group if you find someone to swap with (deadline: end of teaching week 2).
- The labs are designed to mirror a typical research process, progressing through the following stages: understanding research fundamentals, designing experiments, implementing them, analysing data, and communicating findings
- Workload: 5.5 hours per week (1.5 hours in labs, 4 hours self-study)

Self-study

Please note that room A20/21 is equipped with iMacs. Thus, it is not required that you bring your own laptop to these meetings. However, we would recommend to bring your own laptop if you own one. If you use your own laptop in lab classes, you can make sure that everything works on your own machine. This is important as you will likely use your laptop to complete assignments.

Please note that what room A20/21 does *not* have is recording equipment. Labs will therefore not be recorded.

Days and times

All first year psychology students have been allocated to one of six lab groups:

Group	Lab	Lecturer	Demonstrators
1	Tuesday, 9am	Jan	Natasha and Rachel
2	Tuesday, 10.30am	Jan	Aditi and Ayesha
3	Wednesday, 9am	Jonathan	Chhanda and Tobias
4	Wednesday, 10.30am	Jonathan	Isabelle and Jacob
5	Thursday, 9am	Jan	James and Patricia
6	Thursday, 10.30am	Jonathan	Alexia and Sophie

Your teaching timetable should tell you when your lab classes (labelled "Practical" in the timetable) take place.

Swapping groups

Please also note that you cannot usually change your group. However, under exceptional circumstances, we may allow students to switch groups. Note that you can only change to another group if there is someone in that group who is prepared to switch groups with you, or if someone has dropped out of the course. The reason for this is that we are aiming for equally sized lab classes as our computer labs will be very full. Students can change their group only once and only in the first two weeks of Semester 1, and changes need to be authorised by the module convenor.

Please post on the Group swap forum on Moodle if you would like to swap groups. If you have found another student who is willing to swap with you, please email Jan with the following details for both yourself and the other student:

- Name.
- Student ID.
- Current group allocation.

In addition, please copy the student with whom you would like to swap into your email.

Module content in brief

This module focuses on key competencies for conducting experimental research in psychology. Lab 1 focuses on getting started.

The remainder of the module is going to follow a prototypical research process: We will start with questions relating to psychological research in general and experimental design in particular (Labs 2-4). Then we will move on to implementing experiments using computer software (Labs 5-8). Next, we will conduct data analyses (Labs 9-14) and finally we are going to focus on how to write a study up (Labs 15-20). The next paragraphs describe these steps in more detail.

Labs 2 to 4 are an introduction to scientific thinking in psychology, ethics and experimental design. This includes criteria that characterise good research (e.g., reliability and validity) and problems that might occur when conducting an experiment (e.g., the presence of confounds).

Labs 5 to 8 will focus on learning how to use PsychoPy, a piece of software developed here at the University of Nottingham that we will use to present stimuli (e.g., text or pictures) on a computer monitor and to record responses using a keyboard.

Labs 9 and 10 will focus on data preprocessing. In an experiment, a participant will typically respond multiple times to the same experimental condition. This is done to increase the reliability of the measurement. When we preprocess the data, we typically exclude incorrect trials and reject trials with unusually fast or slow response times (RTs). Once this has been done, we average individual RTs on a per-condition basis (alternatively, we might decide to compute medians). In addition, we usually also compute accuracies or error rates.

Once we have the mean RTs and accuracies for each participant, we can calculate statistical measures for a group of participants. This will be the focus of Labs 11 and 12. We will look at missing data, data cleaning, outliers and summary measures such as the mean and the standard deviation.

Labs 13 and 14 will focus on inferential statistics. For example, we will ask if an RT difference between two conditions is actually statistically significant (i.e., very unlikely to occur by chance). In our labs, we will focus on t-tests and correlation tests.

Labs 15 to 20 will focus on writing lab reports. When you write a lab report, you will need to bring together the skills learnt in all the previous labs: You will need to understand an experiment implemented in PsychoPy, you will need to describe the design of the experiment in the Method section of the lab report, you will need to include descriptive and inferential statistics in the Results section, and you will need your knowledge about research and experimental design to critically analyse your own research as well as the research done by others in the Introduction and the Discussion sections.

Module content in tabular form

Table 2: Overview of autumn semester topics

Teaching Week	w/c	Lab	Topic
1	29-Sep	1	Introduction
2	06-Oct	2	Psychological research basics
3	13-Oct	3	Ethics
4	20-Oct	4	Experiments
5	27-Oct	N/A	Careers week
6	03-Nov	5	PsychoPy I
7	10-Nov	6	PsychoPy II
8	17-Nov	7	PsychoPy III
9	24-Nov	8	PsychoPy IV
10	01-Dec	9	Data preprocessing I
11	08-Dec	10	Data preprocessing II

Table 3: Overview of spring semester topics

Teaching Week	w/c	Lab	Topic
1	26-Jan	11	SPSS basics
2	02-Feb	12	Descriptive stats
3	09-Feb	13	Inferential stats
4	16-Feb	N/A	Finding Work Experience Week
5	23-Feb	14	Inferential stats
6	02-Mar	15	Lab reports
7	09-Mar	16	Lab reports
8	16-Mar	17	Lab reports
9	23-Mar	18	Lab reports

N/A	30-Mar	N/A	Easter break
10	27-Apr	19	Lab reports
11	04-May	20	Lab reports

Workload

How much time per week should you spend working on PSGY1001? It is of course difficult to give a general answer to this question, but we thought we will give you an idea of the time the University expects you to work for this module. The University assumes that 1 credit translates into approximately 10 hours of effort. Thus, for a 20-credit module like PSGY1001, you would be expected to put in roughly 200 hours of effort. The whole academic year has about 36 weeks. Thus, as a very rough estimate, you would be expected to spend around 5 1/2 hours per week working on PSGY1001.

Another way to think about workload is this: Let's assume a full-time working week has 36 hours. Per semester, you are enrolled on 60 credits. You complete 10 PSGY1001 credits in autumn and 10 in spring. Thus, PSGY1001 represents $1/6^{th}$ of your workload each semester. $1/6^{th}$ of 36 hours is 6 hours. Thus, we arrive at a very similar estimate using this approach.

Confirmation

> **!** Important
>
> Please confirm you have worked through this chapter by submitting the corresponding chapter completion form on Moodle.

Assessment

Lab class

Here is an overview of the key assessment details:

- Formative assessment: **Does not** contribute to overall module mark.
- Summative assessment: **Does** contribute to overall module mark.
- Summative assessments have different weights - see table below for details.
- Autumn semester:
  - Two summative quizzes.
  - One formative PsychoPy assignment.
  - One summative PsychoPy assignment.
  - Exam.
- Spring semester:
  - Two summative quizzes.
  - One formative lab report.
  - One summative lab report.
- Both semesters: Research participation scheme.
- Make sure you understand what academic misconduct is, so you can avoid committing it.
- Unable to complete assessment: Submit extenuating circumstances (EC) claim.
- Disability?: Get support plan.

Self-study

PSGY1001 focuses on competencies. Competencies include knowledge and skills, and both will be taught and assessed in PSGY1001. The module will be assessed continuously throughout the academic year. In our view, there is one major advantage to this form of assessment: If you don't do well in one or even a few of the assessments, you can still get a really good mark overall. We feel that this approach is generally preferable to an approach that places all the emphasis on one single exam.

Table 1 gives an overview of the **summative** assessments. Summative means that these assessments will contribute to your overall module mark (whereas formative assessments do *not* contribute to your overall module mark).

Table 1: Overview of the summative assessments for PSGY1001.

Assessment Name	Weight	Details
Coursework 1	10	Create PsychoPy experiment
Coursework 2	10	Moodle quizzes (average of 3 quizzes)
Coursework 3	10	Analyse data using Excel and SPSS
Coursework 4	30	Lab report based on lab report template
Research participation	10	Research participation on SONA
ExamSys	30	Exam in January

Links to all pieces of coursework will be made available in the "Quizzes and assignments" section on the module's Moodle page. You will complete all summative quizzes on Moodle. You will also submit the PsychoPy experiment and the lab report on Moodle.

Dates and deadlines

The following tables list the dates for the summative assessments (and the formative assignments that are practice versions of summative assignments). **All assignments are set and due at 3pm.**

Table 2: Overview of autumn semester assessments.

Teaching Week	w/c	Lab	Assignment set	Assignment due
1	29-Sep	1		
2	06-Oct	2	Quiz 1: 09/10	
3	13-Oct	3		Quiz 1: 16/10
4	20-Oct	4	Quiz 2: 23/10	
5	27-Oct	N/A		
6	03-Nov	5		Quiz 2: 06/11
7	10-Nov	6	PsychoPy (formative): 13/11	
8	17-Nov	7		PsychoPy (formative): 20/11
9	24-Nov	8	PsychoPy (summative): 27/11	
10	01-Dec	9		
11	08-Dec	10		PsychoPy (summative): 11/12

Table 3: Overview of spring semester assessments.

Teaching Week	w/c	Lab	Assignment set	Assignment due
1	26-Jan	11		
2	02-Feb	12	Quiz 3: 05/02	

3	09-Feb	13		Quiz 3: 12/02
4	16-Feb	N/A		
5	23-Feb	14	Excel/SPSS quiz: 26/02	
6	02-Mar	15		Excel/SPSS quiz: 05/03
7	09-Mar	16	Lab report formative: 12/03	
8	16-Mar	17		
9	23-Mar	18	Lab report summative: 26/03	Lab report formative: 26/03
N/A	30-Mar	N/A		
10	27-Apr	19		
11	04-May	20		
N/A	11-May	N/A		Lab report summative: **Mon**, 11/05

Summative assessments

The following list gives on overview of the summative assessments in chronological order and briefly describes what they involve.

- **Quiz 1**: A quiz about Chapters 1-3 and 5 of Beth Morling's book.
- **Quiz 2**: A quiz about Chapters 10, 11 and 14 of Beth Morling's book.
- **PsychoPy experiment**: You will have to create a psychological experiment using the software PsychoPy.
- **ExamSys exam**:
  - The exam will take place during the January assessment period (the exact day and time is usually announced at the beginning of December).
  - Up to 60 questions in 60 minutes.
  - 4-alternative multiple choice questions, with no penalty for incorrect answers.
  - About 75% of the questions will be on research methods (questions will be similar to questions from Quiz 1 and 2). Questions will be about Chapters 1-3, 5 and 10-11 in Beth's book.
  - About 25% of the questions will be on PsychoPy. Most PsychoPy questions will have the following format: screenshot of a flow, routine, component or input file together with a short description, followed by the question whether what is displayed will work or not (and if not, why not).
  - A 30-question practice quiz will be released before the Christmas break.
- **Quiz 3**: For this quiz, you will have to analyse data from a PsychoPy output file from an individual participant.
- **Excel and SPSS data analysis quiz**: For this quiz, you will have to analyse data from a PsychoPy output file from an individual participant, from a group of participants and answer questions about statistical procedures..
- **Lab report**: For the lab report, you will need to write a report in the form of a short scientific research article. You will need to analyse the data on which your lab report is based.

Research participation scheme

The research participation scheme (RPS) enables students to familiarise themselves with the research conducted in the School. Participation in the scheme is managed via SONA which all 1st-year students are automatically registered on about 3-4 weeks after the start of term. Your SONA credits will be multiplied by 10 to calculate your RPS mark (thus, obtaining 10 points on SONA will result in a 100% mark). The deadline for taking part in experiments counting towards the RPS is the 30th of April. We would recommend to collect your 10 points as early as possible as it will get harder to find suitable studies once the deadline approaches.

Please note that there are penalties for signing up, but not showing up for studies.

For questions about SONA, please contact our SONA lead.

If for any reason you cannot take part in the RPS, an alternative form of assessment is available. You may instead opt to complete a coursework element, which is also worth 10% of the module mark. If you decide to opt out, you must contact the module convenor by the 30th of November to obtain the coursework details and submission deadline. Opt-out requests made after this date will only be accepted if an EC claim is submitted and approved by the EC panel. Any points accrued through the RPS will be lost if you opt out of the scheme. The essay will then count for the full 10% of the module mark

Overall mark calculation

To calculate overall marks, weights will be taken into account. Let us assume you had the following individual marks:

- Quizzes 1 to 3: 78, 65, 62 □ average: 68.33
- PsychoPy experiment: 68
- Data analysis quiz: 65
- Research participation: 100
- ExamSys exam: 72
- Lab report: 68

Your final mark would then be calculated as:

$$\frac{68.33 + 68 + 65 + 100 + 3 \times 72 + 3 \times 68}{10} \approx 72$$

Thus, your overall mark would be 72.

Academic misconduct

It is vital that you understand what constitutes academic misconduct. Please make sure to read the webpage describing the university's academic misconduct policy, the Students' Union webpage about academic misconduct and the section on "Academic misconduct" on the School's Moodle page.

Extenuating circumstances

Summative assessments

If you are experiencing difficulties, you may be eligible for an extension to this deadline. You can find more information about extenuating circumstances (ECs) on the Student Services EC page and on the Students' Union EC page. More information about ECs is available on the University's page ons EC procedures are available here.

To be eligible for an extension, your circumstances must...

- Be out of your control – you could not have prevented them.
- Have had a significant impact, that is, a demonstrably negative impact, on your ability to study or to undertake an assessment.
- Occur at a time point that is relevant to the impact on study/assessment.

You need to make an EC claim **before** the deadline via the EC site. Claims made after the deadline must explain why the claim could not be made before the deadline to be considered. Without a valid EC claim, there will be a 5% per-day penalty for late submissions. Please note that the procedure is different for exams, where you can make an EC claim up to seven days **after** the exam.

You will be able request self-certified ECs on coursework two pieces of coursework per year (across *all* modules). The default outcome is a five working day extension to the deadline. For longer extensions you will require evidence.

Formative assessments

If you cannot submit a piece of assessment that is formative (i.e., that does *not* contribute to your overall module mark), you do not have to submit an EC form. As formative assignments do not contribute to your overall module mark, not submitting a formative assignment cannot incur a penalty.

Due to the high number of EC claims, the EC panel has decided that it will not be possible to claim ECs for formative assignments. If you miss the deadline, you will not be able to submit.

The only exception from this rule will be the formative lab report (as addressing feedback obtained on the formative lab report will be a marking criterion for the summative lab report).

Disability support

If you are disabled under the Equality Act 2010 (this includes mental health difficulties, specific learning differences, or long-term medical conditions), you should contact the university's Support Team who can develop a Support Plan with recommendations for reasonable adjustments to assessments for you. This can include extended coursework deadlines on request and extra time in exams.

Confirmation

> **!** Important
>
> Please confirm you have worked through this chapter by submitting the corresponding chapter completion form on Moodle.

End-of-chapter quiz

This section contains interactive content which is not available in the PDF version. Please visit the online version to see it.

Reading

Lab class

Key details:

- Get hold of a copy of Beth Morling's book *Research methods in psychology: Evaluating a world of information.*
- Also read more widely, e.g.:
  - Harford, T. (2021). *How to make the world add up: Ten rules for thinking differently about numbers.* The Bridge Street Press.
  - Pinker, S. (2019). *Enlightenment now: The case for reason, science, humanism, and progress.* Penguin.

Self-study

Core reading

The core book for this module is: Morling, B. (2025). *Research methods in psychology: Evaluating a world of information* (5$^{\text{th}}$ ed.). W. W. Norton & Co.

The fourth edition of this book will also be fine.

You can either obtain a hard copy from George Green Library[1] or buy the book, either directly from the publisher Norton or from a bookshop. Norton offers three versions:

- A hard copy (which includes access to the interactive ebook plus the Norton learning tools for **1 year**).
- The standalone ebook (access not time-limited).
- The interactive ebook plus the Norton learning tools (access to the book and the learning tools is limited to **1 year**).

If you intend to buy a hard copy, please enter the code WN217 at checkout. This should give you a 30% discount. If you would like to buy either of the ebook versions, please enter the code WN218 at checkout. This should give you a 15% discount. The codes are valid until 31 October. (And please do let me know if the codes don't work.)

Please also note that the first three chapters are available as ebook demo chapters. You can access these demo chapters without purchasing the book or signing up to the website.

If no more books are available in the library, please make sure to **request** a copy. This is the only way for the library to notice that they need to order more books.

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[1]Unfortunately, it is not available as an ebook via the e-library.

Please also note that you can copy or scan a "fair" proportion of a book for private study and research. As the Library points out, what is "fair" is not defined in law, but "as a rule of thumb, safe limits are likely to be up to 5% of a work or one chapter from a book". It is also good to be aware of the fact that the printers in the library allow you to scan documents directly to your OneDrive. You might also come across shadow library websites such as Sci-Hub or Library Genesis. Please note these sites infringe copyright laws.

Should you borrow or buy books? If you tend to create your own excerpt while reading a book, without making annotations in the book, a library copy will serve you perfectly well. However, I've always had a penchant for buying books. In my view, there are three main advantages to owning a book:

- You have the book available when you need to revise.
- You can work with the book (e.g., add notes, highlight things you find relevant, etc.).
- You can keep the book and look things up later in your studies.

Wider reading

The books below are popular science books that I think every psychology student should have read. I haven't listed them as core reading as they're not technically psychology text books. They are great though and address some key psychological issues. One could perhaps say that an overarching theme in these books is how to make sense of the world using data, something that will be critically important for your course. The books are listed in the order in which I would recommend to read them.

Harford, T. (2021). *How to make the world add up: Ten rules for thinking differently about numbers*. The Bridge Street Press.

Pinker, S. (2019). *Enlightenment now: The case for reason, science, humanism, and progress*. Penguin.

Levitt, S. D., & Dubner, S. J. (2020). *Freakonomics* (Rev. ed.). William Morrow. (Note that their follow-up book, SuperFreakonomics, is not as good in my view.)

Rosling, H. (2019) *Factfulness*. Sceptre. (Also very good, but there is some overlap with Pinker's book. If you read only one, I would suggest to read Pinker's book.)

You might want to have a look at BookFinder if you're potentially interested in buying a new or used copy of one of the books and at WorldCat to check if a book you're interested in is available in a near-by library.

Confirmation

> ❗ Important
>
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Support

Lab class

Besides the support you get in our lab classes, here are some other ways you can get help:

- Go to a help desk session. Help desks are weekly demonstrator-led support sessions.
- Post academic questions on the student forum on Moodle.
- For questions of a more personal nature: email us, chat with us on Teams, or come to our student office hours.
- Use AI whenever you're allowed to.
- For IT issues, get IT support.

Self-study

Help desk

Help desks will be held on **Thursdays from 1–2pm in rooms A20/21** during weeks with lab classes (except on 27/11 when the help desk will be in A5). The aim of the help desks is to support your learning of the content of the labs.

Help desks are run by a demonstrator. You can simply drop in and don't have to make an appointment in advance.

Please note that they are not a replacement for attending the labs or for reading the HHG. If you come to a help desk, you will be expected to have read the relevant chapters in the HHG.

Moodle forum

Here is a link to the Moodle page for the labs. You can access the module's forums under the "Forums" tile. You can post on the General forum at any time. We aim to respond within one working day. Please also use the forum to communicate with each other. If you can answer someone's question please do so—an answer from a peer can be quicker and more helpful than an answer from a lecturer!

Adding a new topic to a forum is pretty much straightforward: Just click on the forum name and then on "Add discussion topic". If you would like to reply to a post, click on the post and then on "Reply".

Forum search

What is less intuitive, however, is how to search forums. The forum search is actually quite powerful, but the very useful advanced features are easy to miss. To see the advanced search, you either have to click on "Search forums" *before* entering a search term:

Search forums

Alternatively, you can perform a search and then click on "Advanced search...":

Advanced search...

The advanced search options should be pretty much self-explanatory. Note that Moodle automatically truncates. This means that if you enter the search term `psycholog`, Moodle will find forum posts with the words `psychology`, `psychologist` etc.

Email, Teams chat and student office hours

Lab classes and the forum are the preferred way to ask questions as all students can benefit from the answers given. However, sometimes you might want to bring personal issues to our attention that are not appropriate for raising in the lab class or posting on the forum. In such cases, please do send us an email, chat with us on Teams or come to our offices.

Jan

Email Jan

Chat with Jan on Teams

Jan's student office hour: Thursday, 12-1pm in room LG43

Jonathan

Email Jonathan

Chat with Jonathan on Teams

Jonathan's student office hour: Tuesday, 2-3pm in room A14

AI use

In my view, AI chatbots can supercharge your learning. They're not perfect, and I wouldn't rely on their statements without independent verification, but they're still incredibly useful. Use them to learn. Then stop using them and complete your assessment on your own. Using AI for assessments is academic misconduct—period. (Unless, of course, the assessment instructions explicitly allow the use of AI.)

You can access Microsoft Copilot by logging in with your university account. I also recommend keeping an eye on AI comparisons such as the LMArena leaderboard as models evolve rapidly and their capabilities can change significantly over time.

I would also highly recommend to read the article Next Time You Consult an A.I. Chatbot, Remember One Thing that was published in the New York Times.

IT support

If you have any IT problems (e.g., difficulties to install a particular piece of software or to access one of the university's online services), please contact the university's Digital and Technology Services.

Confirmation

> **!** Important
>
> Please confirm you have worked through this chapter by submitting the corresponding chapter completion form on Moodle.

Essential IT setup

Lab class

For your labs, you'll need to get a few things set up on your computer. Here's what to do:

- Use a recommended browser as your default browser (i.e., Chrome, Brave, Edge or Firefox; but not Safari).
- Change some file manager settings.
- Find out how to create zip files and how to unzip them. You will need to know this for submitting assessments!
- Install the Microsoft 365 office apps provided by the university.
- Use OneDrive.
- Install PsychoPy.

> ⚠️ Warning
>
> If you are about to buy a computer, don't buy one running **Chrome OS**. Various essential pieces of software will not run on it.

> 💡 Tip
>
> We make these recommendations to make your lives as students easier and more enjoyable. Yes, making the changes we suggest will require some effort initially (and possibly some AI conversations), but we promise that you will benefit in the long run!

Self-study

General points

As the computers in our labs are running macOS, our main focus will be on macOS. However, we will highlight some key points for Windows users.

We will not cover installing SPSS (an app for statistical data analysis), as this will be covered in your statistics lectures.

Web browser

What will you use the web browser for?

- To read material available online.
- To download material from the internet.
- To search the internet.

Make sure you have one of these web browsers installed and set it as your default browser:

- Chrome: For those who want things to just work (at the cost of privacy).
- Brave: For the privacy-conscious.
- Edge: For those who like to use Microsoft 365 web applications (as opposed to desktop applications).[1]
- Firefox: For the non-conformists. Firefox is the only surviving major web browser that is not based on Google's Chromium project.

> ⚠ macOS users
>
> Please do not use Safari. Safari likes to do some things differently and this will cause various issues over the course of the year. Save yourself the trouble and use one of the web browsers recommended above as your default browser. Find out how to change your default web browser here.

File manager

What will you use the file manager for?

- To create, move, copy or delete files and folders.
- To navigate your file system. Among other things, we expect you to be able to find files that you have downloaded from the internet.
- To compress and uncompress files.

The file manager on macOS is called **Finder**, on Windows it is called **File Explorer**. We assume that you know how to use your file manager to move and copy files and will therefore not explain this in more detail. To make navigating the file system easier, we would like you to make a few changes to the default Finder settings though. We will then explain how to compress and uncompress files.

macOS users: Changes to Finder settings

Please make the following two changes to your Finder settings.

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[1] I have the impression that Microsoft 365 web applications tend to work best with Edge. I could be wrong though.

1. Show the path bar

1. Click on your Finder icon:
2. Click on View.
3. Click on Show Path Bar.

Show/hide screenshot illustrating this step

As a result of this change, you will now see the current path displayed at the bottom of your Finder windows, e.g.:
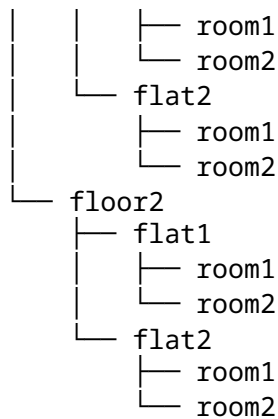

Macintosh HD › Users › test › Public

Note that you can click on the folder names in the path bar to directly jump to one of the folders in the path.

Show/hide this section on file paths

Your file system is a hierarchical structure. Think of your file system as a tower block. A tower block has multiple floors. On each floor, there might be multiple flats. Each flat has multiple rooms. We can visualise this structure in the following way:

```
.
├── floor1
│   ├── flat1
```

```
|   |   ├── room1
|   |   └── room2
|   └── flat2
|       ├── room1
|       └── room2
└── floor2
    ├── flat1
    |   ├── room1
    |   └── room2
    └── flat2
        ├── room1
        └── room2
```

Now, let us imagine you stored a file in one of the rooms. How would you tell someone else to find it? Clearly, you would need to tell them which floor to go to, which flat to enter and which room to look in. Let us assume the file is in room1 in flat2 on floor1. A short way of writing this could be: `/floor1/flat2/room1`. On your file system, this is called a **path**. It describes, well, the path you need to follow to find something you are looking for.

There are two types of paths: absolute and relative. An **absolute path** always starts at the entrance to the building (on your file system, the entrance is called `root`). `/floor1/flat2/room1` is an example for an absolute path (`root` is symbolised by the first forward slash in the path). In the Finder, `root` is called `Macintosh HD`.

A **relative path**, as the name suggests, is relative to the location you are currently in. For example, if someone is in `/floor1/flat2/room1` and you want them to go to `/floor1/flat2/room2`, you could simply say "Leave the room you're currently in and go into room2". We could write this as `../room2` (where `..` means "go one level up in the hierarchy"). Relative paths have the advantage that they are shorter[2], but they have the disadvantage that they only work if the person you want to point to the other room really is in `/floor1/flat2/room2`. If they are not, they will end up in the wrong place.

Now, the Finder on macOS does something quite stupid: By default, it does not make this hierarchical structure particularly clear. It has favourites such as `Documents` or `Downloads`, but no favourites for hierarchical levels above these. There is also no obvious way to say "go one level up in the hierarchy". Finally, it is also not as easy as it should be to find out the absolute path to a location. All of these features make it unnecessarily hard to understand where your files are stored. The changes we outlined above will hopefully make it easier to navigate your file system. If you are interested, you can find more tips for navigating your file system here.
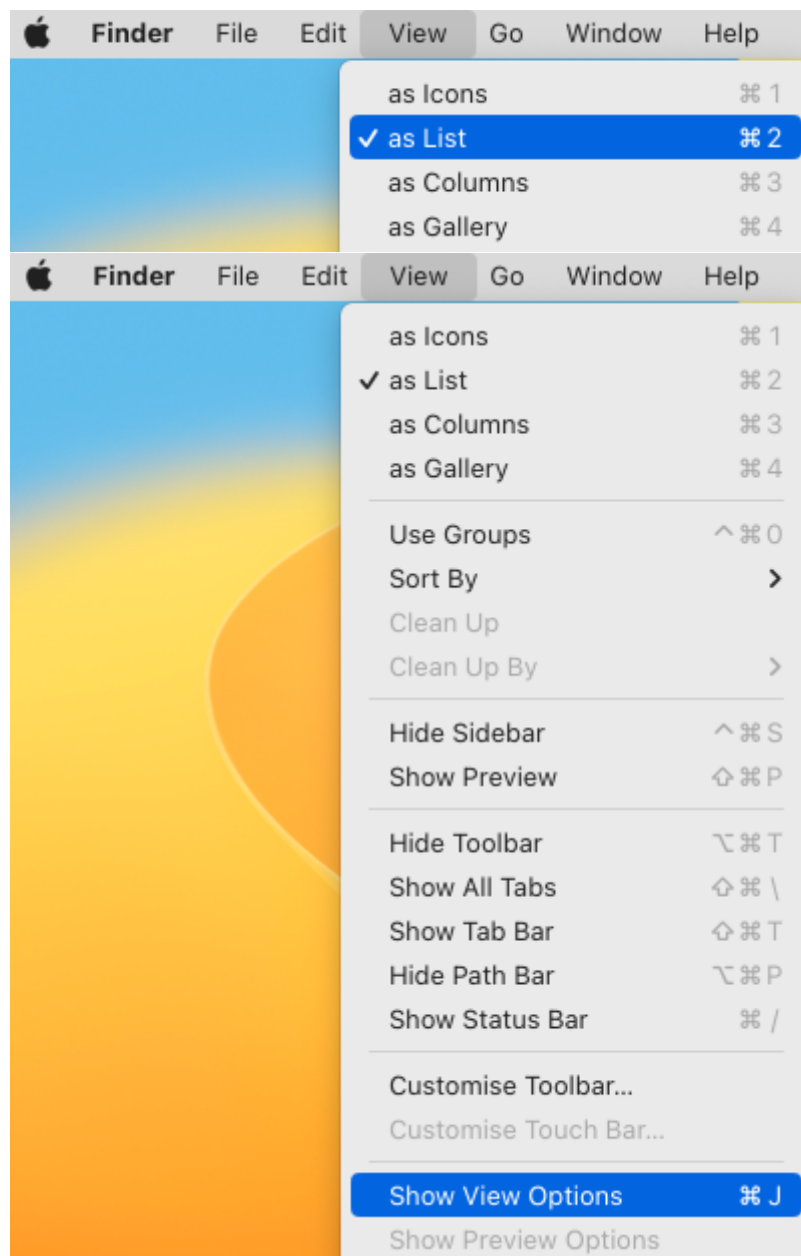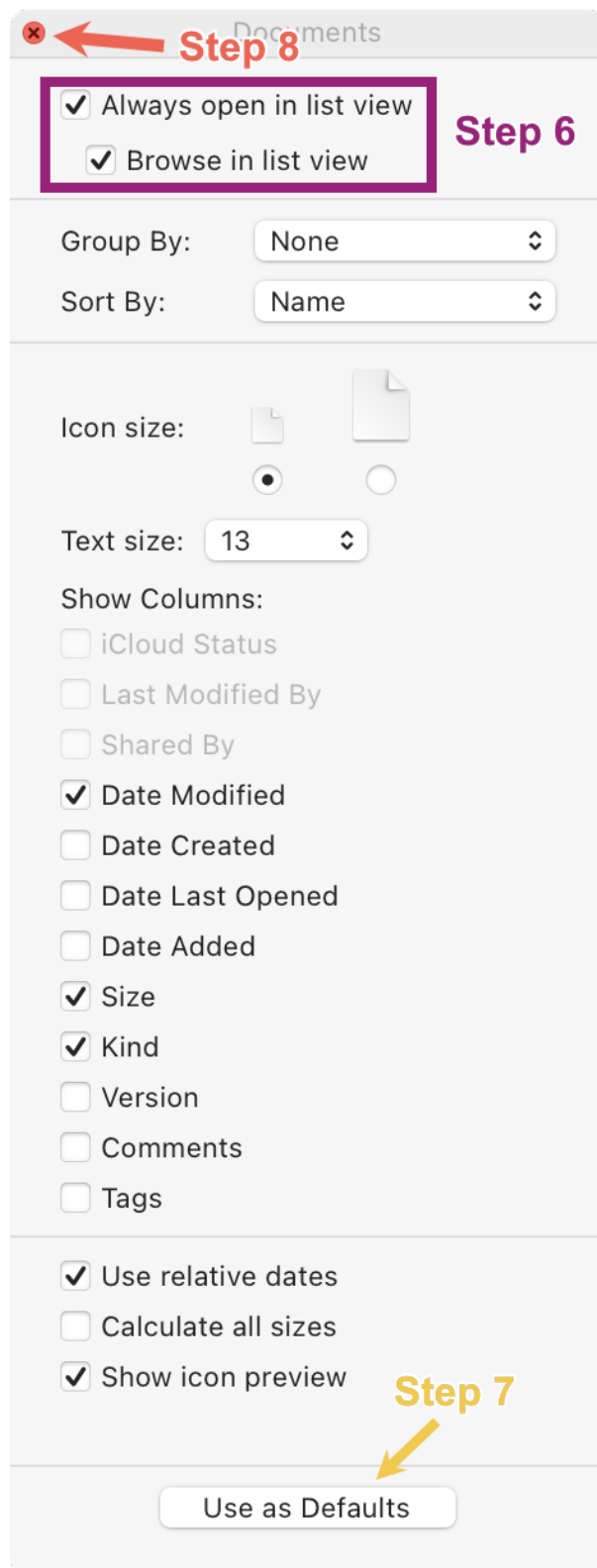
2. Change to list view

1. Navigate to your Documents folder (e.g., click on "Documents" in the Finder sidebar).
2. Click on View in the menu bar.
3. Click on "as List".
4. Click on View again.

---

[2]Another advantage is that you can send someone to a different location without knowing the absolute path. E.g., in our example, you don't need to know if the next level up is called `flat1` or `apartment1`.

5. Click on "Show View Options".
6. Select "Always open in list view". Make sure "Browse in list view" is also selected.
7. Click on "Use as Defaults".
8. Close the popup window.

Show/hide screenshots illustrating these steps

Step 8

Documents

Step 6
☑ Always open in list view
☑ Browse in list view

Group By: None ⇕

Sort By: Name ⇕

Icon size:

Text size: 13 ⇕

Show Columns:
☐ iCloud Status
☐ Last Modified By
☐ Shared By
☑ Date Modified
☐ Date Created
☐ Date Last Opened
☐ Date Added
☑ Size
☑ Kind
☐ Version
☐ Comments
☐ Tags

☑ Use relative dates
☐ Calculate all sizes
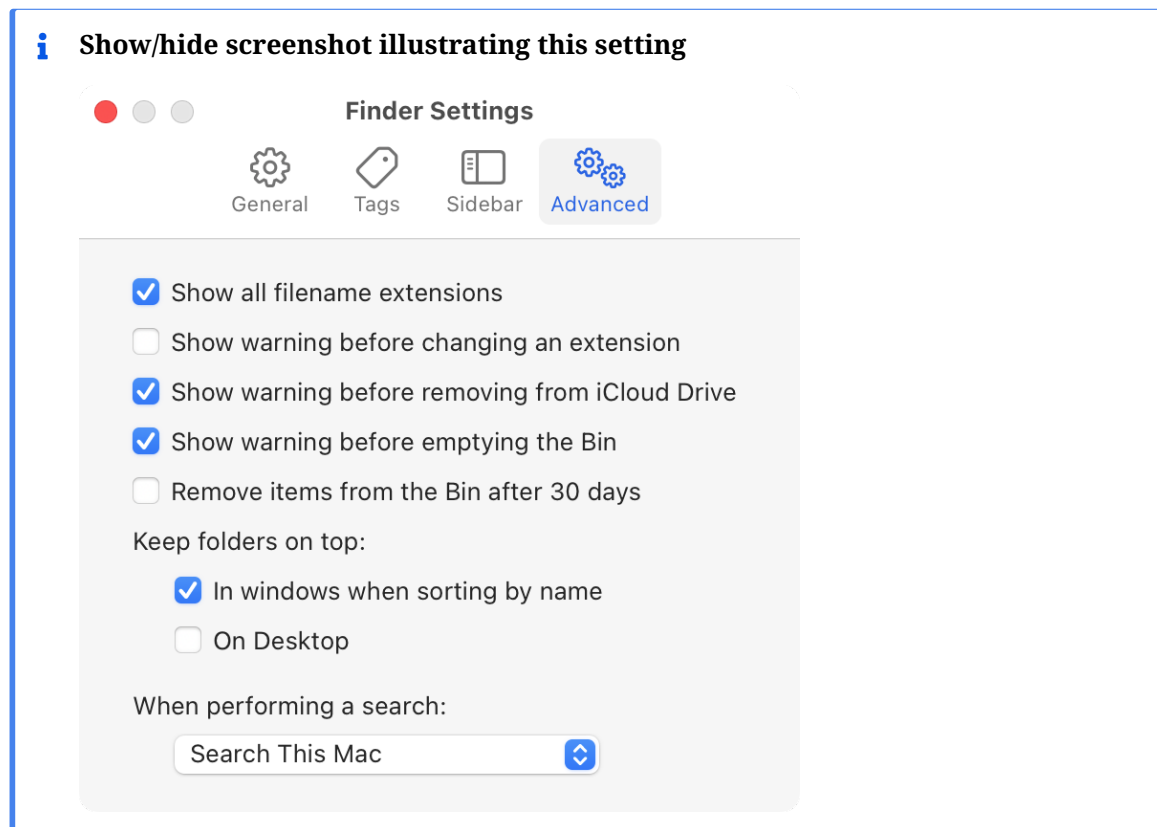☑ Show icon preview

Step 7

Use as Defaults

List view is useful as it shows you key information about files that are not readily available using the other view options. Most importantly, this includes the date on which a file was last modified (you can also add "Date created" using "Show View Options", as well as others) and the file size. When we start working on creating experiments, you will likely find that, e.g., knowing the time when a file was last modified can be extremely helpful when you're trying to identify the file you have most recently been working on.

3. Keep folders on top

A somewhat annoying Finder default setting is that folders and files are intermixed when files are sorted by name. It is usually preferable to have folders listed first though. Here is how to achieve this:

1. Go to the Finder.
2. Click on Finder.
3. Click on Settings.
4. Click on Advanced.
5. Tick "Keep folders on top: In windows when sorting by name".

ℹ Show/hide screenshot illustrating this setting

Finder Settings

General　Tags　Sidebar　**Advanced**

☑ Show all filename extensions
☐ Show warning before changing an extension
☑ Show warning before removing from iCloud Drive
☑ Show warning before emptying the Bin
☐ Remove items from the Bin after 30 days
Keep folders on top:
　☑ In windows when sorting by name
　☐ On Desktop
When performing a search:
Search This Mac

Windows users: Changes to File Explorer settings

The Windows File Explorer has an extremely annoying default setting (and in fact one that is a security risk): It hides file name extensions. Please do make sure to display these by

clicking on View and then by ticking the "File name extensions" box.

ZIP files

What will you use ZIP files for?

- We will provide you with resources in the form of ZIP files.
- You will need to upload a ZIP file to Moodle for a future assignment.

  ZIP is an archive file format that supports lossless data compression. A ZIP file may contain one or more files or directories that may have been compressed. (Wikipedia)

As mentioned on Wikipedia, a single ZIP file can contain many files and folders. This is advantageous as it simplifies data downloads and uploads—instead of having to download or upload many files individually, you only have one file you're dealing with.

ZIP files on macOS

Unzip a ZIP file

1. Navigate to the ZIP file in the Finder.
2. Double-click on the ZIP file.

⮕ The unzipped folders or files will appear in the location where you unzipped the file.

Create a ZIP file

To zip a folder:

1. Right-click on the folder you want to zip.
2. Click on Compress.

⮕ A file called `<yourFolderName>.zip` will be created in the location where you zipped the folder.

To zip multiple files:

1. Select the files you want to zip.
2. Right-click on one of the files.
3. Click on Compress.

⮕ A file called `Archive.zip` will be created in the location where you zipped the files.

ZIP files on Windows

Unzip a ZIP file

1. Navigate to the ZIP file in the File Explorer.
2. Right-click on the ZIP file.
3. Click on "Extract all...".

> ⚠️ **Warning**
>
> If you double-click on a ZIP in File Explorer, Windows will let you "look into" the ZIP file, but it won't be unzipped! Thus, it is vital that you use "Extract all"!

Create a ZIP file

To zip a folder:

1. Right-click on the folder you want to zip.
2. Select "Send to", and then select "Compressed (zipped) folder".

To zip multiple files:

1. Select the files you want to zip.
2. Right-click on one of the files.
3. Select "Send to", and then select "Compressed (zipped) folder".

Try it out

Download the ZIP file below. By default, downloads are saved to your `Downloads` folder. On macOS, the absolute path to your `Downloads` folder is `/Users/yourUsername/Downloads`. If the unzipping procedure is successful, you should see a folder with images. Please let us know if you run into any issues!

[Click here to download the ZIP file.](#)

Microsoft 365

What will you use Microsoft 365 for?

- You will use Excel to analyse data.
- You will use Word to write documents.
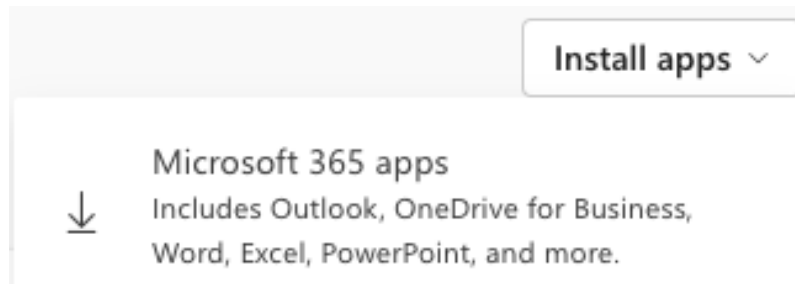- You will use OneDrive to store files.

> ⚠️ **macOS users**
>
> Yes, your Mac comes with Pages, Keynote and Numbers installed, but we nevertheless highly recommend to install MS Office. The university is very much focused on MS Office, and you will live a happier life if you accept this and use MS Office instead of the native macOS apps.

Installing Microsoft 365

Excel, Word and OneDrive are all part of what Microsoft refers to as Microsoft 365. Thus, you only need to install Microsoft 365 and you should have all the relevant apps.

1. Uninstall previous versions of MS Office.
2. Log in to portal.office.com using your university login and password.
3. On the Microsoft 365 homepage, click on "Apps" and then on Install apps":

4. Download the installer file.
5. Once the download is complete, click on the installer file and follow the instructions.

Note that on your Microsoft 365 homepage (i.e., the page you see after logging in to portal.office.com), you will also find web applications for Word, Excel, etc. However, we would recommend to use the locally installed desktop versions whenever possible as the web applications do not yet have all the features the desktop versions have.

Using OneDrive

We recommend that you store all your university-related files in OneDrive. Using OneDrive has several advantages:

- You can access your files from any computer with an internet connection.
- There is plenty of space available (5 TB).
- When you open a file on OneDrive using one of the Office apps (e.g., Word), any changes made will be automatically saved on OneDrive.
- OneDrive also creates a file history, allowing to restore previous versions of a file.

You can access OneDrive as a web application from your Microsoft 365 homepage by clicking on "Apps" in the sidebar and then on OneDrive. Alternatively, you can click on the App Launcher (the nine dots in the upper left corner) and then on OneDrive. The OneDrive icon looks like this:
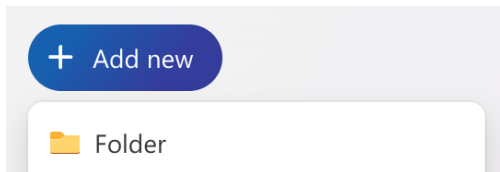

We would recommend to create the following folder structure:

```
Year1
├── PSGY1001
│   ├── Lab1
│   ├── Lab2
│   └── etc.
├── PSGY1002
│   ├── Lecture1
│   ├── Lecture2
│   └── etc.
└── etc.
```

You can create a new folder on OneDrive by clicking on New and on Folder:

PsychoPy

What will you use PsychoPy for?

- To create experiments.
- To run experiments.
- To collect data.

Installing PsychoPy

> ⚠️ iMac users
>
> If you are using one of the iMacs in A20/21, you do not need to install PsychoPy—it is already installed.

Here's how to install PsychoPy on macOS:

1. Download PsychoPy. We would highly recommend to download the current stable version.[3]
2. After the download has completed, click on the downloaded file.
3. **Drag and drop the PsychoPy icon onto the Applications folder icon** (and wait for a while). If you do not complete this step, PsychoPy will not be installed properly![4]

---

[3]Older PsychoPy releases can be found on the PsychoPy GitHub page.

[4]If you've never installed an app on your Mac using this approach before, you might be interested in this page describing different ways to install software on a Mac.

Drag and drop this onto this.

PsychoPy.app   Applications

After the installation is complete, you need to make two important changes in your system settings. If you do not make these changes, PsychoPy will not work.
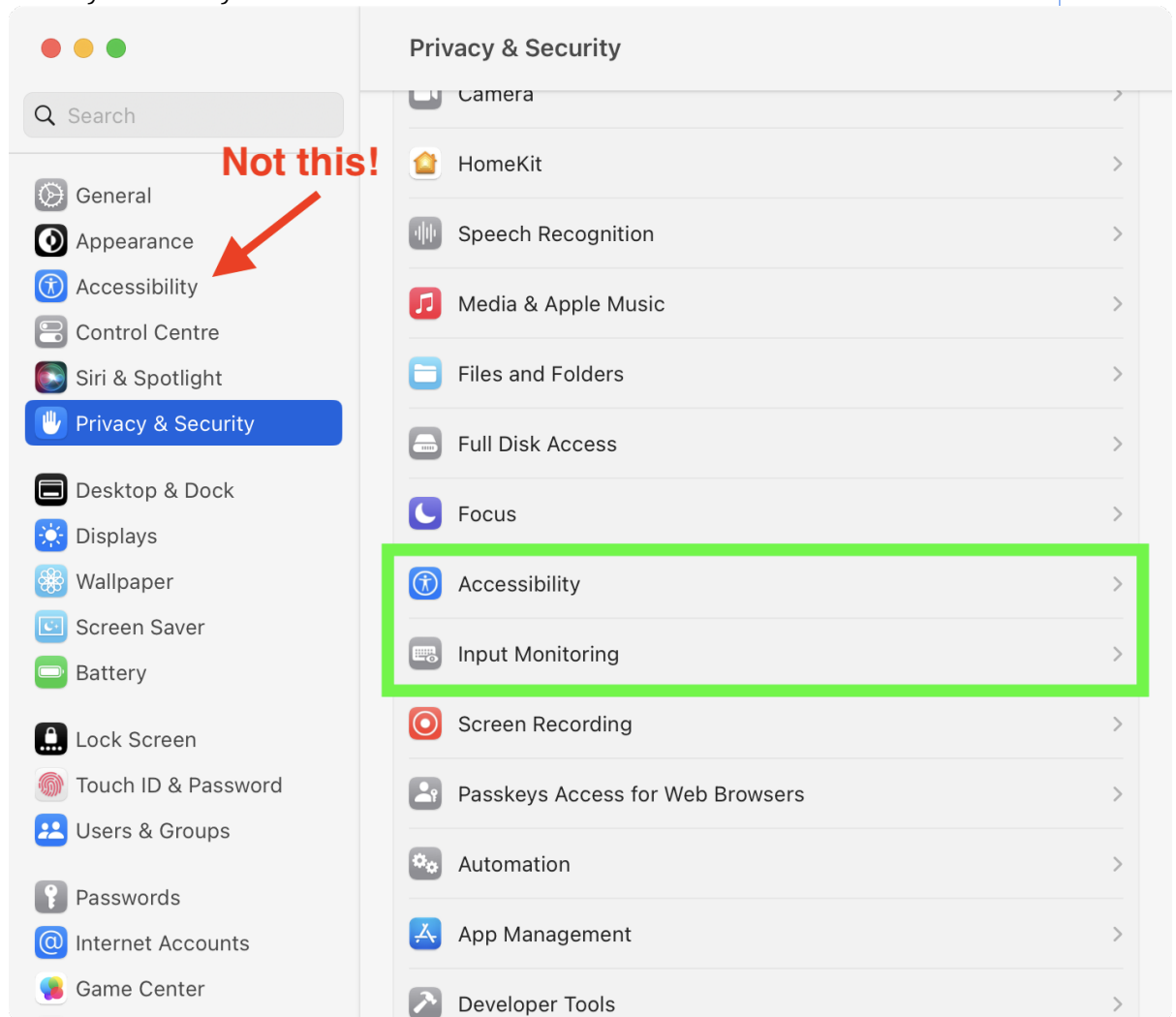
1. Open your system settings.
2. Click on "Privacy & Security".
3. Click on "Accessibility". Note that this refers to "Accessibility" within "Privacy & Security", not "Accessibilty" in the sidebar on the left (if in doubt, see screenshot below)! You will probably need to scroll down for this to become visible.

   - If PsychoPy is already listed, make sure the switch on the right is set to "On".
   - If PsychoPy is not yet listed, click on the plus symbol, navigate to your Applications folder and add PsychoPy.

4. Click on the back arrow to return to "Privacy & Security".
5. Click on "Input Monitoring".

   - If PsychoPy is already listed, make sure the switch on the right is set to "On".
   - If PsychoPy is not yet listed, click on the plus symbol, navigate to your Applications folder and add PsychoPy.
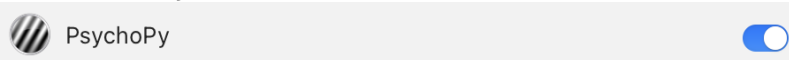
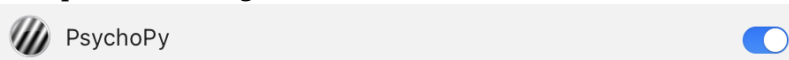**Show/hide screenshots illustrating these steps**

System settings:

Privacy & Security:

In Accessibility:

In Input Monitoring:

Confirmation

> **!** Important
>
> Please confirm you have worked through this chapter by submitting the corresponding chapter completion form on Moodle.

Optional IT setup

Self-study

Note-taking

Imagine you read a chapter in a textbook and finally understand something you never understood before. Will you remember your insight? You might think that of course you will. Well, unfortunately, you might not. Not only do we tend to forget things we learned, but we also tend to believe we won't forget them (Koriat et al., 2004).

Therefore, we would recommend to write things down. This could be on paper or electronically. Electronic notes of course have the advantage that you can search them later. In addition, you can add tags to them, which also makes it easier to find relevant information later. I personally use Evernote, but there are a large number of similar tools available, some of them completely free. In fact, one of them comes with Microsoft 365: OneNote[1]. You could also just use Word. Or you have a look at this very detailed comparison of many different note-taking apps. The point is: It doesn't matter so much which tool you use, as long as you use it!

For more ideas on how to become a sophisticated learner, we would highly recommend reading this article on learning effectively by Bjork et al.

Internet search skills

There are various ways to refine searches with Google. You will find some useful tips for improving your Google search skills in this Guardian article. However, if you really want to dive deep, read this article on Google advanced search operators.

From Windows to macOS

If you have recently switched from Windows to macOS, here are some webpages to help you make the transition:

- Mac tips for Windows switchers from Apple.
- 25 Must-Know macOS Tips from MacRumors.
- A Quick Guide to Using a Mac for Windows Users from MakeUseOf.
- 13 macOS Tips for Windows Users from PCMag.

---

[1]Full disclosure: In my view, OneNote is not great. If you want to try a free app, you might want to go for Joplin or AmpleNote's personal plan.

Syncing OneDrive and your computer

If you install the desktop version of OneDrive on your computer, you have the option to sync files in the cloud and on your computer. The advantage of this is that you can work offline and make changes to files in your local OneDrive folder. Once you come online again, OneDrive will detect these changes and upload the most recent version of your files to the cloud.

Studying psychology

Self-study

Congratulations! You've chosen the most interesting subject that one can study at university! (At least in my humble opinion.) What I love about psychology is that it uses scientific methods to answer questions about human cognition and behaviour. The **scientifc methods** point is an extremely important one. Psychological hypotheses and theories based on opinions that are not confirmed using rigorous tests are worthless (even if it was, say, Freud who came up with these hypotheses).

Numerical literacy

The data analysis associated with this rigorous testing very often requires dealing with numbers, so a certain degree of numerical literacy is a non-negotiable part of psychology. That said, I would argue that the mathematical concepts required in your first year are not too advanced. Looking at the first-year labs, I would argue that you need to have an understanding of the following things:

- Addition
- Subtraction
- Multiplication (incl. squaring numbers, extracting a square root)
- Division
- Percentages
- Linear equations of the form $y = ax + b$.
- The idea of integration (calculating the area under a curve)—but software will do the actual integrating for you (which is one of the reasons why computer literacy is also important).
- Some basic concepts of probability - see below.

A useful visualisation of some basic concepts related to probability is the Galton board. Have a look at this Galton board animation and play around with it for a bit (you might want to increase the speed). Set size to 2 to get a basic understanding of why extreme outcomes are less likely. They are less likely because there's only one way to get there: left 🠒 left to end up on pile 0, and right 🠒 right to end up on pile 2. On the other hand, there are two ways to end up on pile 1: left 🠒 right and right 🠒 left. Therefore, after many rounds, there should be twice as many balls on pile 1 as on pile 0 and pile 2. So, the height of the pile tells you how likely an event is. If you understand this, you've already taken a big step towards understanding a lot of statistics!

If you now increase the size of the board, the same idea still applies. Now there are just many more paths a ball can take. If you increase the size to 10 or more, the resulting distribution begins to resemble a normal distribution or bell curve. The bell curve, for better or

worse, has had a strong influence on psychology. If you look at, say, personality traits or intelligence, it is a way of explaining why most people end up somewhere in the middle of the distribution and very few at the extremes: There are many "paths" that lead to the middle of distribution, whereas there are very few "paths" leading to the extremes (e.g., most genetic and environmental factors increasing intelligence would need to "fall to the right side of the peg" for someone to be highly intelligent).

Surface-level vs in-depth psychology

Surface-level psychology is like going on a boat tour in the arctic ocean and watching icebergs from the safety and comfort of a boat. It's nice and you might learn some interesting facts, but you only ever get to see the part of an iceberg that is above the surface. In-depth psychology is like scuba diving in the cold water and exploring the 90% of the iceberg that is below the surface. It requires more preparation and more skills. It is more challenging. But it is also more rewarding, because you get to see things you would not get to see otherwise.

Let's look at an example. This is what we learn from the *AQA Psychology for A Level* book by Flanagan et al. (2020) about the study by Maguire et al. (2000) (p. 42):

> Eleanor Maguire et al. (2000) studied the brains of London taxi drivers and found significantly more volume of grey matter in the posterior hippocampus than in a matched control group. This part of the brain is associated with the development of spatial and navigational skills in humans and other animals. As part of their training, London cabbies must take a complex test called *The Knowledge*, which assesses their recall of the city streets and possible routes. Maguire et al. found that this learning experience alters the structure of the taxi drivers' brains. They also found that the longer the taxi drivers had been in the job, the more pronounced was the structural difference (a positive correlation).

That is certainly an interesting finding. But this brief description leaves open a number of key questions, most importantly perhaps how Maguire et al. (2000) were actually able to measure the volume of grey matter in the posterior hippocampus. This is what Maguire et al. (2000) have to say about this (pp. 4398-4399):

> **Image Acquisition.** Structural MRI scans were obtained with a 2.0 Tesla Vision system (Siemens GmbH, Erlangen, Germany) by using a T1-weighted three-dimensional gradient echo sequence (TR 9.7 ms; TE 4 ms; flip angle 12°; field of view 256 mm; 108 partitions; partition thickness 1.5 mm; voxel size 1 x 1 x 1.5 mm).
>
> **Image Analysis Method 1: Voxel-based morphometry (VBM).** Data were analyzed by using VBM implemented with Statistical Parametric Mapping (SPM99, Wellcome Department of Cognitive Neurology) executed in MATLAB (Mathworks, Sherborn, MA). Detailed descriptions of the technique are given elsewhere (9, 10). Briefly, the subjects' data were spatially normalized into stereotactic space (11) by registering each of the images to the same template image by minimizing the residual sums of squared differences between them. The template was generated from the structural scans of 50 healthy males acquired in the same scanner used to collect the data for the current analysis (the scans of 13 of the control subjects used in the VBM analysis were included in the creation of this template). The

spatially normalized images were written in voxels of 1.5 x 1.5 x 1.5 mm and segmented into gray matter, white matter, and cerebrospinal fluid by using a modified mixture cluster analysis technique. To reduce confounds caused by individual differences in gyral anatomy, the gray matter images were smoothed by using an isotropic Gaussian kernel of 4-mm full width at half maximum. The statistical model included a measure of total amount of gray matter in each brain as a confound (essentially the original values before normalization). Statistical tests involved locating regionally specific differences in gray matter between subject groups and were based on t tests and the general linear model. Significance levels were set at $P < 0.05$ (small volume correction for multiple comparisons, with 62 resolution elements comprising the volume of interest).

Whoa! Now, that's an entirely different beast! Note that the point here is to illustrate that underlying the simple description of "more volume of grey matter" is a whole new world involving magnetic resonance imaging, anatomical registration, voxel-based morphometry and statistical testing. We don't expect you to reach a level of expertise required for understanding the above in your undergraduate studies, but I would like you to be able to appreciate, metaphorically speaking, the presence of this submerged part of the iceberg.

In keeping with the metaphor, we could perhaps say that the aim in Year 1 is to become an open-water diver (i.e., someone who can go diving on their own). We would like you to use your first year to build a strong base across psychological disciplines and acquire the necessary skills for becoming a competent independent learner. Hopefully, as you progress through your studies, you will then acquire more and more expert knowledge. But note that the aim is not to become an expert in all fields in psychology. The aim is to become an expert in your chosen field. Not everyone will be interested in neuroscience, but every other field in psychology will similarly have a new world to discover below the surface.

Building the base

So, how do you build this base for the labs and ensure you do well on this module?:

- Read the HHG (and, unless you have an excellent memory[1], read it multiple times).
- Read the required chapters in Beth's book (see Section). Ideally, also read some of the other chapters. They're all relevant, we just don't have the time to cover all of them in the labs.
- Think about the content: Critically question what you've read. Try to make connections between what you've read and what you already know. Dive deeper and read some of the original studies that are being mentioned.
- Ask questions: Ask us. Ask AI chatbots. Ask your fellow students.
- Talk to others. Explain things to others. Have others explain things to you. Discuss the content with others.
- Read some of the books recommended as wider reading in Section .
- Attend the PSGY1001 workshops to learn more about study techniques.

---

[1]Which many people believe they have, but very few actually have—see Section .

Confirmation

> **!** Important
>
> Please confirm you have worked through this chapter by submitting the corresponding chapter completion form on Moodle.

Explore, apply, reflect

Lab class

What are psychological questions?

Psychology explores human thoughts, emotions, and behaviours, as well as mental health and well-being, in individuals and groups across the lifespan. **Can you think of examples of psychological questions?** This could be a question you are personally interested in, a question you consider of current interest, or a more general question about thoughts, emotions, or behaviours.

For this activity, we'll be using Microsoft Whiteboard. To edit the whiteboard, make sure you're signed into Microsoft 365 in the same browser you're using to view this page.

Note the following features of MS Whiteboard:

- Sticky notes: Text added to sticky notes will appear anonymous to other students - your name will not be shown on them.
- Color indicators: While you edit a note, a small coloured marker appears. This colour matches the ring around your profile picture in the participant list. Colours may repeat if many people are editing, so it's not a unique identifier.
- Reactions: If you react to a note (e.g., add a "like"), your name is visible when someone hovers over the reaction.
- Instructor view: The instructor can see who contributed what via the board's activity feed. This will only be reviewed if a post raises concerns or requires further investigation by the university.

Please add only **one question per sticky note**.

- Whiteboard Group 1 (Tue, 9-10:30am)
- Whiteboard Group 2 (Tue, 10:30am-12pm)
- Whiteboard Group 3 (Wed, 9-10:30am)
- Whiteboard Group 4 (Wed, 10:30am-12pm)
- Whiteboard Group 5 (Thu, 9-10:30am)
- Whiteboard Group 6 (Thu, 10:30am-12pm)

References

Flanagan, C., Jarvis, M., & Liddle, R. (2020). *AQA psychology for A level: Year 2* (2nd ed.). Illuminate Publishing.

Maguire, E. A., Gadian, D. G., Johnsrude, I. S., Good, C. D., Ashburner, J., Frackowiak, R. S. J., & Frith, C. D. (2000). Navigation-related structural change in the hippocampi of taxi drivers. *Proceedings of the National Academy of Sciences*, *97*(8), 4398–4403. https://doi.org/10.1073/pnas.070039597