Shape the future of DAPR!

We are proposing exciting changes to the DAPR courses. We want your feedback to ensure the new curriculum is relevant, engaging, and valuable for future students.

In the following document you can read about some of the key changes that we are thinking about. We would be very grateful if you could take some time to read it.

Here's what we particularly want your feedback on:

- One hour per week of lectures, not two
- Flexi-labs, not fixed labs
- Pass/fail vs. Pass/fail/merit, not the 20-point scale

How to feedback your thoughts

1. What we would really love – come and talk to us about it! On **26th November**, we'll be in **Room 9.18, 40GS from 2pm to 4pm**. Please drop by for a chat!

2. If you can't make that time, but would like to talk to us, or if you would prefer to leave feedback in writing – please fill out this form: **https://forms.office.com/e/DwVLp0PP62**

Key highlights

- 2 hours of lecture per week → 1 hour of lecture per week
- Labs move to a more flexible set up. Either:
    - **A:** Each week, 2x 2 hours flexi-labs (drop-in style, come and go when you want, work in pairs or groups).
    - **B:** Continue with students having a specific scheduled hour each week, but have them timetabled in pairs back-to-back, with an open message of "at very least attend your scheduled hour, but feel free to come early/stay late and also to attend other labs"
- Moving linear mixed models from DAPR3 into DAPR2
- Generalised linear models (and generalised linear mixed models) will move to DAPR3
- Each week has some weekly activity/activities (video, reading, task to post on discussion board etc)
- DAPR1 and DAPR2 switch to a Pass/Fail system

Less substantial changes

- Teach coding using R scripts, not Rmarkdown documents
    - Consequently, RMarkdown/Quarto will become additional, rather than the core method.
- COs will rotate across the courses from year to year to keep things fresh and avoid having courses become silos of knowledge and teaching approaches

Rationale

Why reduce the number of lectures?

The aim of reducing from two lecture hours to one lecture hour per week is twofold: (1) encourage us as lecturers to focus on the key ideas and not get sidetracked with tangents and jargon and (2) to help students focus on the narrative and the skills we want them to learn.

Why have flexible labs ("flexi-labs") instead of scheduled labs?

For many students, the practical experience of lab-based work is what helps key stats concepts sink in. However, not everyone works well in the lab environment: other students prefer to do the exercises at home and come to the labs only for questions. A flexi-lab helps us cater to both groups of students. This format means that students who want to take advantage of the lab sessions can have up to 4 hours of lab time per week (timetables permitting), and students who prefer to work on the labs at home have more flexibility in when they can come in and ask us their questions. All labs would follow a pair/peer programming approach where students join groups of 2–5 and the person coding switches every 15 minutes.

Why put mixed models in DAPR2?

In the current DAPR curriculum, we cover linear models (LM) in DAPR2 and introduce linear mixed models (LMM) in DAPR3. Our proposal is to introduce linear mixed models immediately after linear models in DAPR2 while moving GLMs to DAPR3, making DAPR2 a course entirely on Gaussian regression models. This will create a more efficient DAPR curriculum and allows us to teach concepts that apply across methods (e.g., teaching interactions in DAPR2 applied to both to LM and LMM, and teaching GLM and GLMM together in DAPR3). We also believe that it will allow us to better drive home the similarities between LM and LMM.

The change would also have certain advantages for the Psychology degree programme. Psych 2 currently introduces repeated measures in the second year. Introducing students to how to analyse such data in DAPR2 will help them to better understand the research papers they see in Psych 2A and 2B (and beyond). In addition, staff supervising mini-dissertation projects in year three are currently forced to simplify designs or teach

students within-person methods alongside the project material, because students hadn't encountered LMM yet. However, if students see LMM in year two, they will be prepared for more realistic mini-dissertation projects because they've already had assessment and feedback on using mixed models.

Why move to pass/fail?

In pre-Honours courses, the granularity of Psychology's usual twenty-point grading scale could be argued to be unnecessary given that grades don't yet count toward students' degree classification. The move to pass/fail also has the potential to simplify marking substantially, which will in turn allow us to better utilise the dwindling GH tutor hours in lab sessions. The grading for DAPR3 remains up for discussion, but we propose to use the same system of skills-based grading (see below) but simply mapped to whatever grading scale is preferred by the department/BPS.

An alternative to pass/fail may be a system that includes a "merit" category for students who go above and beyond—we'll call this the pass/fail/merit system. We discuss this option in more detail below.

How will pass/fail work? A skills-based approach

For DAPR1 and 2, we are proposing to move to a pass/fail system. To obtain a pass, students must demonstrate an array of pre-defined skills in *both* the coursework *and* the exam. We attach an initial draft list of skills for DAPR1 in the appendix to this document.

(If we end up with a pass/fail/merit system, then the difference between a "pass" and a "merit" would be the range of skills achieved.)

Demonstrating skills through coursework

Students will demonstrate skills through coursework in the form of Learn Tests containing MCQs and short student-generated response questions. Students can attempt the Learn tests multiple times, with all questions drawn from a question pool for the specific skill. For some skills, there will be a set of required contexts in which the skills must be demonstrated. For instance, "numerically summarise a sample distribution" will require students to do so for both categorical and continuous variables, and the corresponding Learn Test would include 1 question from two pools (one containing questions on categorical variables, the other continuous).

To help students track their progress, we will mark Learn tests and update each student's person list of obtained skills at the end of each five-week block.

To pass, students must demonstrate (preliminarily) 70% of all skills, which must include at least (preliminarily) two from each block of the course.

Demonstrating skills in exams

Demonstrating skills in the final in-person exam will consist of a combination of MCQs and short written answer questions, each of which will target a specific skill. As with coursework, students must demonstrate a certain percentage of all skills, which must include at least (preliminarily) two from each block of the course.

Why move to skills-based grading?

- Treating statistics as a collection of skills aligns with how stats is used in practice: skills and techniques that people develop by making mistakes and learning from them.
- Research has shown that students in courses with skills-based grading tend to retain their learning for longer than in traditionally graded courses (see, e.g., Zuraw et al., 2019).
- The flexibility inherent in skills-based grading makes it a relatively equitable approach to assessment. It's been shown to be "particularly beneficial to students facing structural and institutional disadvantages" (O'Leary and Stockwell, 2021, p. 879; see also Clark and Talbert, 2023; Zuraw et al., 2019).
- Tracking the precise skills that each student has demonstrated in the DAPR courses will make it very easy for us to prove that students have met the BPS requirements.

Other questions

How AI-proof is this system?

We are also concerned about AI and making sure our assessments are safeguarded against it. This is one big reason why we're keeping a final in-person synchronous exam, to ensure the individuality of the final assessment.

When it comes to the coursework, we note that students use AI for a couple main reasons: (1) they're not certain about what we want from them, and (2) they're in

incredibly high-stakes situations in which they have only one chance to perform. The skills-based grading system helps to mitigate both issues. A clear inventory of skills to demonstrate tells students exactly what we expect them to do, and the option to continuously attempt and re-attempt to demonstrate skills during the year means that they have multiple low-stakes opportunities to show what they can do.

What about live coding demonstrations?

Different courses benefit to different extents from live coding demonstrations. In DAPR1 in particular, students who have never used R before benefit substantially from seeing a lecturer use RStudio in real time.

However, we've also found that students re-watch the lecture recordings a lot more for the live-coding sessions than the content sessions. This indicates to us that the video format is particularly good for watching somebody else code—since in video format, students can pause, skip forwards and back, and code along at their own pace.

For this reason, we will continue to develop coding demonstrations, but we'll present these in video format among the weekly activities.

Will students still get experience writing up methods and results?

Yes, writing-up will be a key skill throughout the DAPR courses. We'll likely assess students' writing-up skills through student-generated response questions (such questions would essentially be the different components of what is currently the "DAPR report" projects.)

For instance, one question that targets the skill of writing a methods section, would see the students being given some code and tasking them with writing a paragraph explaining the methods. Another question that targets the skill of writing up results would provide them with the methods and results and task them with writing a written paragraph pulling out the key results and providing interpretation. Alongside this, skills in correctly specifying an analysis will need to be demonstrated and these would essentially be where the student is given a study description and tasked with specifying a model and identifying which part addresses the research question.

Are mixed models not too complex/advanced for year 2?

Introducing LM immediately after LMM allows us to focus much more heavily on their similarities. Introducing LMM early means students have more time to work on the complex ideas and understand them, i.e. they are not forced to understand these advanced ideas in five weeks but can continue to build their understanding of LMM throughout the rest of DAPR2.
The goal of LMM in DAPR2 will be to introduce them to the model structure and ideas rather than making them full experts on the more complex aspects (convergence issues, within/between effects etc). We will continue to provide reference readings for more specific complexities that students can use as a guide were these to be relevant during their dissertations.

Will pass/fail do a disservice to students who are motivated by good grades?

Because of how frequently we get this comment from staff, we are considering adding a "merit" category over and above a pass. Students who want to demonstrate their proficiency could achieve "merit" by showing evidence of more skills.

We see value in both options, **pass/fail** and what we'll call **pass/fail/merit**.

Here's what speaks for **pass/fail** only: according to the Scholarship of Teaching and Learning literature, people learn and respond to feedback better in the absence of grades and grading scales. Pass/fail is an easy way to implement this. Importantly, it also keeps staff workload reasonable, which is increasingly important as tutor availability dwindles: assessing student work on a binary pass/fail outcome would save a lot of time in marking and moderating.

Additional skills that students gain won't be wasted: at the end of a student's DAPR journey, the DAPR team can send them an itemised "transcript" listing all the skills they've achieved, which they can use, for instance, toward future job or MSc applications (this may be combined with how students track their accumulation of skills through something like: https://uoe-psy.shinyapps.io/skills_track/).

On the other hand, here's what speaks for **pass/fail/merit**: pragmatic concerns have been voiced about whether, under a pass/fail system, students might do what it takes to pass the course but wouldn't push themselves further to deepen their skills.

Among the stats team, opinions are mixed about how bad that really is. Some of us see that behaviour as a reasonable time management strategy that Psychology students should have the option to make, given the stress and workload demands that they're under—but others view it as a missed opportunity for students who go above and beyond to evidence their work. A Pass/Fail/Merit system would help to incentivise these students to work harder, because they could achieve a higher outcome.

Appendix

group	text/mcq	skill_id	skill
R skills		R1	Read a dataset into R
		R2	Create a new variable in a dataframe
		R3	Subset a dataframe
		R4	Filter a dataframe
		R5	Handling missing values when calculating descriptive statistics
Descriptive Stats		D1	Visually summarise a sample distribution
		D2	Numerically summarise a sample distribution
		D3	Visually summarise the association between two variables
		D4	Numerically summarise the association between two variables
Explaining Concepts	text	C1	Describe what a sampling distribution represents
	text	C2	Describe the standard error
	text	C3	Describe the process of NHST
	text?	C4	Interpret a p-value
	text?	C5	Interpret a confidence interval
Analysis Strategy		AS1	Specify appropriate tests to examine..
		AS2	Identify how basic tests can be specified as a linear model
Interpretation		I1	Interpret descriptive statistics for sample distributions
		I2	Interpret descriptive statistics for associations between two variables
		I3	Combine information to evaluate practical as well as statistical significance
	text	I4	Interpret the results of a one sample t test when implemented in R
	text	I5	Interpret the results of a two sample t test when implemented in R
	text	I6	Interpret the results of a correlation test when implemented in R
	text	I7	Interpret the results of a chi-square goodness of fit test when implemented in R
	text	I8	Interpret the results of a chi-square test of independence when implemented in R
	text	I9	interpret the parameters of a simple linear regression model
		I10	Interpret significance in the context of linear models

Writing/Reporting	text	W1	Write up the methods used in a statistical analysis, as if for a paper/dissertation
	text	W2	Write up the results of a statistical analysis, as if for a paper/dissertation
Additional	text	Extra1	Write reproducible documents in Rmd/Quarto
		Extra2	Clean messy data
		Extra3	Follow APA guidelines for reporting
		Extra4	Work in a group environment