

Course administration

Welcome to MLPR! We're your lecturers, Iain Murray and Arno Onken. You can email us directly: i.murray@ed.ac.uk and aonken@inf.ed.ac.uk. (There are multiple *Iain Murray's* at the University; please use the email addresses given here.) However, *if at all possible* post your question to the hypothesis class forum instead.

VIDEO 2020-09-17_00-00-00_arnos_introduction_video_for_mlpr

The University of Edinburgh official course descriptor:
<http://www.drps.ed.ac.uk/20-21/dpt/cxinf11130.htm>

Updates and materials all appear on the course page:
<https://mlpr.inf.ed.ac.uk/>

Please check regularly for updates to your weekly goals, opportunities to meet, and so on.

Machine Learning is growing in importance as a tool for other fields and in industry, and there's a lot of fun stuff in this course. We hope you'll enjoy it. However, this isn't the right course for everyone. This course isn't necessary to apply machine learning, it's building up technical expertise towards being able to research new machine learning methods. If you're mainly interested in picking up some machine learning tools, you should take a more applied course.

1 Course selection advice

If you haven't taken *Introductory Applied Machine Learning (IAML)*, or a course like it, consider taking that instead of MLPR. Every year some students take MLPR without the required background (often the maths background) and then fail it. Don't be one of these students! Take a look at the maths and programming self-test and notes on the course website, and ask yourself honestly whether this is material you understand.

If you are an Informatics undergrad student, this course reviews some of the same material as Inf2B Learning and IAML, but will be more technical. (Neither course is a pre-requisite.) If you didn't enjoy those courses, you should avoid MLPR! If you did like them, this course should reinforce and then extend that material.

Don't take both IAML and MLPR at the same time. Undergraduates should space out the material to get full benefit. MSc students should get more breadth out of a one-year programme, and study an application area of machine learning or other fundamentals in informatics. You'll have a broader set of projects available, and you'll have more to talk about at the end of your studies.

Machine Learning Practical (MLP), for those eligible, is a great course for spending more time on advanced practical skills. It is only a narrow part of machine learning though. Only take MLP if you are taking one of IAML and MLPR, or have already taken one of these or a similar broad machine learning course.

If you've already enrolled in MLPR, don't be afraid to change your course selection. Keep an open mind about whether you should really be taking the course, and don't be embarrassed to change if you find you don't have the required background.

2 Notes

You should take your own notes while working through the materials. Especially anything that surprises you, or anything that you should work through with other students later.

Despite our best efforts, our notes will contain some mistakes and unclear parts. *Please* make use of the hypothesis class forum, a web-based annotation tool. You can quickly highlight

any part of the notes that need fixing or clarifying. Don't be afraid to be picky, We want to fix mistakes of any size (including typos) that might confuse others. We are also more than happy to expand on the material where student discussion reveals it's necessary.

We give pointers to textbooks where reviewing the material from another point of view may be useful. However, except where stated as part of an exercise, we're only expecting you to be familiar with the material we cover in the materials provided.

Some material in the notes is marked either "non-examinable" or "for keen students", which means we're not expecting you to study this material, but hope some of you will find it interesting. That said, you will be expected to be able to generalize your knowledge to models and machine learning problems that you haven't seen. If you do read advanced topics, and outside the course materials, that will be easier.

3 Main assessed tasks and deadlines

We will tell you what you need to do each week on the Weekly Activities pages.

Hard deadlines, Fridays of weeks 3–6 and 8–11 to complete that week's set of tasks. These Fridays are: 9, 16, 23, 30 October, 13, 20, 27 November, and 4 December.

These tasks are equally weighted and form 80% of your mark. Late submissions will not be accepted. Most students are ill or have a bad week at some point in the Semester, so we will drop the lowest-scoring assignment from your average. Please approach student support (*not* the lecturers) if you are unable to work for more than one week.

Week 7 is MLPR's reading week: other classes will be running, but we are having a break from releasing extra material or activities, to provide some clear self-study time.

Week 8 class test: Monday 9 November. 20% of your mark for the class.

There is no final exam this year (2020/21 session).

Our aim with regular assessment, with no extensions, is to give you timely feedback and to avoid people falling behind. We intend the workload to be manageable (10–13 hours a week) for someone with the background pre-requisites, and have tried to give you flexibility over when you study. Nevertheless, however we structure things, learning substantial new material is hard work.

If you have special circumstances that affect more than one of the weekly hand-ins, you will have to follow University Procedures. If the weekly deadlines really can't work for you (e.g., because of a relevant disability or chronic illness), you should formally agree learning adjustments with the University and tell us now.

3.1 The weekly tasks

You should spend the first two weeks getting on top of the tools we're using, getting to know people in the class, and getting comfortable with the introductory material.

The weekly tasks from week 3 include a mixture of mathematical reasoning, short programming exercises, and short written discussions. Some must be done individually, others may be done with others, as instructed.

- **Introductory questions in the notes:** You must make an honest attempt of these, doing so contributes to your mark. However, learning involves making mistakes, so getting some of these questions wrong is expected and will not itself affect your mark. Do attempt these questions as you read, and don't stress out about them. However, you need to try: frequent blank, or meaningless answers will mean you don't obtain the credit for these questions.

- **Discussion group task:** Discussion groups (starting week 3) are also primarily to help you learn, and marks here will be coarse grained. Explaining your machine learning thinking to others is valued in research and industry, and is a learning objective of the course.
- **Assessed questions:** These will be based on material from previous weeks, and will have the strongest influence on your grade. It's important to discuss the relevant material in the week(s) before these are due, because no one will tell you the answers to these questions.

3.2 Suggested work pattern

The intended rhythm for each of weeks 3–6 and 8–11 is as follows:

- **From Monday:** Start learning the new material for the week, answering questions in the notes as you go. Materials will be released by the previous Thursday, giving you some flexibility to get ahead if your schedule requires it.
- **By Thursday** complete the discussion task on this week's material, and make sure you've asked questions about anything that isn't making sense.
- **By Friday:** You must have submitted: 1) questions in this week's notes; 2) an output from the discussion task; 3) assessed questions on the material from the previous week. ~~We will try to give you feedback on this submission by Wednesday. (We tried and failed; sorry.)~~ We will give you feedback on this submission by the next Friday.

We strongly suggest that you submit everything by Thursday (pretend it's the deadline), and have the assessed questions finished well before then. There has to be a deadline somewhere, and we cannot accept late submissions. If you routinely leave things until Friday, you are likely to miss more than one deadline and lose substantial marks for the class.

Don't stress out if your answers aren't good one week: if you get a C (50%) instead of an A (70%) you'll only reduce your course average by around 2% and your year average by a fraction of a percent. But do always hand *something* in on time: after the first missing/late submission, each further missing/late submission would contribute a zero to your average, and would reduce your course mark by a roughly a whole grade.

It's up to you exactly when you do the assessed questions, to fit in with your other commitments. If you finish the hand-in by Thursday (as recommended) you will have some clear time on Friday. You can also continue into the next week, but we suggest getting them done *well* before the deadline, in case of unexpected difficulties, and so you can concentrate on new material.