Study your own topic

Instructions

This task requires you to select a topic of your choice. This is to give you an opportunity to select a subject you would like to investigate further, or which ca prepare you better for the rest of your degree.

The subject, and the learning objectives, should be pre-approved by the teaching team. Please follow the procedure:

1. Select a topic to study;
2. Identify 2 to 4 learning objectives for this topic;
3. **Discuss your proposed learning objectives with the unit chair.**;
4. Once the learning objectives have been approved you can study the topic, and fill a lesson review, as for the other modules.

Since this is a distinction task, with a larger degree of freedom on the topic that you wish to study, you will need to find your own resources. By now, you should have a good knowledge base that will enable you to understand the topic you choose.

While this task is individual, there may be other students interested in studying the same topic. It is fine to study a topic with like-minded fellow students, as long as your submission is individual and your peers are acknowledged appropriately in your reflection. We have opened a dedicated discussion forum on the unit site where you can advertise your chosen topic, if you wish.

As for the other modules, the teaching team will support you while you work on this module. You can ask questions in the dedicated forum, including about possible learning objectives, and about the maths.

Selecting a topic

Below we suggest a few topics that you may choose to study. You are allowed to choose from this list, or select your own. If you choose your own topic,

remember that it needs to relate to discrete mathematics. If you choose from this list, you will still need to narrow down the topic to two or three learning objectives (hey, it's a Distinction task after all). Please make sure that you get the teaching team's assent on your learning objectives before you invest too much time on a topic.

Good learning objectives

Your learning objectives should be easily verifiable – this is essential for you to be able to scope your module clearly. Remember that, together with your tutor, you will need to establish whether you have achieved the objectives, so as you select your objectives, reflect on how you will assess that you have done so. Start your learning objective with an action verb. Good objectives include "applying" a method, "computing" a value, "explaining" or "summarising" a concept, because you can check whether you can do that by solving selected problems. On the other hand, "learning about" something is too vague to be easily verifiable.

Excellent (and usually free) resources exist for the suggested topics below, and for most topics that you might choose. Some of these resources go beyond what we expect in the scope of this module. While it is hard to give a specific rule (what some textbooks cover in details might be covered in a few pages in more advanced textboos), a good rule of thumb is to: 1. Pick a resource at your level: the book or series of lectures starts from something you'e reasonably familiar with, and then digs gently into the topic; 2. Select a part of the resource that suits the scope of the projet – typically one or two chapters in an intermediate discrete mathematics textbook, or equivalently 2-3 hours of lectures.

Suggested Topics

- Discrete Probabilities
- Introduction to Cryptography
- Graph theory algorithms
- Regular grammars and regular languages
- Turing machines
- Analysis of Algorithms