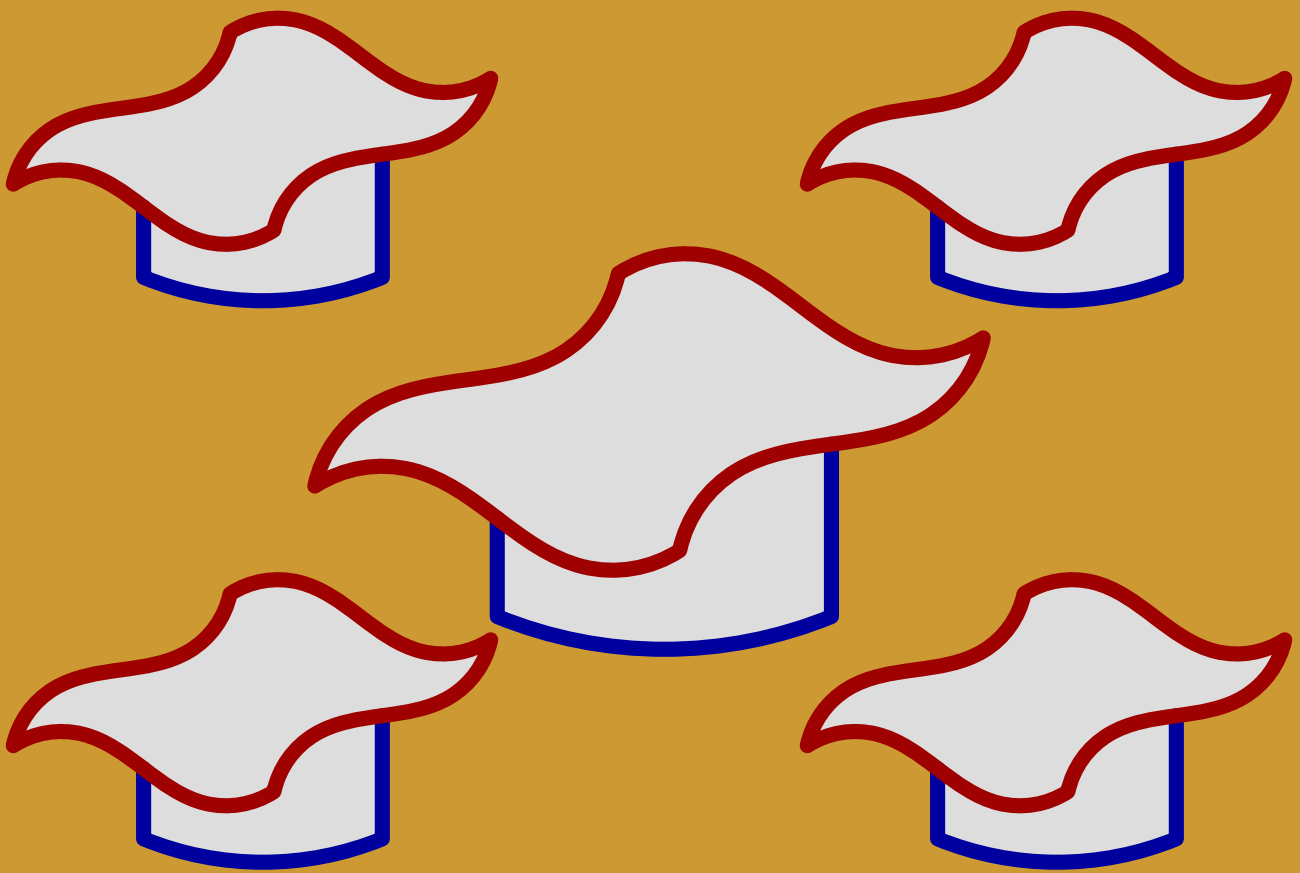


Study Guide 2DL00 (2022-2023)-(1)



R.R. van Hassel

Eindhoven

date: 17 January 2023

email: r.r.v.hassel@tue.nl

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1 The Study Guide for 2DL00

This study guide¹ gives an idea about what will be done during this course.²

This is a first version of the Studyguide, just to inform you a little bit about what you can expect. How will the lectures be given? When will the lectures be given? When will the instructions be given?

Don't print this Study Guide at this moment, it will change a lot of times!

At canvas, an internet site of the TUE, you can find information.

But most of you will have no access to that site.

Information can also be found at my internetsite:

<https://www.win.tue.nl/~rvhassel/>

There you can find information about the lectures and the instructions. See at that page the link to "Video-Files of Lectures" and "2DL00-Notes".

If you have access to canvas, you can find there the same information.

The students have to look at internet to keep informed about what is done. They have to follow the lectures to keep informed about what has to be studied for the final exam. Only studying the subjects out of this Study Guide is may be not enough.

The following book will be used:

Calculus, A Complete Course, R.A. Adams, ninth edition, Pearson,
ISBN 978-0-13-415436-7.

Of importance is also the file:

Algebraic Skills.pdf

This text aims at refreshing the algebraic skills required for following courses in basic mathematics at an academic level. Familiarity with many basic concepts is implicitly assumed throughout.

The idea is that there will be a Lecture Journal, such that there can be read what will be done (WIM: What In Mind) and what has be done (WID: What Is Done). The Lecture Journal is handwritten, because it is easier to write formulas by hand then the use of all kind of word processing systems. Every time if a lecture has been given, the Lecture

¹ The study guide is written in the English language because there are, beside the Dutch students, also foreign students.

² The study guide can change during a course! Keep informed.

Journal will change. *So don't print it out!*

This studyguide is written with the idea that there are

- * $(2\frac{3}{4})$ hours: to spend to the lectures,
- * $(2\frac{3}{4})$ hours: to spend to the instruction.

From Sander Dommers, the coordinator of this course, I received the dates, that there will be given lectures and instructions. Here I will give them to you. I hope they will not change.

Here follow the dates of the lectures and the instructions:

- * Lectures (time: 18:00-20:00 hour):
 - 15 February,
 - 1 March,
 - 8 March (entrance test + lecture),
 - 22 March,
 - 29 March,
 - 26 April,
 - 10 May,
 - 17 May,
 - 31 May,
 - 7 June (retake entrance test + question time for exam),
 - 28 June (final test),
 - 16 August(resit).
- * Instructions (time: 18:00-20:00 hour):
 - 27 February,
 - 6, 13, 27 March,
 - 3, 24 April,
 - 8, 15, 22 May,
 - 5, 12 June.

2 Calculation Final Grade

There are three tests:

- 1) entrance test,
- 2) final test,
- 3) digital tests.

About the calculation of the final grade, you will receive a separate message. There has to be done something with the grades of the "entrance test", "the final test" and "digital tests". If you have followed this course, it has to clear how that formula works.

3 What is asked of a student

A student has to study well. This means, that he or she has to go to the lectures every time and has to try to solve the exercises at the instructions. A student has not only to study at these hours. He or she has also to spend hours to read the book and to do other things, such as to make the notes readable, made at the lectures. Try to solve the exercises at home and don't look first to the answers. Be convinced that the answers found are right. Find a way to control an answer, not only to search to the answers.

If an exercise gives problems, write down why it gives problems. If the problems are written down, it gives most of the time an idea about what has to be done. This is also a way to solve exercises. Try to find strategies to solve the different kind of problems. But this has not to be done, just two weeks before the exam.

This process has to be done in quite a long period (two quartiles). The lectures and instructions don't follow each other regularly. It is important to keep busy each(!) week with the stuff, which has to be done. One week nothing done and you have to repeat it. So it looks if everything is new, which is not the case.

It looks like running. One week nothing done and you have to restrain yourself somewhat to continue.

In the exam period, exercises have to be repeated. Old exams have to be solved, just as at the exam. So, answers are not known. The trust has to be, that the exam can be done without too much difficulties.

That is a period of up and downs. Sometimes it goes well, sometimes there are times of asking yourself: "What am I doing? What have I started?" Keep one thing in mind, in that same period, the lecturer asks himself the same? Most of the time, more than once!

4 Rough division of the subject matter

Below follows a rough classification of the subject matter to be covered. One thing, **come to all the lectures**, because sometimes a lecture goes fast, but it can also go quite another way as imagined.

4.1 Block 1

In this section are given the subjects and exercises, which have to be done.

4.1.1 Theory

Out of Adams:

- P1, P2, P3, P4.

4.1.2 Exercises

Study what is done at the lecture and try to do the following exercises, out of Adams:

- * P1: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35;
- * P2: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 47, 48, 49;
- * P3: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 48, 49;
- * P4: 5, 6, 7, 13, 15, 19, 21, 22, 37, 39, 41, 43, 46, 47, 53

4.2 Block 2

In this section are given the subjects and exercises, which have to be done.

4.2.1 Theory

Out of Adams:

- P5, P6, P7, §1.2.

4.2.2 Exercises

Study what is done at the lecture and try to do the following exercises, out of Adams:

- * P5: 1, 3, 5, 7, 9, 13, 15, 19, 20, 21, 22, 23, 24, 27, 33;
- * P6: 1, 3, 5, 7, 9, 11, 13, 15; (Write every polynomial as a product of linear or positive definite factors.)

* P7: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 23, 25, 27, 29, 31, 33, 35, 37;

* §1.2: 1, 3, 5, 9, 13, 17, 21, 27, 29, 33, 59, 67;

4.3 Block 3

In this section are given the subjects and exercises, which have to be done.

4.3.1 Theory

Out of Adams:

- § 1.3, § 1.4, § 2.2, § 2.3 (without mathematical induction), § 2.4.

4.3.2 Exercises

Study what is done at the lecture and try to do the following exercises, out of Adams:

* § 1.3: 9, 31;

* § 1.4: 13, 15, 17, 21, 23, 29, 30, 31;

* § 2.2: 1, 5, 27, 43, 44, 45, 46;

* § 2.3: 1, 5, 11, 15, 19, 21, 23, 35, 43, 45;

* § 2.4: 1, 3, 7, 9, 11, 13, 25, 33, 34

4.4 Block 4

In this section are given the subjects and exercises, which have to be done.

4.4.1 Theory

Out of Adams:

- § 2.6, § 2.8, § 2.9, § 4.9.

4.4.2 Exercises

Study what is done at the lecture and try to do the following exercises, out of Adams:

* § 2.6: 3, 7, 11, 13, 15(1), 19(1), 28;

* § 2.8: 2, 5, 6, 7, 12, 13;

* § 2.9: 1, 3, 5, 7, 9, 10, 11, 17;

- * § 4.4: 17, 31, 35;
- * § 4.9: 1, 2, 3, 5, 7, 9, 10, 11, 13, 15, 17, 19, 21

4.5 Block 5

In this section are given the subjects and exercises, which have to be done.

4.5.1 Theory

Out of Adams:

- § 4.10.

4.5.2 Exercises

Study what is done at the lecture and try to do the following exercises, out of Adams:

- * § 4.10: 1, 3, 5, 7, 9, 11, 13, 19, 21, 23, 25

4.6 Block 6

In this section are given the subjects and exercises, which have to be done.

4.6.1 Theory

Out of Adams:

- § 3.1, § 3.2, § 3.3, § 3.5.

4.6.2 Exercises

Study what is done at the lecture and try to do the following exercises, out of Adams:

- * § 3.1: 1, 3, 5, 7, 9, 11, 13, 17, 19, 21, 23, 25, 29;
- * § 3.2: 1, 3, 5, 7, 9, 11, 13, 15, 17, 23, 25, 27, 29;
- * § 3.3: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 39, 47;
- * § 3.5: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 35, 39, 47

4.7 Block 7

In this section are given the subjects and exercises, which have to be done.

4.7.1 Theory

Out of Adams:

- § 2.10, § 5.4, § 5.5.

4.7.2 Exercises

Study what is done at the lecture and try to do the following exercises, out of Adams:

- * § 5.4: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 31, 33, 35, 41;
- * § 5.5: 1, 3, 5, 7, 9, 11, 13, 15, 21, 23, 28, 29, 33, 39, 41, 43, 45;
- * § 2.10: 1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 23, 25

4.8 Block 8

In this section are given the subjects and exercises, which have to be done.

4.8.1 Theory

Out of Adams:

- § 5.6, § 6.1.

4.8.2 Exercises

Study what is done at the lecture and try to do the following exercises, out of Adams:

- * § 5.6: 1, 2, 3, 5, 6, 7, 9, 12, 13, 14, 15, 19, 20, 21, 35, 40, 41, 43;
- * § 6.1: 1, 2, 3, 5, 7, 10, 13, 16, 19, 20, 21, 29