Math in depth

Mathematics from high school to university

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Optimal order of studying our courses on Udemy

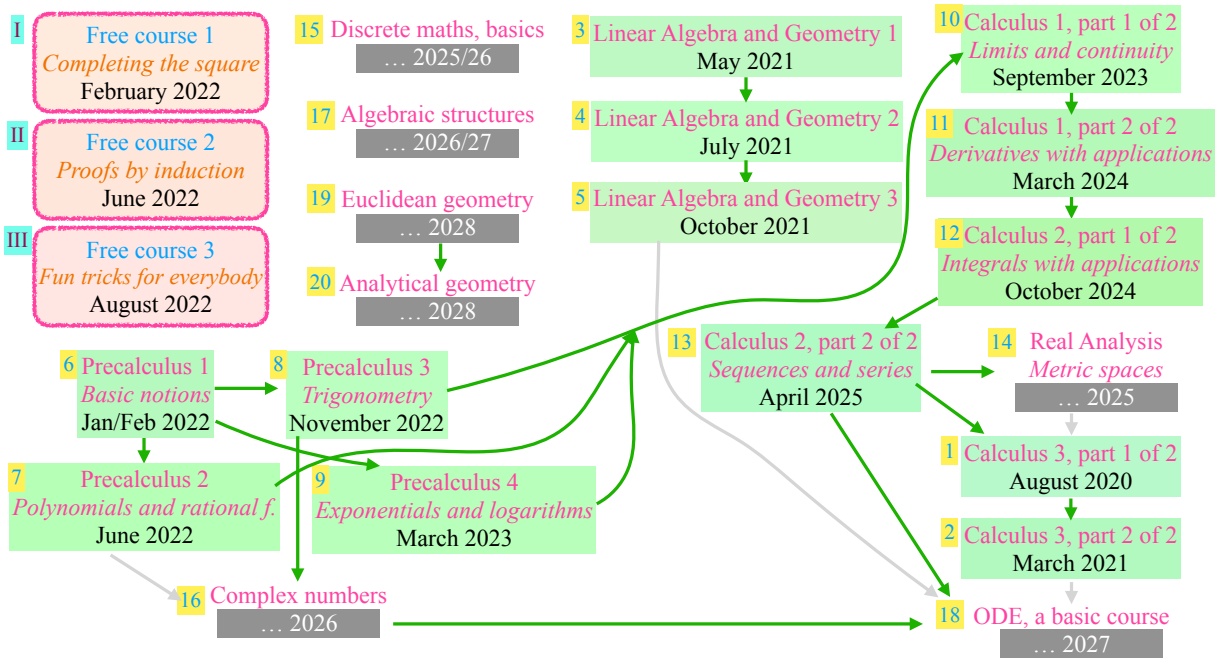
Because I got many questions about absence of Calculus 1 and 2 in our offer, and about optimal order of studying our courses, I decided to address these questions and place the present document as a resource to our bonus lectures. This document will be updated each time we release a new course.

Calculus 1& 2 were absent in our collection (while Calculus 3 was there), but now (April 2025) the Calculus series is complete. I started my adventure with Udemy during the Summer of 2020 (after having taught via Zoom during the Spring 2020, because of the pandemic) and, because I thought I would create only *one* course (just during the Summer between two semesters at the university, when I was free from work), I simply chose my favourite: Calculus 3.

Almost a year later I decided to quit my job at the university and continue working with my own courses full time. Then I also decided to create my own curriculum, which is a combination of my own high-school program (a mathematical class in Poland, very advanced, even more advanced than the first two years at a typical university in Sweden where I live now) with undergraduate program at the university.

I attach our Master Plan, in which you can see both our courses which are already created **and** our plans for the nearest future. The courses coloured in green (paid courses) or in pinkish (free courses) are already created, while the courses coloured in grey are still just planned. You can also see our approximate release dates under the course names.

The green arrows between the courses show (more or less) how the courses depend on each other. Generally, the courses more to the left are on a lower level than the courses to the right.



Here are my suggestions for the order of studying:

0. You can watch our 3 free courses whenever you want to, because they have only high-school maths as prerequisite, and they cover one issue each: **Completing the square**, **Proofs by induction**, **Fun tricks for everybody**.

1. Starting with **Precalculus 1: Basic notions** is the best choice, as this course gives the foundation for all the other courses.
   (BTW, I have discovered that our course *Precalculus 1: Basic notions* covers, among others, about 80% of the content in a typical first course on Discrete Mathematics, so the name *Precalculus* is maybe not the best choice of mine... I could have called it *Bridging course to university mathematics* or something like this, with subtitle *Precalculus, Discrete Mathematics, and more.*)

2. You can watch at the same time (if you want to have some variation) **Linear Algebra and Geometry 1**, because it is also based on high-school maths only (with some minor exceptions).

3. You can continue with the **Precalculus** series, which is numbered, but **Trigonometry**, **Exponentials and logarithms** and **Polynomials** do not depend on each other (with some really minor exceptions, which will not have any impact on your study process), so you can watch them in any order. Each course of the Precalculus series has **the Precalculus book** attached as a resource to the first video, as extra material.

4. You can watch the **Linear Algebra and Geometry** (LAG) series independently from **Calculus 1&2** series.

5. **Calculus 3** is (for now) my most advanced course, and should be studied after **Calculus 1&2** (probably not a surprise); it is nice if you know LAG by then, but you should know that I explain some prerequisites from LAG in the Calculus 3 course (Calculus 3 was my very first course and I didn't know that I would create *everything*, so I felt that I should cover the LAG prerequisites).

6. **Complex numbers** (not created yet) after Trigonometry.

7. **ODE (Ordinary differential equations)** (not created yet) has really a lot of prerequisites: Precalculus, Calculus, Linear Algebra and Geometry, Complex numbers, so you need to have seen a lot of stuff before you can start studying this one.

8. **Discrete mathematics** can be studied quite early, even directly after Precalculus 1, but I haven't created it yet, so I guess that you will do the Precalculus series first. I haven't decided yet how my **Abstract Algebra** (or **Algebraic Structures**) will look. The **Geometry** courses will probably be based on high-school mathematics only.

All our paid courses are **large** (42–60 hours) as I am trying to make them as complete as possible **and** at the same time compensate for a possible poor high-school education (or for the forgotten stuff) some students might have. This is why I created the lists of all the topics in each course, to help my students navigate through the content without wasting their time on something they already master (the students who have enjoyed very good education on high-school level) or don't need (for example: because it is too theoretical, or their teachers don't teach it). These lists are placed as resources to the first video in the corresponding course, but I will place the links to all the lists here, so that you can see the content even without having the course. Here they come:

1. **Calculus 3 (multivariable calculus), part 1 of 2**, published in August 2020:

`https://www.wehlou.com/hania/files/uu/Outline_Calculus3.pdf`

2. **Calculus 3 (multivariable calculus), part 2 of 2**, published in March 2021:

https://www.wehlou.com/hania/files/uu/Outline_Calculus3_part2.pdf

3. **Linear Algebra and Geometry 1**, published in May 2021:

https://www.wehlou.com/hania/files/uu/Outline_Linear_Algebra_and_Geometry_1.pdf

4. **Linear Algebra and Geometry 2**, published in July 2021:

https://www.wehlou.com/hania/files/uu/Outline_Linear_Algebra_and_Geometry_2.pdf

5. **Linear Algebra and Geometry 3**, published in October 2021:

https://www.wehlou.com/hania/files/uu/Outline_Linear_Algebra_and_Geometry_3.pdf

6. **Precalculus 1: Basic notions**, published end January (begin February) 2022:

https://www.wehlou.com/hania/files/uu/Outline_Precalculus1.pdf

7. **Precalculus 2: Polynomials and rational functions**, published in June 2022:

https://www.wehlou.com/hania/files/uu/Outline_Precalculus2.pdf

8. **Precalculus 3: Trigonometry**, published in November 2022:

https://www.wehlou.com/hania/files/uu/Outline_Precalculus3.pdf

9. **Precalculus 4: Exponentials and logarithms**, published in March 2023:

https://www.wehlou.com/hania/files/uu/Outline_Precalculus4.pdf

10. **Calculus 1, p. 1 of 2: Limits and continuity**, published in September 2023:

https://www.wehlou.com/hania/files/uu/Outline_Calculus1_part1.pdf

11. **Calculus 1, p. 2 of 2: Derivatives with applications**, publ. in March 2024:

https://www.wehlou.com/hania/files/uu/Outline_Calculus1_part2.pdf

12. **Calculus 2, p. 1 of 2: Integrals with applications**, publ. in October 2024:

https://www.wehlou.com/hania/files/uu/Outline_Calculus2_part1.pdf

13. **Calculus 2, p. 2 of 2: Sequences and series**, published in April 2025:

https://www.wehlou.com/hania/files/uu/Outline_Calculus2_part2.pdf

I hope that this helps. If you are looking for some particular topic and you are not sure in which course it is discussed, just drop me a line, and I will be happy to help you. Also, even though my courses are large and fairly complete, there will always be things which are not explained in a way which is clear to everybody, so **ask questions via Q&A**; I am really good at answering them. Asking questions helps everybody, because the courses are getting more and more complete, and the difficult stuff often gets explanations from different angles, which is good, because different students can think in different ways. Briefly: **All mathematical questions are more than welcome on Q&A.**

Happy studying!