

Differential Geometry

Lecture Notes

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Welcome

These are the Lecture Notes of **Differential Geometry 661955** for T1 2023/24 at the University of Hull. We will study curves and surfaces in \mathbb{R}^3 . I will follow these lecture notes during the course. If you have any question or find any typo, please email me at

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Up to date information about the course, Tutorials and Homework will be published on the University of Hull **Canvas Website**

canvas.hull.ac.uk/courses/67594

and on the **Course Webpage** hosted on my website

silviofanzon.com/blog/2023/Differential-Geometry

Readings

The main textbook of the course is Pressley [5]. Other interesting readings are the books by do Carmo [2] and Bär [1]. I will assume some knowledge from Analysis and Linear Algebra. A good place to revise these topics are the books by Zorich [6, 7].

Visualization

It is important to visualize the geometrical objects and concepts we are going to talk about in this course. I will show basic Python code to plot curves and surfaces. This part of the course is **not required** for the final examination. If you want to have fun plotting with Python, I recommend installation through [Anaconda](#) or [Miniconda](#). The actual coding can then be done through [Jupyter Notebook](#). Good references for scientific Python programming are [3, 4].

If you do not want to mess around with Python, you can still visualize pretty much everything we will do in this course using the excellent online 3D grapher tool [CalcPlot3D](#). To understand how it works, please refer to the [help manual](#) or to the short [video introduction](#).

! You are not expected to purchase any of the above books. These lecture notes will cover 100% of the topics you are expected to know in order to excel in the final exam.

License

Reuse

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References

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- [2] M. P. do Carmo. *Differential Geometry of Curves and Surfaces*. Second Edition. Dover Books on Mathematics, 2017.
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