

## Prerequisites and Programming Resources

- 02562 Rendering - Introduction
- 01003/01005/01006/01015/01016 Advanced Engineering Mathematics 1 (assumed by 02562)
- 02101/02102/02393/02635 Introductory programming or a similar course (assumed by 02562).

As in 02562, we assume that you know basic geometry, trigonometry, and vector algebra. In addition, some knowledge of complex numbers and basic differential and integral calculus is warmly recommended.

We assume that you have some previous experience in graphics programming. In particular, we assume that you are familiar with ray tracing and how to implement a ray tracer in a high-level programming language such as C++. Since we assume that you have already tried to implement a ray tracer and understand how it works, a C++ framework where a ray tracer is already implemented will be uploaded to DTU Inside File Sharing. If you prefer to use your own ray tracer, or a third one, this is acceptable. One alternative to the course framework is the framework accompanying the text book.

The default programming environment in the course is Visual C++. If you are planning to go with the default setting, but have no previous experience with Visual Studio, we suggest that you read the following book chapter:

- Chapter 1: Programming with Visual C++. In *Ivor Horton's Beginning Visual C++ 2013*, Wiley, 2013.  
[https://media.wiley.com/product\\_data/excerpt/14/11188457/1118845714-15.pdf](https://media.wiley.com/product_data/excerpt/14/11188457/1118845714-15.pdf)

If you have no previous experience with C++ programming, the following quick reference sheet may be enough for you to solve the exercises:

- [http://www.pa.msu.edu/~duxbury/courses/phy480/Cpp\\_refcard.pdf](http://www.pa.msu.edu/~duxbury/courses/phy480/Cpp_refcard.pdf)

If you would like to take a look at a complete book about C++, here is an e-book option:

- Ivor Horton and Peter Van Weert. *Beginning C++17: From Novice to Professional*. Apress, 2018.  
<https://link-springer-com.proxy.findit.cvt.dk/book/10.1007/978-1-4842-3366-5>

Finally, the text book chosen for this course (**P**) provides C++ source code for everything that it covers. See how we use the book in the document `pbrt.pdf` on DTU Inside. This means that you have a large number of highly relevant C++ examples at your disposal.