LINKS to Read

Applications of linear algebra in data science and linear algebra overview

<https://www.analyticsvidhya.com/blog/2019/07/10-applications-linear-algebra-data-science/>

<https://www.analyticsvidhya.com/blog/2017/05/comprehensive-guide-to-linear-algebra/> (now that you know the main concepts of linear algebra, this article can give you an idea of what's coming next for you)

Linear algebra in general

<https://betterexplained.com/articles/linear-algebra-guide/>

Vectors (this will trigger the download of a pdf file, only the first 20 pages are related to what we have done so far, the rest might be of use for what comes next)

<https://www.reed.edu/physics/faculty/wheeler/documents/Sophmore%20Class%20Notes%202007/Chapter%201.pdf>

Matrices and their properties (same thing about this pdf file, also we are not interested in the concept of Hermitian matrix in this course.

Apart from that, almost anything up to page 38 is related to what we have seen, especially matrix-vector product and matrix-matrix product)

<https://www.math.tamu.edu/~dallen/m640_03c/lectures/chapter2.pdf>

A good reminder of the operations we can use on matrices

<https://towardsdatascience.com/beginners-introduction-to-matrices-bd39289cc66a>

Dot product and norm (we haven't talked about norms but we will when we dig deeper in the concept of dot product, here you can focus just on the first 2 pages)

<https://www-users.math.umn.edu/~olver/num_/lnn.pdf>

Matrices and linear transformations (don't overthink this topic, it is slightly less important than the rest for us)

<http://www.cimt.org.uk/projects/mepres/alevel/fpure_ch9.pdf>

VIDEOS

- the videos of 3Blue1Brown about linear algebra is the best thing I have seen in terms of clarity about this topic. I REALLY encourage you to have a look to some of them:

<https://youtube.com/playlist?list=PLZHQObOWTQDPD3MizzM2xVFitgF8hE_ab>

- a great 25min video by Zach Star about what matrices are used for, with real life examples (ok: maybe not for the zombies)

<https://youtu.be/rowWM-MijXU>

BOOKS

There are a lot of books that might be of use if you want to dig deeper in the topics covered by this course but I'll go with 2 of them:

- "Linear Algebra and learning from data" from Gilbert Strang

- "Linear Algebra and Optimization for Machine Learning, a textbook" from Charu C. Aggarwal

LINKS

Inverse of a matrix  
<https://www.mathsisfun.com/algebra/matrix-inverse.html>

<https://www.mathsisfun.com/algebra/matrix-inverse-minors-cofactors-adjugate.html>

<http://mathworld.wolfram.com/MatrixInverse.html>

<https://towardsdatascience.com/beginners-introduction-to-matrices-part-ii-42b86e791b8b>

<https://medium.com/linear-algebra-basics/inverse-matrices-ba2259b0503d>

https://hadrienj.github.io/posts/Deep-Learning-Book-Series-2.3-Identity-and-Inverse-Matrices/ (to find the inverse of a matrix in Python)  
https://youtu.be/uQhTuRlWMxw (12min 3Blue1Brown video about the inverse of a matrix [and other things])

Exercises: have the file about the exercises on the inverse of a matrix and its determinant

Eigenvalues and eigenvectors  
<https://medium.com/sho-jp/line>ar-algebra-part-6-eigenvalues-and-eigenvectors-35365dc4365a (you can stop when you read "diagonalization")  
<https://medium.com/fintechexplained/what-are-eigenvalues-and-eigenvectors-a-must-know-concept-for-machine-learning-80d0fd330e47>  
<https://web.physics.utah.edu/~detar/lessons/python/nu>mpy\_eigen/node1.html (to find the eigenvectors and eigenvalues of a matrix using Python)  
https://www.youtube.com/watch?v=wXCRcnbCsJA (examples of eigenvectors in a short video [1m36])  
https://youtu.be/PFDu9oVAE-g (17min 3Blue1Brown video about eigenvectors and eigenvalues)  
https://youtu.be/i8FukKfMKCI (25min video answering the question "what are the applications of eigenvalues and eigenvectors?")  
https://www.dhruvonmath.com/2019/03/20/pagerank/ (example of use of eigenvectors and eigenvalues : Google's PageRank algorithm)

Exercises (with answers) about eigenvalues and eigenvectors : <https://en.wikibooks.org/wiki/Linear_Algebra/Eigenvalue>s\_and\_Eigenvectors/Solutions