

# A Data Science Course

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# Contents

<b>1</b>	<b>About this course</b>	<b>5</b>
1.1	Course Topics . . . . .	5
<b>2</b>	<b>Welcome to the TSL Data Science Course</b>	<b>7</b>
<b>3</b>	<b>Literature</b>	<b>9</b>
<b>4</b>	<b>Methods</b>	<b>11</b>
<b>5</b>	<b>Applications</b>	<b>13</b>
5.1	Example one . . . . .	13
5.2	Example two . . . . .	13
<b>6</b>	<b>Final Words</b>	<b>15</b>



# Chapter 1

## About this course

This is the handbook for the data science component of the TSL M.Sc in Global Plant Health. In it you will find links to the written content for each of the separate topics covered as well as the descriptions of the course assessments and projects.

### 1.1 Course Topics

We will cover the following topics in data science

1. Introduction to Genomics
2. Data Exploration and Visualisation
3. Understanding Statistics With Linear Models
4. Introduction to Non-Frequentist Statistics
5. Introduction to Machine Learning
6. Beginning Programming
7. Literate Computation



## Chapter 2

# Welcome to the TSL Data Science Course

You can label chapter and section titles using `{#label}` after them, e.g., we can reference Chapter 2. If you do not manually label them, there will be automatic labels anyway, e.g., Chapter 4.

Figures and tables with captions will be placed in `figure` and `table` environments, respectively.

```
par(mar = c(4, 4, .1, .1))  
plot(pressure, type = 'b', pch = 19)
```

Reference a figure by its code chunk label with the `fig:` prefix, e.g., see Figure 2.1. Similarly, you can reference tables generated from `knitr::kable()`, e.g., see Table 2.1.

```
knitr::kable(  
  head(iris, 20), caption = 'Here is a nice table!',  
  booktabs = TRUE  
)
```

You can write citations, too. For example, we are using the **bookdown** package (Xie, 2020) in this sample book, which was built on top of R Markdown and **knitr** (Xie, 2015).

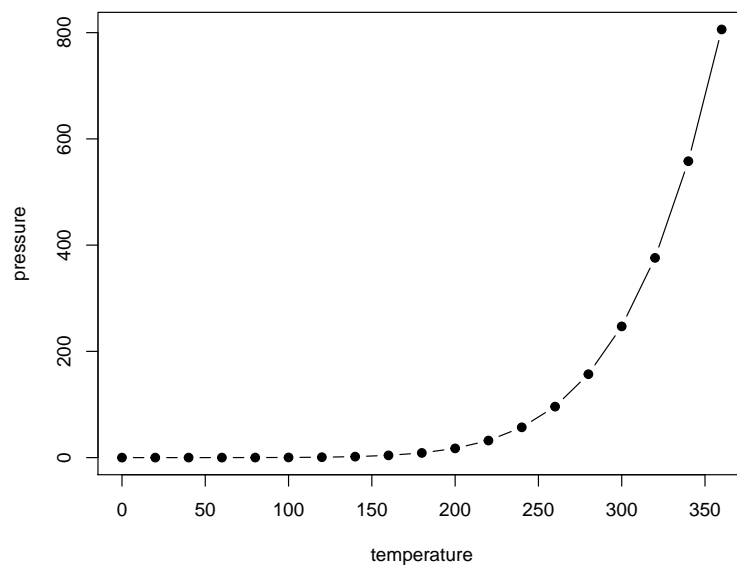


Figure 2.1: Here is a nice figure!

Table 2.1: Here is a nice table!

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa
5.4	3.9	1.7	0.4	setosa
4.6	3.4	1.4	0.3	setosa
5.0	3.4	1.5	0.2	setosa
4.4	2.9	1.4	0.2	setosa
4.9	3.1	1.5	0.1	setosa
5.4	3.7	1.5	0.2	setosa
4.8	3.4	1.6	0.2	setosa
4.8	3.0	1.4	0.1	setosa
4.3	3.0	1.1	0.1	setosa
5.8	4.0	1.2	0.2	setosa
5.7	4.4	1.5	0.4	setosa
5.4	3.9	1.3	0.4	setosa
5.1	3.5	1.4	0.3	setosa
5.7	3.8	1.7	0.3	setosa
5.1	3.8	1.5	0.3	setosa



## Chapter 3

# Literature

Here is a review of existing methods.



## Chapter 4

# Methods

We describe our methods in this chapter.



## Chapter 5

# Applications

Some *significant* applications are demonstrated in this chapter.

### 5.1 Example one

### 5.2 Example two



## Chapter 6

# Final Words

We have finished a nice book.





# Bibliography

Xie, Y. (2015). *Dynamic Documents with R and knitr*. Chapman and Hall/CRC, Boca Raton, Florida, 2nd edition. ISBN 978-1498716963.

Xie, Y. (2020). *bookdown: Authoring Books and Technical Documents with R Markdown*. R package version 0.21.