

# **An Introduction to Reproducible Research and Probabilistic Modelling**

**Lecture Notes with Examples in Python**

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1    Everything is not fine with the way we teach and practice statistics in  
the sciences. We can all do better. . . . . 1



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# Preface

- Connection to McLevey (2022)...

⚠ This is a Manuscript in Progress

- What to expect
- How to give feedback



Figure 1: Everything is not fine with the way we teach and practice statistics in the sciences. We can all do better.



# 1 Introduction

Coming soon...



## **2 Scientific Computing and Reproducible Research**

Coming soon...



### **3 Foundations of Causal and Generative Models**

Coming soon...





## **4 Foundations of Probabilistic Programming**

Coming soon...



## **5 Quantifying Uncertainty and Reallocating Credibility**

Coming soon...



## **6 Automating Inference via Stochastic Sampling**

Coming soon...



## 7 Linear Models

Coming soon...





## 8 Hierarchical Regression

Coming soon...



## **9 Measurement Error, Missing Data, and Generalized Linear Models**

Coming soon...



## **10 Modelling Network Structure and Dynamics**

Coming soon...



## **11 Complex Systems and Agent-based Models**

Coming soon...





## 12 Conclusion

Coming soon...



## References

McLevey, John. 2022. *Doing Computational Social Science: A Practical Introduction*. Sage.

