Resources

There are a wide range of resources available to help with this course as well as more generally:

Textbooks

R Programming

- Kabacoff, R. (2015). R in Action, 2nd Ed. Manning Publications.
- Wickham, H., & Grolemund, G. (2017). R for Data Science. O'Reilly Media.

General statistics

- Poldrack, R. A. (2019). Statistical Thinking for the 21st Century. http://statsthinking21.org/

Bayesian statistics and modeling in Stan

- Lambert, B. (2018). A Student's Guide to Bayesian Statistics. Sage.
- McElreath, R. (2020). Statistical Rethinking: A Bayesian Course with Examples in R and Stan, 2nd Ed. CRC Press.
- Kruschke, J. K. (2015). Doing Bayesian Data Analysis: A Tutorial with R, JAGS, and Stan, 2nd Ed. Academic Press.
- Pruim, R. (2019). (Re)Doing Bayesian data analysis. https://rpruim.github.io/Kruschke-Notes/
- Gelman, A., Carlin, J. B., Stern, H. S., Dunson, D. B., Vehtari, A., & Rubin, D. B. (2013). Bayesian Data Analysis, 3rd Ed. Chapman and Hall/CRC.

Which textbook should I start with?

It is recommended that beginners to Bayesian statistics should work their way down from this list starting with *A Student's Guide to Bayesian Statistics*, whilst those with some experience should start with *Statistical Rethinking: A Bayesian Course with Examples in R and Stan*.

Cognitive modeling

- Farrell, S., & Lewandowsky, S. (2018). Computational Modeling of Cognition and Behavior. Cambridge University Press.
- Lee, M. D., & Wagenmakers, E. J. (2014). Bayesian Cognitive Modeling: A Practical Course. Cambridge University Press.

Journal articles

Ahn, W. Y., Haines, N., & Zhang, L. (2017). Revealing neurocomputational mechanisms of reinforcement learning and decision-making with the hBayesDM package. Computational Psychiatry, 1, 24-57. https://doi.org/10.1162/CPSY_a_00002

Daw, N. D. (2011). Trial-by-trial data analysis using computational models. Decision Making, Affect, and Learning: Attention and Performance XXIII, 23, 3-38. https://doi.org/10.1093/acprof:oso/9780199600434.003.0001

Etz, A., Gronau, Q. F., Dablander, F., Edelsbrunner, P. A., & Baribault, B. (2018). How to become a Bayesian in eight easy steps: An annotated reading list. Psychonomic Bulletin & Review, 25(1), 219-234. https://doi.org/10.3758/s13423-017-1317-5

Kruschke, J. K., & Liddell, T. M. (2018). Bayesian data analysis for newcomers. Psychonomic Bulletin & Review, 25(1), 155-177. https://doi.org/10.3758/s13423-017-1272-1

Lockwood, P. L., & Klein-Flügge, M. C. (2021). Computational modelling of social cognition and behaviour—a reinforcement learning primer. Social Cognitive and Affective Neuroscience, 16(1-2), 1-11. https://doi.org/10.1093/scan/nsaa040

Wagenmakers, E. J., Marsman, M., Jamil, T., Ly, A., Verhagen, J., Love, J., Selker, R., Gronau, Q. F., Šmíra, M., Epskamp, S., Matzke, D., Rouder, J. N., & Morey, R. D. (2018). Bayesian inference for psychology. Part I: Theoretical advantages and practical ramifications. Psychonomic Bulletin & Review, 25(1), 35-57. https://doi.org/10.3758/s13423-017-1343-3

Wilson, R. C., & Collins, A. G. E. (2019). Ten simple rules for the computational modeling of behavioral data. eLife, 8, Article e49547. https://doi.org/10.7554/eLife.49547

Zhang, L., Lengersdorff, L., Mikus, N., Gläscher, J., & Lamm, C. (2020). Using reinforcement learning models in social neuroscience: Frameworks, pitfalls and suggestions of best practices. Social Cognitive and Affective Neuroscience, 15(6), 695-707. https://doi.org/10.1093/scan/nsaa089

Websites

- The Stan Forums: the community hub where users can ask questions, share code, and discuss implementation details of Stan models
- DataCamp: a resource for interactive online courses that cover Bayesian statistics and Stan programming
- The distribution zoo: an interactive tool to build intuitions about common probability distributions.
- Probability distribution explorer: another interactive tool on probability distributions, with code in `Python` and `Stan`.
- Michael Betancourt's blog post: comprehensive case studies using `Stan`.