

A gentle introduction to Bayesian Statistics (Course code S18)

23.8.2021-27.8.2021 (week 33)

Course Director: *Prof.Dr. Rens van de Schoot*

Lecturers: *Rens vd Schoot, Katharina Meitinger, Kimberley Lek*

E-mail: ms.summerschool@uu.nl

Please note that the schedule is in Central European Summer Time

Saturday and Sunday (24 & 25 August)		
Time	Activity	Description
12.00-18.00	Key pick up	You will find the exact key pick up location in the pre-departure information, which becomes available after you have paid the course fee.

Day	Time	Type	Description	Location
Monday	09:00 -12:45	Lecture	<p>Conceptual introduction + reasons for using Bayesian methods + discussion on interpretability of results when using p-values/95%intervals + empirical example of a linear regression analysis in the Bayesian framework.</p> <p>Useful reference: <i>van de Schoot, R., Depaoli, S., King, R. et al. Bayesian statistics and modelling. Nature Review Methods Primers 1, 1 (2021).</i> https://doi.org/10.1038/s43586-020-00001-2</p>	tba
	12:45 -13.15	Lunch		
	13:15 -16.00	Computer lab		tba
Tuesday	09:00 -12:45	Lecture	<p>Q&A + WAMBS-checklist (when to worry and how to avoid the misuse of Bayesian Statistics)</p> <p>Useful references: <i>Depaoli, S., & Van de Schoot, R. (2017). Improving transparency and replication in Bayesian statistics: The WAMBS-Checklist. Psychological methods, 22(2), 240.</i> <i>Van de Schoot, R., Veen, D., Smeets, L., Winter, S. D., & Depaoli, S. (2020). A tutorial on using the WAMBS checklist to avoid the misuse of Bayesian statistics. Small Sample Size Solutions: A Guide for Applied Researchers and Practitioners; van de Schoot, R., Miocevic,</i></p>	tba
	12:45 -13.15	Lunch		
	13:15 -16.00	Computer lab		tba

For information about the Social Programme, please visit the [Utrecht Summer School website!](#)

Wednesday	09:00 -12:45	Lecture	<p>Q&A + Bayesian CFA, testing for Measurement Invariance and approximate MI.</p> <p>Useful references:</p> <p><i>Davidov, E., Meuleman, B., Cieciuch, J., Schmidt, P., & Billiet, J. (2014). Measurement equivalence in crossnational research. Annual Review of Sociology, 40, 55– 75.</i></p> <p><i>Van De Schoot, R., Kluytmans, A., Tummers, L., Lugtig, P., Hox, J., & Muthén, B. (2013). Facing off with Scylla and Charybdis: a comparison of scalar, partial, and the novel possibility of approximate measurement invariance. Frontiers in psychology, 4, 770.</i></p> <p><i>Muthén, B., and Asparouhov, T. (2012b). Bayesian SEM: a more flexible representation of substantive theory. Psychol. Methods 17, 313–335. doi: 10.1037/a0026802</i></p>	tba
	12:45 -13.15	Lunch		
	13:15 -16:00	Computer lab		
Thursday	09:00 -17.00	Lecture	<p>Introduction to informative hypotheses, Bayesian model selection (BMS), and model selection using information criteria (i.e., AIC and its generalization called the GORIC).</p> <p>This includes interpreting Bayes factors, posterior model probabilities, and GORIC weights.</p> <p>Useful references:</p> <p><i>Hojtink, H. (2012). Informative Hypotheses. Theory and Practice for Behavioral and Social Scientists. Boca Raton: Chapman and Hall/CRC.</i></p> <p><i>Kuiper, R.M., Hoijtink, H.J.A. & Silvapulle, M. J. (2011). An Akaike-type information criterion for model selection under inequality constraints. Biometrika, 98, pp. 495-501.</i></p>	tba
	12:45 -13.15	Lunch		
	13:15 -16:00	Computer lab		
Friday	09:00 -12.45	Lecture	<p>Updating a hypothesis and combining evidence from multiple studies. Notably, the evaluation of informative hypotheses using model selection, discussed on Day 4, plays an important role here.</p> <p>Useful reference:</p> <p><i>Kuiper, R.M., Buskens, V.W., Raub, W. & Hoijtink, H. (2013). Combining statistical evidence from several studies: A method using Bayesian updating and an example from research on trust problems in social and economic exchange. Sociological Methods and Research, 42 (1), pp. 60-81.</i></p>	tba
	12:45 – 13:15	Lunch	End pf program	