

# Course material

## Lecture slides:

Hans-Peter Piepho: [overview](#), [part 1](#), [part 2](#), [part 3](#)

Jarrold Hadfield: [lecture 1](#), [lecture 2](#)

Anna Marie Holand: [lecture 1](#)

Jon Ahlinder: [lecture 1](#), [lecture 2](#)

Jens Leon: [lecture 1](#)

Boby Mathew: [lecture 1](#)

## Computer class exercises:

- [exercise 1](#), [exercise 2](#)
- find material here: [Animal-INLA script & datasets](#)
- or here: [AnimalINLA-INLA.R](#), [Fitness.dat](#), [maternal.dataset.dat](#), [maternal.pedigree.dat](#), [rep.Gaussian.dat](#)

## Supplementary reading (should be read before attending the course)

These articles will function as background material for the lectures. In addition, they will be used as basis for Group Discussions. Each student can take part in two (2) groups (A-D).

If necessary, you may request pdf files of the articles to be sent to your e-mail (please contact Emma Votka, [emma.votka@joulu.fi](mailto:emma.votka@joulu.fi))

**N.B.** If these articles give rise to any questions or comments, please share them via the Comment field below! This will help the teachers in preparing their lectures and group discussions to better meet the needs of the students.

### Group A (run by Prof. Hans-Peter Piepho)

Piepho, H. P., Büchse, A. & Emrich, K. (2003) A hitchhiker's guide to mixed models for randomized experiments - J. Agronomy & Crop Science 189: 310-322. [pdf](#)

Piepho, H. P. & Möhring, J. (2007) Computing heritability and selection response from unbalanced plant breeding trials - Genetics 177: 1881-1999. [pdf](#)

Piepho, H. P., Möhring, J., Melchinger, A. E. & Büchse (2008) BLUP for phenotypic selection in plant breeding and variety testing - Euphytica 161: 209-228. [pdf](#)

### Group B (run by Dr. Jon Ahlinder and Dr. Boby Mathew)

Hallander, J., Waldmann, P., Wang, C. & Sillanpää, M. J. (2010) Bayesian inference of genetic parameters based on conditional decompositions of multivariate normal distributions - Genetics 185: 645-654. [pdf](#)

Ahlinder, J. & Sillanpää, M. J. (2013) Rapid Bayesian inference of heritability in animal models without convergence problems - Methods in Ecology and Evolution 4:1037-1046. [pdf](#)

Mathew, B., Bauer, A. M., Koistinen, P., Reetz, T. C., Leon, J. & Sillanpää, M. J. (2012) Bayesian adaptive Markov Chain Monte Carlo estimation of genetic parameters - Heredity 109: 235-245. [pdf](#)

### Group C (run by Prof. Jarrod Hadfield)

Hadfield, J. (2010) MCMC methods for multi-response generalized linear mixed models: the MCMCglmm R package - Journal of Statistical Software 33:1-22. [pdf](#)

de Villemereuil, P. (2012) Estimation of a biological trait heritability using the animal model. How to use the MCMCglmm R package. [pdf](#)

**Group D (run by Dr. Anna Marie Holand)**

Holand, A., I. Steinsland, H. Jensen & Martino, S. (2013) Animal model and integrated nested Laplace approximations - G3, Genes, Genomes, Genetics 3:1241-1251.[pdf](#)

Larsen, C. T., Holand, A. M., Jensen, H., Steinsland, I. & Roulin, A. (2014) On estimation and identifiability issues of sex-linked inheritance with a case study of pigmentation in Swiss barn owls (*Tyto alba*) - Ecology and Evolution 4: 1555–1566. [pdf](#)