

Hybrid course (onsite and online)

Introduction to GAMM and GLMM with R

- With GAM applications to spatial, temporal and spatial-temporal data -

Provided by: Highland Statistics Ltd

Instructors: Dr. Alain F. Zuur and Dr. Elena Ieno

Organised by: James Cook University, Townsville, Australia

This is an onsite course but you can also join online via Zoom

This course is a hands-on introduction to generalised linear mixed - effects models and generalised additive mixed models in R. We'll start with a quick refresher on multiple linear regression, then move on to generalised additive models (GAMs) — a flexible way to handle non-linear relationships. You'll get to see how they work through practical exercises, not heavy maths.

Next, we'll look at mixed-effects models, which are great for data that come from grouped or repeated measurements — like several observations from the same site or individual. We'll then combine the two approaches to create generalised additive mixed models (GAMMs) and work through examples using GLMMs and GAMMs.

In the final part of the course, we'll apply these models to spatial and spatio-temporal data, using different types of response variables — continuous, counts, and more — with Gaussian, Poisson, and negative binomial distributions.

We'll use R throughout, mainly with the `mgcv` and `glmmTMB` packages. It's a practical, non-technical course designed to help you understand how to fit, interpret, and visualise these models in R.

Hybrid statistics course

Venue: James Cook University, Townsville Campus, Australia

Dates and times:

- 2 - 6 March 2026
- 09.00 - 16.00 (local time)

Price: £500

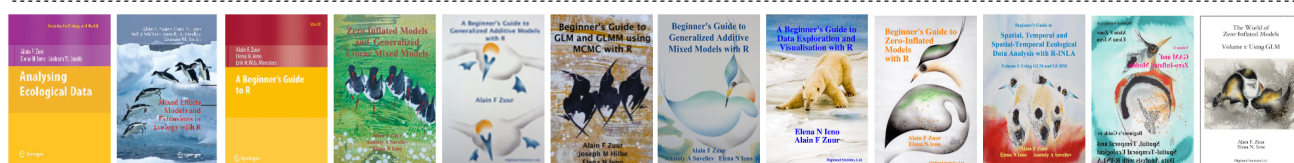
Included: 1 hour face-to-face video chat about your data.

Instructors:

Dr. Elena Ieno.
Dr. Alain Zuur.

Authors of 12 books and providers of over 250 courses.

Working knowledge of R, data exploration, linear regression and GLM (Poisson, negative binomial) is required. The course website provides preparatory materials, including on-demand videos and R scripts covering multiple linear regression, basic matrix notation, generalised linear models, model validation using DHARMA, and the explanation of variograms.



COURSE CONTENT

Preparation material (in case you are not familiar with the required knowledge). Estimated time: 2 hours

- Exercise on linear regression (with on-demand video).
- Exercise on Poisson GLM (with on-demand video).
- Short explanation of DHARma (with on-demand video).
- Short explanation of a variogram (with on-demand video).

Module 1

- General introduction.
- Theory presentation on GAM.
- Two introductory GAM exercises.
- GAM exercise discussing model selection and smoother interactions.

Module 2

- Catching up
- Theory presentation on linear-mixed effects models.
- One exercise using linear mixed-effects models.
- One exercise on Gaussian additive mixed-effects models (GAM with random effects).

Module 3

- Short theory presentation on hierarchical GAMs
- Exercise using hierarchical GAMs (the GAM equivalent of random slope models).
- Exercise using hierarchical GAMs to estimate common trends in time series.
- One exercise on negative binomial GAM.

Module 4

- One exercise on negative binomial GLMM.
- Two exercises on Poisson and negative binomial GAMM.

Module 5

- One exercise on (Gaussian) GAM applied to spatial data.
- One exercise on GAM applied to spatial count data.
- One exercise on GAM(M) applied to spatial-temporal count data.
- Time allowing: Guidance for the analysis of binary, continuous, proportional and continuous data (Bernoulli, binomial, beta, Tweedie and Gamma distributions).

The course website provides preparatory materials, including on-demand videos and R scripts covering multiple linear regression, basic matrix notation, generalised linear models, model validation using DHARMA, and the explanation of variograms. If you are not familiar with these methods, please review them before the course begins.

FREE 1-HOUR FACE-TO-FACE MEETING

The course fee includes a 1-hour face-to-face meeting with one or both instructors. You can discuss your own data, but we strongly advise that the statistical topics are within the content of the course. The 1-hour consultancy needs to be consumed in one session, and will take place at a mutual convenient time. It is not transferable. The meeting needs to take place within 12 months after the last live zoom module.

We reserve the right to change the exercises. Pdf files of all theory material will be provided. All exercises consist of data sets and annotated R scripts. Access to the course website is for 12 months. The course website also contains on demand video.

GENERAL INFORMATION

COURSE FEE: £500

- Credit card payments are processed in GBP.
- Australian participants: Not subject to VAT.
- UK participants: Subject to 20% VAT.
- EU participants (non-UK): Not subject to UK VAT but must provide their institutional VAT number.
- Non-EU participants: Not subject to VAT. Canadian participants are subject to GST/HST tax.

COURSE TIMES:

- Monday-Friday: 09.00am to 16.00pm including a 1 hour lunch break and a 20 minutes break both morning and afternoon.

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CANCELLATION POLICY:

What if you are not able to participate? Once participants are given access to course exercises with R solution codes, pdf files of certain book chapters, pdf files of presentations and video solution files, all course fees are non-refundable. However, we will offer you the option to attend a future course or you can authorise a colleague to attend this course. Terms and conditions see the footer at: <https://www.highstat.com>.

REGISTRATION

<https://www.highstat.com/index.php/joine-an-onsite-course>

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Payment via credit card or bank transfer

