

Time series models for ecologists: course timetable

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Module pre-requisites can be found [here](#). All the raw files and code can be found [here](#). Click 'Download ZIP' near the top right if you want an offline version of the material

Monday 26th June

Time	Class
8:30-9:30	Introduction, example data sets (slides) (handout)
9:30-9:45	Coffee break
9:45-10:45	Revision: likelihood and inference (slides) (handout)
10:45-11:00	Break
11:00-12:00	Revision: linear regression and GLMs (slides) (handout)
12:00-13:15	Lunch
13:15-14:45	Tutor-guided practical (John): Loading data in R and running simple analysis (code)
14:45-15:00	Coffee break
15:00-16:30	Self-guided practical: Using R for linear regression and GLMs' (worksheet) (answer code)

Tuesday 27th June

Time	Class
8:30-9:30	Auto-regressive models and random walks (slides) (handout)
9:30-9:45	Coffee break
9:45-10:45	Moving averages and ARMA (slides) (handout)
10:45-11:00	Break
11:00-12:00	Integrated models and ARIMA (slides) (handout)
12:00-13:15	Lunch
13:15-14:45	Tutor-guided practical (Emma): the <code>forecast</code> package in R (code)
14:45-15:00	Coffee break
15:00-16:30	Self-guided practical: Fitting ARIMA models with <code>forecast</code> (worksheet) (answer code)

Wednesday 28th June

Time	Class
8:30-9:30	Including covariates: ARIMAX models (slides) (handout)
9:30-9:45	Coffee break
9:45-10:45	Creating bespoke time series models using Bayes (slides) (handout)
10:45-11:00	Break
11:00-12:00	Model choice and forecasting using Bayes (slides) (handout)
12:00-13:15	Lunch

Time	Class
13:15-14:45	Tutor-guided practical (Emma): a walkthrough example time series analysis (code)
14:45-15:00	Coffee break
15:00-16:30	Self-guided practical: finding the best time series model for your data set (worksheet)

Thursday 29th June

Time	Class
8:30-9:30	Modelling with seasonality and the frequency domain (slides) (handout)
9:30-9:45	Coffee break
9:45-10:45	Stochastic volatility models and heteroskedasticity (slides) (handout)
10:45-11:00	Break
11:00-12:00	Fitting Bayesian time series models (slides) (handout)
12:00-13:15	Lunch
13:15-14:45	Tutor-guided practical (John): fitting time series models in JAGS and Stan (code)
14:45-15:00	Coffee break
15:00-16:30	Self-guided practical: start analysing your own data set with Bayes (worksheet)

Friday 30th June

Time	Class
8:30-9:30	Models for continuous time series: Brownian Motion and Ornstein Uhlenbeck processes (slides)
9:30-9:45	Coffee break
9:45-10:45	State-space and change point models (slides)
10:45-11:00	Break
11:00-12:00	Multivariate time series models, Splines, and Gaussian processes (slides)
12:00-13:15	Lunch
13:15-16:30	Open session: analyse your own data set