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)
12:00-13:00	Lunch
13:00-14:30	Tutor-guided practical (John): Loading data in R and running simple analysis (code)
14:30-15:00	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)
12:00-13:00	Lunch
13:00-14:30	Tutor-guided practical (Emma): the `forecast` package in R (code)
14:30-15:00	Coffee break
15:00-16:30	Self-guided practical: Fitting ARIMA models with `forecast` (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)
12:00-13:00	Lunch

Time	Class
13:00-14:30	Tutor-guided practical (Emma): a walkthrough example time series analysis (code)
14:30-15:00	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)
12:00-13:00	Lunch
13:00-14:30	Tutor-guided practical (John): fitting time series models in JAGS and Stan (code)
14:30-15:00	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 Ornstien Uhlenbeck processes (slides) (handout)
9:30-9:45	Coffee break
9:45-10:45	State-space and change point models (slides) (handout)
10:45-11:00	Break
11:00-12:00	Multivariate time series models, Splines, and Gaussian processes (slides) (handout)
12:00-13:00	Lunch
13:00-16:30	Open session: analyse your own data set