

# A short course about fitting models with the `scipy.optimize` module

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## Software

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## Summary

Fitting models and testing the match of the models to the measured data is a fundamental activity in many fields of science. This short (approximately 3-hour) course aims to teach participants to use the Scipy library's `optimize` module to fit models to data (???). Using data from a psychology experiment (???) as an example, the course motivates the use of explicit mathematical models to explain and predict data and compares linear models and non-linear models. The core of the lesson focuses on fitting a curve with the `curve_fit` function. Finally, the course introduces the idea of model comparison with cross-validation for evaluation and selection between non-nested non-linear models. A video of an example of instructing this lesson by the author is available on [YouTube](#)

## Statement of need

The target audience for this course are researchers or students with some programming knowledge (e.g., having participated in a ‘Software Carpentry’ workshop beforehand). Model fitting is useful in many different fields of research, but optimization for model fitting is not a topic that is usually covered in introductory statistics or computing classes in. This course fills an existing need for hands-on curriculum that goes beyond the topics taught in introductory computing workshops, such as ‘Software Carpentry’, providing material for follow-up workshops on advanced/intermediate topics.

## References