

Regression Modeling Strategies Short Course 2025

Regression Modeling Strategies

Strategies for good statistical practice, developing accurate predictive models that validate, choosing between statistical models and machine learning, introduction to Bayesian regression modeling, and complete R examples.

[Time/hours are Central Standard Time (CST)]

1ST DAY – Thursday, May 15

- | | |
|---------------|---|
| 9:00 – 10:00 | Introduction |
| | <ul style="list-style-type: none">i. Philosophy of Multivariable Modelingii. Model uncertainty / Data-driven Model Specification [chapter 1.6] |
| 10:15 – 12:00 | General Aspects of Fitting Regression Models [chapter 2] |
| 12:45 – 1:00 | continue, General Aspects of Fitting Regression Models [chapter 2, omit 2.9-10] |
| 1:00 – 4:00 | <ul style="list-style-type: none">i. Multivariable Modeling Strategies [chapter 4] |

2ND DAY – Friday, May 16

- | | |
|---------------|---|
| 9:00 – 10:15 | <ul style="list-style-type: none">i. Describing model fits and model validation [chapter 5] |
| 10:30 – 12:00 | <ul style="list-style-type: none">i. Binary Logistic Regression [chapter 10]ii. Logistic Model Case Study: Survival of Titanic Passengers [chapter 12] |
| 12:45 – 2:00 | <ul style="list-style-type: none">i. Ordinal Logistic Regression [chapter 13]ii. Ordinal Regression Examples [chapter 13, BBR 7.6, 7.8, 7.9 (paired data)] |
| 2:15 – 4:00 | <ul style="list-style-type: none">i. Regression Models for Continuous Y and Case Study in Ordinal Regression [chapter 15] |

3RD DAY – Monday, May 19

- 9:00 – 10:45 i. Modeling Longitudinal Responses using Generalized Least Squares [chapter 7, omit 7.8.4]
- 11:00 – 12:00 Semiparametric Ordinal Longitudinal Models [chapter 22, 7.8.4]
- 12:45 – 1:45 Causal Models for Variable Selection
- 1:45 – 2:30 i. Advantages of Bayesian modeling [2.10]
- ii. Constraining regression models using Bayesian priors [2.10]
- 2:30 – 4:00 i. Parametric Survival Models [chapter 18]
- ii. Case Study in Parametric Survival Modeling and Model Approximation [chapter 19]

4TH DAY – Tuesday, May 20

- 9:00 – 11:00 i. Cox Proportional Hazards Regression Model [chapter 20]
- ii. Case Study in Cox Regression [chapter 21]
- 11:00 – 12:00 Ordinal Semiparametric Regression for Survival Analysis [chapter 25]
- 12:45 – 2:00 continue, Ordinal Semiparametric Regression for Survival Analysis [chapter 25]
- 2:15 – 3:00 General likelihood ratio test and profile confidence limits [2.9]
- 3:00 – 4:00: Summary and discussion