The Center for Astrostatistics Virtual Summer School 2025

The following is a suggested schedule in United States Eastern Time (ET), based on the availability of instructors, most of whom are in this or a nearby time zone. Please adjust the lecture schedule according to your own availability, as recordings will be accessible at least one day before the suggested lecture time and will remain available until a week after the summer school (until 11:59 PM ET, June 13, 2025). Live Q&A session times are fixed in ET.

The suggested schedule below, in ET, starts at 9:00 AM and ends by 6:00 PM. R Labs will serve as daily homework.

- Day 1 (Monday, June 2)
  - 9:00 AM–9:50 AM: Introduction to Astrostatistics (Feigelson, Penn State).
  - 9:50 AM–10:00 AM: 10-minute break.
  - 10:00 AM–1:50 PM: Probability (Hunter, Penn State)
    Watch the recorded lecture for 2 hours and 30 minutes.
    A 20-minute break and a 60-minute lunch break are included.
  - 1:50 PM–2:20 PM: 30-minute live Q&A with Hunter via Zoom.
  - 2:20 PM–2:30 PM: 10-minute break.
  - 2:30 PM–5:30 PM: Statistical Inference (Tak, Penn State)
    Watch the recorded lecture for 2 hours and 30 minutes.
    A 30-minute break is included.
  - 5:30 PM–6:00 PM: 30-minute live Q&A with Tak via Zoom.
  - Homework: Watch the recorded R Lab (Feigelson) and complete the tutorials.

- Day 2 (Tuesday, June 3)
  - 9:00 AM–11:10 AM: Regression (Villar, Harvard)
    Watch the recorded lecture for 1 hour and 40 minutes.
    A 30-minute break is included.
  - 11:10 AM–11:30 AM: 20-minute live Q&A with Villar via Zoom.
  - 11:30 AM–11:40 AM: 10-minute break.

- 11:40 AM–2:10 PM: Model Fitting, Bootstrap, and Model Selection (Babu, Penn State)
  Watch the recorded lecture for 1 hour and 10 minutes.
  A 20-minute break and a 60-minute lunch break are included.
- 2:10 PM–2:30 PM: 20-minute live Q&A with Babu via Zoom.
- 2:30 PM–2:40 PM: 10-minute break.
- 2:40 PM–5:00 PM: Supervised and Unsupervised Learning (Villar, Harvard)
  Watch the recorded lecture for 1 hour and 50 minutes.
  A 30-minute break is included.
- 5:00 PM–5:20 PM: 20-minute live Q&A with Villar via Zoom.
- Homework: Watch the recorded R Lab (Feigelson) and complete the tutorials.

- Day 3 (June 4, Wed)
  - 9:00am–12:00pm: Bayesian Inference (Loredo, Cornell).
    Watch the recorded lecture for 2 hours and 30 minutes.
  - 12:00pm–1:00pm: 60-minute lunch break
  - 1:00pm–1:30pm: 30-minute Live Q&A with Loredo via Zoom.
  - 1:30pm–1:40pm: 10-minute break
  - 1:40pm–3:20pm: Markov Chain Monte Carlo (Haran, Penn State)
    Watch the recorded lecture for 1 hour and 20 minutes.
    A 20-minute break is included.
  - 3:20pm–3:40pm: 20-minute Live Q&A with Haran via Zoom.
  - 3:40pm–3:50pm: 10-minute break
  - 3:50pm–5:30pm: Nested Sampling (Speagle, University of Toronto)
    Watch the recorded lecture for 1 hour and 20 minutes.
    A 20-minute break is included.
  - 5:30pm–5:50pm: 20-minute Live Q&A with Speagle via Zoom.
  - Homework: Watch the recorded R Lab (Feigelson) and complete the tutorials.

- Day 4 (June 5, Thu)
  - 9:00am–10:40am: Time Series (Feigelson, Penn State)
    Watch the recorded lecture for 1 hour and 20 minutes.
    A 20-minute break is included.
  - 10:40am–11:00am: 20-minute Live Q&A with Feigelson via Zoom.
  - 11:00am–11:10am: 10-minute break
  - 11:10am–1:50pm: Spatial Statistics (Haran, Penn State)
    Watch the recorded lecture for 1 hour and 20 minutes.
    A 20-minute break and a 60-minute lunch break are included.
  - 1:50pm–2:10pm: 20-minute Live Q&A with Haran via Zoom.
  - 2:10pm–2:20pm: 10-minute break
  - 2:20pm–3:40pm: An Overview of Machine Learning Techniques in Astronomy (Mahabal, Caltech)
    Watch the recorded lecture for 1 hour.
    A 20-minute break is included.
  - 3:40pm–4:00pm: 20-minute Live Q&A with Mahabal via Zoom.
  - 4:00pm–4:10pm: 10-minute break
  - 4:10pm–5:30pm: An Overview of Deep Learning in Astronomy (Speagle, University of Toronto)
    Watch the recorded lecture for 1 hour.
    A 20-minute break is included.
  - 5:30pm–5:50pm: 20-minute Live Q&A with Speagle via Zoom.
  - Homework: Watch the recorded R Lab (Feigelson) and complete the tutorials.

- Day 5 (June 6, Fri)
  - 9:00am–10:45am: Gaussian Process (Aigrain, Oxford)
    Watch the recorded lecture for 1 hour and 25 minutes.
    A 20-minute break is included.
  - 10:45am–11:05am: 20-minute Live Q&A with Aigrain via Zoom.
  - 11:05am–11:15am: 10-minute break

- 11:15am–3:15pm: Deep Learning Neural Networks (Banks, Duke)
  Watch the recorded lecture for 2 hours and 30 minutes.
  A 30-minute break and a 60-minute lunch break are included.
- 3:15pm–3:45pm: 30-minute Live Q&A with Banks via Zoom.
- 3:45pm–3:55pm: 10-minute break
- 3:55pm–5:40pm: Machine Learning with Random Forest (Freeman, Carnegie Mellon)
  Watch the recorded lecture for 1 hour and 25 minutes.
  A 20-minute break is included.
- 5:40pm–6:00pm: 20-minute Live Q&A with Freeman via Zoom.
- Homework: Watch the recorded R Lab (Feigelson) and complete the tutorials.