Teaching Statement

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Teaching is the process of helping students learn how to think, not simply what to think. Statistics naturally embodies this goal: it cultivates logical reasoning, connects theory to uncertainty, and encourages critical reflection on assumptions. I view statistical thinking as a language for reasoning about evidence, and my teaching philosophy is to help students develop this language with rigor, intuition, and clarity.

As a Graduate Teaching Associate at The Ohio State University, I have led recitations for mathematical statistics (STAT 4201/4202) and statistical inference (STAT 3202), serving over one hundred students each semester. Many students find probability proofs or likelihood theory intimidating. I help them transition from intuition to formality through visual explanations and small simulations before introducing asymptotics. To bridge theory and computation, I teach debugging as a form of logical analysis: just as a proof is unpacked step by step, a computation is traced to reveal how functions and objects connect. Students learn to decompose problems into modular components and assemble them into reproducible workflows, viewing statistical programming not as trial-and-error but as constructing a transparent analytic argument.

Collaboration and application are central to my teaching. In project-based assignments, students work in small teams to analyze real or simulated data, reinforcing theoretical ideas through computation. Reproducible programming exercises paired with algebraic derivations allow students to see how statistical principles manifest empirically. For example, Monte Carlo experiments illustrating asymptotic distributions demystify likelihood-based inference and help students connect formal results with practical intuition.

My teaching draws on evidence-based pedagogy emphasizing metacognition, active learning, and inclusivity. I aim to create classrooms where all students feel intellectually respected and where engagement with uncertainty is encouraged rather than feared. My mentorship frequently extends beyond coursework; many students seek guidance on graduate study, research opportunities, and career development, and several have continued into graduate programs in statistics and data science.

I am prepared to teach a broad range of courses in statistics and data science, including probability, regression, mathematical statistics, statistical computing, and modern machine learning. In theoretical courses, I emphasize the intuition behind proofs, model assumptions, and asymptotic reasoning. In applied and computational courses, I focus on reproducibility, interpretability, and coding literacy. Building on my research expertise, I hope to design electives such as Network Time Series Analysis, integrating high-dimensional probability and multivariate time series, and a course on spectral methods for network and matrix estimation. Relevant textbooks include Chen et al., 2021; Lütkepohl, 2013; Wainwright, 2019. These courses would connect modern statistical methodology with practical tools for analyzing complex, interconnected data systems.

Ultimately, I aim to balance rigor with accessibility. Every statistical concept can be understood symbolically, geometrically, or computationally, and students learn most deeply when they can move fluidly among these representations. Rigor makes knowledge durable; empathy

makes it reachable. My goal is to help students develop both the skills and the confidence to use statistics as a principled, expressive language for inquiry and decision-making.

References

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Lütkepohl, H. (2013). *Introduction to multiple time series analysis*. Springer Science & Business Media.

Wainwright, M. J. (2019). *High-dimensional statistics: A non-asymptotic viewpoint*, volume 48. Cambridge university press.