

Xianzheng Huang

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Degrees

2006 Ph.D. Statistics, North Carolina State University
2002 M.S. Statistics, Oklahoma State University
1997 B.S. Mathematical Statistics, Nankai University, P. R. China

Professional Experience

2020 – present *Professor*, Department of Statistics, The University of South Carolina
2017 Spring *Visiting Associate Professor*, Department of Statistics, Rice University
2012 – 2019 *Associate Professor*, Department of Statistics, The University of South Carolina
2006 – 2012 *Assistant Professor*, Department of Statistics, The University of South Carolina
2005 – 2006 *Research Assistant*, Department of Statistics, North Carolina State University
2003 – 2005 *Graduate Industrial Trainee*, Statistical Science in North America, GlaxoSmithKline, Research Triangle Park, NC
2002 *Teaching Assistant*, Department of Statistics, North Carolina State University
2001 – 2002 *Research Assistant*, Department of Statistics, Oklahoma State University
2000 – 2002 *Teaching Assistant*, Department of Statistics, Oklahoma State University
1997 – 2000 *Lecturer*, Department of Mathematics, Tianjin Polytechnic University, P. R. China
1997 *Statistical Intern*, Training Department, National Statistical Bureau, P. R. China

Honors and Awards

2019 Faculty Travel Initiative at USC (Travel expense to present research at the 11th ICSA International Conference)
2018 Faculty Travel Initiative at USC (Travel expense to present research at the 4th Conference of the International Society of Nonparametric Statistics)
2011 Nominated for Breakthrough Rising Stars of USC
2010 Travel expenses to attend SAMSI Workshop
2010 NSF 3-year grant for a sole-PI research project
2008 Travel expenses to attend Workshop for Junior Researchers at ENAR Spring Meetings
2007 Travel expenses to attend SAMSI Workshop
2005 International Biometric Society (ENAR) Distinguished Student Paper Award
2004 Elected to The National Statistical Honor Society of Mu Sigma Rho
2002 Outstanding M.S. Graduate in Statistics, Oklahoma State University
2002 Elected to The Honor Society of Phi Kappa Phi
2002 Elected the Student Membership in American Statistical Association, Department of Statistics, Oklahoma State University
2000 First Prize in Presentation Contest, Tianjin Polytechnic University, P. R. China
1996 Single-Phase Scholarship, Nankai University, P. R. China

Professional Organizations

American Statistical Association (ASA)

International Biometric Society (ENAR)

International Society of Nonparametric Statistics (ISNPS)

Publications (* Marks Huang's advisees)

Liu*, Q., **Huang X.**, and Zhou H. (2024). The flexible Gumbel distribution: A new model for inference about the mode. *Stats* **7**, 317–332.

Liu*, Q. and **Huang X.** (2024). Parametric modal regression with error in covariates. *Biometrical Journal* **66**: 2200348.

Yu*, Z. and **Huang X.** (2024). A new parameterization for elliptically symmetric angular Gaussian distributions of arbitrary dimension. *Electronic Journal of Statistics* **18**, 301–334.

Zhang, H., **Huang, X.**, and Arshad, H. (2023) Comparing dependent undirected Gaussian networks. *Bayesian Analysis* **18**, 1341–1366.

Zhou, H. and **Huang, X.** (2021). Bayesian beta regression for bounded responses with unknown supports. *Computational Statistics and Data Analysis* **167**, 107345.

Huang, X. and Zhang, H. (2021). Tests for differential Gaussian Bayesian networks based on quadratic inference functions. *Computational Statistics and Data Analysis*, **159**, 107209.

Huang, X. and Zhang, H. (2021). Corrected score methods for estimating Bayesian networks with error-prone nodes. *Statistics in Medicine*, **40**, 2692–2712.

Zhang, H., **Huang, X.**, Han, S., Rezwan, F., Karmaus, W., Arshad, H., and Holloway, J. (2021). Gaussian Bayesian network comparisons with graph ordering unknown. *Computational Statistics and Data Analysis*, **157**, 107156.

Wang, D., Mou, X., Li*, X., and **Huang, X.** (2020). Local polynomial regression for pooled response data. *Journal of Nonparametric Statistics* **32**, 814–837.

Zhou, H. and **Huang, X.** (2020). Parametric mode regression for bounded responses. *Biometrical Journal*, **61**, 1791–1809.

Huang, X. (2020). Improved wrong-model inference for generalized linear models for binary responses in the presence of link misspecification. *Statistical Methods & Applications*, DOI: 10.1007/s10260-020-00529-3.

Huang, X. and Zhou, H. (2020). Conditional density estimation with covariate measurement error. *Electronic Journal of Statistics* **14**, 970–1023.

Li*, X. and **Huang, X.** (2019). Linear mode regression with covariate measurement error. *Canadian Journal of Statistics* **47**, 262–280.

Yu*, S. and **Huang, X.** (2019). Link misspecification in generalized linear mixed models with a random intercept for binary responses. *TEST* **28**, 827–843.

Zhou, H. and **Huang, X.** (2019). Bandwidth selection for nonparametric modal regression. *Communications in Statistics - Simulation and Computation* **48**, 968–984.

- Huang, X.** and Warasi, M. (2017). Maximum likelihood estimators in regression models for error-prone group testing data. *Scandinavian Journal of Statistics* **44**, 918–931.
- Yu*, S. and **Huang, X.** (2017). Random-intercept misspecification in generalized linear mixed models for binary responses. *Statistical Methods & Applications* **26**, 333–359.
- Huang, X.** and Zhou, H. (2017). An alternative local polynomial estimator for the errors-in-variables problem. *Journal of Nonparametric Statistics* **29**, 301–325.
- Huang, X.** (2017). Semi-nonparametric isotonic regression. *Communications in Statistics, Theory and Methods* **46**, 10071–10087.
- Zhou, H. and **Huang, X.** (2016). Nonparametric modal regression in the presence of measurement error. *Electronic Journal of Statistics* **10**, 3579–3620.
- Cheng*, W. Dryden, I., and **Huang, X.** (2016). Bayesian registration of functions and curves. *Bayesian Analysis* **11**, 447–475.
- Zhang, H., **Huang, X.**, Gan, J., Karmaus, W., and Sabo-Attwood, T. (2016). A two-component G-prior for variable selection. *Bayesian Analysis* **11**, 353–380.
- Du*, J., Dryden, I., and **Huang, X.** (2015). Size and shape analysis of error-prone shape Data. *Journal of the American Statistical Association* **110**, 368–379.
- Huang, X.** (2015). Dual model misspecification in generalized linear models in the presence of measurement error. Chapter 1 in *New Developments in Statistical Modeling, Inference and Application*, edited by Jin., Z. Springer.
- Huang, X.** and Zhang, H. (2013). Variable selection in linear measurement error models via penalized score functions. *Journal of Statistical Planning and Inference* **143**, 2101–2111.
- Huang, X.** (2013). Tests for random effects in linear mixed models using missing data. *Statistica Sinica* **23**, 1043–1070.
- Huang, X.** (2011). Detecting random-effects model misspecification via coarsened data. *Computational Statistics and Data Analysis* **55**, 703–714.
- Huang, X.** (2009). An improved test of latent-variable model misspecification in structural measurement error models for group testing data. *Statistics in Medicine* **28**, 3316–3327.
- Huang, X.**, Stefanski, L. A., and Davidian, M. (2009). Latent-model robustness in joint models for a primary endpoint and a longitudinal process. *Biometrics* **65**, 719–727.
- Huang, X.** and Tebbs, J. M. (2009). On latent-variable model misspecification in structural measurement error models for binary response. *Biometrics* **65**, 710–718.
- Huang, X.** (2009). Diagnosis of random-effect model misspecification in generalized linear mixed effects models for binary response. *Biometrics* **65**, 361–368.
- Huang, X.**, Stefanski, L. A., and Davidian, M. (2006). Latent-model robustness in structural measurement error models. *Biometrika* **93**, 53–64.

Book Reviews

- Huang, X.** (2018). Statistical Analysis with Measurement Error or Misclassification (by Grace Y. Yi), Springer, 2017. *Journal of American Statistical Association*.

Funded Grant

- University of South Carolina, Advanced Support for Innovative Research Excellence (ASPIRE-I). “Consistent model diagnostics and improved wrong-model inference in GLM(M) using error-prone data”. **Role: PI.** Funded at: \$12,162. Funding timeline: 05/2015–08/2016.
- University of South Carolina. Institute for Visiting Scholars. “2015 Palmetto Lecturer”. (PI: Grego, USC). **Role: Co-PI.** Funded at: \$2,012.
- University of South Carolina. Institute for Visiting Scholars. “2014 Palmetto Lecturer”. (PI: Grego, USC). **Role: Co-PI.** Funded at: \$2,412.
- National Science Foundation. “Informative model specification tests using coarsened data” (DMS-1006222). **Role: PI.** Funded at: \$104,866. Funding timeline: 09/2010–08/2013.

Unfunded Grant

- National Science Foundation. “Collaborative Research: Differential Directed Networks in Allergic Diseases” (Joint DMS/NIGMS Initiative to Support Research at the Interface of the Biological and Mathematical Sciences). **Role: PI** of the leading organization (USC), with Zhang from University of Memphis as the PI of the non-leading organization, and Co-Investigator Arshad from University of Southampton. Request amount: \$197,474 (for USC). Funding timeline: 04/2020-03/2023. Submitted in 09/2019.
- National Institutes of Health. “Mode regression for bounded data”. **Role: MPI** with Zhou from Northern Illinois University. Funding timeline: 12/2019–11/2021. Submitted in 06/2019.
- National Science Foundation. “Combinatorial and topological principles for associational and causal modeling and inference”. **Role: Co-PI** with Lu from Department of Mathematics as PI and Valtorta from Department of Computer Science and Engineering as Co-PI. Funding timeline: 1/2020–12/2022. Submitted in 05/2019.
- National Science Foundation. “Collaborative Research: Differential Directed Networks in Allergic Diseases” (Joint DMS/NLM Initiative on Generalizable Data Science Methods for Biomedical Research). **Role: PI** of the leading organization (USC), with Zhang from University of Memphis as the PI of the non-leading organization, and Co-Investigator Arshad from University of Southampton. Request amount: \$189,672 (for USC). Funding timeline: 09/2019-08/2022. Submitted in 01/2019.
- National Institutes of Health. “Epigenetic origins of obesity via differential directed networks – does race matter?”. **Role: MPI** with Zhang from University of Memphis. Funding timeline: 04/2019-03/2021. Submitted in 05/2018.
- University of South Carolina. Advanced Support for Innovative Research Excellence (ASPIRE-I). “Statistical inference for Bayesian networks in the presence of measurement error”. **Role: PI.** Request amount: \$15,000. Funding timeline: 05/2018–08/2019. Submitted in 01/2018.
- National Institutes of Health. “Genetic concert work on maternal obesity inheritance via differential directed networks – does race matter?”. **Role: MPI** with Zhang from University of Memphis. Funding timeline: 12/2017-11/2019. Submitted in 02/2017.
- National Science Foundation. “Statistical inference using coarsened data in the presence of model misspecification”. **Role: PI.** Funding timeline: 07/2016–06/2019. Submitted in 11/2015.

- University of South Carolina, ASPIRE-I. “Variable selection in the presence of measurement error”.
Role: PI. Requested amount: \$11,851. Funding timeline: 05/2013–09/2014. Submitted in 01/2013.
- National Science Foundation. “Asymmetric models for concurrent longitudinal process in developmental and family research” (MMS). (PI: Malone, USC; Co-PI: Masyn, Harvard). **Role: Investigator.** Requested amount: \$610,559. Submitted in 08/2012.
- University of South Carolina. Institute for Visiting Scholars. “2013 Palmetto Lecturer”. (PI: Grego, USC). **Role: Co-PI.** Request amount: \$2,390. Submitted in 08/2012.
- National Institutes of Health. “Asymmetric models for concurrent longitudinal process in developmental research”(R21 HD071173-01). (PI: Malone, USC; Co-PI: Masyn, Harvard). **Role: Investigator.** Requested amount: \$275,000. Submitted in 03/2012.
- University of South Carolina. Research Opportunity Program. “Regression analysis of group testing data with measurement error”. **Role: PI.** Requested amount: \$7,100. Submitted in 12/2006.

Presentations

- “Statistical inference for elliptically symmetric directional data”, Department of Mathematics and Statistics, University of New Hampshire, March 28, 2024
- “Nonparametric Regression for Circular Responses with Error-in-Covariate”. Invited seminar at the Department of Mathematical Sciences, Indiana University-Purdue University Indianapolis, September 12, 2023
- “Detecting responsible nodes in differential Bayesian networks”. Invited talk at EcoStat 2023, Tokyo, Japan, on the August 1, 2023
- “The modal age of regression”. Invited talk at Northern Illinois University Graduate Colloquium, 02 September 2022.
- “Bayesian beta regression for bounded responses with unknown supports”. Invited talk at the 14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2021), King’s College London, 18-20 December 2021.
- “Local polynomial regression for pooled response data”. Invited talk at WNAR 2021, 13-16 June 2021 (Virtual conference).
- “Parametric mode regression for bounded data”. Invited talk at the 11th ICSA International Conference, Zhejiang, P. R. China, December 2019.
- “Conditional density estimation with covariate measurement error”. Invited talk at the 4th Conference of the International Society for Nonparametric Statistic, Salerno, Italy, June 12, 2018.
- “Nonparametric modal regression in the presence/absence of measurement error”. Invited seminar at the Department of Statistics, Rice University, November 21, 2016.
- “Nonparametric modal regression in the presence of measurement error”. Invited talk at Newest Developments and Urgent Issues in Measurement Error and Latent Variable Problems, Banff, Canada, August 15, 2016.
- “Nonparametric modal regression in the presence of measurement error”. Invited seminar at the Department of Mathematical Sciences, Clemson University, March 31, 2016.

- “An alternative local polynomial estimator for the errors-in-variables problem”. Contributed talk at 2015 Joint Statistical Meeting. Seattle, WA. August 09, 2015.
- “An alternative local polynomial estimator for the errors-in-variables problem”. Invited talk at 2014 South Carolina Statistics Consortium. Clemson, SC. November 15, 2014.
- “Dual model misspecification in generalized linear models with error in variables”. Invited talk at 2014 ICSA/KISS Applied Statistics Symposium. Portland, OR. June 18, 2014.
- “Score-based variable selection in linear measurement error models”. Invited talk at Workshop on Biostatistics and Bioinformatics held at Department of Mathematics and Statistics at Georgia State University on May 06, 2012.
- “Model specification tests using coarsened data”. Invited talk at SRCOS Summer Research Conference, McCormick, SC. June 2011.
- “Informative specification tests”. Invited seminar at the Department of Biostatistics, Medical University of South Carolina. February 2011.
- “Semi-nonparametric smooth isotonic regression”. Seminar at the Department of Statistics, University of South Carolina. February 2011.
- “An improved test for latent-variable model misspecification in structural measurement error models for group testing data”. Contributed talk at Joint Statistical Meetings, Vancouver, Canada. August 2010.
- “Informative model specification test using coarsened data”. Contributed talk at ENAR Spring Meetings, New Orleans, LA. March 2010.
- “Constructive data destruction: specification tests using coarsened data”. Seminar at the Department of Statistics, University of South Carolina. November 2009.
- “Less can help: A counterintuitive concept of fully utilizing data”. Seminar at the Department of Statistics, University of South Carolina. October 2009.
- “Information-reduction diagnostic methods for latent variable models”. Invited seminar at the Department of Epidemiology and Biostatistics, University of South Carolina. April 2009.
- “Detecting model misspecification via information reduction strategies”. Invited seminar at the Department of Statistics, University of Georgia. March 2009.
- “Diagnosis of random-effect model misspecification in GLMM”. Contributed talk at ENAR Spring Meetings, Arlington, VA. March 2008.

Contributed Presentations

- “Bayesian variable selection based on modal regression”. Oral presentation by Jiasong Duan at ENAR 2024 Spring Meeting, Baltimore, Maryland, March 2024
- “Nonparametric regression for a circular response with error-in-covariate”. Oral presentation by Nicholas Woolsey at ENAR 2024 Spring Meeting, Baltimore, Maryland, March 2024
- “Bayesian modal regression based on mixture distributions”. Oral presentation by Ray Bai at EcoStat 2023, Tokyo, Japan, on the August 2, 2023

- “Elliptically symmetric distributions for directional data of arbitrary dimension”. Oral presentation by Zehao Yu at the 15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2022), King’s College London, 17-19 December 2022.
- “Nonparametric regression for error-prone homogeneous pooled data”. ENAR Spring Virtual Meeting. March 2020. Oral presentation by Dewei Wang.
- “Linear mode regression with covariate measurement error”. Joint Statistical Meetings, Baltimore, Maryland. July 31, 2017. Oral presentation by Xiang Li.
- “Linear mode regression with covariate measurement error”. South Carolina Chapter American Statistical Association 46th Annual Meeting, Columbia, South Carolina. March 24, 2017. Oral presentation by Xiang Li.
- “Effects and detection of random-effect misspecification in GLMM”. ENAR Spring Meetings, Orlando, Florida. March 2013. Oral presentation by Shun Yu.
- “Bayesian analysis of continuous curve functions”. ENAR Spring Meetings, Orlando, Florida. March 2013. Oral presentation by Wen Cheng.
- “A Bayesian approach to continuous curve analysis”. Mathematical Biosciences Institute, Current Topic Workshop: Statistics of Time Warpings and Phase Variations. Columbus, Ohio. November 2012. Poster presentation by Wen Cheng.
- “Measurement error models in shape analysis”. Joint Statistical Meetings, Miami, Florida. August 2011. Oral presentation by Jiejun Du.
- “Measurement error models in shape analysis”. SRCOS Summer Research Conference, McCormick, SC. June 2011. Poster presentation by Jiejun Du.
- “Shape analysis and measurement error”. Department of Statistics at The University of South Carolina. October 2010. Oral presentation by Jiejun Du.
- “Measurement error models in shape analysis”. SAMSI workshop, Research Triangle Park, NC. September 2010. Poster presentation by Ian Dryden.
- “Measurement error models in shape analysis”. Joint Statistical Meetings, Vancouver, Canada. August 2010. Poster presentation by Jiejun Du.

Student Direction

- Jiasong Duan, Ph.D. candidate. (Fall 2022–present) “Bayesian network analysis for heavy-tailed data”
- Qinyan Shen, Ph.D. candidate. (Spring 2022–present) Co-advise with Karl Gregory. “Topics on post-selection inference”
- Nicholas Woolsey, Ph.D. candidate. (Fall 2021–Summer 2024) “Nonparametric regression for directional data and measurement error problems”
- Zehao Yu, Ph.D. candidate. (Fall 2020–Spring 2024) “Regression analysis for directional data”.
- Qingyang Liu, Ph.D. candidate. (Fall 2020–Spring 2023) “Advancements in parametric modal regression”.
- Xiang Li, Ph.D. candidate (Completed in December 2018). “Semiparametric regression in the presence of measurement error”.

Shun Yu, Ph.D. (Completed in May 2015). “Model diagnostics for generalized linear mixed models for binary responses”.

Wen Cheng, Ph.D. (Completed in May 2014). Co-advise with Ian Dryden. “Bayesian analysis of continuous curve functions”.

Jiejun Du, Ph.D. (Completed in August 2012). Co-advise with Ian Dryden. “Measurement error models for shape data”.

Other graduate committees: 18 Ph.D., 6 M.S.

Course Development

Latent Variable Models (STAT 718A). This is a new course I created in Fall 2010 and taught in Spring 2011, Spring 2013. This course serves as an elective for the Ph.D. program in Statistics.

Professional service

International and national level

- Organizer and chair of an invited session, entitled “Statistical learning of non-Gaussian Data,” at CMStatistics 2023, Berlin, Germany, December 16–18, 2023
- Organizer of an invited session, entitled “Recent advances in network analyses,” at 6th International Conference on Econometrics and Statistics (EcoSta 2023), Hybrid Conference, Waseda University, Tokyo, Japan, August 1–3, 2023
- Member on editorial board of “Measurement: Interdisciplinary Research and Perspectives” (Spring 2023–present)
- Scientific Program Committee member of CMStatistics 2023
- Reviewer on NSF Review Panel, Spring 2023
- Organizer of an invited session, entitled “Statistical Analysis in Non-Euclidean Spaces,” at CMStatistics 2022, King’s College London, 17–19 December, 2022
- Reviewer. The Council for Social Sciences and the Humanities of the Netherlands Organization for Scientific Research (NWO), April 2019.
- Member. ENAR Student Paper Awards Committee, 2010–2012.
- Reviewer. Artificial Intelligence and Statistics (AISTATS) 2011 conference.
- Session chair. Joint Statistical Meetings, 2010.
- Referee for
 - American Statistician; Annals of Applied Statistics; Annals of Statistics; Annals of the Institute of Statistical Mathematics; Austrian Journal of Statistics; Axiom; Biometrical Journal; Biometrics; Biometrika; Biostatistics; Communications in Statistics (Theory and Methods); Computational Statistics; Computational Statistics and Data Analysis; Computer Methods and Programs in Biomedicine; Eastern Journal of Medicine; Electronic Journal of Statistics; Entropy; Environmental Health Perspectives; International Journal of Environment Research and Public Health; International Statistical Review; Journal of Applied Statistics; Journal of Business & Economic Statistics; Journal of Multivariate Analysis; Journal of Nonparametric Statistics; Journal of Statistical Computation and Simulation; Journal of Statistical Planning and Inference; Journal of the American Statistical Association; Journal of the Royal Statistical Society (Series B, Series C); Lifetime Data Analysis; Mathematics; PLOS ONE; Psychometrika; Scandinavian Journal of Statistics; Scientific Reports; SIAM

Journal on Mathematics of Data Science; Stat; Stats; Statistica Sinica; Statistics and Computing; Statistics and Probability Letters; Statistical Science; Statistical Methods in Medical Research; Statistics in Medicine; Symmetry; Thailand Statistician

University level

- Member. USC Committee NSF Graduate Research Fellowships, 2013–2016.

Department level

- Chair. Unit Tenure-Promotion Committee, 2021–present
- Chair. Chair Evaluation Committee. 2022
- Faculty mentor for junior faculty
- Member. Faculty Search Committee. Fall 2019 – Fall 2020, 2022
- Graduate Director. July 2016 – June 2019
- Member. Department Chair Search Committee. Spring 2018
- Member. Chair Advisory Committee. 2017-2018
- Session Chair. Latent Variable 2016 Conference
- Seminar Chair. 2012 Fall – 2015 Spring
- Member. Graduate Advisory Committee. 2014, 2015–2020
- Chair. Qualifier Exam Committee. May, 2012, 2014, 2019, 2020, 2021
- STAT 509 Course Coordinator. January 2013 – June 2019
- Chair. Computer Committee. 2009 – May, 2013
- Member. Computer Committee. 2006 – 2009
- Member. Faculty Search Committee. 2011, 2019, 2020, 2022
- Member. Graduate Program Committee. 2007 – 2009, 2014, 2015, 2019, 2020
- Member. Qualifier Exam Committee. 2007 – 2016
- Member. MAS Qualifier Exam Committee. January 2015 – June 2015
- Member. Course Development Committee (STAT 704, 705). 2006 – 2007
- Conference Organizing Committee and Session Chair. Nonparametric Conference 2007
- Library Representative. 2006 – 2008

Teaching

Course	Semester
STAT 201 Elementary Statistics	Fall 2007
SCHC 312A Proseminar in Statistics	Spring 2007, 2008
STAT 310 Probability and Statistics	Spring 2017 (at Rice University)
STAT 509 Statistics for Engineers	Spring 2010, 2013, 2014, 2016, 2018, 2021, 2022, 2023, 2024 Fall 2013, 2020, 2021, 2022, 2023
STAT 515 Statistical Methods I	Fall 2006, 2007, 2011, 2012, 2013, 2015, 2019; Spring 2007, 2008, 2009, 2015, 2018, 2019, 2020
STAT J702 Introduction to Statistical Theory I	Fall 2014, 2016
STAT J703 Introduction to Statistical Theory II	Spring 2015
STAT 712 Mathematical Statistics I	Fall 2008, 2009, 2010, 2011, 2019, 2020
STAT 713 Mathematical Statistics II	Spring 2009, 2010, 2011, 2012, 2020, 2021
STAT 714 Linear Statistical Models	Fall 2012, 2014, 2017
STAT 715 Nonlinear Statistical Models	Spring 2014, 2016
STAT 718A Latent Variable Models	Spring 2011, 2013, Fall 2022
STAT 820 Advanced Statistical Inference-I	Spring 2022, Fall 2023
STAT 821 Advanced Statistical Inference-II	Fall 2015, 2021, Spring 2024