

Course Information

Time: MWF, 10:40 a.m. – 11:30 p.m. **Location:** 230 FLO (Griffin-Floyd Hall)

Instructor: Dr. Brett Presnell

Office: 220 FLO

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Office Hours: See instructor's web page.

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Course Content and Objectives

This course will cover the fundamental tools and concepts of smoothing methods in statistics. Topics will include kernel density estimation, kernel regression, local polynomial regression, smoothing splines, and regression splines. If time permits, we will also discuss wavelets and possibly other topics.

Grading

Grades will be based on homework assignments and presentations given in class.

Prerequisites

STA 6467 or permission of instructor.

References

You may find it useful to consult any of the following books. However, please do not request any of them from the library without consulting me first. There is a good chance that I already have the book checked out to use in preparing class notes.

Adrian W. Bowman and Adelchi Azzalini. *Applied Smoothing Techniques for Data Analysis: the Kernel Approach with S-Plus Illustrations*. Oxford University Press, Oxford, 1997.

Carl de Boor. *A Practical Guide to Splines*. Springer-Verlag, New York, 1978. I have UF Library copy.

Luc Devroye and Gábor Lugosi. *Combinatorial Methods in Density Estimation*. Springer-Verlag, New York, 2001. I have UF Library copy.

Paul Dierckx. *Curve and Surface Fitting with Splines*. Oxford University Press, Oxford, 1993. I have UF Library copy.

Randall L. Eubank. *Nonparametric Regression and Spline Smoothing*. Marcel Dekker, 1999.

- J. Fan and I. Gijbels. *Local Polynomial Modeling and Its Applications*. Chapman & Hall, London, 1996. I have John Saw Library copy.
- P. J. Green and B. W. Silverman. *Nonparametric Regression and Generalized Linear Models*. Chapman & Hall, London, 1994. I have John Saw Library copy.
- Wolfgang Härdle. *Applied Nonparametric Regression*. Cambridge University Press, 1992.
- Jeffrey D. Hart. *Nonparametric Smoothing and Lack-of-Fit Tests*. Springer-Verlag, New York, 1997.
- T. J. Hastie and R. J. Tibshirani. *Generalized Additive Models*. Chapman & Hall, London, 1990.
- Clive Loader. *Local Regression and Likelihood*. Springer-Verlag, New York, 1999. I have UF Library copy.
- E. A. Nadaraya. *Nonparametric Estimation of Probability Densities and Regression Curves*. Kluwer Academic Publishers, Dordrecht, The Netherlands, 1989. I have UF Library copy.
- R. Todd Ogden. *Essential Wavelets for Statistical Applications and Data Analysis*. Birkhäuser, Boston, 1997.
- David W. Scott. *Multivariate Density Estimation : Theory, Practice, and Visualization*. Wiley, New York, 1992.
- B. W. Silverman. *Density Estimation for Statistics and Data Analysis*. Chapman & Hall/CRC Press, 1986.
- Jeffrey S. Simonoff. *Smoothing Methods in Statistics*. Springer-Verlag, New York, 1996.
- Brani Vidakovic. *Statistical Modeling by Wavelets*. John Wiley & Sons, Inc., New York, 1999.
- Grace Wahba. *Spline Models for Observational Data*. Society for Industrial and Applied Mathematics, Philadelphia, 1990.
- M. P. Wand and M. C. Jones. *Kernel Smoothing*. Chapman & Hall, London, 1995. I have UF Library copy.