



UNIVERSITAS GADJAH MADA
Faculty of Mathematics and Natural Sciences
Department of Mathematics

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Master in Mathematics

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MODULE HANDBOOK

Module Name	<i>Semiparametric regression</i>
Module level, if applicable	<i>Master</i>
Code, if applicable	<i>MMM-5417</i>
Subtitle, if applicable	-
Courses, if applicable	<i>Semiparametric regression</i>
Semester(s) in which the module is taught	<i>4 (four)</i>
Person responsible for the module	Chair of Statistics Laboratory
Lecturer(s)	-
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>elective</i>
Teaching methods	<i>Lecture</i>
Workload (incl. contact hours, self-study hours)	2x50 minutes lecture, 6 hours individual study, 6 weeks per semester, include mid-term and final exam Total workload 126 hours a semester.
Credit points	3
Required and recommended prerequisites for joining the module	-

Module objectives/intended learning outcomes	After completing this course the students have ability to : CO 1. Understanding the differences between parametric, nonparametric, and semiparametric regression models. CO 2. Performing parameter estimation for parametric, nonparametric, and semiparametric regression models. CO 3. Selecting appropriate smoothing parameters. CO 4. Conducting simulations and real-world examples.
Content	Matrix Algebra, Random Vectors and Random Matrices Parametric Regression, including Simple Linear Regression, Multiple Regression: Hypothesis Testing and Confidence Intervals, General Linear Model, Parameter Estimation, Properties of Estimators, Best Linear Unbiased Estimator (BLUE), Estimator Variance, Histogram Kernel Density Estimation, Nonparametric Regression including Nadaraya-Watson Estimation, Properties of Nadaraya-Watson Estimator, Bandwidth Selection, Semiparametric Regression including Least Squares Estimation in Parametric Component, Properties of Estimator, Nonparametric Component Estimation, Smoothing Parameter Selection, Simulation and Real-World Examples.
Examination forms	Mid-term exam, Final exam
Study and examination requirements	To pass the course, students are expected to get a minimum grade of D. The final mark will be weighted as follows: i. Class activity (Quiz, HW, presentation, etc) 25% ii. Mid semester exam 30% iii. Final exam 35%
Media employed	Slides and LCD projectors, laptop, whiteboards , book
Reading list	1. Hardle, W., 1991, Smoothing Techniques with Implementation in S, New York, Springer-Verlag. 2. Rencher, A. C., 2000, Linear Model in Statistics, USA: John Wiley & Son Inc. 3. Hardle, W., Liang H., & Gao, J., 1999, Partially Linear Models, Springer Verlag Company.

CO-PLO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CO 1	√	√				
CO 2	√			√		
CO 3	√				√	

CO 4					√	
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