Department	Course Number	Title	Instructor	Grade	School	Texts	Subject Matter Covered
Department of Applied Probability and Statistics	ST3131	Regression Analysis	Thi Kim Cuc Pham	A+	NUS	Introduction to Linear Regression Analysis. Douglas C. Montgomery. 5th Ed.	1. Analysis of Variance (ANOVA) 2. Simple Linear Regression 3. Multiple Linear Regression 4. Variable Selection 5. Residuals, Influence and Outliers 6. Departures from Assumptions 7. Indicator Variables 8. Nonlinear Regression
Department of Applied Probability and Statistics	ST3233	Applied Time Series Analysis	Zehua Chen	A+	NUS	Time series analysis and its applications: with R examples. Shumway R H, Stoffer D S.	1. Mathematical foundations of Time Series Analysis 2. Descriptive Analysis (Plots, Decomposition, Correlation) 3. Models for Stationary Series 4. Non-Stationary Models 5. Forecasting 6. Uncertainty Quantification 7. Deep-Learning models
Department of Applied Probability and Statistics	ST3248	Statistical Learning	Chinghway Lim	A	NUS	An Introduction to Statistical Learning with Applications in R. James et al. 1st Ed.	1. Linear Regression 2. Logistics Regression, LDA, QDA, KNN 3. Cross-Validation, Bootstrap 4. Linear Model Selection and Regularization (Subset Selection, Shrinkage Methods, Dimension Reduction Methods) 5. Unsupervised Learning
Department of Applied Probability and Statistics	ST2131	Probability	Rongfeng Sun	A	NUS	A First Course in Probability by Sheldon Ross, 9th Ed.	1. Axioms of probability, sample space, events, independence, conditioning, Bayes' rule, combinatorial calculations, etc. 2. Discrete Random Variables (Bernoulli, Binomial, Geometric, and Poisson random variables, distribution function, expectation, joint distribution of multiple random variables, independence, conditioning) 3. Continuous Random Variables (Uniform, Exponential, Normal/Gaussian random variables, random vectors, multivariate normal distribution) 4. Law of large numbers, Central limit theorem, Poisson limit theorem.
Department of Statistics	MANA130023	Applied Multivariate Statistical Analysis	Jinjin Hu	A	School of Management, FDU	Applied multivariate statistical analysis. Johnson R A, Wichern D W.	1. Matrix Algebra and Random Vectors 2. Multivariate random sampling 3. Multivariate Normal Distribution 4. Statistical Inference of Mean Vector 5. Principal Component Analysis 6. Factor Analysis 7. Discriminant Analysis 8. Cluster Analysis
Software School	SOFT130079	Linear Algebra	Weidong Zhao	A	Software School, FDU	Linear Algebra. Tongji University Press. 6th Ed.	1. Determinant 2. Matrix, inverse matrix, block matrix, matrix operation, elementary transformation of matrix, rank of matrix 3. Linear combination of vectors, linear correlation and linear independence of vector groups, Schmidt method 4. Linear equations 5. Eigenvalues and eigenvectors of the matrix
Department of Mathematics	PHAR130049	Mathematical Statistics	Donghua Zhao	A	School of Mathematical Sciences, FDU	Probability theory and mathematical statistics Course. Shisong Mao, Yiming Cheng, Xiaolong Pu. 2nd Ed.	1. Random sampling and distribution 2. Point estimation and interval estimation 3. Hypothesis testing 4. Orthogonal Experiment Design and Analysis
Department of Mathematics	MATH120005	Advanced Mathematics I	Guoming Hang	A	School of Mathematical Sciences, FDU	Advanced Mathematics. Lu Jin, Yusun Tong et.al. 4th Ed.	1. Limit and continuity 2. Derivative operation, Differential operation, L'Hospital Law, Taylor formula 3. Calculus 4. Matrix and linear equations

Department of Mathematics	MATH120006	Advanced Mathematics II	Guoming Hang	A	School of Mathematical Sciences, FDU	Advanced Mathematics. Lu Jin, Yusun Tong et.al. 4th Ed.	1. Space analytical geometry 2. Multivariate calculus 3. Series, power series, Fourier series 4. Ordinary differential equations 5. probability
School of Computer Science	924.014.1	Data Mining	Chaofeng Sha	A	School of Computer Science, FDU	Mining of massive datasets. Jure Leskovec, Anand Rajaraman and Jeffrey D. Ullman. 2nd Ed	1. Association rule mining (Apriori, PCY algorithm) 2. Min-hash, LSH theory 3. Dimensionality reduction (SVD, PCA) 4. Recommendation system (content-based recommendation, collaborative filtering) 5. Link analysis (PageRank, Spam, HITS) 6. Graph mining algorithms (community detection, graph embedding/node embedding) 7. Classification algorithm (decision trees, Navie Bayes, SVM, ensemble methods) 8. Data streams (Morris algorithm, Misra-Gries algorithm, FM sketch, Count-min sketch)
School of Computer Science	DATA130020	Database and Implementation	Weiguo Zheng	A-	School of Data Science, FDU	Database Technology and Application -SQL Server 2008, Weiguo Liu, Xiaoyan Kui.	1. Basic principles of relational databases 2. The creation/modification/deletion of the databases 3. Data query, SQL implementation 4. Index introduction and operation 5. Program control, cursor management and application 6. Trigger operation, transaction processing, lock mechanism 7. Database system design
School of Computer Science	COMP110042	Python Programming	Xiangdong Zhang	A	School of Computer Science, FDU	Python programming foundation. Fuguo Dong. 2nd Ed.	1. Lists, Tuples, dictionaries, sets 2. Conditional expression, selection statement 3. Loop statements 4. Strings 5. Regular expressions 6. Function definition, Parameter types, return statements, variable scope 7. File operations 8. Exception handling
School of Pharmacy	PHAR130141	Chemical Analysis	Yunqiu Yu	A	School of Pharmacy, FDU	Analytical Chemistry. Yifeng Chai, Xin Di. 8th Ed.	1. Error data processing and analysis 2. Acid-base titration (8 class hours) 3. Coordination Titration 4. Redox Titration 5. Precipitation titration 6. Gravimetric Analysis
School of Pharmacy	PHAR130142	Instrumental Analysis	Yunqiu Yu	A	School of Pharmacy, FDU	Analytical Chemistry. Yifeng Chai, Xin Di. 8th Ed.	1. Potential method and dead-stop titration 2. Ultraviolet-visible spectrophotometry 3. Fluorescence analysis 4. Infrared absorption spectrometry 5. Atomic absorption spectrophotometry 6. NMR spectroscopy 7. Mass spectrometry 8. Planar chromatography 9. High performance liquid chromatography
Department of Physics	PHYS120003	General Physics	Weijuan Fu	A	School of Physics, FDU	College Physics Concise Guide, Lifen Liang, Ping Jiang.	1. Frame of reference, velocity, acceleration 2. Newton's three laws, momentum, angular momentum 3. Mechanical energy conservation law 4. Fluid mechanics 5. Electrostatic field 6. Magnetic field 7. Electromagnetic induction 8. Vibration and wave 9. Diffraction/interference/polarization of light