Class/Lecture	Day	Date	Topic	References
1	M	Jan. 3	Intro to course	
2	W	Jan. 5	Measure theoretic foundations of probability theory	Amemiya, Sec. 3.1; Rao, Sec. 2a, Appendix 2A Lecture 2
3	M	Jan. 10	Prob. density functions, the Radon-Nikodym theorem, convergence of sequences of random variables	Amemiya, Section 3.2; Serfling, Section 1.2.1-1.2.4; 1.3.1-1.3.5; Rao, pp. 92-94, Section 2c.2; Appendix 2B
4	W	Jan. 12	Relations among modes of convergence Stochastic order relations	Amemiya, Sec. 3.2 Serfling, Sec. 1.3.1-1.3.5 Rao, pp. 122-123; Sec. 2c.2
	M	M	MLK Day. No class	
5	W	Jan. 19	Characteristic functions and laws of large numbers	Amemiya, Sec. 3.3 Serfling, Sec/.1.1.7, 1.8 Rao, Sec. 2b.4; 2c.3; pp. 117-118; p. 124

6	M	Jan. 24	A law of large numbers for time series The accuracy of laws of large numbers	Bosq, Theorem 1.2 Serfling, p. 35, p. 75; *Ann. of Math. Stat.* (1970)
7	W	Jan. 26	The Lindeberg-Lévy central limit theorem and extensions	Amemiya, pp. 91-92 Rao, pp. 126-127 Serfling, p. 18, p.35
8	M	Jan. 31	Other central limit theorems The accuracy of central limit theorems	Amemiya, pp. 91-93 Bosq, Theorem 1.7 Rao, Sec. 2c.5 Serfling, Sec. 1.9.1, 1.9.2, 1.9.5
9	W	Feb. 2	Definition of extremum estimators; uniform convergence; measurability of extreme\um estimators	Amemiya, p. 106 Kolmogorov and Fomin, p. 285
10	M	Feb. 7	Consistency of extremum estimators	Amemiya, Sec. 4.1 Newey and McFadden: Sec. 2 intro; Sec. 2.1; Sec. 2.6 Notes on Canvas

11	W	Feb. 9	Midterm examination	
12	M	Feb. 14	Examples of consistency and inconsistency of extremum estimators Asymptotic normality of extremum estimators	Amemiya: Sec. 4.1.1-4.1.3, 4.2.2; Examples Neyman and Scott (1948)
13	W	Feb. 16	Proof of asymptotic normality theorem Uniform law of large numbers	Amemiya: Sec. 4.1.2, Theorem 4.2.1 Newey and McFadden: Sec. 2.3, Sec. 3
14	M	Feb. 21	Maximum likelihood estimation	Amemiya: Sec. 4.2 Newey and McFadden: Sec. 2.2.1, 2.4, 3.2, 4.2, 5.1 Rao: Sec. 1e.6
15	W	Feb. 23	Estimating the covariance matrix in maximum likelihood; Conditioning on covariates; Hypothesis tests based on maximum likelihood estimates;	Amemiya: Sec. 4.5.1 Newey and McFadden: Sec. 4.2, 9.1-9.3

			Tests of composite hypotheses based on MLE;	Amemiya: Sec. 1.4.1, 1.5.2, 4.5.1
16	M	Feb. 28	An example	Newey and McFadden, Sec. 9.1-9.3
17	W	Mar. 2	Power of tests	Amemiya: Sec. 4.5.1; Newey and McFadden, Sec. 9.2; DasGupta, Sec. 21.4
18	M	Mar. 7	Generalized method of moments	Newey and McFadden 2.2.3, 2.5, 3.3, 4.3, 6.1 ;
19	W	Mar. 9	Asymptotic normality when the objective function has only one derivative with respect to theta	Newey and McFadden, Sec. 7.1
	F	Mar. 18	Final examination	