

# Stat31120 Syllabus

## March

29 Lec1: Random Variables and Convergence

31 Lec2: Stochastic Process, BM

## April

5 Lec3: Ito and Stratonovich Integral

7 Lec4: Solvable SDE

12 Lec5: Strong and Weak Solution of SDE

14 Lec6: Euler method, Strong Convergence

19 Lec7: Weak Convergence and Numerical Stability

21 Lec8: Ito Taylor Expansion: Multiple Stochastic Integrals

26 Lec9: Ito Taylor Expansion: General Form

28 Mid Term

## May

3 Lec10: Strong Approximation of Stochastic Integrals

5 Lec11: Strong Schemes with higher order

10 Lec12: Mean Square Estimations of Stochastic Integrals

12 Lec13: General Strong Convergence Theorem, Stochastic RK Schemes

17 Lec14: Implicit Strong Schemes

19 Lec15: Weak Taylor Approximation

24 Lec16: Weak RK, Predictor-Correction Method

26 Lec17: Multilevel Monte Carlo path simulation

31 No Lecture.

(This is a proposed schedule.)