Special lecture on Dirichlet forms and related topics

Course Syllabus

Spring Term 2014 — SNU

Course Title	Special topics in analysis
Course number	3341.721A
Instructor	Gerald Trutnau
E–Mail	trutnau@snu.ac.kr
Course homepage	`http://www.math.snu.ac.kr/~trutnau/teachingDF-2014.html`
Prerequesites	Good knowledge in (Functional) Analysis and Measure Theory
Course Objective	We will study symmetric and non-symmetric Dirichlet forms and related topics, like stochastic calculus, recurrence and transience, conservativesness, or heat kernel estimates, as presented in the references and in the references of the references. We may also study some other topics that will be precised later in some update or during the lecture.
Evaluation	- Attendance: (will not be checked). However, students are supposed to know the material taught in class. Students must accomplish two take home exams. - Take Home Exam I (5-7th week, 40 % of final score); - Take Home Exam II (12-13th week, 40 % of final score); Other: (20 % of final score)

References

- Albeverio, S.; Kondratiev, Y.; Röckner, M.: Strong Feller properties for distorted Brownian motion and applications to finite particle systems with singular interactions, 15–35, Contemp. Math., 317, Amer. Math. Soc., Providence, RI, 2003.

- Bouleau, N., Hirsch, F.: Dirichlet forms and Analysis on Wiener space, Walter de Gruyter, Berlin, 1991.

- Carlen, E. A.; Kusuoka, S.; Stroock, D. W.: Upper bounds for symmetric Markov transition functions. Ann. Inst. H. Poincaré Probab. Statist. 23 (1987), no. 2, suppl., 245–287.

- Fukushima, M.,Oshima, Y., Takeda, M.: Dirichlet forms and Symmetric Markov processes. Berlin-New York: Walter de Gruyter 1994 (or new edition 2011).

- Ma, Z.M., Röckner, M.: Introduction to the Theory of (Non-Symmetric) Dirichlet Forms. Berlin: Springer 1992.

- Oshima, Y.: Semi-Dirichlet forms and Markov processes, Walter de Gruyter, Berlin, 2013.