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This volume is devoted to a thorough and accessible exposition on the functional analytic approach to the problem of construction of Markov processes with Ventcel' boundary conditions in probability theory. Analytically, a Markovian particle in a domain of Euclidean space is governed by an integro-differential operator, called a Waldenfels operator, in the interior of the domain, and it obeys a boundary condition, called the Ventcel' boundary condition, on the boundary of the domain. Probabilistically, a Markovian particle moves both by jumps and continuously in the state space and it obeys the Ventcel' boundary condition, which consists of six terms corresponding to the diffusion along the boundary, the absorption phenomenon, the reflection phenomenon, the sticking (or viscosity) phenomenon, the jump phenomenon on the boundary, and the inward jump phenomenon from the boundary. In particular, second-order elliptic differential operators are called diffusion operators and describe analytically strong Markov processes with continuous paths in the state space such as Brownian motion. We observe that second-order elliptic differential operators with smooth coefficients arise naturally in connection with the problem of construction of Markov processes in probability. Since second-order elliptic differential operators are pseudo-differential operators, we can make use of the theory of pseudo-differential operators as in the previous book: Semigroups, boundary value problems and Markov processes.