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In this lecture we explain the notion of stochastic backward differential equations and its relationship with classical (backward) parabolic differential equations of second order. The paper contains a mixture of stochastic processes, like Markov processes and martingale theory, and semi-linear partial differential equations of parabolic type. Some emphasis is put on the fact that the whole theory generalizes Feynman-Kac formulas. A new method of proof of the existence of solutions is given: a one-sided Lipschitz function, which generates our semi-linear backward stochastic differential equation is approximated by two-sided Lipschitz function. All the existence arguments are based on rather precise quantitative estimates. The uniqueness part of the solutions are known. Another novelty is the fact that in our framework the notion of viscosity solution can be introduced in a natural way. That solutions obtained by probabilistic methods are often viscosity solutions can be proved via a comparison theorem. Proofs of comparison theorems are based on the construction of certain  $L^2$ -martingales. (Received September 09, 2007)