Load and Resistance Factor Design (LRFD) method has been used in the United States for the design of steel structures since its use was allowed in 1986 by the American Institute of Steel Construction (AISC). This chapter outlines the general principles that apply to the design of single-storey and multi-storey steel building frames. The theory and criteria are explained as well as cross references to beam-column equations to AISC are given where applicable. Design concepts and structural schemes for moment resisting frames are explained in details. Design of independently braced frames, frames with leaner columns, second-order effects, and issues related to column effective length and moment amplification factors are treated as separate topics. Full design examples are given to illustrate the design principles explained in the text. Other design considerations related to the erection procedure and stability during construction are presented.