This work was devoted to the measurement of magnetooptical effects in ferromagnetic semiconductors. We analyzed in detail the measurement technique based on a photoelastic modulator and we constructed an experimental setup that enables to measure the spectra of magnetic circular dichroism (MCD), magnetic circular birefringence (MCB), magnetic linear dichroism (MLD), and magnetic linear birefringence (MLB). This setup was used for the measurement of magnetooptical spectra of several samples of ferromagnetic semiconductors (Ga,Mn)As and (Ga,Mn)(As,P).