Method for investigating azimuths and ellipticities of a polarization image of blood plasma films, in which a human blood plasma layer is irradiated with linearly polarized radiation having a polarization azimuth of 0° relative to an incidence plane, formed by passing a beam from a low-coherence semiconductor laser diode with a wavelength of 0.6328 μm through a linear polarizer, and a transmission plane of an analyzer is rotated at angles ranging from 0° to 180°. Polarization images of the blood plasma sample are projected by means of a micro-objective into a plane of a photosensitive area of a CCD camera, arrays of minimum and maximum intensity levels of the blood plasma image are measured for each individual pixel of the CCD camera along with corresponding rotation angles, from which maps of polarization azimuths and ellipticities of the blood plasma measured at the wavelength of 0.6328 μm are obtained, followed by computer-aided calculation of their 1st-4th orders statistical moments. The human blood plasma layer is additionally irradiated with linearly polarized radiation formed by passing a beam from a low-coherence semiconductor laser diode with a wavelength of 0.405 μm through a linear polarizer, the transmission plane of the analyzer is rotated at angles ranging from 0° to 180°, and polarization images of the blood plasma sample are projected by means of the micro-objective into the plane of the photosensitive area of the CCD camera. Arrays of minimum and maximum intensity levels of the blood plasma image are measured for each individual pixel of the CCD camera along with corresponding rotation angles, from which maps of polarization azimuths and ellipticities of the blood plasma measured at the wavelength of 0.405 μm are obtained, followed by computer-aided calculation of their 1st-4th order statistical moments, and a correlation area and 2nd and 4th orders correlation moments of the maps of polarization azimuths and ellipticities of the blood plasma measured at two wavelengths of 0.6328 μm and 0.405 μm are calculated by means of a computer, and based thereon, differentiation of nosologies at the two wavelengths is performed according to fuzzy logic rules using computer software.