To date, navigation and satellite positioning has mainly been associated with the American GPS and Russian GLONASS systems. However, in recent years, two new satellite systems have appeared: the European Galileo System and the Chinese BeiDou System. The Galileo System may be especially interesting, mainly because it shares two frequencies with GPS. Those frequencies are E1 shared with GPS and L1 and E5a which are shared with GPS L5 frequency. Because both systems share the same frequencies, it is possible that observations from these two systems can be jointly processed and it is possible to process observations from different frequencies. However, this is not a part of this project. The most desirable approach for combined GPS and Galileo is where only one pivot satellite is appointed for both systems and, based on this one satellite, the double differences of observations are made. However, in this approach, a few facts have to be taken into account. GPS and Galileo have different time and coordinate systems. Since these values are known, they can be taken into account. The difference between the receiver hardware delays affecting the signals from different systems and it must also be taken into account. This bias is termed "inter-system bias" (ISB). The ISB depends on the correlation inside the GNSS (Global Navigation Satellite System) receiver and on the type of receiver. The ISB can reach up to a few nanoseconds. Studies on ISB have shown that the value of ISB is typical for the pair of receivers and it is constant in time. There is also another approach for combined GPS and Galileo observations. In this approach, there is one pivot satellite for each navigational system and the GPS has a separate pivot satellite and Galileo has a separate pivot satellite. However, this approach is problematic nowadays because there are not many operating Galileo satellites available. The goal of this project is to estimate the ISB value using the first of the described approaches. Nowadays, when technologies connected to satellite positioning are rapidly developing, ensuring the highest positioning accuracy is especially important. This makes the estimation of ISB important and an pressing issue. Hence, the author of this proposal undertook an analysis this issue. In the project, it is expected to modify the mathematical model of the MAFA (Modified Ambiguity Function Approach) method and adopt it to the designation of the ISB. In MAFA method, there is no need to explicitly designate the phase observation ambiguities, although the final solution takes into account its integer character. This allows the number of parameters (ambiguities) to be reduced, thus improving the conditioning of the mathematical model. In this study, the issue of ISB and its influence on positioning will be analyzed. After a preliminary analysis, the author of the proposal will begin to develop a new mathematical model that includes estimation of ISB value using the MAFA method. In the next step of the study, real data tests will be held. Data will originate from field measurements made by the author along with data from permanent stations, such as International GNSS Service (IGS) stations. In the numerical test, various combinations of GNSS receivers will be tested, including both pairs of the same manufacturer receiver as well as a combination of two receivers from different manufacturers. To test the correctness of the newly-developed mathematical model, the obtained results will be compared with one of the best-known models of ISB estimation values. The final stage of research will involve drawing conclusions from the numerical tests.