

Chapter 5

Conclusion

At the end of this course, we believe that the results presented will contribute to the development of the study of fractional calculus, by opening new horizons to scientific research on this emerging theme.

After having presented the preliminary notions useful for the good understanding of the present work, we presented results of existence and uniqueness of certain differential problems of fractional orders relating to the Riemann-Liouville and Caputo derivative in spaces of Banach. First, we established global existence and uniqueness results of a neutral-type fractional differential problem using fixed point techniques.

The results presented in this course naturally offer many perspectives.

The first is the study of fractional differential equations whose order of derivation is between 1 and 2. The second possible perspective would be the study of impulsive equations of fractional orders with finite and infinite delay, as well as the stability of the solutions of these equations.

Finally, a perspective, which seems to be a logical continuation of this work, is the development of numerical models corresponding to the problems presented in this course.