Statement of Purpose

Dear Sir or Madam,

I would like to apply to the PhD program in Mathematics at Koç University for the following reasons.

The discipline of mathematics fascinates me for its variety of aspects and relevance in a plurality of fields. First of all   captivates me because of   which allow the development and study of   , while never loosing its precision. Moreover mathematics can provide   for getting in   , be it physics, biology, finances, psychology or philosophy. As I am curious about   , I am very keen to explore the relevance mathematics can have for them. When mathematics is applied to other fields, I am very interested in exploring   in order to   , which is only possible with strong theoretical foundations.

This diversity of interests is already reflected in the subjects of my bachelor theses: One of them is about an application of   on the phenomenon of   , and the other one about the   and some of its applications. In addition to having very different spheres of impact, these subjects also present a range of mathematical methods.

At the beginning of my master studies I was indecisive on the area I wanted to specialize in, so during the first year I deepened my knowledge in   ,because I thought that these   concepts are a good basis, no matter in what direction I would continue. I took the decision to choose   as my area of specialization while taking Dr.   course entitled '   ' in my second semester. The application of   to   was very new to me and captivated me immediately. First of all, by studying   , it becomes possible to   . Moreover joining these two disciplines makes it possible to use concepts and results from both of them in the proofs. Thus I was confronted with new surprising methods to analyze   .

I think that   unites the above mentioned diversity of mathematics on its own. On the one hand   , and on the other hand   . Moreover results of many other mathematical disciplines are used in   . It was in this course that I became aware of this variety of   and how fascinating well-known   can become when   are added to them.

After starting to work on my master thesis with Dr.   , I learned even more about fascinating aspects of   . Many methods like   ,   ,   and   as well as applications like   ,   and   were all new to me. Moreover, I realized the importance of   about   , but also   and   through some exemplary applications, that show that there are   .

The subject of my master thesis are   , many aspects of which can be studied through   . In the first

, thus affecting the   . The second p   is   . In particular,   I   am   examining the   . For both   of   these   models,   the   aim   is   to like the   ,   and the   , and to determine if and when they are   .

The   fact   that   these   generalizations   are   based   on - implies that   need to be used in the analysis of   . While and   are useful methods in the first case, in the second case the different of   provide useful approaches. The topic of my master thesis thus also allows the application of a variety of results from   along with various other domains of mathematics. I believe that Koç University would be the perfect place to pursue my studies in   since besides the mathematics department being very good, there also seem to be collaborations between different fields of mathematics and with other departments.

Moreover I am very excited to get the opportunity to teach at Koç University. During my   studies in   , I got the chance to be a teaching assistant for the introductory course in   . On the one hand this allowed me to recognize how rewarding it is to be able to share ones knowledge and to help students in grasping new concepts. I think that it is especially important at the beginning of the studies, while getting used to a new way of thinking, to encourage students to ask any questions they want and to try to understand their way of looking at things in order to be able to see where the difficulty lies for them. Moreover I think that it is very important   to   present   students   different   approaches   to and   , so that they can later see the connections between different areas of more easily.

On the other hand teaching also allowed me to realize how much my own under-standing was deepened by presenting the material and through the questions I was asked. The students often question things that seem obvious to us after having spent many years with the subject. Further, in the learning process students make connec-tions and use metaphors that might not always be right, but at the same time that may lead to interesting new ways of looking at concepts, or of how one should not look at them.

In my PhD thesis, I would like to continue a study on   and related fields. At Koç University I would very much like to work with Prof.   . There are also several other professors in the mathematics department whose research is of great interest to me, including Prof.   , and Prof.   , whose talk on   at   was really interesting to me. In conclusion, I would be very happy to be accepted for a PhD study at Koç University.

Yours sincerely,

April 20