Minor in Mathematics

Department of Mathematics & Statistics

King Fahd University of Petroleum & Minerals

1. Minor in Mathematics

The Department of Mathematics & Statistics offers a Minor in Mathematics for students majoring in other disciplines. A general aim of the Minor in Mathematics is to provide the students with a stronger background in mathematics, significant mathematical skills and a perspective on the discipline.

1.1. Eligibility and pre-requisites for enrolment in Minor in Mathematics

A student can apply for enrolment in Minor in Mathematics provided he has completed at least 32 credit hours, including Math101 and Math102, and his cumulative GPA is 2.0 or above.

1.2. Courses requirement for Minor in Mathematics

The requirements for the Minor in Mathematics consist of completing 12 credit hours from the following groups, with at least 6 credit hours taken from the "CORE GROUP".
- CORE GROUP
  Consisting of the courses Math201, Math202, Math232, Math280, Math301, Math311, Math321, Math345, Math411, Math430.
- ELECTIVE GROUP
  Consisting of all Math elective courses from the areas of Applied Mathematics & Numerical Analysis, Pure Mathematics, and Statistics.

The choice of courses is to be made in accordance with the following.
- The courses for the Minor in Mathematics should be in addition to the courses required for the student's Major degree program. So a course cannot be double counted for the student's Major degree as well as for Minor in Mathematics.
- Math321 cannot be used for Minor in Mathematics if the student's Major degree plan includes CISE301.
- Math202 cannot be used for Minor in Mathematics if the student's Major degree plan includes Math260.

1.3. GPA requirement for Minor in Mathematics

A student qualifies for Minor in Mathematics provided his minor GPA is not less than 2.00, where the minor GPA means the cumulative GPA of the courses taken for Minor in Mathematics.

The details about the courses and the qualification for Minor will appear on the student's transcript but not on the degree.

2. Benefits of the Math Minor to KFUPM and Students

There are various reasons why a Minor in Mathematics would be beneficial to KFUPM, in general, and to the undergraduate engineering students of KFUPM, in particular. One of the most crucial skills one acquires in advanced mathematics courses is logical thinking. Being able to correctly arrive at all possible logical conclusions given a range of assumptions does not come naturally to everyone, and it is an important skill to develop. This kind of thinking is explicitly tested by standardized exams for higher study, such as the GRE, MCAT, LSAT, and GMAT. Students' performance on such exams greatly influences the overall chances of their admission to top graduate schools in the world.

A large number of KFUPM engineering graduates pursue a career in industry than pursuing graduate studies. Apart from the logical thinking mentioned above, the ability to generalize and deal with abstraction is highly valued in industry and is useful in reaching the best solutions to real life engineering problems. Being able to recognize that a solution to one problem applies to a different problem, or to expand a solution to cover a wider range of problems is the cornerstone of ingenuity and efficiency. These skills are not acquired in the typical MATH 101-102-201-202 course sequence. They are learned and developed in higher mathematics courses which are part of Minor Program.

Some significant advantages are summarized in the bulleted list below.
- ❖ It provides an opportunity to those non-Math students of KFUPM who
  - ▪ want to improve their mathematical background/level without over-committing themselves.
  - ▪ are interested in developing expertise in core subjects of undergraduate Mathematics.
- ❖ Because of the significance of Mathematics in every engineering major,
  - ▪ enhancing mathematical skills with a Math minor will result in better understanding of students in their respective major's courses
  - ▪ extended mathematical training through suitably chosen courses in Math minor will ultimately lead to improved technical skills in the students' own subject
- ❖ For students wishing to pursue graduate studies in their field:
  - ▪ At the level of admission to graduate program, having a Math minor will distinguish them in a positive way from other applicants
  - ▪ A minor in Mathematics will assist them in pursuing graduate studies more successfully
- ❖ On the job front:
  - ▪ Having a Math minor will distinguish a student in a positive way from others with the same major because the graduates with better mathematical expertise are preferred by employers.
  - ▪ Increased analytical and logical skills will be useful in tackling the tasks on the job.

- Job market is getting tougher in the kingdom. A Math minor on the resumé will give the graduate a competitive edge in job search as most employers will recognize it as an additional qualification.

To sum up, a Minor in Mathematics will be an attractive addition to the resumé of KFUPM graduates. It would develop enhanced analytical problem-solving skills as well as a logical and analytical perspective that is valuable in engineering, science, information technology, economics, finance, management and business. Within any of these other disciplines, the student who acquires these additional skills and perspective would stand out from his peers. It would notify both employers and institutes of higher education that the applicant is capable of abstract thinking, experienced in logical reasoning, and is comfortable with the foundations of engineering and sciences.