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| Code of course: BMI-LOTD17-103E BMA-LOTD17-103 |
| Title of course: Foundations of Mathematics |
| Title of course in English: Foundations of Mathematics |
| Lecturer: Alexa Gopaulsingh |
| **General aim of the course:**  To demonstrate the set theoretic build-up of the number systems.  **Content of the course:**  Axioms of set theory; Russell's paradox; Relation, functions, equivalence classes and cartesian products; von Neumann construction of natural numbers, Properties of natural numbers, Peano axioms; Review of groups and group homomorphisms; Building the integers from the natural numbers; Building the Rationals from the Integers, Building the Reals from the Rationals using Dedekind cuts, Properties of Real numbers, Cardinality to measure size of sets, Properties of cardinality, Cantor–Schröder–Bernstein theorem.  Lastly if time permits, a discussion on generalising size from finite collections to infinite collections using cardinality: What principle(s) about size do we give up when generalising cardinality from finite sets to infinite sets?  **Grading criteria, specific requirements:**  The grade will be based on weekly homeworks and a final exam.  **Required reading:**  A Book of Set Theory by Charles C. Pinter.  **Suggested further reading:**  Introduction to Metamathematics by Stephen Cole Kleene. |