

## Content

| Course Code | Course Name                 | Semester | Theory | Practice | Lab | Credit | ECTS |
|-------------|-----------------------------|----------|--------|----------|-----|--------|------|
| MAT115      | Fundamentals of Mathematics | 1        | 3      | 2        | 0   | 5      | 8    |

|                        |  |
|------------------------|--|
| Prerequisites          |  |
| Admission Requirements |  |

|                         |   |
|-------------------------|---|
| Language of Instruction | French  |
| Course Type             | Compulsory  |
| Course Level            | Bachelor Degree   |
| Objective               | To introduce the subjects and technics of pure mathematics  |
| Content                 | Logic, Proof methods, Notion of set, Family of sets, Product of sets, Relations, Functions, One to one, surjective functions, composition of functions, equivalence relation, equivalence classes, quotient sets, Order relations |
| References              | Deschamps et Warusfel , Mathématiques 1ère année, Cours et exercices.<br>Gary Chartrand, Albert D. Polimeni, Ping Zhang, Mathematical Proofs: A Transition to Advanced Mathematics  |

## Theory Topics

| Week | Weekly Contents       |
|------|-----------------------|
| 1    | Set theory            |
| 2    | Introduction to logic |
| 3    | Introduction to logic |
| 4    | Proof methods         |
| 5    | Proof methods         |
| 6    | Proof methods         |
| 7    | Relations             |
| 8    | Mid-term examination  |
| 9    | Order relations       |
| 10   | Modular arithmetic    |
| 11   | Functions             |
| 12   | Functions             |
| 13   | Cardinalities of sets |
| 14   | Cardinalities of sets |