  **Part I : Modeling, computers and error analysis**

* Numerical errors (round-off errors, truncation errors, significant digits, accuracy and precision)
* Error definitions (absolute and relative errors, true and estimated)
* The Taylor series

 **Part II : Roots of equations**

* Bisection method (definition, application, error control, order of convergence and convergence criteria)
* False position method (definition, application, error control, order of convergence and convergence criteria)
* Fix point method (definition, application, error control, order of convergence and convergence criteria)
* Newton-Raphson method (definition, application, error control, order of convergence and convergence criteria)
* Secant method (definition, application, error control, order of convergence and convergence criteria)
* Backward and forward errors (definition, being able to explain on a graph these concepts, problems with multiple roots)
* Multiple roots

 **Part III : Linear algebraic equations**

* Naive Gauss algorithm
* Gauss algorithm with partial pivoting
* A=LU decomposition (The matrix inverse as an application example)
* Matrix condition number and ill-conditioned problems