Mathematics Courses for Engineers
Contents and Credits

Lineare Algebra für Ingenieure.
Lectures 30 h, Seminar 30 h, Credit 6 ECTS Points.
Gauss Algorithm, Matrices and Lineare Equations; Linear Differential Equations; Vectors and Linear Maps, Dimension, Matrix Algebra, Vector Geometry, Determinants, Eigenvalues; Linear Differential Equations of \( n \)-th Order.

Analysis I für Ingenieure.
Lectures 60 h, Seminar 60 h, Credit 8 ECTS Points.
Sets and Maps; Induction, Real Numbers, Complex Numbers, Sequences and Convergence; Limits and Continuity of Functions; Differentiation, Extremal Values, Meanvalue Theorem and Consequences; Higher Derivatives, Taylor Approximation; Elementary Functions by ODEs, Applications of Differentiation; Definite and Indefinite Integral, Integration of Rational and Complex Functions, Improper Integrals; Fourier Approximation; Infinite Series, Power Series, Fourier Series.

Analysis II für Ingenieure.
Lectures 60 h, Seminar 60 h, Credit 8 ECTS Points.

Integraltransformationen und partielle Differentialgleichungen für Ingenieure.
Lectures 30 h, Seminar 30 h, Credit 6 ECTS Points.

Differentialgleichungen für Ingenieure.
Lectures 30 h, Seminar 30 h, Credit 6 ECTS Points.
Linear ODE-Systems, Stability; Linear Partial Differential Equations, Separation, Planar-Wave-Solutions; Bessel’s Equation; Boundary-Eigenvalue-Problems; Laplace Transform.

Analysis III für Ingenieure.
Lectures 30 h, Seminar 30 h, Credit 6 ECTS Points.

Numerik für Ingenieure
30 h Lecture, alternatively with 30 h Seminar or 30 h Project, Credit 6 ECTS Points, or with 60 h Project, Credit 8 ECTS Points.
The Projects include Modelling.