

Course description for International Master's program „Mathematical Modeling, Computation and Optimization“

Course Name	Numerical Linear Algebra
Contents and Objectives	<p><u>Contents:</u></p> <ul style="list-style-type: none"> • eigenvalue problems; power method, Raleigh quotient iteration; QR iteration; • approximation by subspace projection • Krylov subspace methods for linear systems of equations, preconditioning. • Krylov subspace methods for matrix functions <p><u>Objectives:</u> Introduction to basic computational problems in linear algebra; special emphasis is place on iterative methods for large sparse or structured problems. Computer labs provide opportunity to implement the algorithms treated in class.</p>
Teaching	<p>This course consists of lectures and exercise sessions.</p> <ul style="list-style-type: none"> • Lectures: Numerical Linear Algebra (4h/week) • Exercises: Numerical Linear Algebra (2h/week)
Prerequisites	Basic concepts of linear algebra, an introductory course in numerical analysis; familiarity with MATLAB is helpful.
Examination	Oral exam (30 minutes)
Credits	8 ECTS points
Frequency	This course is given at least every other year.
Workload	The estimated total working time for this course is 270 hours.
Duration	This course is given during one semester.