

COURSE DETAIL

NUMERICAL CALCULUS AND TEACHING SOFTWARE

Country

Italy

Host Institution

University of Bologna

Program(s)

University of Bologna

UCEAP Course Level

Upper Division

UCEAP Subject Area(s)

Mathematics

UCEAP Course Number

179

UCEAP Course Suffix**UCEAP Official Title**

NUMERICAL CALCULUS AND TEACHING SOFTWARE

UCEAP Transcript Title

NUM CALC & SOFTWARE

UCEAP Quarter Units

6.00

UCEAP Semester Units

4.00

Course Description

This is a graduate level course that is part of the Laurea Magistrale program in Mathematics. Enrollment is by consent of the instructor. The course is intended for students who have a strong background in math, especially calculus. The course focuses on the fundamental aspects of scientific calculus. Emphasis is placed on numerical solutions to problems of scientific calculus. A section of the course is devoted to teaching scientific calculus as described by the Italian Educational Mathematics Curriculum in Secondary Schools. This section emphasizes how to face and solve mathematical problems within a uniform, integrated computer algebra environment. Students are also required to prepare lesson plans and exercises. A special section of the course is devoted to the presentation of numerical methods for solving, via computer, certain mathematical problems, and the comparison with corresponding computer algebra methods, wherever appropriate. The course covers the use of computer tools in Math courses in the Secondary School system in Italy. Required readings are assigned from the following sources, available in the Departmental library: NUMERICAL COMPUTING WITH IEEE FLOATING POINT ARITHMETIC by M. Overton, ACCURACY AND STABILITY OF NUMERICAL ALGORITHMS by N. Higham, NUMERICAL ANALYSIS: MATHEMATICS OF SCIENTIFIC COMPUTING by D. Kincaid, E. W. Cheney, NUMERICAL LINEAR ALGEBRA, by D. Bau, N. Trefethen, AFTERNOTES ON NUMERICAL ANALYSIS by G. W. Stewart. Assessment is based on a laboratory test and a short written report and discussion of course materials.

Language(s) of Instruction

Italian

Host Institution Course Number

34739

Host Institution Course Title

NUMERICAL CALCULUS AND TEACHING SOFTWARE

Host Institution Campus

SCIENZE

Host Institution Faculty
Host Institution Degree
Host Institution Department Matematica

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