

Differential Equations 1 - Second Part

17th January - 19th March 2011

– **Lecturer:**

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– **Classes:** Room 2AB/40:

Monday 14.30-16.15

Tuesday 14.30-16.15

Wednesday 14.30-16.15

– **Office hours:** Wednesday 10.30–12.30 (by e-mail appointment)

– **Structure of the course:** Theory and exercises (homework). Partial exams every two weeks. Two partial exams for this second part of the course.

– **Grading and oral exam.** Based on the partial exams (2+2), the professors Lanza and Monti will propose a final grade. Students may accept this grade or may ask to take an oral exam.

– **Bibliography.**

- 1) The lecture notes of the course, as well as the proposed exercises, will be published on line.
- 2) L. C. Evans, Partial Differential Equations, Part 2.3, AMS 1998. This book is recommended.
- 3) E. DiBenedetto, Partial Differential Equations, Chapter V, Birkhäuser 1995

– **Program.** Heat Equation, Cauchy Problem, fundamental solution, representation formula, uniqueness and nonuniqueness, mean value formula, parabolic maximum principle, nonhomogeneous case, further regularity, uniqueness with exponential growth, parabolic Harnack inequality. Time permitting: maximum principle for elliptic-parabolic operators, Hopf lemma for elliptic operators.