### Ph.D course in Mathematical Analysis, Modelling, and Applications

**Head of the Ph.D course:** Prof. Massimiliano Berti  
**Web site:** [Mathematical Analysis, Modelling, and Applications](#)

**Research lines:**
- Conservation Laws
- Transport Problems
- Geometric PDEs
- Numerical Analysis of PDEs
- Nonlinear Analysis
- Dynamical Systems
- Hamiltonian PDEs
- Calculus of Variations
- Gamma-Convergence and Multiscale Analysis
- Rate independent evolution problems
- Geometric Control Theory
- Sub-Riemannian Geometry
- Inelastic behavior of solids: plasticity, damage, fracture
- Mechanobiology of the cell and cell motility
- Mechanics of soft and active materials
- Reduced basis methods
- Boundary integral methods and isogeometric analysis
- Fluid-structure interaction problems
- Computational Fluid and Solid Mechanics
- Uncertainty quantification
- Shape optimization
- Flow control
- Machine Learning

**Fellowships available:** 8  
**Admission:** Academic and scientific qualifications + written exam + oral exam  
**Beginning of the Courses:** 3 October, 2022

<table>
<thead>
<tr>
<th>Evaluation of academic and scientific qualifications:</th>
<th>10 points</th>
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<tbody>
<tr>
<td>Access to Written Exam:</td>
<td>minimum mark of 7/10 on academic and scientific qualifications</td>
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<td>Evaluation of Written Exam:</td>
<td>40 points</td>
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<td>Access to Oral Exam:</td>
<td>minimum mark of 28/40 in the written exam evaluation</td>
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<td>Evaluation of Oral Exam:</td>
<td>50 points</td>
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<td>Total Evaluation:</td>
<td>100 points</td>
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<td>Eligibility:</td>
<td>70 points</td>
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<th>First Session</th>
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<tr>
<td>Deadline for online submission of applications: 10 February, 2022</td>
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<td>Written Exam:</td>
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<td>Oral Exam:</td>
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| Second Session (only if there should still be places available after the first one) |
| Deadline for online submission of applications: 23 August, 2022 |
| Written Exam: | 7 September, 2022 |
| Oral Exam: | 8 September, 2022 |

Admission to the written exam and results of all evaluations will be notified by email.