

## International Doctorate in Civil and Environmental Engineering

DOCTORAL COURSE – A.Y. 2021/22

### Topological continuum mechanics

Teacher: Prof. Dr. Paolo Maria MARIANO

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Calendar	
Thursday, 17-02-2022, h. 17.00-19.00 – on line	Thursday, 24-02-2022, h. 17.00-19.00 – on line
Thursday, 03-03-2022, h. 17.00-19.00 – on line	Thursday, 10-03-2022, h. 17.00-19.00 – on line
Thursday, 17-03-2022, h. 17.00-19.00 – on line	Thursday, 24-03-2022, h. 17.00-19.00 – on line
Thursday, 31-03-2022, h. 17.00-19.00 – on line	Thursday, 07-04-2022, h. 17.00-19.00 – on line
Thursday, 05-05-2022, h. 17.00-19.00 – on line	Thursday, 12-05-2022, h. 17.00-19.00 – on line
Total	hours 20 – 10 credits

Program
<p><b>Syllabus</b></p> <ol style="list-style-type: none"><li>1. Review of some notions on tensors</li><li>2. Tensor fields and differential forms</li><li>3. Bodies as differentiable manifolds</li><li>4. Topological classification of defects in solids and related mechanics</li><li>5. Topological aspects of fluid flows and related mechanics</li></ol> <p><b>Aim and scope:</b> The course introduces to models and analyses of the emergence of coherent structures in solids (evolving “defects”) and fluids (vortex structures and their like). Prerequisites are essentially a good course on continuum mechanics and a reasonable knowledge of differential calculus; further necessary formal notions will be summarized when necessary.</p> <p><b>Important:</b> The course will be delivered on-line. So, in order to receive the pertinent link, it is strictly necessary to communicate to the course secretariat (<a href="mailto:dott-dicea@unifi.it">dott-dicea@unifi.it</a>) one's willingness to participate.</p>