

# OFFERTA DIDATTICA

## XXXV ciclo - 2019/2020



Corso/docente	Breve descrizione	Ore / CFU	Lingua	Date	Docente
<p><b>Introduction to stochastic and mathematical modelling of discrete systems</b></p> <p>Possibili interessati: Ingegneri meccanici, civili, chimici, dei materiali...</p>	<p><b>Argomenti</b></p> <p>Teoria (10-12 ore)</p> <ul style="list-style-type: none"> <li>· Introduction to probability theory and Markov Chains</li> <li>· Continuous time Markov Chains</li> <li>· Introduction to Game theory</li> <li>· Introduction to Blockchain systems</li> </ul>	10 ore / 2 CFU	IT/EN (su richiesta)	14 - 28 Febbraio 2020	<p>Prof. Vittorio Astarita</p> <p><a href="mailto:vittorio.astarita@unical.it">vittorio.astarita@unical.it</a></p>
<p><b>Verification and Validation procedure for CFD simulations</b></p> <p>Possibili interessati: Ingegneri meccanici, civili, chimici, dei materiali...</p>	<p><b>Argomenti</b></p> <p>Teoria ed applicazioni</p> <ul style="list-style-type: none"> <li>· An introduction to 3D numerical modelling (3 ore)</li> <li>· Errors and Uncertainties in numerical simulations (2 ore)</li> <li>· Validation (3 ore)</li> <li>· Examples and applications (2 ore)</li> </ul>	10 ore / 2 CFU	IT/EN (su richiesta)	10 – 26 Aprile 2020	<p>Ing. Teresa Castiglione</p> <p><a href="mailto:teresa.castiglione@unical.it">teresa.castiglione@unical.it</a></p>

<p><b>Tools for the scientific calculation, programming and dynamic simulation. Application in the renewable energy field</b></p> <p>Possibili interessati: Energy, mechanical, electrical, electronic, management, environmental, civil, building-architecture engineers</p>	<p><b>MATLAB for the scientific calculation</b></p> <ul style="list-style-type: none"> <li>• Matrix and symbolic calculation (4 hours)</li> <li>• Processing, interpolation and graphical representation of data (3 hours)</li> <li>• Programming and case study (3 hours)</li> </ul> <hr/> <p><b>TRNSYS for the dynamic simulation of renewable systems</b></p> <ul style="list-style-type: none"> <li>• Photovoltaic generators, Wind generators, and electric storage batteries (3 hours)</li> <li>• Case studies (2 hours)</li> </ul>	<p>10 ore / 2 CFU</p> <hr/> <p>5 Ore/ 1CFU</p>	<p>IT/EN (su richiesta)</p>	<p>27 Aprile – 14 Maggio, 2020</p>	<p>Ing. PhD Domenico Mazzeo <a href="mailto:domenico.mazzeo@unical.it">domenico.mazzeo@unical.it</a></p>
<p><b>Inglese Academic skills</b></p>	<p>Programma da CLA</p>	<p>60 ore lezione + 40 ore studio individuale 6 CFU</p>	<p>EN</p>	<p>In attesa di calendario da CLA</p>	<p>Centro Linguistico di Ateneo</p>

<p><b>Energy performances and design of sustainable buildings</b></p> <p><u>Possibili interessati:</u> Ingegneri meccanici, civili ed energetici</p>	<p><b>Argomenti</b> Teoria ed applicazioni Main features of high efficient buildings: the nZEB target (3 ore); Simplified approaches: the quasi-steady model for heating and cooling requirements (2 ore); The dynamic model for building energy performances: the standard EN ISO 52016-1 (2 ore) The primary energy needs: high efficient plants and integration of renewable sources in buildings (3 ore) Examples and applications: the design of nZEB in transient regime by TRNSYS and Termolog (5 ore)</p>	<p>15 ore / 3 CFU</p>	<p>IT/EN (su richiesta)</p>	<p>27 Febbraio – 11 Marzo 2020</p>	<p>Prof. Roberto Bruno Ph.D. <a href="mailto:roberto.bruno@unica.it">roberto.bruno@unica.it</a></p>
<p><b>Objectives and methods for systematic literature review</b></p> <p><u>Possibili interessati:</u> Tutte le specializzazioni di Ingegneria</p>	<p><b>Argomenti</b> Theory (5 hours):</p> <ul style="list-style-type: none"> <li>• Motivation and objectives of a literature review</li> <li>• Methodology</li> <li>• Literature search, Exclusion criteria</li> <li>• Analysis of bibliographic metadata</li> <li>• Analysis of documents</li> </ul> <p>Applications (5 hours):</p> <ol style="list-style-type: none"> <li>1) Papers collection and screening</li> <li>2) Database creation</li> <li>3) Definition of a review structure</li> <li>4) Elaboration and data presentation</li> </ol>	<p>10 ore / 2 CFU</p>	<p>IT/EN (su richiesta)</p>	<p>15 Maggio – 5 Giugno 2020</p>	<p>Prof. Marilena De Simone <a href="mailto:marilena.desimone@unica.it">marilena.desimone@unica.it</a></p>

<p><b>GPU-accelerated scientific computing with application to noise and vibration problems</b></p> <p><u>Possibili interessati:</u> Ingegneri meccanici, civili, chimici, dei materiali</p>	<p>Teoria ed applicazioni</p> <ul style="list-style-type: none"> <li>• Introduction to heterogenous parallel computing (2 ore)</li> <li>• Cuda from matlab (2 ore)</li> <li>• Cuda Parallelism model: streams, kernels, grids, blocks and threads (1 ore)</li> <li>• Memory and Data locality (1 ore)</li> <li>• Application examples in the field of noise and vibrations (4 ore)</li> </ul> <p><u>Possibili interessati:</u> Ingegneri meccanici, civili, chimici, dei materiali...</p>	<p>10 ore / 1 CFU</p>	<p>IT/EN (su richiesta)</p>	<p>3 – 14 Febbraio 2020</p>	<p>Ing. Francesco Cosco <a href="mailto:francesco.cosco@unical.it">francesco.cosco@unical.it</a></p>
<p><b>Città sostenibili: rinnovati paradigmi e strumenti in evoluzione</b></p> <p><u>Possibili interessati:</u> Ingegneri civili ed energetici</p>	<p>Teoria (10 ore)</p> <ul style="list-style-type: none"> <li>• Sviluppo sostenibile e <i>Smart City</i></li> <li>• Certificazione di sostenibilità</li> </ul>	<p>10 ore / 2 CFU</p>	<p>IT</p>	<p>26 Marzo – 9 Aprile 2020</p>	<p>Prof.ssa Annunziata Palermo <a href="mailto:annunziata.palermo@unical.it">annunziata.palermo@unical.it</a></p> <p>-</p> <p>Prof.ssa Maria Francesca Viapiana <a href="mailto:mf.viapiana@unical.it">mf.viapiana@unical.it</a></p>

# CORSI ON-LINE (Inpath-Tes PhD on Innovation Pathways for TES)

Titolo	Breve descrizione	Ore / CFU	Lingua	Date / Periodo	Docente
<p><b>Research and PhD</b></p>	<ul style="list-style-type: none"> <li>- Types of CV and supporting statements</li> <li>- The research process and the research method</li> <li>- Error analysis of measurements and in simulations               <ul style="list-style-type: none"> <li>- Management of research data</li> </ul> </li> <li>- Definition of RRI; RRI plan; Key elements: engagement; gender equality; science education; open access; ethics; governance; sustainability; social justice/inclusion</li> <li>- Intellectual Property and Intellectual Property Rights</li> </ul>	6 ECTS	EN	Flessibile (on-line)	<p><a href="http://www.inpathtes.eu/courses/1">http://www.inpathtes.eu/courses/1</a>            Per informazioni contattare: Prof. Marilena De Simone (corso on-line)</p>
<p><b>Intellectual property and patenting ideas</b></p>	<p>Intellectual Property and Intellectual Property Rights            Dissemination, exploitation and communication plan</p> <p>Basics of patents and classification systems</p> <p>Applying for a patent and case studies</p>	4 ECTS	EN	Flessibile (on-line)	<p><a href="http://www.inpathtes.eu/courses/6">http://www.inpathtes.eu/courses/6</a>            Per informazioni contattare: Prof. Marilena De Simone (corso on-line)</p>

<p><b>Idea to product development</b></p>	<p>Idea generation methods  Idea screening  Idea development and testing  Technical implementation  Business analysis tools</p>	<p>5 ECTS</p>	<p>EN</p>	<p>Flessibile (on-line)</p>	<p><a href="http://www.inpathtes.eu/courses/7">http://www.inpathtes.eu/courses/7</a>  Per informazioni contattare: Prof. Marilena De Simone (corso on-line)</p>
<p><b>Introduction to TES</b></p>	<p>Renewable energy policies  Types and role of energy storage and thermal energy storage  Sorption and chemical heat storage</p>	<p>3 ECTS</p>	<p>EN</p>	<p>Flessibile (on-line)</p>	<p><a href="http://www.inpathtes.eu/courses/2">http://www.inpathtes.eu/courses/2</a>  Per informazioni contattare: Prof. Marilena De Simone (corso on-line)</p>

<p><b>Thermal energy storage materials</b></p>	<p>Fundamentals of materials science and engineering</p> <p>Corrosion issues related to the use of TES materials</p> <p>Calculation of thermal properties of composite materials and case studies</p> <p>Introduction to micro &amp; nano-scale modelling and kinetic theory</p>	<p>4 ECTS</p>	<p>EN</p>	<p>Flessibile (on-line)</p>	<p><a href="http://www.inpathtes.eu/courses/3">http://www.inpathtes.eu/courses/3</a></p> <p>Per informazioni contattare: Prof. Marilena De Simone (corso on-line)</p>
<p><b>Testing and characterisation of TES materials</b></p>	<p>Approach and Planning for Testing Properties</p> <p>Thermophysical properties: DSC, TGA, T-history and other home-made techniques</p> <p>Technologies for measuring thermal diffusivity, thermal conductivity, and thermal expansion</p> <p>Process-related properties characterisation: Physical properties</p> <p>Process-related properties characterisation: Chemical properties</p>	<p>5 ECTS</p>	<p>EN</p>	<p>Flessibile (on-line)</p>	<p><a href="http://www.inpathtes.eu/courses/4">http://www.inpathtes.eu/courses/4</a></p> <p>Per informazioni contattare: Prof. Marilena De Simone (corso on-line)</p>

<p><b>Heat and mass transfer and sizing of energy storage devices</b></p>	<p>Heat transfer fundamentals  Theoretical and numerical analysis of multi-dimensional heat transfer</p> <p>Mass transfer fundamentals</p> <p>Advanced mass transfer</p> <p>Heat transfer with phase change: analytical and numerical modelling</p> <p>Modelling of thermochemical storage</p> <p>Design, modelling and optimization of thermal components</p> <p>Design and optimization of TES components and systems</p>	<p>8 ECTS</p>	<p>EN</p>	<p>Flessibile (on-line)</p>	<p><a href="http://www.inpathtes.eu/courses/5">http://www.inpathtes.eu/courses/5</a></p> <p>Per informazioni contattare: Prof. Marilena De Simone (corso on-line)</p>
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