



Programme of Module "Advanced Geometry 2"

- Code: DT0119
- Type of course unit: Compulsory (Master Degree in Mathematics curriculum Generale)
- Level of course unit: Postgraduate Degrees
- Semester: 2

Number of ects credits: (Master Degree in Mathematics) 6 (workload 150 hours)

Teachers: Lucio Bedulli

<b>1</b>	<b>Course objectives</b>	-The goal is to acquire a good knowledge of basic concepts about topological manifolds, CW-complexes and simplicial complexes (Fedeli). - The student should learn the basic notions of the theory of Riemann surfaces necessary to establish some theorem and to solve problems about this subject (Nelli)
<b>2</b>	<b>Course content and learning outcomes (dublin descriptors)</b>	<p>Topics of the module include:</p> <ul style="list-style-type: none"> <li>• Smooth manifolds with boundary and Stokes' theorem</li> <li>• de Rham Theorem</li> <li>• Hodge theory</li> <li>• Vector bundles</li> <li>• Introduction to Riemannian Geometry</li> </ul> <p>On successful completion of this module, the student should :</p> <ul style="list-style-type: none"> <li>• The student should learn the basic notions of Riemann surfaces theory.</li> </ul> <p>The student should have a basic knowledge on topological manifolds and complexes.</p> <ul style="list-style-type: none"> <li>• The student should be able to solve small problems about the theory Riemann surfaces, using notions and theorems of the course.</li> </ul> <p>The student should be able to use the acquired tools.</p> <ul style="list-style-type: none"> <li>• The student should understand how to apply the acquired notions of Riemann Surfaces theory to the proposed problems.</li> </ul> <p>The student should be able to understand and solve problems.</p> <ul style="list-style-type: none"> <li>• The student should be able to explain the statements and the proofs of the theorems about Riemann surfaces.</li> </ul> <p>The student should be able to present in a clear and rigorous way the acquired knowledge.</p> <ul style="list-style-type: none"> <li>• The student should have acquired the ability of reading and understanding more advanced result about Riemann surfaces.</li> </ul> <p>The student should develop those learning skills necessary to deal with the subsequent studies.</p>
<b>3</b>	<b>Course prerequisites</b>	An introductory course on algebraic topology (fundamental group and singular homology) Basics on smooth manifolds (in particular differential forms and de Rham cohomology).
<b>4</b>	<b>Teaching methods and language</b>	Lectures <b>Language:</b> English
<b>5</b>	<b>Assessment methods</b>	Oral exam