



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

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