Course Title: Real and Functional Analysis	**Number of Units:** 1
SSD : MAT/05	**CFU: 9**
Course aims: The course aims to provide basic knowledge of Functional Analysis required to formulate mathematical models of engineering and scientific problems.	
Course Description: Topological spaces. Metric spaces. Completeness**.** Compactness. Complete matric spaces: Banach spaces, Hilbert spaces. Orthonormal basis and Fouries series in Hilbert spaces. Linear and continuous operators between normed spaces. Compact operators. Adjoint operators. Spectral decomposition of self-adjoints operators. Spectrum of Laplace operator. Weak topologies. Reflexive spaces. Separable spaces. L^p spaces. Sobolev spaces and variational formulation of boundary value problems for partial differential equations. Introduction to Galerkin methods and finite elements methods in a model case.	
Assumed Background: Mathematical Analysis at undergraduate level	
Assessment methods: Oral examination	