

5.0 credits	45.0 h	2q
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Teacher(s) :	Vitale Enrico ; Gran Marino ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	<p>1) Basic examples of universal constructions : kernel, quotient group, tensor product of abelian groups, free vector space and free affine space, free group and free abelian group, abelianisation of a group, torsion free abelian groups, Cauchy completion of a metric space, logic, etc.2) Basic category theory : categories, functors, natural transformations, limits and colimits, adjoint functors, equivalences, Kan extensions.3) More examples : limits in categories of topological spaces, Tychonoff theorem, free Tychonoff space on a topological space, Stone-Cech compactification, limits in categories of Banach spaces, tensor product of rings, free K-algebra, continuum hypothesis, etc.</p>
Aims :	<p>During the three years of BAC, several examples of universal constructions and adjoint functors have been studied. We introduce here the basic elements of category theory, whose aim is to unify and express in a rigorous way all those examples. We also try to express and solve, using categorical methods, problems coming from algebra, geometry, logic and set theory, and to recognize the categorical structure underlying the problem.</p> <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p>
Other infos :	<p>Pré-requis Néant</p> <p>Evaluation Modalités à discuter entre étudiants et titulaires.</p> <p>Support - F. Borceux : Handbook of categorical algebra, Cambridge University Press 1994.- S. Mac Lane : Categories for the working mathematician, Springer-Verlag 1972.</p>
Cycle and year of study :	<p><a href="#">&gt; Master [60] in Mathematics</a></p> <p><a href="#">&gt; Master [120] in Mathematics</a></p>
Faculty or entity in charge:	MATH