# COURSE DETAIL

| ANALYSIS |
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| **Country**<br>France |
| **Host Institution**<br>University of Bordeaux |
| **Program(s)**<br>University of Bordeaux |
| **UCEAP Course Level**<br>Upper Division |
| **UCEAP Subject Area(s)**<br>Mathematics |
| **UCEAP Course Number**<br>116 |
| **UCEAP Course Suffix** |
| **UCEAP Official Title**<br>ANALYSIS |
| **UCEAP Transcript Title**<br>ANALYSIS |
| **UCEAP Quarter Units**<br>6.00 |
| **UCEAP Semester Units**<br>4.00 |

**Course Description**

This course covers the theorems usually used for numerical sequences and real functions, and their proofs. It discusses the main idea behind the construction of the integral in Riemann's sense, as well as how to write proofs, use the various notions, and independently study a numerical sequence or a given function. Topics include numerical sequences: theorems of monotonic convergence, adjacent and Cauchy sequences, notions of adherence values, upper/lower bounds and the Bolzano-Weierstrass theorem; local behavior of a function: theorems of extension by continuity and sequential characterization of continuity, applying this characterization to the limit of recurring sequences (a result accepted in advanced math), calculating derivatives, the Taylor-Young theorem, and the limited developments of reference functions, calculating limited developments to find limits and relative positions of curves; global behavior of a function: restoring and using the theorems of intermediate values, Heine, bijection, local extrema, Rolle and finite increments, Taylor with integral remainder and Taylor-Lagrange; Riemann integral: retaining the guiding idea behind the construction of the integral in the Riemann sense, demonstrating general results on the integral of functions, calculating integrals using primitives, integration by parts or change of variables, using the notion of comparison between Riemann integral and sum.

**Language(s) of Instruction**
French

**Host Institution Course Number**
4TPU210U

**Host Institution Course Title**
ANALYSIS

**Host Institution Campus**
UNIVERSITÉ DE BORDEAUX

**Host Institution Faculty**
Collège des Sciences et Techniques

**Host Institution Degree**

**Host Institution Department**
Mathématiques

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