Analysis

University: L'X
Level: BA1
Teaching mode: hybrid: EuroTeQ students attend online, home students attend on campus
Instructor(s): Frank Pacard

Description

Analysis (MAA 102) is an introductory-level mathematical analysis course which provides a well-balanced approach between foundational notions and calculus. It is designed to equip students with the fundamental analytical tools required to pursue studies in Mathematics and, more generally, in any scientific field (Physics, Mechanics, Economics, Engineering, etc).

The objective is to present fundamental notions and results regarding the set of real and complex numbers, real and complex-valued sequences, real and complex-valued infinite series and functions of one real variable.

With respect to the expected initial knowledge of the students, the Course follows a more systematic approach, providing a few insights on the roots of analysis and proving all important results. Though in the continuity of the students' previous studies in Mathematics, this course may also be a turning point towards more rigor and proofs.

The Course starts with the study of real and complex-valued sequences. This will be the opportunity to introduce mathematical quantifiers, explain how to work with mathematical statements and the rules of logic.

The Course then proceeds with the study of real and complex-valued infinite series. It also covers the analysis of functions of one real variable and in particular, the limit of functions at a point or at infinity, the notion of continuity and differentiability of a function. Finally, the Course culminates with the problem of the approximation of function of one real variable by Taylor series.

Learning outcomes

Real and complex-valued infinite series; Analysis of functions of one real variable; The notion of continuity and differentiability of a function; approximation of function of one real variable by Taylor series

General information

Contact hours per week:	3.5
Total workload:	49 +personal work
ECTS credits:	5
Language:	English
Course start date:	20/09/2021
Course end date:	21/01/2022
Weekly teaching day/time:	Monday morning (recorded session) and Tuesday morning
Time zone:	CET (Denmark, Germany, France, Netherlands, Switzerland, Czech Republic)
Further information:	
Prerequisites:	
Activities and methods:	Lectures, Tutorial sessions
Presence on campus:	

Final examination

Form:	TBC
Date:	24/01/2022
Location:	
Re-sit possibility:	
Transcript available:	approx. 6 weeks after the exam date
Add. info/requirements:	The exam will take place the week of January 24, 2022

Registration

To register for this course, follow the registration requirements of your **home university** as specified here: www.euroteq.eu/courses-registration.

Administration

Number of places:	5
Internal course code:	MAA102
Contact:	exchange-international@polytechnique.fr

This course is part of the EuroTeQ Engineering University joint course catalogue 2021/22. This is a collaborative activity of the eight partner universities DTU, L'X, TU/e, TalTech, CTU, TUM as well as EPFL and Technion. Students from these universities can participate in the offered courses. It is the responsibility of the student to check if you fulfil the requirements to participate in a specific course. Students are also advised to check with their home institution how to get recognition of the ECTS credits gained in courses of the EuroTeQ course catalogue. For further information about EuroTeQ Engineering University, visit www.euroteq.eu or get in touch with the above-mentioned point of contact.