8 Mai 1945 University, Guelma
Faculty of Exact Sciences
Department of Mathematics

SYLLABUS.

Course : Annalysis 3.
Sector : Second year license.
Half : 3, **University Year :** 2024/2025
Credits : 7.
Coefficient : 4.
Weekly Hourly Volume : 7.5 Hours.

- Course (4.5 Hours)
- Directed work (3 Hours)

Teaching language : English
Teacher Course manager : Professor : BENRABAH A.Rafik, **Desk : ....**

Objective This course is intended for students in the second year of a mathematics degree, as well as for second year undergraduate students in physics and science and technology. It concerns the series and generalized integrals while taking into account the latest programs.
Previous knowledge recommended : Analysis 1 and Analysis 2
This course is divided into 5 chapters :

3 Weeks : 6 course sessions : 30/09/2024 to 17/10/2024: In the **first chapter** we give the main definitions, properties, and convergence criteria for numerical series.

2 Weeks : 4 course sessions : 22/10/2024 to 31/10/2024: the **second chapter** is dividedé into two parts. The first one concerns sequences of functions. The second part deals with series of functions. We have exposed the various types of convergence for sequences and series of functions.

A: **November : First partial exam on the first chapter**

2 Weeks : 4 course sessions : 05/11/2024 to 14/11/2024: The **third chapter** is devoted to the entire(power) series. In the first four sections we present the essentials on the radius and domain of convergence, and the sum of an entire series. The three The following are devoted to the development of an entire series as well as their application for the resolution of certain differential equations.

2 Weeks : 4 course sessions : 19/11/2024 to 28/11/2024: In the **fourth chapter**, the first two sections are devoted to trigonometric series and Fourier series. In the last two sections we present the theorem of Dirichlet and the identity of Parseval.

C: **December : Second partial exam on the second and third chapter**

3 Weeks : 6 course sessions : 03/12/2024 to 18/12/2024: Finally the **fifth chapter** deals with generalized integrals and functions defined by an integral : where, we will extend the notion of integral to functions f defined and locally integrable on one intervals of the form $[a, b[$, $]a, b]$ and $]\,a, b\,[$. In particular, one of the limits a or b can be infinite, possibly both.

B: **At the end : Third partial exam on the fourth chapter**

Evaluation : The evaluation has three components : Directed Work, partial examinations and the final exam. The weighting of these The controls are shown in the following table :

Control	Weighting (percentage)	Calculation method
Final exam	60	...
Directed Work	20	Attendance and participation
Partial exam	20	3 partial exam
Total	100	.

Bibliographic References :

[1] S. Balac et L. Chupin, Analyse et algèbre : cours de mathématiques de deuxième année avec exercices, Presses Polytechniques et Universitaires Romandes, 2008.

[2] D. Guinin et B. Joppin, Analyse MP, Bréal, 2004.

[3] J. M. Monier, Analyse MP : cours, méthodes et exercices corrigés, Dunod, 5ème édition, 2007.

[4] J. Voedts, Cours de mathématiques MP-MP*, Ellipses, 2002.

[5] C. Servien, Analyse 3 « Séries numériques, suites et séries de fonctions, Intégrales », Ellipses, 1995.

[6] www.les-mathematiques.net

Date and signature

A.R BENRABAH.