



Course No.: 54454143
Course Name: Function Analysis I

Time Division: 4hr Theoretical
Semester & Year: First, 2022/ 2023

Course Website: ان وجد

Course Description:

(4 credit hours)

The aim of this course is to teach the students the concept of metric spaces, linear spaces, general properties of linear spaces, linear subspaces, linear sum of two subspaces, direct sum of spaces, quotient spaces, Banach space, normed linear spaces N , the classical Banach space L_p , Holders and Minkowski inequalities, subspaces and quotient spaces of Banach spaces, examples and theorems of Banach spaces, linear transformations and their properties, continuous linear transformations, topological isomorphism, equivalent norms, linear transformation and Hahn Banach theorem, the natural imbedding of N into N^{**} , convexity, the open mapping theorem, the closed graph theorem.

Course Intended Outcomes:

At the end of the Course, students are expected to be able to understand mathematical analysis and functional analysis properly.

Course Outline:

Week	Topics Covered
1	Metric spaces, linear spaces
2	General properties of linear spaces, linear subspaces
3	Linear sum of two subspaces, direct sum of spaces, quotient spaces
4	Banach space, normed linear spaces N
5	The classical Banach space L_p
6	Holders and Minkowski inequalities
7	Subspaces and quotient spaces of Banach spaces
8	Examples and theorems of Banach spaces
9	Linear transformations and their properties
10	Continuous linear transformations
11	Topological isomorphism, equivalent norms
12	Linear transformation and Hahn Banach theorem
13	The natural imbedding of N into N^{**} , convexity
14	The open mapping
15	The closed graph theorem

Textbooks:

- [1] Kreyszin E. (1978), Introduction Functional Analysis with applications, New York.
[2] Rudin W. (1991), Function Analysis, 2nd Edition, New York.

Suggested references:

- [1] Siddiqui J. A. (1986), Functional Analysis with applications, New Delhi.
[2] Taylor A. E. (1958), Introduction to Functional Analysis, New York.

Marking:

First Semester				Final Exam
1st exam	2nd exam	Practical	Activity	
10	10	5	5	70

Assignment/ Project	Description	Due Date	Marking
Homework	Solve exercises	28/11/2022	5
Test question	For test the understanding	18/12/2022	5

Instructor(s) information [معلومات الأستاذ]

Section: (Mathematics) ; Lecture Room:[201,202] ; Office No.: (3)

Instructor's Name: **Dr. Arwa Nazar**


E-Mail: arwanazar10@uomustansiriyah.edu.iq

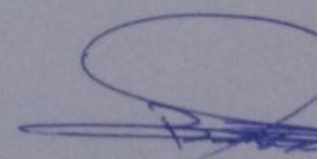
Office Hours: Sun. : (08:30 – 10:10)

Tus : (08:30 – 10:10)

NOTES:

- Office Hour: Other office hours are available by appointment.
- The content of this syllabus not be changed during the current semester.


Lecturer Signature


Chairman Sig