MATH 241: APPLIED FUNCTIONAL ANALYSIS

In Workflow

1. MATH Committee Chair (vincent.pigno@csus.edu)
2. MATH Chair (kelce@skymail.csus.edu)
3. NSM College Committee Chair (mikkel.jensen@csus.edu)
4. NSM Dean (datwyler@csus.edu)
5. Academic Services (catalog@csus.edu)
6. Senate Curriculum Subcommittee Chair (curriculum@csus.edu)
7. Dean of Undergraduate (gardner@csus.edu)
8. Dean of Graduate (cnewsome@skymail.csus.edu)
9. Catalog Editor (catalog@csus.edu)
10. Registrar's Office (k.mcfarland@csus.edu)
11. PeopleSoft (PeopleSoft@csus.edu)

Approval Path

1. Thu, 03 Oct 2024 23:34:48 GMT
   Vincent Pigno (vincent.pigno): Approved for MATH Committee Chair
2. Fri, 04 Oct 2024 18:09:34 GMT
   Kimberly Elce (kelce): Approved for MATH Chair
3. Thu, 24 Oct 2024 16:50:18 GMT
   Mikkel Jensen (mikkel.jensen): Approved for NSM College Committee Chair
4. Thu, 24 Oct 2024 17:14:44 GMT
   Chris Taylor (ctaylor): Approved for NSM Dean

Date Submitted: Thu, 03 Oct 2024 23:14:58 GMT

Viewing: MATH 241 : Applied Functional Analysis

Formerly known as: MATH 241A

Last edit: Thu, 03 Oct 2024 23:14:57 GMT

Changes proposed by: Matthew Krauel (219183121)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Matthew Krauel	krauel@csus.edu	916-278-6221

Catalog Title:
Applied Functional Analysis

Class Schedule Title:
Applied Functional Analysis

Academic Group: (College)
NSM - Natural Sciences & Mathematics

Academic Organization: (Department)
Mathematics & Statistics

Will this course be offered through the College of Continuing Education (CCE)?
No

Catalog Year Effective:
Fall 2025 (2025/2026 Catalog)

Subject Area: (prefix)
MATH - Mathematics

Catalog Number: (course number)
241

Course ID: (For administrative use only.)

147736

Units:

3

Is the ONLY purpose of this change to update the term typically offered or the enforcement of existing requisites at registration?

No

In what term(s) will this course typically be offered?

Fall, Spring

Does this course require a room for its final exam?

Yes, final exam requires a room

This course complies with the credit hour policy:

Yes

Justification for course proposal:

The program is reorganizing its electives. MATH 241B will be deactivated and MATH 241A is being altered, updated and relabeled as MATH 241 to better reflect the material it covers. Students with catalog rights that allowed the use of MATH 241A will be approved to take MATH 241 in its place.

Course Description: (Not to exceed 90 words and language should conform to catalog copy.)

Normed spaces, Banach spaces; inner product spaces, Hilbert spaces; linear operators on Banach spaces; Hahn-Banach theorem, uniform boundedness principle, closed graph theorem; linear operators on Hilbert spaces.

Are one or more field trips required with this course?

No

Fee Course?

No

Is this course designated as Service Learning?

No

Is this course designated as Curricular Community Engaged Learning?

No

Does this course require safety training?

No

Does this course require personal protective equipment (PPE)?

No

Does this course have prerequisites?

Yes

Prerequisite:

Math 130B and either Math 100 or Math 35, or instructor permission.

Prerequisites Enforced at Registration?

No

Does this course have corequisites?

No

Graded:

Letter

Approval required for enrollment?

No Approval Required

Course Component(s) and Classification(s):
Seminar

Seminar Classification
CS#05 - Seminar (K-factor=1 WTU per unit)
Seminar Units
3

Is this a paired course?
No

Is this course crosslisted?
No

Can this course be repeated for credit?
No

Can the course be taken for credit more than once during the same term?
No

Description of the Expected Learning Outcomes and Assessment Strategies:

List the Expected Learning Outcomes and their accompanying Assessment Strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers). Click the plus sign to add a new row.

	Expected Learning Outcome	Assessment Strategies
1	Students will be able to explain the meaning and importance of fundamental functional analysis concepts such as normed spaces, Banach spaces, Hilbert spaces, and linear operators.	Exams, reading and problem-solving assignments.
2	Students will be able to prove key theorems in applied functional analysis such as the Hahn-Banach theorem, the open mapping theorem, the closed graph theorem, and the uniform boundedness principle.	Exams, reading and problem-solving assignments.
3	Students will be able to apply tools from the theory of Banach spaces and Hilbert spaces to prove various properties of spaces such as l^p spaces.	Exams, reading and problem-solving assignments.
4	Students will be able to solve problems that require the application of functional analysis concepts and techniques.	Exams, reading and problem-solving assignments.
5	Students will be able to construct mathematical arguments and proofs, and to communicate their ideas clearly and rigorously.	Exams, reading and problem-solving assignments.

Attach a list of the required/recommended course readings and activities:
MATH 241 Sample Syllabus.docx

Is this course required in a degree program (major, minor, graduate degree, certificate?)
No

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?
No

Will there be any departments affected by this proposed course?
Yes

Indicate which department(s) will be affected by the proposed course:

Department(s)
Mathematics

I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.
I/we agree

University Learning Goals

Graduate (Masters) Learning Goals:

Disciplinary knowledge
Communication
Critical thinking/analysis
Information literacy
Professionalism
Intercultural/Global perspectives

Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?

No

Is this a Graduate Writing Intensive (GWI) course?

No

Key: 3214