Course Title: Advanced Real Analysis

Instructors:

Course Number: 21-723  Cross Listing: Click here to enter text.

Prerequisites/Corequisites: Pre: 21-720 (Measure and Integration), Co: 21-640 (Functional Analysis)

Semesters Offered:

- Fall  X Spring  ☐ Summer-All  ☐ Summer 1
- ☐ Summer 2

Semester Length:

- ☐ Mini 1  ☐ Mini 2  ☐ Mini 3  ☐ Mini 4  X Full Semester

Course Offering Frequency: Yearly.

Suggested Days and Times: MWF any time.

Course Evaluation type: X Letter Grade  ☐ Pass/Fail

Course Unit Justification:

- Total Units 12
- In Class Hours: 3  Recitation Hours: 0
- Lab Hours: 0  Out of Class Hours: 9

Target Population: First year graduate students in mathematics. Advanced undergraduates with a strong background in analysis.

Anticipated Enrollment: 10

Rationale for Course (Background): The Applied Analysis Graduate Curriculum Committee has been appointed to examine the graduate curriculum for students in the Ph.D. Program in Mathematical Sciences specializing in applied analysis.

Currently the department offers a first graduate course in real analysis, Measure and Integration (21-720) every fall. The proposed course will function as a complement to 21-720, introducing a number of other
important topics in analysis. These will serve to better prepare students for their coursework in the second year.

**Special Facilities Needed:** None

**Textbooks and/or Other Materials:** None.

**Assessment:** Homework and written examinations.

**Topics Covered:** Distributions, Fourier series and transform, Sobolev spaces, Bochner integration, basics of interpolation theory, integral transforms.

**Course Catalog Description:** This course is a sequel to 21-720 (Measure and Integration). It is meant to introduce students to a number of important advanced topics in analysis.

Topics include: distributions, Fourier series and transform, Sobolev spaces, Bochner integration, basics of interpolation theory, integral transforms.

**Learning Objectives:** Students will learn fundamental techniques in advanced real analysis. They will further their preparation for research in applied analysis. They will develop their mathematical maturity.

**Departmental Approval Date:** Click here to enter text.

**CUA Recommendation Date:** Click here to enter text.

**College Council Approval Date:** Click here to enter text.

**Date Sent to Enrollment Services:** Click here to enter text.

**Comments:** Click here to enter text.

* Please attach a copy of the proposed syllabus