

**Fall 2022**  
**SYLLABUS**

<i>Course title</i>	<b>Applied Functional Analysis</b>
<i>Course number</i>	MAT 6932
<i>Schedule, Room</i>	<b>MWF 8</b> , Lit 207
<i>Instructor</i>	Maia Martcheva maia@ufl.edu <a href="http://people.clas.ufl.edu/maia/">http://people.clas.ufl.edu/maia/</a>
<i>Main themes</i>	<b>An Introduction to Applied Functional Analysis</b>

*Goals:* Introduce students to concepts of functional analysis which are important in differential equations, mathematical biology and numerical analysis.

*Text:* Applied Functional Analysis, D.H. Griffel, Dover Publications, New York, 2002.

*Topics:*

- (1) Normed spaces.
- (2) The contraction mapping theorem.
- (3) Compactness and Schauder's Theorem.
- (4) Hilbert spaces.
- (5) The theory of operators.
- (6) The spectral theorem.
- (7) The differential calculus of operators and applications.
- (8) Generalized functions.
- (9) Sobolev spaces.

*Prerequisites:* 6000 level analysis sequence will be helpful.

**Requirements:**

- (1) Students will be expected to present a solved problem in applied functional analysis in class.
- (2) Students will be expected to attend class.
- (3) Homework will be given if requested by the students.

*Grading:* Grades will be based on (1) Attendance; and (2) Presentations.

*COVID-19 directions:* In response to COVID-19, the following recommendations are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available and have been demonstrated to be safe and effective against the COVID-19 virus. Visit [one.ufl.edu](http://one.ufl.edu) for screening / testing and vaccination opportunities.

- If you are sick, stay home. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 to be evaluated.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.