

**MA 8663: Functional Analysis I**  
**Course Syllabus**  
**Fall 2016**

**Section 01**  
**MWF: 10:00 - 10:50 am**  
**Allen 411**

**Instructor:** Dr. Matt McBride  
**Office:** Allen 419  
**Office Phone:** 325-7139  
**Office Hours:** MWF: 9:00 – 10:00 am or by appointment  
**Email Address:** mmcbride@math.msstate.edu  
**Website:** msm646.math.msstate.edu

**Textbook:** Vershynin, Roman: *Lectures in Functional Analysis*

**Prerequisites:** MA 8643

**Objective:** Functional analysis is a broad tool for analysis. It focuses on the theory of linear operators in infinite dimensional vector spaces. This is the first part in a two semester sequence. In this class, we'll discuss Banach and Hilbert spaces, bounded linear operators, four major theorems in functional analysis, compact operators, and spectral theory for a class of operators.

**Withdrawl Date:** The last day to drop the course with a W is October 5<sup>th</sup>.

**Student Honor Code:** Mississippi State has an approved Honor Code that applies to all students. The code is as follows: "As a Mississippi State University student, I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do." Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code. For additional information, please visit: <http://honorcode.msstate.edu/policy>

**Students with disabilities:** Mississippi State University is committed to providing reasonable accommodation for all students with disabilities. If you require special accommodation in this course you are requested to speak with the instructor as early in the semester as possible. Students with disabilities must be registered with the Office of Student Support Services prior to receiving accommodations in this course. For further information please see <http://www.sss.msstate.edu>.

**Title IX:** Mississippi State University is committed to complying with Title IX, a federal law that prohibits discrimination, including violence and harassment, based on sex. This means that MSU's educational programs and activities must be free from sex discrimination, sexual harassment, and other forms of sexual misconduct. If you or someone you know has experienced sex discrimination, sexual violence and/or harassment by any member of the university community, you are encouraged to report the conduct to MSU's Director of Title IX/EEO Programs at 325-8124 or by email to [titleix@msstate.edu](mailto:titleix@msstate.edu). Additional resources are available at <http://www.msstate.edu/web/security> or at <http://students.msstate.edu/sexualmisconduct/>.

**Homework:** As with any math course, homework is a vital component. One must practice newly learned facts, theorems, etc. through the assigned homework. Homework will be assigned more or less daily, however it will be collected only once a week except during the midterm exam week. See the schedule for details.

**Exams:** There will be one closed book, closed notes, and closed homework midterm exam during the week of October 10<sup>th</sup>. Students will have three hours to take the exam and we will arrange a time during that week that fits everyone's schedule. See the schedule for the exact sections covered.

**Final Exam:** The final exam is **not** a comprehensive exam and will be held on **Monday, December 5<sup>th</sup>** in the usual class location at **8:00 - 11:00 am**. This date can **not** be modified, so make sure one's calendar is free.

**Make-up Policy:** Make-up exams will be given **only** for reasons deemed acceptable by the instructor, and **only** with written documentation. Make-up exams must be taken within one week of the original date, and no make-ups may be taken after the final exam. Make-up exams are never easier than the original.

**Grading Distribution:**

Homework.....	50%
Midterm Exam.....	25%
Final Exam.....	25%
Total.....	100%

**Grading Scale:**

<b>A:</b> .....	100% - 90%
<b>B:</b> .....	89% - 80%
<b>C:</b> .....	79% - 70%
<b>D:</b> .....	69% - 60%
<b>F:</b> .....	59% and below

**Fall 2016 Tentative Schedule**

Note: this may be modified and is left to the discretion of the instructor.

<b>Date</b>	<b>Section Covered/ HW Due</b>	<b>Homework Assigned</b>
Wed, Aug. 17	1.1	none
Fri, Aug. 19	1.1	<b>1.1:</b> 21,24
Mon, Aug. 22	1.2	none
Wed, Aug. 24	1.2	<b>1.2:</b> 2,4,21,23
Fri, Aug. 26	1.3 ( <b>1.1 due</b> )	none
Mon, Aug. 29	1.3	<b>1.3:</b> 2,12
Wed, Aug. 31	1.4	none
Fri, Sept. 2	1.4 ( <b>1.2 due</b> )	<b>1.4:</b> 20,22,25
Wed, Sept. 7	1.5	<b>1.5:</b> 9,10,11
Fri, Sept. 9	1.6 ( <b>1.3,1.4 due</b> )	none
Mon, Sept. 12	1.6	none
Wed, Sept. 14	1.6,2.1	<b>1.6:</b> 17,23,37,38
Fri, Sept. 16	2.1,2.2 ( <b>1.5 due</b> )	<b>2.1:</b> 4,12
Mon, Sept. 19	2.2	none
Wed, Sept. 21	2.2,2.3	<b>2.2:</b> 7
Fri, Sept. 23	2.3 ( <b>1.6,2.1 due</b> )	none
Mon, Sept. 26	2.3	none
Wed, Sept. 28	2.3,2.4	<b>2.3:</b> 9,21,32,33
Fri, Sept. 30	2.4 ( <b>2.2 due</b> )	none
Mon, Oct. 3	2.4	none
Wed, Oct. 5	2.4,3.1	<b>2.4:</b> 5,12,16,30,41,43,45

<b>Date</b>	<b>Section Covered/ HW Due</b>	<b>Homework Assigned</b>
Fri, Oct. 7	Review for Midterm ( <b>2.3 due</b> )	none, <b>Covering: Chp 1,2</b>
Mon, Oct. 10	3.1	none
Wed, Oct. 12	3.1,3.2	<b>3.1:</b> 11,18
Mon, Oct. 17	3.2,3.3	none
Wed, Oct. 19	3.3	<b>3.3:</b> 18,22
Fri, Oct. 21	3.4 ( <b>2.4,3.1 due</b> )	<b>3.4:</b> 9,13
Mon, Oct. 24	3.5	none
Wed, Oct. 26	3.5,3.6	<b>3.5:</b> 15,20
Fri, Oct. 28	3.6,4.1 ( <b>3.3,3.4 due</b> )	<b>3.6:</b> 7
Mon, Oct. 31	4.1	<b>4.1:</b> 2,5,10,19
Wed, Nov. 2	4.2	<b>4.2:</b> 4
Fri, Nov. 4	4.3 ( <b>3.6 due</b> )	<b>4.3:</b> 9
Mon, Nov. 7	4.4	none
Wed, Nov. 9	4.4	<b>4.4:</b> 24,26,27,28
Fri, Nov. 11	5.1 ( <b>4.1,4.2,4.3 due</b> )	none
Mon, Nov. 14	5.1,5.2	<b>5.1:</b> 4,12
Wed, Nov. 16	5.2,5.3	<b>5.2:</b> 8
Fri, Nov. 18	5.3 ( <b>4.4 due</b> )	none
Mon, Nov. 21	5.3,5.4	<b>5.3:</b> 17,19
Mon, Nov. 28	5.4 ( <b>5.1,5.2,5.3 due</b> )	<b>5.4:</b> 2,3,4,5
Wed, Nov. 30	Review for Final Exam	none
Mon, Dec. 5	<b>Final Exam (5.4 due)</b>	<b>Covering: Chp 3-5</b> <b>8:00-11:00am in Allen 411</b>