

Iowa State University – 2016—2017

MATH 520

Syllabus

Spring 2017

MATH 520 – Methods of Applied Mathematics II (3 credits)

T-TH 9:30-10:50am, Carver 0132

INSTRUCTOR: Dr. Pablo Raúl Stinga, 458 Carver Hall, 515-294-6420, stinga@iastate.edu

INSTRUCTOR OFFICE HOURS: T 2:00-4:00pm, TH 3:00-5:00pm, and also by appointment.

TEACHING ASSISTANT: Leoncio Rodríguez Quiñones, 468 Carver Hall, leoncior@iastate.edu

TEACHING ASSISTANT OFFICE HOURS: M W 9:00-11:00am and also by appointment.

WEBPAGE: we use Blackboard

This course consists of two lectures per week. You are expected to attend all two classes per week and solve not only the assigned HW, but all the exercises from the textbook, as this will better prepare you for the qualifying exam.

TEXT: Lecture notes by Paul Sacks: <http://www.public.iastate.edu/~psacks/AMathNotes/Math519-520Notes.html>

Precise info about the chapters covered can be found on Blackboard under Course Content, Tentative Schedule.

Further reading:

- *Methods of Applied Mathematics*, by T. Arbogast and J. Bona: <https://www.ma.utexas.edu/users/arbogast/appMath08c.pdf>
- *Functional Analysis, Sobolev Spaces and Partial Differential Equations*, by H. Brezis
- *Functional Analysis*, by P. Lax
- *Mathematics for the Physical Sciences*, by L. Schwartz
- *Green's Functions and Boundary Value Problems*, by I. Stakgold
- *Partial Differential Equations, an Introduction*, by W. Strauss
- *A Guide to Distribution Theory and Fourier Transforms*, by R. Strichartz
- *A First Course in Partial Differential Equations with Complex Variables and Transform Methods*, by H. Weinberger

OBJECTIVES OF COURSE: Master applied mathematics tools such as linear, unbounded and compact operators theory, spectral theory, Green's functions, variational methods and weak solutions for PDEs.

RESTRICTIONS AND PREREQUISITES: MATH 519.

GRADES: One midterm (20% of total grade), one final exam (30% of total grade), weekly assigned homework (50% of total grade). Your grade will be no lower than what is indicated next: 93-100:A; 90-92:A-; 87-89:B+; 83-86:B; 80-82:B-; 77-79:C+; 73-76:C; 70-72:C-; 67-69:D+; 63-66:D; 60-62:D-; 0-59:F

TEXT HOMEWORK: I will assign 4 to 6 exercises per week, which will be collected for grading on Thursday the following week. The list of assigned HW can be found in Blackboard under Course Content, HW List.

Instructions: You must write down your name, surname and ISU-ID number at the top right of each page you turn in, write solutions of different exercises in different pages and **staple all the pages**.

EXAMS: You must bring a valid photo ID (ISU-ID card, for example) to the exams. Notes, books, cell phones, calculators or any other electronic devices are not allowed during exams.

Midterm (20%): Questions will require that you show your work, like problems from the text. This exam will be given during the normal lecture period. **Exam Date: Thursday, March 9.**

Final exam (30%): You will have a final exam during finals week May 1-5, 2017. Exact date, time and place to be announced. *You should carefully examine the exam dates above, since being available for these exams is a*

requirement for this course, therefore there are NO Makeup exams (except for a few quite specific extenuating circumstances: <https://math.iastate.edu/syllabus-and-class-policies/>)

STUDENT CONDUCT: All computers, cell phones and other electronic devices must be put away out of sight during class and during exams.

ATTENDANCE: This course is structured with the expectation that you will attend every class. Of course, sometimes an absence is necessary. In such a situation, you should contact a classmate to get notes, due dates and other information for the class you missed. If you choose to miss class, **do not email me to ask what material was covered during class, what the assignments are, when assignments were made or are due, what sections the exams will cover, or any other question that has been answered or will be answered during class.** I will not respond to such queries. If you miss class, accept responsibility for your absence without involving me.

STUDENTS WITH DISABILITIES: Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. All students requesting accommodations are required to meet with staff in Student Disability Resources (SDR) to establish eligibility. A Student Academic Accommodation Request (SAAR) form will be provided to eligible students. The provision of reasonable accommodations in this course will be arranged after timely delivery of the SAAR form to the instructor. Students are encouraged to deliver completed SAAR forms as early in the semester as possible. SDR, a unit in the Dean of Students Office, is located in room 1076, Student Services Building or online at www.dso.iastate.edu/dr/. Contact SDR by e-mail at disabilityresources@iastate.edu or by phone at 515-294-7220 for additional information.

Academic Dishonesty: The class will follow Iowa State University's policy on academic dishonesty. Anyone suspected of academic dishonesty will be reported to the Dean of Students Office.

ACADEMIC MISCONDUCT: Academic Misconduct in any form is in violation of Iowa State University Student Disciplinary Regulations and will not be tolerated. This includes, but is not limited to: copying or sharing answers on tests or assignments, plagiarism, having someone else do your academic work. Depending on the act, and at the instructor's discretion, the student could receive an F grade on the test/assignment and an F grade for the course. The student could also be suspended or expelled from ISU. See http://catalog.iastate.edu/academic_conduct/#academicdishonestytext

PLAGIARISM AND ACADEMIC DISHONESTY: *Plagiarism is the act of representing directly or indirectly another person's work as your own. It can involve presenting someone's speech, wholly or partially, as yours; quoting without acknowledging the true source of the quoted material; copying and handing in another person's work with your name on it; and similar infractions. Even indirect quotations, paraphrasing, etc., can be considered plagiarism unless sources are properly cited. Plagiarism will not be tolerated, and students could receive an F grade on the test/assignment or an F grade for the course. The Iowa State University policy for academic misconduct can be found in the Student Disciplinary Regulations.*

DEAD WEEK: This class follows the Iowa State University Dead Week policy as noted in section 10.6.4 of the [Faculty Handbook](http://www.provost.iastate.edu/resources/faculty-handbook): <http://www.provost.iastate.edu/resources/faculty-handbook>

HARASSMENT AND DISCRIMINATION: Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact his/her instructor, [Student Assistance](#) at 515-294-1020 or email dso-sas@iastate.edu, or the [Office of Equal Opportunity and Compliance](#) at 515-294-7612.

RELIGIOUS ACCOMMODATION: If an academic or work requirement conflicts with your religious practices and/or observances, you may request reasonable accommodations. Your request must be in writing, and your instructor or supervisor will review the request. You or your instructor may also seek assistance from the [Dean of Students Office](#) or the [Office of Equal Opportunity and Compliance](#).

By enrolling in this class you accept all the terms and conditions contained in this syllabus.