

ISC 4933/5238: Integral Equation Methods

Spring 2021

SYLLABUS

Instructor	Bryan Quaife 444, Dirac Science Library bquaife@fsu.edu
Class	Zoom or F2F (M: 1:20–2:10pm) Zoom (WF: 1:20–2:10pm; Password: 5238)
Office Hours	Mondays 2:10–3:00pm Set up time to meet on Zoom or F2F by emailing the me
Textbook	There is no required text for this class. Partially completed notes will be provided before each lecture. Annotated version of my notes will be available after each lecture.
Coding	Matlab, Python, Julia Do not submit Jupyter Notebooks. I expect .m, .py, or .jl files. We may do some Fortran coding.
Prerequisites	Numerical Analysis, PDEs, Calculus 2, Linear Algebra
Website	FSU's Canvas Course Management Site.

Description

This course introduces reformulations of differential equations as integral equations. Numerical methods to solve the integral equations will be developed.

Course Plan

The first class will be on January 6 (W), and the last class will be on April 16 (F). There is no class on January 18 (MLK Day). There is no spring break this year. Barring unforeseeable events, we will have 43 lectures.

Topics covered is tentative and flexible, but may include computational methods for complex functions, Bromwich integrals, layer potentials, quadrature methods, fast summation methods, and viscous fluid dynamics.

Grading	Assignments	60%	(approximately 6)
	Literature Review	30%	(approximately 3)
	Attendance and Participation	10%	

Course Policies

- The lectures in the first two weeks and every Wednesday and Friday will be delivered only on Zoom. The lectures on Mondays starting on January 25 will be delivered both on Zoom and face-to-face in DSL499. **The password for each lecture is 5238.** If you come to class, you must wear a mask and practice social distancing.

- Interruptions during class time is highly encouraged. If you do not understand a concept, there is a good chance that other students would benefit from further explanation.
- The incomplete notes will be posted on Canvas before class. I will annotate notes during class, and this version will be posted after class. However, listening to explanations that complement the notes are necessary to understand the course content. Therefore, it is in your best interest to attend every lecture possible. History has shown that students who “learn” the material by only reading the notes on their own time are less successful than those who also come to class and participate in the discussion.
- Unless otherwise directed, the only need for a computer, laptop, or tablet during class is to connect to the Zoom session and look at the unannotated notes. During class time, I ask that you do not check email, chat, text, etc. There is compelling evidence that such multitasking distracts both you, and me, and lowers student engagement and learning. Class discussions are less fruitful when only a handful of people participate.
- Assignments will focus on writing code and paper-and-pencil calculations. All assignments must include working code and a pdf writeup that includes all derivations, discussions, computer plots, etc. Legible hand-written solutions are acceptable.
- Unless discussed with the professor before the deadline, late labs and assignments will be deducted 10% per day. Assignments later than five days will not be graded.
- I encourage you to work with others (using social distancing) on both your labs and assignments. However, the final submission, including the code, must be unambiguously yours. Plagiarism will not be tolerated, will result in a 0, and will be reported.

University Attendance Policy

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy

The Florida State University Academic Honor Policy outlines the University’s expectations for the integrity of students’ academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to “...be honest and truthful and...[to] strive for personal and institutional integrity at Florida State University.” (Florida State University Academic Honor Policy, found at <http://fda.fsu.edu/Academics/Academic-Honor-Policy>)

Americans With Disabilities Act

Students with disabilities needing academic accommodation should:

- register with and provide documentation to the Student Disability Resource Center; and
- bring a letter to the instructor indicating the need for accommodation and what type.

This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center
874 Traditions Way
108 Student Services Building
Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
sdradmin.fsu.edu
<http://www.disabilitycenter.fsu.edu>

Free Tutoring from FSU

For tutoring and writing help in any course at Florida State University, visit the Academic Center for Excellence (ACE) Tutoring Services' comprehensive list of tutoring options—see <http://ace.fsu.edu/tutoring> or contact tutor@fsu.edu for more information. High-quality tutoring is available by appointment and on a walk-in basis. These services are offered by tutors trained to encourage the highest level of individual academic success while upholding personal academic integrity.

Syllabus Change Policy

Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.