Washington University - St. Louis
Fall 2021
Math 523 - Computational Harmonic Analysis
Lecture: Room: Duncker 101 Time: TTH 1:00pm – 2:20pm

Instructor: Brett D. Wick Office: Cupples I 212
Office Phone: 314-935-6765 Office Hours: Tuesday/Thursday 2:30pm-3:30pm
Email: wick@math.wustl.edu or by appointment
Webpage: http://www.math.wustl.edu/∼wick/teaching/math523_F2021.html

Text: There will be no assigned text for the course. The material to be covered will be taken from the texts:

"An Introduction to Compressive Sensing" by Foucart and Rauhut;

"A Wavelet Tour of Signal Processing: The Sparse Way" by Mallat;

"Classical and Modern Harmonic Analysis" by Grafakos;

"Harmonic Analysis: Real Variable Methods, Orthogonality, and Oscillatory Integrals" by Stein;

"Fourier Analysis" by Duoandikoetxea.

Additional material will be taken from other sources such as books or papers in the literature.

Prerequisite and Description: The main goal of this course is to expose students to computational harmonic analysis through the mathematical theory of Fourier analysis, and at the same time, to some of its many applications in the sciences and engineering.

Prerequisites: Math 5051, 5052, 4111, or permission of the instructor.

Attendance: Attendance is required for all lectures. The student who misses a class meeting is responsible for any assignments and/or announcements made. Office hours will not be utilized to re-teach material presented in class. However, questions to better understand the course are always welcome.

In the event of an absence that will impact your ability to complete your assignments due to travel representing Washington University - St. Louis, you must notify the professor at least two weeks in advance to arrange an early test or other alternative. Otherwise, such absences will be treated as personal.

Homework: This course will have recommended homework assignments. Homework will not be collected, but will help with the learning of the material.

Projects: There will be a required project to complete for the course. The project will be to work through a particular paper and present it to the class. The project will be determined by discussion between the student and the instructor and selected based on connections with the course and students interests. Exact details will be provided later.

Learning Disabilities: It is the right of any student with a certified learning disability to request necessary accommodation. Such requests must be made well in advance of the time that the accommodation is required and a letter of documentation from the Disability Resources office must be presented at the time of any request.

Academic Honesty: It is expected that all students are aware of their individual responsibilities under the WUSTL Academic Integrity Policy, which will be strictly adhered to in this class. **Any violations must be reported directly to the Dean of Students.**

Policy Regarding Online Course: Since the course currently meets in person, in the event the course needs to transition to completely online instructions will be emailed to the class about how the course meetings will continue and any additional changes that are required for the course.

COVID Safety Procedures: Students are expected to follow university-mandated COVID safety procedures at all times, and stay informed of any changes to these procedures. Failure to do so will result in you being removed from the classroom, and possible university disciplinary procedures. Masks and social distancing are the most important safety measures we can take; it is also important that you wash your hands and clean surfaces as frequently as possible.

Masks are mandatory at all times in the classroom; if you have a medical condition that precludes wearing one, contact Disability Resources to discuss accommodations before coming to class.

If you are sick: If you are sick, quarantined, or do not pass WUSTL self-screening, do not come to class in person. Notify your instructor.

If your instructor is sick: If your instructor is sick, quarantined, or does not pass self-screening, your class meeting may need to move online for the day. Please check Canvas (or your email) immediately before you leave for class in case your meeting needs to move online at the last minute.

Grades: The usual ten-point scale will be used (A: 90-100, B: 80-89, C: 70-79, D: 60-69, F: 0-59), however, if necessary, adjustments will be made to arrive at a standard grade distribution. Grades will be based upon attendance, participation, and a class project.

Attendance/Participation	50%
Project	50%

Important Dates for Fall 2021:

August 30	First day of Classes
September 6	Labor Day - No Class
October 11 - 12	Fall Student Recess - No Class
November 24 - 28	Thanksgiving Break - No Class
December 10	Last day of Classes