

MATH 464, Sec. 0101: Transform Methods

Department of Mathematics, UMCP

Fall 2022

Handout: COURSE SYLLABUS AND POLICIES (3 pages)

Date: Tuesday, 08/30/2022

Lectures: Room: MATH 1308

Time: Tue Thu 12:30pm–1:45pm

Note: Lectures are **in person**. NO recording is planned. NO notes will be posted.

CONTACT INFO:

Instructor: Professor Dio Margetis; e-mail: diom@umd.edu

Office: MATH2106; phone: 5-5455

Homepage: <https://www.math.umd.edu/~diom/>

Office hours: (i) **In person:** Tue 1:45pm–2:30pm (after class); (ii) **On Zoom:** Wednesday 5:00pm–5:45pm; or (iii) **by appointment**. Office hours *start on Tue 09/06/22*.

Zoom meetings for instructor's office hour are scheduled through ELMS/Canvas.

Students showing up at instructor's office hours should have *specific and well-defined* questions.

Students are strongly encouraged to wear KN95 face masks during in-person office hours. I am happy to meet on Zoom with students who prefer not to wear a mask.

Grader: TBA as soon as the info becomes available; e-mail: TBA

Grader's Office hour: Time: TBA

Possible Zoom meeting for grader's office hour will be scheduled through ELMS/Canvas.

ELMS/Canvas: This platform will be used partly for the course. The details of the Zoom meetings (ID and passcodes) for office hours should be found there. Only authenticated UMD users are allowed to join Zoom meetings. **This syllabus and homeworks** will be posted there. To access ELMS, go to <https://myelms.umd.edu>; log in using UMD username & passwd.

COURSE SPECS: Prerequisites: One course with minimum grade of C- from {MATH246, MATH341}. **Recommended:** MATH240 or MATH461 (strongly recommended).

Course Web page: To access it, **go to my homepage (above) – click on Teaching and then find course. Homeworks will also be posted on that website.**

Required text: D. W. Kammler, *A First Course in Fourier Analysis*, Cambridge University Press, Second Ed., 2008; ISBN 978-0-521-70979-8.

Course outline: Mathematical concepts and tools for transforms used in Mathematics, Engineering, and Physical Sciences. Theme: How to mathematically synthesize various functions, many of which solve scientific problems, from simple functions, e.g., wavelets. This synthesis has features similar to those in the creation of a piece of music by the chords of a guitar.

Topics: Review of Linear Algebra (3 Lecs). Fourier series (4 Lecs). Fourier transform (4 Lecs). Integral eqs, filters (1 Lec). Sampling theory (2 Lecs). Distributions (6 Lecs). Applications to Differential Eqs. (3 Lecs). Windowed Fourier transform (2 Lecs). Wavelet transform (2 Lecs).

The course description is given on the Mathematics Department web page at:
<https://www-math.umd.edu/undergraduate/departamental-course-pages/offered-courses/406-math-464-transform-methods-for-scientists-and-engineers.html>

EXAMS: There will be **two in-person, proctored midterm exams and one in-person, proctored Final exam**. These Exams will be given on the following dates:

- **Exam 1: Thursday, September 29, 12:30-1:45pm**, in lecture room.
- **Exam 2: Tuesday, November 15, 12:30-1:45pm**, in lecture room.
- **Final Exam: Monday, December 19, 1:30pm-3:30pm**, in lecture room.

Word of Caution: Students who unjustifiably miss an exam take serious risks in regard to their grades; and will be called upon to explain and might be advised to drop the course.

Your answers in exam problems should be legible and clear.

HOMEWORKS: There will be 9-11 sets of required homeworks. These assignments will be posted on the ELMS/Canvas and Course Web page, and will be announced in class. Once assigned, each homework should be turned in by the date specified, **in class**. **Late homeworks will not be accepted**. Solutions to homeworks won't be distributed. The requirements for legibility regarding exams apply strongly to homeworks. Illegible solutions will not be graded.

Submissions: Homeworks should be turned in **in person**, during class lectures.

Word of Caution: Students who unjustifiably do not return homeworks take risks regarding their grades; and will be called upon to explain and might be advised to drop the course.

GRADING SCHEME and EXAM POLICY: **40%** from two in-class midterm exams (of equal weight, 20% each); **25%** from homeworks; and **35%** from the Final exam.

Make-up exam: Make-up exams are given **ONLY in cases of formally excused absences from the actual exam**. The make-up exam will in principle be a **75-minute ORAL exam**, on similar material, with questions prepared by the instructor and answers expected to be written by the student on the **blackboard**. The time and place must be agreed on by the instructor and the student. **Note:** If the student is registered with the **Accessibility & Disability Service (ADS)**, the student will take a written (not oral) make-up exam at the ADS, if the student provides valid documentation for the excused absence.

Excused Absences: If you are absent from a scheduled exam, you **MUST** provide *valid, acceptable, verifiable* documentation about the reason of your absence, **in a timely fashion**, to be allowed to take a make-up exam. **For any medically necessitated absence, you must provide verifiable documentation signed by a qualified medical doctor/physician, in order to take a make-up exam.** (Documentation or "notes" from nurses, vaguely defined assistants etc won't be accepted). The instructor will NOT grant a make-up exam without valid documentation. **Similar rules hold for students asking to be excused from returning homeworks.** In case of medical or family emergency, please contact the Instructor as soon as is practical, preferably before the exam. **Whenever requests for excused absences affect assignments & exams, documentation for justification will be asked strictly.**

Exams policy: No calculators are allowed during exams. Your answers must be adequately supported by mathematical reasoning. Explanations in your test papers must be given in coherent English sentences. Minor algebraic and numerical errors, such as missing a sign, that are not symptomatic of a conceptual misunderstanding will be penalized minimally. Egregious errors, such as $\frac{1}{a+b} = \frac{1}{a} + \frac{1}{b}$, will be penalized **severely**.

If you feel that you are entitled to more points on an exam or homework, you may **resubmit your paper** with a note explaining why your grade should be changed. (Since each questioned problem will be very carefully reexamined, it is possible that you could end up losing points in the re-evaluation process.) Any request for re-evaluation is overdue if it is made later than 5 days after the return of the (graded) paper. The Instructor and grader reserve the right to **disregard your paper resubmission if they deem this is overdue or unsubstantiated.**

Academic Integrity. All work that you submit must be your own. You are welcomed to discuss homework material with each other in a general way, but you may not consult any one else's written work. Any marked similarity between submissions of different authors might be regarded as evidence of academic dishonesty. You must cite any reference you use and mark any quotation or close paraphrase that you include. Such citation will not lower your grade, but extensive quotation might. **Homeworks and exams should be done individually.**

You are expected to read carefully and adhere to the following instruction.

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <https://policies.umd.edu/student-affairs/university-of-maryland-code-of-student-conduct>

To further exhibit your commitment to academic integrity, remember to sign the Honor Pledge on all examinations: *"I pledge on my honor that I have not given or received any unauthorized assistance on this examination (assignment)."*

Additional note for MATH 464: You will not be asked to sign such a pledge on assignments, but you are expected to adhere to the principles of the pledge there.

UNIVERSITY POLICIES: General policies on Undergraduate Courses are found here:

<http://www.ugst.umd.edu/courserelatedpolicies.html>

COVID-19 related policy: According to recent communication by the Director of the University Health Center: *"Effective Monday, August 29, wearing a mask will not be required while indoors in most situations, including classrooms. As a reminder, masks are a significant defense against the spread of COVID-19 and other respiratory viruses. Therefore, I recommend wearing a KN95 mask while indoors for added protection."*

On Excused Absences: The University policy on excused absences can be found at:

<http://www.president.umd.edu/administration/policies/section-v-student-affairs/v-100g>

DISABILITY SUPPORT: Students with documented disabilities should notify me and discuss the corresponding accommodations according to policies of the Accessibility & Disability Service (ADS) **by 2nd week of classes. I ask these students to make accommodated testing reservations by 2nd week of classes, for ALL exams (see dates).**

RELIGIOUS OBSERVANCES. If you plan to be absent from class because of religious observances, please submit to Instructor a list of the dates in the first week of classes.

COUNSELING. For confidential counseling and help with personal issues, students are advised to contact the UMD Counseling Center, 301-314-7651; <https://counseling.umd.edu>