

# PHY 422A : Mathematical Methods II, *revised* course handout

12/06/2020

- This revised handout contains updated policies marked in **darkred** colour below. Click [here](#) for the First Course Handout.
- The course announcements, problem sets, examination questions, and solutions (selective) will be posted at  
<http://home.iitk.ac.in/~didas/s20/phy422a.html>
- **Course Timings :**
  - **Until March 6<sup>th</sup>, 2020 :** TuThF 08:00-09:00, T201 and tutorials W 8:00-9:00, T201.
  - Thereafter the course has moved to an online platform with lectures available at : <http://home.iitk.ac.in/~didas/s20/online/phy422online.html>
  - Problem sets are posted at : <http://home.iitk.ac.in/~didas/s20/phy422a-hw.html>
- **References :** No textbook will strictly be followed. Parts of the course will use the following useful references :
  1. *Group Theory in a Nutshell* by *A. Zee* .
  2. *Mathematical Methods of Physics* by *J. Mathews* and *R. J. Walker*.
  3. *Mathematics for Physics* by *M. Stone* and *P. Goldbart*.
  4. *Lie Algebras in Particle Physics* by *H. Georgi*.
  5. *Course lecture notes on Group theory* : <http://home.iitk.ac.in/~didas/s20/phy422Texv2.pdf>.
  6. *Course lecture notes on PDEs & Green's functions available in the previously linked course online resources page.*
  7. *There are seven PSets posted on the course assignments page.*
- **Contents :** We will cover various essential topics in *group theory*, for the first part of this course, with the goal to understand *representation theory*

using various theorems and tools.

The second half of this course will focus on solving *partial differential equations* using mainly *Greens function* techniques.

- **Evaluation :**

- The final grades will be awarded based on the midsemester examination marks alone. As per the Senate guidelines (Minutes of the 533rd e-Senate meeting, held on 19-20 May 2020), no End Semester Examination for 2019-20-II will be held; the semester will rather close with grade submission. The instructors are permitted to revise their evaluation criteria whenever necessary. As a one time exception, only A, B, C and S grades will be awarded this time, the grade ‘S’ will be awarded to a student when his/her performance is considered lower than that deemed fit for the grade ‘C’ in instructor’s judgement. For more details and other relevant queries, you are advised to go through the [FAQ on Senate Guidelines for Closure of 2019-20-II](#) available at the website of the Dean, Academic Affairs, Indian Institute of Technology Kanpur.
- Re-examination
  - \* As per the Senate guidelines, students with B/C/S grades can opt for re-examination to seek a grade modification/revision (Minutes of the 533rd e-Senate Meeting/May, 19-20, 2020). The grading scheme for the re-examination, as per the Senate decision, is A/B/C/D/E/F. It has also been decided that the grade obtained in the re-examination will be considered as the final grade in the course.
  - \* The syllabus for the re-examination will consist of the following:
    - 30% *Group theory* + 70% *PDEs and Greens functions*.