

Syllabus and course policy

MA641: Operator Theory in Hilbert Spaces [3-0-0-6]

January – April 2020

Prerequisites: MA543 [Functional Analysis] or equivalent

Syllabus: Review of Hilbert spaces, orthonormal bases, weak convergence; Bounded operators on Hilbert spaces, adjoints of bounded operators, algebra of bounded operators; Orthogonal projections, isometric and unitary operators, finite rank and compact operators, Hilbert-Schmidt operators, selfadjoint and normal operators; Spectra of bounded operators, invariant and reducing subspaces; Spectral theorem for compact operators, polar and singular value decompositions, Schatten class operators; Spectral theorem for bounded selfadjoint and normal operators.

N.B. Students are advised to revisit Lebesgue integration, at least up to L^p spaces. Course-materials of MA550, available at <http://www.iitg.ac.in/rksri/Teaching.htm> will be helpful.

Instructor: Rajesh Srivastava

For any query/help, you feel free to meet me in my office (E1 208) / call me at 2630/
email me at rksri@iitg.ac.in

Lectures: D slot. Classroom: 1103.

Attendance: It is expected that you attend all the classes. A student will be debarred from appearing in the end semester examination of MA641 if his/her attendance falls below 75 percent and will be awarded an “**F**” grade in this course.

The mobile phone must be in the switched off mode during the class.

Grading: Relative grading will be done based on the total marks obtained in the quizzes, mid-semester exam, and end semester. Exams/quizzes will have the following weight-ages:

Quiz I: 10%

Mid-Semester exam: 30%

Quiz II: 10%

End-Semester exam: 50%

Syllabus for exams: Will be declared in the class.

Some Important Points:

- No make-up exam will be held for the students who **miss a quiz or mid-semester exam.**

- You are always encouraged to ask the instructor anything regarding this course, anywhere, and anytime. However, you are discouraged to meet the instructor to clarify a doubt or to ask for a hint of some problem on the day of any exam.
 - Grades of MA641 will be made available to the students only through the Academic Section on the stipulated date. Please do not ask me to let you know the grades.
-