Information of the course on **Linear Algebra, Integral Transforms and Special Functions(MA102)** at IIT Ropar, Summer semester, A.Y.: 2023-2024

- **Course coordinator:** Dr. Manmohan Vashisth
- **Class and tutorial timings:** As per the institute time-table

Instructors:

- Dr. Balesh Kumar (After Mid-sem)
- Dr. Manmohan Vashisth (Upto Mid-sem)

Teaching Assistants:

- Vinay Rana
- Priya Jain

Course contents:

- **Linear Algebra:** Vector spaces over R and C, Subspaces, Basis and Dimension, Matrices and determinants, Rank of a matrix, System of linear equations, Gauss elimination method, Linear transformations, Rank-nullity theorem, Change of basis, Eigen values, Eigen vectors, Diagonalization of a linear operator, Inner product spaces. Spectral theorem for real symmetric matrices, application to quadratic forms.
- **Integral Transforms:** Laplace transforms of elementary functions, Inverse Laplace transforms and applications, Fourier series, Fourier transforms, Fourier cosine and sine integrals, Dirichlet integral, Inverse Fourier transforms, Special Functions: Gamma and Beta functions, Error functions.

Credit system for the course:

- 10 marks for first quiz which will be held on May 31, 2024.
- 40 marks for mid-sem exam. Mid-sem exam will be as per institute schedule.
- 10 marks for the second quiz.
- 40 marks for end-sem exam. End-sem exam will be as per institute schedule.

Grading and attendance policy:

1. There will be a relative grading with a minimum threshold for A (Outstanding) and D(Marginal) grades as per the criteria given below.

   - The minimum percentage for the award of an "A" grade is 80%.
   - The minimum percentage for the award of "D"grade is 30%.

2. Attendance policy is as per institute rules.

Note: Based on circumstances above evaluation scheme may change.

References for the course:

1. H. Anton and C. Rorres; Elementary Linear Algebra, 11th Edition, Wiley, 2014.
2. E. Kreyszig; Advanced Engineering Mathematics, 10th edition, Wiley, 2019.