Recent Advanced Mathematical Methods for Engineering and Physical Sciences Schedule

March 20-25, 2025 (Hybrid mode)

Date	March 20, 2024	March 21, 2024	March 22, 2024	March 23, 2024	March 24, 2024	March 25, 2024
Day	Thursday	Friday	Saturday	Sunday	Monday	Tuesday
09:00-10:00 AM		Finite Difference Methods for elliptic problems **Dr. Vivek Agrawal, DTU, Delhi**	Numerical solutions of IVP and their convergence using Python **Dr. Vivek Agrawal, DTU, Delhi**	Low-rank approximation, manifold learning, principal component analysis, linear discriminant analysis **Prof. Sanjeev Kumar, IIT Roorkee**	Basic concepts of FEM - type of element, convergence, boundary conditions **Prof. V K Gupta, IIITDM Jabalpur**	Weighted Residual Method and Application of FEM **Prof. V K Gupta, IIITDM Jabalpur**
10:00-11:00 AM	Inauguration					
11:00-11:30 AM	High Tea	Tea break				
11:30-12:30 PM	Basics of Python with computational error **Dr. Vivek Agrawal, DTU, Delhi**	Multi-resolution analysis for wavelet Galerkin and collocation methods **Prof. Mani Mehra, IIT Delhi**	Introduction to multi-rate system and Application **Dr. Anil Kumar, IIITDM Jabalpur**	Numerical optimization for the transport problem **Dr. Deepmala, IIITDM Jabalpur**	Introduction to global approach method and their comparisons with local approach methods; discretization of the methods etc. **Dr. L K Balyan, IIITDM Jabalpur**	Spectral methods for periodic/non-periodic problems; Fourier Galerkin methods and Fourier collocation methods **Dr. L K Balyan, IIITDM Jabalpur**
12:30-01:30 PM						
01:30-02:30 PM		**Lunch Break**				
02:30-03:30 PM	Introduction to wavelet transform **Prof. Mani Mehra, IIT Delhi**	Error analysis using FDM for elliptic operators **Dr. Vivek Agrawal, DTU, Delhi**	Equality of integral and summation for quadrature formula **Dr. L K Balyan, IIITDM Jabalpur**	Spectral decomposition, singular value decomposition **Prof. Sanjeev Kumar, IIT Roorkee**	LAB-Paper writing skills in Latex **Dr. Deepmala, IIITDM Jabalpur**	LAB-Phyton/Matlab implementation of higher-order methods for IVPs **Dr. L K Balyan, IIITDM Jabalpur**
03:30-4:00 PM	Tea break					
04:00-4:30 PM	LAB-Python Lab **Dr. Vivek Agrawal, DTU, Delhi**	LAB-Recent applications of wavelet methods using Phyton/Matlab **Prof. Mani Mehra, IIT Delhi**	LAB-Application for signal processing using Phyton/Matlab **Dr. Anil Kumar, IIITDM Jabalpur**	LAB-Python implementation of SVD, PCA, LDA **Prof. Sanjeev Kumar, IIT Roorkee**	LAB-Python/Matlab implementation of FEM **Prof. V K Gupta, IIITDM Jabalpur**	
04:30-05:30 PM						**Closing Ceremony**
05:30-06:00 PM						