

ST. ALOYSIUS COLLEGE(AUTONOMOUS), JABALPUR

Reaccredited 'A+' Grade by NAAC(CGPA:3.68/4.00)

College with Potential for Excellence by UGC

DST-FIST Supported & STAR College Scheme by DBT

Faculty of Science

Bachelor of Science (B.Sc.)

SUBJECT: MATHEMATICS

B.Sc. VI Semester

Paper- Discipline Specific Elective (DSE) Group- A, Paper- II

Integral Transform

Course Outcomes

CO.No.	Course Outcomes	Cognitive Level
CO1	Understanding about Laplace transform and its properties.	U
CO2	Solve ordinary differential equations using Laplace transform.	Ap
CO3	Familiarise with Fourier transform of functions. Relation between Laplace and Fourier transform. Apply the concept of the course in real life problems.	U, Ap
CO4	Explain Parseval's identity and applications of Fourier transform to boundary value problems.	AP

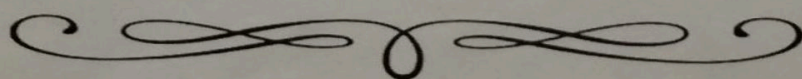
Credit and Marking Scheme

	Credits	Marks		Total Marks
		Internal	External	
Theory	4	40	60	100
Total	4		100	

Evaluation Scheme

	Marks	
	Internal	External
Theory	3 Internal Exams of 20 Marks (During the Semester) (Best 2 will be taken)	1 External Exams (At the End of Semester)

Mandur
26/7/24



Jalauq

Ramin

M. Dube

Spain

Preeti

Mandur
26/7/24

AL



ST. ALOYSIUS COLLEGE(AUTONOMOUS), JABALPUR

Reaccredited 'A+' Grade by NAAC(CGPA:3.68/4.00)
College with Potential for Excellence by UGC
DST-FIST Supported & STAR College Scheme by DBT

Content of the Course Theory

No. of Lectures (in hours per week) 45 Hrs. per week

Total No. of Lectures:60 Hrs.

Maximum Marks: 80

Unit	Topics	No. of Lectures
I	Laplace Transform: 1.1 Linearity property 1.2 Existence theorem 1.3 Shifting theorem 1.4 Change of scale property 1.5 Laplace transform of derivatives and integrals 1.6 Differentiation and integration of the Laplace transforms 1.7 Multiplication and division by 't' 1.8 Periodic function	25
II	Inverse Laplace Transform: 2.1 Linearity property 2.2 Shifting theorem 2.3 Change of scale property 2.4 Inverse Laplace transforms of derivatives and integrals 2.5 Multiplication and division by powers of p 2.6 Convolution theorem 2.7 Heaviside expansion theorem	25
III	Application of Laplace Transform: 3.1 Solution of ordinary differential equation with constant coefficients 3.2 Solution of ordinary differential equation with variable coefficients	15
IV	Fourier Transform: 4.1 Linearity property 4.2 Shifting theorem 4.3 Change of scale property 4.4 Modulation 4.5 Convolution theorem 4.6 Fourier transform of derivatives 4.7 Relations between Fourier transform and Laplace transform 4.8 Parseval's identity for Fourier transform 4.9 Solution of differential equation using Fourier transform	15

Handwritten
26/7/24

M. Dube

Handwritten
26/7/24

Star
Ardang.
Kominari
Benti

AL

ST. ALOYSIUS COLLEGE(AUTONOMOUS), JABALPUR

Reaccredited 'A+' Grade by NAAC(CGPA:3.68/4.00)

College with Potential for Excellence by UGC

DST-FIST Supported & STAR College Scheme by DBT

References

Text Books:

- 1 Lokenath Debnath, Dambaru Bhatta: Integral Transforms and Their Applications, Chapman and Hall/CRC; 3rd edition, 2014.
- 2 Sreenadh S. Ranganatham S. Prasad M. V. S. S. N. & Babu, Ramesh V. : Fourier Series and Integral Transforms. S. Chand Publishing, 2014.
- 3 A. N. Srivastava: Integral Transforms and Fourier Series. Narosa Publications, 2012.
- 4 मध्यप्रदेश हिंदी ग्रंथ अकादमी की पुस्तके।

Reference Books:

- 1 I. N. Sneddon: The use of integral transform. McGraw Hill, 1972.
- 2 Murray R. Spiegel. Laplace transform, Schaum's Series, McGraw Hill Education, 1st edition, 1965.

Mandus
26/7/24

Raman

M. Dube

Mandus
26/7/24

Ardang.

Sain

Panti

AL