DR.B.R. AMBEDKAR UNIVERSITY, SRIKAKULAM

Semester-wise Revised Syllabus under CBCS, 2020-21
Subject: **MATHEMATICS**

Max Marks: 100

IV Year B.A./B.Sc. (Hons)– Semester – V
Course-6B**: Multiple integrals and applications of Vector calculus**
(Skill Enhancement Course (Elective), 5 credits)

SYLLABUS

(Hours: Teaching: 75 (incl. unit tests etc.05), Training: 15)

Unit – 1: Multiple integrals-I   (15h)
 1. Introduction, Double integrals, Evaluation of double integrals, Properties of double integrals.
 2. Region of integration, double integration in Polar Co-ordinates,
 3. Change of variables in double integrals, change of order of integration.

Unit – 2: Multiple integrals-II   (15h)
 1. Triple integral, region of integration, change of variables.
 2.   Plane areas by double integrals, surface area by double integral.
 3. Volume as a double integral, volume as a triple integral.

Unit – 3: Vector differentiation   (15h)
 1. Vector differentiation, ordinary derivatives of vectors.
 2. Differentiability, Gradient, Divergence, Curl operators,
 3. Formulae involving the separators.

Unit – 4: Vector integration   (15h)
 1. Line Integrals with examples.
 2. Surface Integral with examples.
 3. Volume integral with examples.

Unit – 5: Vector integration applications   (15h)
 1. Gauss theorem and applications of Gauss theorem.
 2. Green's theorem in plane and applications of Green's theorem.
 3. Stokes's theorem and applications of Stokes theorem.

I.   Reference Books:
 1. Dr. M Anitha, Linear Algebra and Vector Calculus for Engineer, Spectrum University Press, SR Nagar, Hyderabad-500038, INDIA.
 2. Dr. M. Babu Prasad, Dr. K. Krishna Rao, D. Srinivasulu, Y. AdiNarayana, Engineering Mathematics-II, Spectrum University Press, SR Nagar, Hyderabad-500038,INDIA.
 3. V. Venkateshwara, N. Krishnamurthy, B. V. S. S. Sarma and S.Anjaneya Sastry, A text Book of B.Sc., Mathematics Volume-III, S. Chand & Company, Pvt. Ltd., Ram Nagar,NewDelhi-110055.
 4. R. Gupta, Vector Calculus, Laxmi Publications.
 5. P. C. Matthews, Vector Calculus, Springer Verlag publications.
 6. Web resources suggested by the teacher and college librarian including reading material

DR.B.R. AMBEDKAR UNIVERSITY, SRIKAKULAM
MATHEMATICS-PAPER -6B

Course-6B: Multiple integrals and applications of Vector calculus
(Skill Enhancement Course (Elective), 5 credits)

SEMESTER-VI
MODEL PAPER PATTERN

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Max.Marks:75   **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)

SECTION - B (Total: 5 X 5=25Marks)

(Answer any **five questions**. Each answer carries **5 Marks)(At least**

1 question should be given from each Unit)

1.	**UNIT-1**
2.	**UNIT-1**
3.	**UNIT-2**
4.	**UNIT-3**
5.	**UNIT-3**
6.	**UNIT-4**
7.	**UNIT- 4 & 5**
8.	**UNIT-5**

SECTION - C (Total: 5 X 8 = 40 Marks)

(Answer ALL the questions. Each question carries 8 Marks)

1.	**UNIT-1 (a) or (b)**
2.	**UNIT-2 (a) or (b)**
3.	**UNIT-3 (a) or (b)**
4.	**UNIT-4 (a) or (b)**
5.	**UNIT-5 (a) or (b)**

DR.B.R. AMBEDKAR UNIVERSITY, SRIKAKULAM

Semester-wise Revised Syllabus under CBCS, 2020-21
Subject: **MATHEMATICS**
IV Year B.A./B.Sc. (Hons)– Semester – V
Course-7B: Integral transforms with applications
(Skill Enhancement Course (Elective), 5 credits)   Max Marks: 100

SYLLABUS
(Hours: Teaching: 75 (incl. unit tests etc.05), Training: 15)

Unit – 1:   Laplace transforms- I   (15h)
1. Definition of Laplace transform, linearity property-piecewise continuous function.
2. Existence of Laplace transform, functions of exponential order and of class A.
3. First shifting theorem, second shifting theorem and change of scale property.

Unit – 2:   Laplace transforms- II   (15h)
1. Laplace Transform of the derivatives, initial value theorem and final value theorem. Laplace transforms of integrals.
2. Laplace transform of t^n. f (t), division by t, evolution of integrals by Laplace transforms.
3. Laplace transform of some special functions-namely Dirac delta function, error function, Bessel function and Laplace transform of periodic function.

Unit – 3:   Inverse Laplace transforms   (15h)
1. Definition of Inverse Laplace transform, linear property, first shifting theorem, secondshifting theorem, change of scale property, use of partial fractions**.**
2. Inverse Laplace transforms of derivatives, inverse, Laplace transforms of integrals, multiplication by powers of 'p', division by 'p'.
3. Convolution, convolution theorem proof and applications.

Unit – 4: Applications of Laplace transforms   (15h)
1. Solutions of differential equations with constants coefficients, solutions of differentialequations with variable coefficients.
2. Applications of Laplace transforms to integral equations- Abel's integral equation.
3. Converting the differential equations into integral equations, converting the integralequations into differential equations.

Unit – 5: Fourier transforms   (15h)
1. Integral transforms, Fourier integral theorem (without proof), Fourier sine and cosineintegrals.
2. Properties of Fourier transforms, change of scale property, shifting property, modulation theorem. Convolution.
3. Convolution theorem for Fourier transform, Parseval's Identify, finite Fourier transforms.

II.   Reference Books:

1. Dr. S.Sreenadh, S.Ranganatham, Dr.M.V.S.S.N.Prasad, Dr. V.Ramesh Babu, Fourier series and Integral Transforms, S. Chand & Company, Pvt. Ltd., Ram Nagar, New Delhi-110055.
2. A.R. Vasistha, Dr. R.K. Gupta, Laplace Transforms, Krishna Prakashan Media Pvt. Ltd.Meerut.
3. M.D.Raisinghania, H.C. Saxsena , H.K. Dass, Integral Transforms, S. Chand & CompanyPvt. Ltd., Ram Nagar, New Delhi-110055.
4. Dr. J.K. Goyal, K.P. Gupta, Laplace and Fourier Transforms, Pragathi Prakashan, Meerut.
5. Shanthi Narayana , P.K. Mittal, A Course of Mathematical Analysis, S. Chand & CompanyPvt.Ltd. Ram Nagar, New Delhi-110055.
6. Web resources suggested by the teacher and college librarian including reading material.

DR.B.R. AMBEDKAR UNIVERSITY, SRIKAKULAM
MATHEMATICS-PAPER -7B
Course-7B: Integral transforms with applications
(Skill Enhancement Course (Elective), 5 credits)
SEMESTER-VI
MODEL PAPER PATTERN

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Max.Marks:75   **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)

SECTION - B (Total: 5 X 5=25Marks)

(Answer any **five questions**. Each answer carries

5 Marks)(At least 1 question should be given

from each Unit)

1.	UNIT-1
2.	UNIT-1
3.	UNIT-2
4.	UNIT-3
5.	UNIT-3
6.	UNIT-4
7.	UNIT- 4 & 5
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