DRAFT SCHEME

Sharnbasva University, Kalaburagi

Scheme of Teaching and Examination 2021-22

Outcome Based Education(OBE) and Choice Based Credit System (CBCS)

(Effective from the academic year 2021-22)

I / II SEMESTER B.Tech (Physics/Chemistry Group)

Sl.No	Course Code	Course Title	Teaching Dept. & Paper Setting Board	Teaching Hours/week				Examination				Credits
				Theory Lecture	Tutorial	Practical/Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	S					
1	18MATDIP31	Additional Mathematics-I	Mathematics	2	1	---	---	3	50	50	100	00
2	18MATDIP41	Additional Mathematics-II	Mathematics	2	1	---	---	3	50	50	100	00
Total				04	02	--	--	06	100	100	200	00

1) Dr. T.V. Biradar
2) Dr. N.B. Naduvinamani –
3) Dr. Sharangouda Malipatil –
4) Dr. Mahantesh Swamy –
5) Dr. Shivalingappa Patil –
6) Dr. G. Janardhan Reddy –
7) Dr. Veena. P. H –
8) Dr. Ashok Patil –
9) Prof. T. Venkatesh –
10) Dr. Suvarna Saraf –
11) Dr. Swati Kalshetty –
12) Prof. Jaysudha. N –
13) Dr. Suresh Biradar –
14) Dr. Shreedevi Kalyan –
15) Dr. Jagadish Patil –
16) Prof. Sharanayya Swami –
17) Prof. Ramesh Kempepatil –

SHARNBASVA UNIVERSITY, KALABURAGI

ADDITIONAL MATHEMATICS - I
(B.Tech. III semester Common to all branches)
(A Bridge course for Lateral Entry students of III Sem. B. Tech.)

[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2019-20)

Course Code : 18MATDIP31
Contact Hours/Week : 03
Total Hours:40
Semester : III

CIE Marks : 50
SEE Marks: 50
Exam Hours:03
Credits: 00

Course Learning Objectives:

This course will enable students to:

- Acquire basic concepts of complex trigonometry, vector algebra, differential & integral calculus and vector differentiation.
- Evaluation of double and triple integrals.
- know the basic concepts of partial differential equations.
- To develop the knowledge of matrices and linear algebra in compressive manner.
- To understand the essential concept of linear algebra.

MODULE-I

Complex Trigonometry-1:

Complex Numbers: Definition and Properties . Modulus and Amplitude of complex number, Argand's diagram , De-Moivre's theorem (without proof)

Vector Analysis : Scalar and Vectors. Vector addition and subtraction. Multiplication of vectors (Dot and Cross products) Scalar and vector triple products- simple problems, Vector Differentiation : Gradient, Divergence and Curl.

8 - Hours

MODULE-II

Differential Calculus:

Review of successive differentiation. Formulae of N^{th} derivatives of standard functions- Leibnitz's theorem (without proof).

Polar Curves: Expression for Angle between radius vector and tangent, length of perpendicular from pole to the tangent, angle between two polar curves, Pedal Equation of polar curves and problems. Taylor' and Maclaurin's seires expansions.

8 - Hours

MODULE-III

Partial Differentiation :

Definitions of Partial Differentiation, Direct and Indirect partial derivatives, Symmetric functions, Homogeneous function and Euler's theorem on homogeneous function. Total Derivative of composite and implicit function. Jacobian.

8 - Hours

MODULE-IV

Integral Calculus:

Reduction Formulae of $\int_0^{\pi/2} Sin^n x\, dx$, $\int_0^{\pi/2} Cos^n x\, dx$, *and* Statement of Reduction formulae $\int_0^{\pi/2} Sin^m x\, Cos^n x\, dx$ and Problems.

Double and Triple integral- simple problems.

8 - Hours

MODULE-V

Linear Algebra:

Basic concepts of matrices- Rank of matrix by elementary row transformations- Echelon form. Consistency of system of Linear equations. Solution of system linear equations by Gauss Elimination method, Linear Transformation, Cayley- Hamilton theorem to compute inverse of matrix. Eigen values and Eigen vector, Largest Eigen value and corresponding Eigen vector by Reyleigh's Power method. **8 - Hours**

Course outcomes:

On completion of the course, students are able to:

- Understand the fundamental concepts of complex numbers and vector algebra to analyze the problems arising in related area.
- Use derivatives and partial derivatives to calculate rates of change of multivariate functions.
- Learn techniques of integration including double and triple integrals to find area, volume, mass and moment of inertia of plane and solid region.
- Analyze position, velocity and acceleration in two or three dimensions using the calculus of vector valued functions.
- Recognize and solve first-order ordinary differential equations occurring in different branches of engineering.
- Solve systems of linear equations in the different areas of linear algebra.

Question paper pattern:

- The question paper will have ten questions.
- Each full Question consisting of 20 marks
- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.
- The students will have to answer 5 full questions, selecting one full question from each module.

Text Book:

B.S. Grewal: Higher Engineering Mathematics, Khanna Publishers, New Delhi, 43rd Ed., 2015.

Reference Books:

1. E. Kreyszig: Advanced Engineering Mathematics, John Wiley & Sons, 10th Ed., 2015.

2. N.P.Bali and Manish Goyal: Engineering Mathematics, Laxmi Publishers, 7th Ed., 2007.