

# COURSE TEACHING STRUCTURE

## Course: Engineering Mathematics-3

**Dept: PETROLEUM ENGINEERING**

**Class: SE**

### **UNIT 1: LINEAR DIFFERENTIAL EQUATION**

**MARKS: 16**

**LECTURE: 12 HOURS**

SR NO	TOPIC	DURATION	TOPIC BASED	MARKING SKIM
1	Complementary Function	1 Hr	Numerical	3
2	Perticular Integral	15 Min	Theoretical	0
3	General Method	1.15 Hrs	Numerical	6
4	Shortcut Methods	4.30 Hrs	Numerical	13
5	Method Of Variation Of Parameters	1.45 Hrs	Numerical	7
6	Cauchy's DE	50 Min	Numerical	7
7	Legender's DE	40 Min	Numerical	7
8	Simultaneous DE	1 Hrs	Numerical	6
9	Symmetric Simultaneous DE	45 Min	Numerical	5

### **UNIT 2: FOURIER TRANSFORMS**

**MARKS: 16**

**LECTURE: 09 HOURS**

SR NO	TOPIC	DURATION	TOPIC BASED	MARKING SKIM
	<b>FOURIER TRANSFORM</b>			
1	Fourier Integral Theorem	1.30 Hrs	Numerical	5
2	Fourier Sine & Cosine Integrals	1.30 Hrs	Numerical	5
3	Fourier Transform	2 Hrs	Numerical	5
4	Fourier Sine Inverse	2 Hrs	Numerical	4
5	Fourier Cosine Inverse	1 Hrs	Numerical	4
6	Discrete Fourier Transform	1 Hrs	Numerical	5

### UNIT 3: LAPLACE TRANSFORMS

**MARKS: 14**

**LECTURE: 08 HOURS**

SR NO	TOPIC	DURATION	TOPIC BASED	MARKING SKIM
1	Defination Of LT	1 Hr	Theoretical	0
2	Inverse LT	2 Hrs	Numerical	5
3	Properties And Thneorems	1 Hr	Numerical	8
4	LT Of Standard Functions	2 Hrs	Numerical	8
5	LT Of Some Special Functions	30 Min	Numerical	6
6	Application Of LT For Solving LDE	1.30 Hrs	Numerical	7

### UNIT 4: VECTOR DIFFRENTIAL CALCULUS

**MARKS: 18**

**LECTURE: 13 HOURS**

SR NO	TOPIC	DURATION	TOPIC BASED	MARKING SKIM
1	Vector Differentiation - Gradient, Divergence And Curl	4 Hrs	Numerical	7
2	Directional Derivative	3 Hrs	Numerical	7
3	Solenoidal And Irrotational Fields	3 Hrs	Numerical	5
4	Vector Identities	3 Hrs	Numerical	6

### UNIT 5: VECTOR INTEGRAL CALCULUS & APPLICATIONS

**MARKS: 18**

**LECTURE: 13 HOURS**

SR NO	TOPIC	DURATION	TOPIC BASED	MARKING SKIM
1	Line, Surface And Volume Integrals	2 Hrs	Numerical	6
2	Work-Done	2 Hrs	Numerical	6
3	Green's Lemma	1 Hr	Numerical	6
4	Gauss's Divergence Theorem	3 Hrs	Numerical	7
5	Stoke's Theorem	3 Hrs	Numerical	6
6	Application To Problems In Electro-Magnetic Fields	2 Hrs	Derivations	6

**UNIT 6: APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS (PDE)****MARKS: 18****LECTURE: 10 HOURS**

<b>SR NO</b>	<b>TOPIC</b>	<b>DURATION</b>	<b>TOPIC BASED</b>	<b>MARKING SKIM</b>
1	Modeling Of Vibrating String, Wave Equations	3 Hrs	Derivations	8
2	One Dimensional Heat Flow	2 Hrs	Derivations	7
3	Two Dimensional Heat Flow	3 Hrs	Derivations	7
4	Application Of PDE To Problems Of Civil And Allied Engineering	2 Hrs	Derivations	8

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