



SRI VIDYA COLLEGE OF ENGINEERING & TECHNOLOGY

COURSE PLAN (THEORY)



ACADEMIC YEAR: 2018-2019

ACADEMIC YEAR 2016-2017						
Subject Code	MA8353		L	T	P	C
Subject Title	TRANSFORMS AND PDE		4	0	0	4
Year / Dept / Sem	II/MECH-B/III		Regulation Year		2017	
Faculty Name / Desg / Dept	P.ARUNACHALAM / ASSISTANT PROFESSOR / MATHEMATICS					
Course Prerequisite	INTEGRAL, DIFFERENTIATION AND PDE					

Attach the copy of syllabus

Course Objectives (CO)	CO1: Introduce students to partial differential equations CO2: Introduce students to how to solve linear Partial Differential with different methods CO3: Introduce students to some physical problems in Engineering and Biological models that results in partial differential equations CO4: Students should be able to solve a second order partial diff with boundary conditions and initial conditions CO5: Students should be able to solve both linear and quasilinear wave equation by the method characteristics CO6: Solve linear partial differential equations of both first and second order
Expected Course Outcomes (ECO)	At the end of the course, the students should be able to: ECO1: Apply the fundamental concepts of Ordinary Differential Equations and Partial Differential Equations and the basic numerical methods for their resolution. ECO2: Solve the problems choosing the most suitable method ECO3: Understand the difficulty of solving problems analytically and the need to use numerical approximations for their resolution ECO4: Use computational tools to solve problems and applications of Ordinary Differential Equations and Partial Differential Equations. ECO5: Formulate and solve differential equation problems in the field of Industrial Organisation Engineering. ECO6: Use an adequate scientific language to formulate the basic concepts of the course

Mapping of CO & PO (Specify the PO's) - (Fill the cols with the legend given below)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	B,3					A,1				D,2		
CO2		B,2				C,3						D,1
CO3		D,1			E,2				H,3			
CO4				B,3		C,2				D,1		
CO5		B,2			D,1				E,3			
CO6						B,3				D,1		C,2

Bridging the Curriculum Gap (Additional Topics beyond syllabus/Seminars/Assignments)	BCG1: Assignment problems in Fourier series BCG2: seminar in Fourier transforms BCG3: Assignment problems in application of pde
Related Website URLs	W1: http://www.rejinpaul.com/2014/06/ma6351-transform-and-partial-differential-equations-syllabus-nots-question-papers-question-bank-ma6351-m3-tpde-regulation-2013.html W2: http://www.notesengine.com/dept/mech/3sem/Transforms and Partial Differential Equations.php W3: https://sites.google.com/site/benotesplusem2/transforms-and-partial-differential-equations W4: http://www.vidyarthiplus.com/vp/thread-19733.html#.V1px3hL3CCk W5: http://waps9.blogspot.in/2013/10/transforms-and-partial-differential.html
Related Video Course Materials (min. 3 no.s)	V1: https://www.youtube.com/watch?v=AGXtOt37XL0 V2: https://www.youtube.com/watch?v=U8riFeiui3s V3: https://www.youtube.com/watch?v=gZNm7L96pfY V4: https://www.youtube.com/watch?v=wG6VUnkrO90 V5: https://www.youtube.com/watch?v=LYsIBqjQTdl

UNIT I –PARTIAL DIFFERENTIAL EQUATIONS

S.No	Topic Name	Book	Page No	Mode of Teaching	No of hrs	Cumulative hrs
1.	Introduction	R2	1.2	BB	1	1
2.	Formation of PDE by elimination of arbitrary constant	R2	1.2-1.12	BB	1	2
3.	Formation of PDE by elimination of arbitrary function	R2	1.13-1.23	BB	2	4
4.	Type1: $F[p, q] = 0$	R2	1.28-1.33	BB	1	5
5.	Type2: Clairaut's form $z = px + qy + f(p, q)$	R2	1.34-1.46	BB	2	7
6.	Type3: $F(z, p, q) = 0$	R2	1.47-1.54	BB	2	9
7.	Type4: $F_1(x, y, p, q) = 0$	R2	1.55-1.64	BB	1	10
10.	Method of grouping	R2	1.66-1.73	BB	1	13
11.	Method of multipliers	R2	1.74-1.81	BB	1	14
12.	Homogeneous linear Equations	R2	1.88-1.120	BB	1	15
13.	Review				1	16

UNIT II -FOURIER SERIES

Topic Name	Book	Page No	Mode of Teaching	No of hr	Cumulative hrs
Fourier series-Dirichlet's Conditions	R2	2.4-2.19	BB	2	18
2. Problems under $(0, 2\pi)$					
3. Odd & even function	R2	2.22-2.37	BB	1	19
4. Half range sine & cosine series	R2	2.39-2.80	BB	2	21
5. Complex form of Fourier series	R2	2.4-2.96	BB	2	23
6. Parseval's identity & theorem	R2	2.126-2.130	BB	1	24
7. Harmonic Analysis	R2	2.98-2.124	BB	1	25
8. Review	R2	2.131-2.139	BB	2	27
				1	28

UNIT III -APPLICATION OF PARTIAL DIFFERENTIAL EQUATIONS

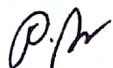
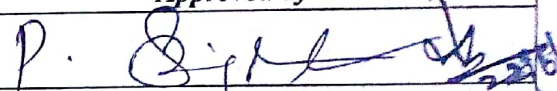
S.No	Topic Name	Book	Page No	Mode of Teaching	No of hr	Cumulative Hrs
1.	Method of separation of variables	R2	3.3-3.5	BB	1	29
2.	One dimensional wave equations	R2	3.10-3.27	BB	1	30
	Vibrating string with zero initial velocity					
3.	Vibrating string with non-zero initial velocity	R2	3.29-3.45 3.47-3.57	BB	1	31
4.	Vibrating string with initial velocity & initial displacement	R2	3.59-3.65	BB	1	32
5.	One dimensional heat equations	R2	3.70-3.79	BB	1	33
	Problems with zero boundary values					
6.	Steady state condition and zero boundary conditions	R2	3.80-3.84	BB	1	34
7.	Steady state condition and non-zero boundary conditions	R2	3.86-3.92	BB	1	35
9.	Two dimensional heat flow equations	R2	3.93-3.97	BB	1	37
10.	Infinite plate and finite plate	R2	3.98-3.124	BB	2	38
11.	Review				1	39

UNIT IV -FOURIER TRANSFORM

S.No	Topic Name	Book	Page No	Mode of Teaching	No of hrs	Cumulative Hrs
1.	Fourier integral theorem	R2	4.1-4.3	BB	1	40
2.	Fourier cosine & sine integrals	R2	4.4-4.5	BB	1	41
3.	Fourier transform	R2	4.7-4.30	BB	3	44
4.	Self reciprocal	R2	4.31-4.34	BB	2	46
5.	Fourier cosine and sine transform	R2	4.36-4.56	BB	2	48
6.	Problems under derivative	R2	4.58-4.63	BB	1	49
7.	Parseval's identity	R2	4.64-4.73	BB	1	50
10.	Review				1	51

UNIT V-Z-TRASFORM & DIFFERENCE EQUATIONS

S.No	Topic Name	Book	Page No	Mode of Teaching	No of hr	Cumulative hrs
1.	Z-transform of some basic property	R2	5.2-5.23	BB	3	54
2.	First shifting theorem	R2	5.24-5.30	BB	1	55
3.	Problems under derivative	R2	5.30-5.35	BB	1	56
4.	Initial & final value theorem	R2	5.36-5.39	BB	1	57
5.	Inverse Z-transform using partial fractions	R2	5.40-5.49	BB	1	58
6.	Convolution theorem	R2	5.50-5.55	BB	1	59
7.	Residue method	R2	5.56-5.63	BB	1	60
8.	Formation & Solution of difference equation	R2	5.64-5.80	BB	1	61
9.	Review				1	62

	Prepared by	Approved by
Signature		
Name	P.ARUNACHALAM	P.SURIYAKALA
Designation	Assistant Professor /S&H	Assistant Professor /S&H
Signed date	22.06.18	22/6/18

/Endorsed/

 (P.A.)