D.S GOVERNMENT COLLEGE FOR WOMEN

OUTCOME BASED EDUCATION

CO- PO ATTAINMENT REPORT

CO- PO MAPPING, COMPUTATION AND ANALYSIS

PROGRAM WISE & COURSE WISE ANALYSIS

DEPARTMENT OF MATHEMATICS

SEMESTER I

DIFFERENTIAL EQUATIONS

MATHEMATICS, PHYSICS & COMPUTER SCIENCE

PROGRAMME OUTCOMES
(Common to all UG Programmes)

PO no.	On the completion of a Programme, The students will be able to	Benchmarks	Remarks
PO1	Acquire a comprehensive understanding of domain-specific knowledge and demonstrate their acquired skills effectively during practical transactions within the specific domain.	70%	
PO2	Demonstrate proficient analytical and problem-solving skills through the application of critical thinking strategies to addressreal-world situations effectively.	60%	
PO3	Master effective communication, collaborate skilfully with diverse stakeholders, nurture meaningful dialogues, build strong professional bonds in and beyond college	60%	
PO4	Exhibit proficiency in ethically using information from diverse sources, analysing and synthesizing data effectively forreal-world research.	50%	
PO5	Exemplify ethical standards in personal and professional contexts, appreciate diverse cultures, evaluate social responsibility's impact on well-being, and advocate for women students' betterment.	70%	
PO6	Actively promote social awareness through community service, contributing to a more inclusive and compassionateglobal community.	80%	Design edfor CSP
PO7	Embrace continuous learning, create professional growth chances, and prioritize personality development and physicalwell-being for a holistic approach.	60%	
PO8	Foster self-confidence, advocate women empowerment, demonstrate expertise for growth in studies, employment, and entrepreneurship, creating a brighter and equitable future.	80%	Designe d for Internshi ps

Programme Specific Outcomes (PSO)

MATHEMATICS PHYSICS COMPUTER SCIENCE

PSO-No	Upon the successful completion of B.Sc., degree with Mathematics as one of the subject, the students will be able to:	Mapping with POs
PSO - 1	Understand the concepts of vector spaces, group theory, quantum mechanics, optical, thermal, electrical, mechanical properties of a materials, probability, algorithm design, data base	PO1
PSO - 2	Analyse the concepts of mathematics, physics and computers science able to relate them in numerical programming of modelsof physical systems.	PO4
PSO - 3	To impart knowledge of a broad range of Computer Science skills, tools, and mathematical techniques, and the capability ofapplying them to analyze and design complex systems.	PO8
PSO - 4	Acquire logical and analytical skills to apply the concepts to model and solve real life problems in related areas.	PO2
PSO-5	Engage in professional development in the fields of InformationTechnology and Computer Science.	PO8

MATHEMATICS CLOUD COMPUTING COMPUTER SCIENCE

PSO-No	Upon the successful completion of B.Sc., degree with Mathematics as one of the subject, the students will be able to:	Mapping with POs
PSO - 1	Acquire good knowledge and understanding in advanced areas of mathematics andstatistics, chosen by the student from the given courses.	PO1
PSO - 2	Design, implements, test, and evaluate a computer system,	PO4
PSO - 3	component, or algorithm to meet desired needs and to solve a computational problem	PO8
PSO - 4	Demonstrate understanding of the principles and working of the hardware and software aspects of computer systems	PO2
PSO-5	Acquire the fundamental ideas behind Cloud Computing, the evolution of theparadigm, its applicability; benefits, as well as current and future challenges	PO8

Levels of attainment of PO

POs & PSOs attainment are characterized in to 3 levels

Level 3 – High

Level 2 – Medium

Level 1 – Low Not addressed

Targets/ benchmarks for the level at which a PO is addressed

If 50% of classroom sessions/tutorials/lab sessions address a particular PO, it is considered that the PO is addressed at Level 3

If 25% to 49% (less than 50% and rounded off to two decimals) of classroom sessions/tutorials/lab sessions address a particular PO, it is considered that the PO is addressed at Level 2

If 5% to 24% (less than 25% and rounded off to two decimals) of classroom sessions/tutorials/lab sessions address a particular PO, it is considered that the PO is addressed at Level 1

If less than 5% of classroom sessions/tutorials/lab sessions address a particular PO, it is considered that the PO is not addressed

Semester I

Course: Differential Equations

Programme: Mathematics, Physics, Computer Science

Faculty concerned : Smt. B.Sravani

CO No	Upon the successful completion of the course students will be able to	PO’s/PSO’s	Cognitive level
CO1	Demonstrate the fundamental concepts, principles, and techniques related to first-order and higher-order differential equations.	PO1,PO5	L1,L2,L3
CO2	Understand various methods and apply the methods to solve differential equations	PO1,PO2	L2,L3
CO3	Critically analyze and evaluate the solutions obtained for differential equations	PO2,PO3	L4,L5

Mid 1 Question paper

Question number	Question	MA	CL	CO mapped
1	The degree of differential equation $[1 + (dy/dx)^2]^{32} = d^2y/dx^2$ is	0.5	L1	CO1
2	Integrating factor of the differential equation cos x dy / dx + y sin x = 1 is	0.5	L2	CO2
3	The solution of dx/dy+px=Q is -------------	0.5	L3	CO2
4	The necessary and sufficient condition for the differential equation Mdx +Ndy=0 to be exact is -----	0.5	L2	CO1
5	Integrating factor(I.F)of a homogeneous differential equation and Mx+Ndy≠0 is---------	0.5	L2	CO1
6	Integrating factor(I.F)Of differential equation Mdx+Ndy=0 is of the form f(xy)ydx+g(xy)xdy=0 and Mx-Ny ≠0 is ---------------	0.5	L2	CO1
7	Solution of $\frac{dy}{dx} + \frac{x}{y} = 0$ ______	0.5	L3	CO1
8	The particular integral of $1/D^3$ Sin x is _______________	0.5	L2,L3	CO2
9	The solution of (D^2-4D+5)Y=0 is__	0.5	L3	CO1
10	The particular integral of $1/((D-2)(D-3))\ e^{2x} is$ _	0.5	L2,L3	CO2
11	Solve $(1 + e^{x/y})\,dx + e^{x/y}(1 - x/y)\,dy = 0$	2	L2,L3	CO2
12	Solve $(1+y^2)dx = (\tan^{-1} y - x)dy$	2	L4,L5	CO3
13	Solve (Px-y) (Py+x)=2P	2	L4,L5	CO3
14	Find the orthogonal trajectories of the family of parabolas $x^2 = 4ay$ where \`a' is a parameter	2	L4,L5	CO3
15	Solve y+ px = p^2x^2	2	L4,L5	CO3
16	Solve $(D^2 - 4D + 3)y = \sin 3x \cos 2x$	2	L4,L5	CO3
17.	Solve $(D^2 - 3D + 2) = \cosh x$	2	L4,L5	CO3
18	Solve (1+xy)xdy+(1-xy)ydx=0	5	L2.L3	CO1
19	Solve p^2+2pycotx=y^2	5	L2,L3	CO2
20	Solve $(D^3 + D^2 - D - 1)y = \cos 2x$	5	L1,L2, L3	CO1

MA: Marks allotted, CL: Cognitive levels

Mid 2 Question paper

Question number	Question	MA	CL	CO mapped
1	Solve $(D^2-3D+2)y = 2x^2$	2	L1,L2,L3	CO1
2	Solve $(D^2-6D+13)y = 8e^{3x}\sin 2x$.	2	L2,L3	CO2
3	Solve $(D^2+9)y = \cos^3 x$	2	L2,L3	CO1
4	Solve $(D^2-2D+1)y = xe^x \sin x$	2	L2,L3	CO1
5	Solve $(D^2-5D+6)y = xe^x$	2	L2,L3	CO1
6	Solve $x^2 d^2y/dx^2+4x\, dy/dx+2y = e^x$	2	L2,L3	CO1
7	Solve $x^2y'' - 2x(1+x)y' + 2(1+x)y = x^3$	2	L2,L3	CO2
8	Solve $(D^2 - 2D + 4)y = 8(x^2 + e^{2x} + \sin 2x)$	5	L4,L5	CO3
9	Solve $(D^2 - 2D)y = e^x \sin x$ by the method of variation of parameters.	5	L4,L5	CO3
10	Solve $(x^2D^2-xD+2)y = x\log x$	5	L4,L5	CO3

MA: Marks allotted CL: Cognitive levels

Assignments

Assignment No	Assignment Questions	Assigned to	Bloom's cognitive levels	CO mapped
A1	Solve $xy^2\frac{dy}{dx} - 2y^3 = 2x^3$ given that y=1 when x=1	Total class	L2,L3	CO2
A2	Show that the system of confocal and coaxial parabolas y^2 = 4a(x+a) is self orthogonal	Total class	L1,L2	CO1
A3	Solve $(D^2$+16)y =e^{-3x} + cos4x.	Total class	L2,L3	CO2
A4	Solve $(D^2$ - 4D +3)y = 2xe^{3x} + 3e^{x}cos2x.	Total class	L4,L5	CO3
A5	Solve[(x-1)D^2-xD+1]y=($x-1)^2$ by the variation of the parameters.	Total class	L4,L5	CO3

Differential Equations

Computation of CO attainment: Benchmarks for the attainment of COs:

CO. No	Upon the successful completion of the course, students will be able to	Targets
CO - 1	Demonstrate the fundamental concepts, principles, and techniques related to first-order and higher-order differential equations.	70%
CO - 2	Understand various methods and apply the methods to solve differential equations	70%
CO - 3	Critically analyze and evaluate the solutions obtained for differential equations	70%

Levels of overall CO attainment for a Course:

S.No	Range of average attainment of all COs	Level of attainment
1	Greater than or equal to 60	3
2	Between 50 and 60	2
3	Between 40 and 50	1
4	Less than or equal to 40	CO not at all attained

1. Weightages assigned:

Weightage to CIA = 50%,

Weightage to SEE = 50%

Weightage to each item in

CIA Mid 1 = 40%

Mid 2 = 30%

Assignments = 20%

Seminar/ Quiz/ Group discussion/ etc., = 10%

Formulae for the computations:

i) Direct attainment of a CO = 0.5× CIA average + 0.5×SEE average

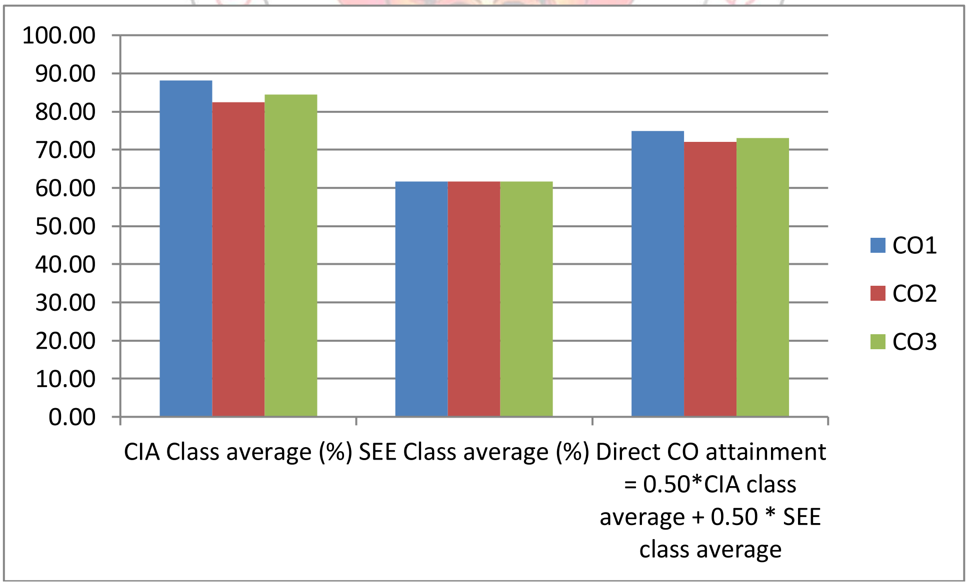
ii) CIA average (%) = 0.4× Mid 1 average % + 0.3× Mid 2 average % + 0.2× Assignments average % + 0.1× seminars Average %

Class Average Percentage in CIA

CO	Class Average				
	Mid 1	Mid 2	Assignments	SEMINAR	CIA average %
CO1	79.15	88.33	100.00	100	88.15
CO2	85	95	100.00		82.50
CO3	95	88	100.00		84.40

Direct attainment of Cos

CO	CIA Class average (%)	SEE Class average (%)	Direct CO attainment = 0.50*CIA class average + 0.50 * SEE class average
CO1	88.15	61.7	74.92
CO2	82.50	61.7	72.1
CO3	84.40	61.7	73.05



Analysis of the results:

CO attainment gap

CO	CO target %	CO attainment %	CO attainment gap	Attained or not attained
CO1	70	74.92	4.92	Attained
CO2	70	72.1	2.1	Attained
CO3	70	73.05	3.05	Attained

Plan of action (Closure of the quality loop)

CO	Target %	CO attainment gap %	Action proposed to bridge the gap	Modification of target where achieved
CO1	70	4.92	No gap	Increase targets to 75%
CO2	70	2.1	No gap	Increase targets to 75%
CO3	70	3.05	No gap	Increase targets to 75%

Differential Equations Course attainment value

for the programme

Mathematics, Physics, Computer Science = 73.35

Differential Equations Course attainment level = 3

Computation of attainment of POs

Number of sessions or hours of instruction (class sessions, lab sessions, tutorials etc.,)used to address the COs:

CO. No	Upon the successful completion of the course, students will be able to	POs/PSOs mapped	cognitive level	Class sessions
CO - 1	Demonstrate the fundamental concepts, principles, and techniques related to first-order and higher-order differential equations.	PO1,PO5	L1,L2,L3	25
CO - 2	Understand various methods and apply the methods to solve differential equations	PO1,PO2	L2,L3	35
CO - 3	Critically analyze and evaluate the solutions obtained for differential equations	PO2,PO3	L4,L5	30
Total Hours of instruction				**90**

Number of hours spent to address the POs

PO	COs	Total number of sessions
PO1	CO1, CO2	20+15 =35
PO2	CO2,CO3	20+15=35
PO3	CO3	15
PO5	CO1	5
No. of Hours		90

PO mapping strength:

PO	Number of hours consumed	Total number of hours allotted	Percentage	Mapping strength
PO1	35	90	38.88	2
PO2	35	90	38.88	2
PO3	15	90	16.66	1
PO4	0	0	0	0
PO5	5	90	5	1
PO6	0	0	0	0
PO7	0	0	0	0
PO8	0	0	0	0

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Direct Attainment of PO

PO	COs mapped	Mapping strength	CO attainment percentage			PO attainment percentage
			CO1	CO2	CO3	
PO1	CO1, CO2	2	74.92	72.1		32.67
PO2	CO2,CO3	2		72.1	73.05	32.25
PO3	CO3	1			73.05	8.11
PO4						
PO5	CO1	1	74.92			8.32
PO6						
PO7						
PO8						

Lecturer | Lecturer in Charge | Coordinator OBE/ Addl. Coordinator IQAC | Principal