

PITHAPUR RAJAH'S GOVERNMENT COLLEGE(A) KAKINADA

DEPARTMENT OF MATHEMATICS

4/25/2024



GUEST LECTURE ON DIFFERENTIAL EQUATIONS AND IT'S APPLICATIONS

BY
SMT.M.MADHAVI M.SC.,APSET.,(PH,D)
LECTURER IN MATHEMATICS
GOVERNMENT DEGREE COLLEGE(A): TUNI

Principal's Permission Letter

From
Principal,
P.R. Government college (A),
Kakinada.

To
Principal,
Government Degree College(A)
Tuni, Kakinada Dist.

Sir/Madam,

Sub : P.R. Govt. College (A), Kakinada – Guest Lecture on Differential Equations & It's Applications –
Request for sparing the service of Smt. M.Madhavi, Lecturer in Mathematics of your College
on -04-2024-Reg.,

I would like to bring to your kind notice that we propose to organize a Guest Lecture on
Differential Equations & It's Applications on 25 – 04 - 2024. In this connection I request you to depute
Smt. M.Madhavi, Lecturer in Mathematics of your Esteemed institution on 25 – 04 - 2024 .

Your Co-operation is highly solicited in this regard.

Thanking you Madam.

Station : Kakinada

Date : 23-04-2024

Copy to Smt.M.Madhavi ,
Lecturer in Mathematics.

Yours Sincerely

(V. S.)

Principal
P.R. Govt. College (A)
KAKINADA

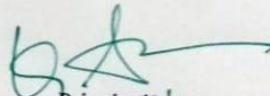
PITHAPUR RAJAH'S GOVERNMENT COLLEGE (A)
KAKINADA



CERTIFICATE

This is to certify that Smt. M.Madhavi, Lecturer in mathematics, Government Degree College(A) ,Tuni, has delivered a guest lecture on "Differential Equations & It's Applications" . Which has been organized by the department of mathematics on 25-04-2024. It is so enlightening and very useful for the First year students in terms of current trends.

Received copy
M.Madhavi


Principal,
P.R. Govt. College (A)
KAKINADA.

Circular / Notice

Notice

23-04-2024

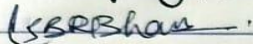
To inform all the first year mathematics students, the department of mathematics conduct a guest lecture on "Differential equations and it's applications" by Smt. M. Madhavi, lecturer in mathematics at GDC, Tuni on 25-04-2024 i.e Thursday at 10 AM in LCD - I. So all students must be attend and clear your doubts.

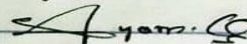
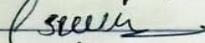
Topic

Differential equations and it's real life application

Signature of H.O.D

Signatures of the staff.

1. S. Anam. G
2. 
3. K.S.P. Prasad.
4. 
5. K. Samrajyama
6. N.S.S. Nagadevi
7. R.V.L. Devi
8. 
9. P. Sai Lakshmi

(stud)	S.NO	class	Major	sign. of lect.
	1.	B.sc	Mathematics	
	2.	B.Sc	statistics	
	3.	B.Sc	chemistry	

Brief Notes on Activity

In a guest lecture, **students get new perspectives and opinions that are often missed in a regular class**. A guest lecture gives students a better opportunity to learn about an explicit topic in a way that gets them involved in the class and actively join in a more convenient way of teaching.

Getting guest lecturers in college are very useful for some students but not for everyone. Guest lectures are a highly useful medium to provide exceptional knowledge to students, it also adds an extra variety to the classroom routine and colleges put a lot of emphasis on the importance of Guest lectures. The Guest lecturers are the “real-world” arriving in the classroom in order to make classes more interesting.

Guest speakers share their experiences and engage students in a dialogue. Dialogue with experts helps students to develop multiple skills like critical thinking, reasoning, planning for the future, etc.. There are multiple reasons to attend guest lectures at university and it is advised by every department to do so.

Guest lecturers can provide great benefits to the students and can be a great tool for the betterment of the class. In a guest lecture, students get new perspectives and opinions that are often missed in a regular class. A guest lecture gives students a better opportunity to learn about an explicit topic in a way that gets them involved in the class and actively join in a more convenient way of teaching.

The outcome of a Guest lecture also depends on the interest, willingness and motivation of the students. Some students seize the opportunity and start practising what they learn in lectures and build an advanced skillset which helps them in their future.

Why are guest lectures important?

Regardless of any course that you have selected, Guest lectures have multitudinous benefits. Students can learn more effectively and form a different perspective on things. One lecture cannot provide knowledge and guidance about everything, industry professional and subject matter expert’s present varied perspectives.

Apart from this, let’s further discuss the importance of guest lectures:

- **Real-life world Exposure**

Guest speakers make students aware of current business scenarios and situations. In a classroom students study about the concepts, however, guest speakers provide a broader view on the real-life problems faced by them in a particular niche and also presents solutions.

- **Expert Professional**

An expert guest speaker makes a big difference in students ability to understand any topic. By attending lectures from guest speakers students learn to overcome different challenges and it becomes easier to nail down difficult concepts.

Providing guest lectures is one of the most important teaching practice at PRGC(A). As we are in one of the worse pandemics of history, online classes are now a necessity and we are continuously organizing online guest lectures and online classes for students. Our state of the art LMS (learning management system) BLACKBOARD makes it easy for students to study in the comfort of their home.

- **Students get to speak with successful individuals**

Keynote speakers not only educate students about their journey towards success but also motivates them to achieve greatness. When students interact with successful entrepreneurs, alumni they learn the secrets of their struggles and by taking notes of their journey it also prepares them for the struggle that they may face in the path to success.

- **Inspiration for students**

Students follow regularly scheduled classes and sometimes it can feel a bit monotonous and boring. Guest lecture breaks monotony and updates students interest about career opportunities & career paths in new domains. Knowing about a better protective on future career sparks confidence and it inspires students to prepare not only theoretical concepts but also practicals which may not be included in the syllabus.

Hearing about changes being made in the working world with theoretical concepts is exciting and insightful for students. Students get to interact with a new teacher and also experience alternative ways of learning and teaching.

- **Clearer career path**

Students oftentimes look for mentors to answer important questions about their career options. Professors cannot answer all of these inquiries. The best individual to answer these questions is the experts already working in those specific fields.

Objectives of Guest Lecture

- To promote understanding via explanations of particularly difficult concepts.
- To respond to student misconceptions or difficulties.
- To create or engage interest in a new area.
- To add an extra variety to the classroom routine.
- To break monotony and to spark students' interest about career opportunities in new domains

Outcomes of Guest Lecture

- They can share their real-world experiences and challenges in their domain, and how they overcome them.
- This can help students to develop critical thinking and problem-solving skills.
- Students seize the opportunity and build an advanced skill set which helps them in their future.
- Students learn to overcome different challenges and it becomes easier to nail down difficult differential equations.

CV of Guest

Mail: madhavi.malireddy@asdgdcw.ac.inreddy@gmail.com

Mobile No: 09247380632

M. Madhavi- M.Sc (Mathematics),(Ph.D)

OBJECTIVE:

Seeking a challenging career in an esteemed organization and grow professionally by strengthening my skills and earn good reputation with whom I work, always keeping the goals of the Organization as the prime objective and to better facilitate the student learning in the area of the application of the mathematics in Engineering.

EXPERIENCE:

❖ 20 years teaching experiences in PG and Engineering Institutions.

1. From Sept, 2021 to till date worked as a regular lecturer in **GDC(A), Tuni**
2. From June ,2018 to Sept,2021, worked as a regular lecturer in **ASDGDCW(A),Kakinada**
3. From August 2016 to July 2017, worked as an asst. Prof. in **AMC engineering college**, Bengaluru.
4. From July 2013 to May 2016 worked as Asst. prof. in **Gokaraju Rangaraju institute of engineering and technology**, Hyderabad .Ratified by JNTUH.
5. From July-2012 to July-2013 worked as Asst. Prof. in **BVRIT**, Hyderabad.
- 6.From September-2011 to June-2012 worked as Asst. Prof in **Vasavi College of Engineering College**, Ibrahimbagh, **Hyderabad**.
- 7.From May-2007 to May-2011 Worked as a Asst. Prof. in **RRS College of Engineering**, Hyderabad. Ratified by JNTUH.
- From August-2005 to April-2007 worked as a Lecturer in **Church Institute of Technology**, Hyderabad.
- From August-2003 to April-2005 Worked as a Part-Time P.G. Lecturer in **KTRWC**,Gudivada.Ratified by ANU, Guntur.

EDUCATIONAL PROFILE:

❖ Qualified State Eligibility Test (SET) in the year 2012.

Ph.D Registered from VIGNAN UNIVERSITY in “Fluid Dynamics”.

Master of Mathematics

A.N.R. College, Gudivada Affiliated to ANU, Gudivada in 2003

B.A. (Maths, Stat., Economics)

A.N.R.P.L. Arts and Science College, ANU, Gudivada in 2001

Intermediate (M.P.C)

Sri Venkateswara Junior College, Gudivada, Board of Intermediate in 1998

Secondary School Certificate

S.G.R.K. High School, Gudivada, in 1996

SEMINARS ATTENDED:

Attended many workshops and seminars conducted by esteemed institutions to enhance the skills and knowledge.

Workshops Organized

Two national level workshops organized as a convener and acted as an organizing secretary for one national seminar.

(M. Madhavi)

Synopsis of the Lecture

EXPLORING THE POWER OF MATHEMATICAL MODELING APPLICATIONS OF DIFFERENTIAL EQUATIONS IN VARIOUS FIELDS

M.MADHAVI

LECTURER IN MATHEMATICS

GOVT. DEGREE COLLEGE(A),TUNI

ORIGIN OF DIFFERENTIATION

The word "differentiation" originates from the Latin word "differentiāre," which is derived from "differentia," meaning "difference" or "distinction." In mathematics, "differentiation" refers to the process of finding the derivative of a function, which measures the rate at which a quantity changes with respect to another. The concept of differentiation was developed in the 17th century, primarily by mathematicians such as Isaac Newton and Gottfried Wilhelm Leibniz. They independently developed methods for calculating derivatives to solve various problems in calculus and physics. Over time, the term "differentiation" has been adopted in various fields beyond mathematics, such as biology, economics, and education, to denote processes of distinguishing or specialized development. This broad usage reflects the fundamental idea of identifying and analyzing differences or changes in different contexts.

1. What is a differential equation
2. What is a linear differential equation
3. What is exact differential equation

TYPES OF DIFFERENTIAL EQUATIONS

- ORDINARY DIFFERENTIAL EQUATIONS
- PARTIAL ORDER DIFFERENTIAL EQUATIONS
- LINEAR DIFFERENTIAL EQUATIONS
- NON LINEAR DIFFERENTIAL EQUATIONS
- AUTONOMOUS DIFFERENTIAL EQUATIONS
- HOMOGENEOUS AND NON HOMOGENEOUS DIFFERENTIAL EQUATIONS
- EXACT AND NON EXACT DIFFERENTIAL EQUATIONS

Newton's Law of Growth

A murder victim is discovered and a lieutenant from the forensic science laboratory is summoned to estimate the time of death. The body is located in a room that is kept at a

constant temperature of 68 F. The lieutenant arrived at 9.40P.M. and measure the body temperature at 94.4F at that time. Another measurement of the body temperature at 11PM is 89.2 F. Find the estimated time of death.

Sol: Let θ be the temperature of the body.

θ_0 is the temperature of the room = 68°F.

By Newton's law of cooling, we have $d\theta/dt = k(\theta - 68)$

By solving the differential equation we get $\theta = 68 + ce^{-kt}$ when $t = 0$, $\theta = 94.4$ by substituting we get $c=26.4$

At 11 P.M the temperature of the body is 89.2 thus $t=80$ mins by substituting

$k = 1/80 \log (21.2/26.4)$ then $\theta = 68 + 26.4e^{-1/80 (\log 21.2/26.4) t}$

By substituting the normal human body temperature 98.6 we get $t=53.8$ mins.

Death occurred approximately 53.8 minutes before first measurement at 9.40.i.e at 8.46 pm.

Law of Natural growth

If the exponential growth law implied to population growth in Nigeria, find the doubling time of the population if it continuous to grow to 2.1% per year compounded continuously.

Sol: $N = N_0 e^{kt}$, let N_0 be the initial population.

Per year 2.1% means after one year the population is $N_0 + 2.1N_0 / 100$

by substituting we get $k = \log (102.1/100)$

If $N=2 N_0$, then $t=33.35$ years

Geometrical Applications

At every point on a curve the slope is the sum of abscissa and the product of the ordinate and the abscissa and the curve passes through (0,1). Find the equation of the curve.

Sol:

- $dy/dx = x + xy$
- The solution is $\log (1 + y) = (x^2/2)+c$
- Since it passes through (0,1) we get $c=\log(2)$
- The curve is $1 + y = 2e^{x^2/2}$

Programme Schedule

PITHAPUR RAJAH'S GOVERNMENT COLLEGE(A) : KAKINADA

PROGRAMME SHEET

INVITING GUESTS ON TO THE DAIS	: 10:30 am
	P.Hyama Suji Bharathi (I B.Sc -Maths)
OPENING REMARKS OF H.O.D	: Dr. K. Jayadev
	HOD of the Department
GUEST INTRODUCTION	: P.Hyama Suji Bharathi
	(I B.Sc – Maths Major)
MESSAGE OF THE CHIEF GUEST	: 10.50 to 11.00
LECTURE CLASS OF THE GUEST	: 11.00 AM to 1.00 PM
FELICITATION OF CHIEF GUEST	: HOD, Staff Members & Students
FEEDBACK ON PROGRAMME	: 1. P.Hyama Suji Bharathi
	2. Sk.Reshma
	3. Sk. Sameer

List of the participants with signatures

174

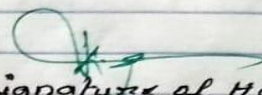
Guest Lecture

25-04-2024:-

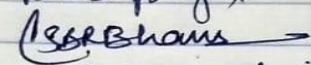
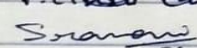
The department of mathematics conducted a Guest lecture on 25-04-2024 at on Differential equations & it's Real life applications by smt. M. Madhavi, lecturer in mathematics, in GDC, Tuni.

Madhavi madam told about differential equations and it's applications and she gives many examples for real life applications to the first year Major and Minor mathematics students.

M. Madhavi 25/4/24.
Signature of the
Guest Lecturer.


Signature of HOD

Signatures of Lecturers

1.  Lecturer 1
2.  Lecturer 2
3. K.S.P. Prasad
4.  Lecturer 4
5. N.S.S. Nagadevi
6. V.V.L. Devi
7. P. Sai Lakshmi
8.  Lecturer 8

S.No	Name of the student	Major	Signature
1.	G. Rani	Maths	G. Rani
2.	G. Suseela devi	Mathematics	G. Suseela devi
3.	J. veera Durga	General chemistry	J. v. Durga
4.	M. Uma devi	Mathematics	M. Umadevi
5.	CH. Rajasri	Mathematics	CH. Rajasri
6.	P. Hyma Saji Bhavathi	Mathematics	P. Hyma
7.	K. Suma chandani	Mathematics	K. Suma
8.	J. Saimanjuna	Mathematics	J. Saimanjuna
9.	P. V. V. Vasa lakshmi	Statistics	P. V. V. lakshmi
10.	B. UMA MAHES WARI	"	B. UMA MAHES WARI
11.	Y. Renuka	Mathematics	Y. Renuka
12.	S. Baby	Mathematics	S. Baby
13.	M. Chandini Devi	Mathematics	M. Chandini Devi
14.	G. Mahalakshmi	Mathematics	G. Mahalakshmi
15.	S. Lovalakshmi	Mathematics	S. Lovalakshmi
16.	B. Renuka	Mathematics	B. Renuka
17.	B. Saravani	Mathematics	B. Saravani
18.	A. Veera Satya	Mathematics	A. V. Satya
19.	T. Vaswanthi	Mathematics	T. Vaswanthi
20.	A. Vasa lakshmi	Mathematics	A. Vasa lakshmi
21.	P. Harsha	Mathematics	P. Harsha
22.	S. Maha lakshmi devi	Mathematics	S. Devi
23.	U. Renuka sri	Mathematics	U. Renuka
24.	P. veera eswari	Mathematics	P. veera eswari
25.	D. Dwiga Bhavani	Maths [Minor]	D. Dwiga Bhavani
26.	P. Venkata lakshmi	Maths [Minor]	P. V. lakshmi
27.	P. Prasanna	Mathematics	P. Prasanna
28.	P. P. Saravani	Mathematics	P. Saravani
29.	G. Ammani	Mathematics	G. Ammani
30.	P. Anu	Mathematics	P. Anu
31.	K. Geetha	Mathematics	K. Geetha

S-NO	Name of the student	Major	Signature
32.	K. padmavathi	mathematics	K. padma
33.	y. Divya	mathematics	y. Divya
34.	sk. Reshma	mathematics	sk. Reshma
35.	k. Sravanthi	Mathematics	k. Sravanthi
36.	B. Veera Lakshmi	Mathematics	B. Veera Lakshmi
37.	k. Venkata lakshmi	Mathematics	k. Venkata lakshmi
38.	E. varadalsshmi adinarayan	Mathematics	E. varadalsshmi adinarayan
39.	M. Bharathi	BSc (Statistics)	M. Bharathi
40.	K. Kalyani	BSc (Statistics)	K. Kalyani
41.	G. Divijambika	BSc (Statistics)	G. Divijambika
42.	Y. Srinivas	BSc (Statistics)	Y. Srinivas
43.	T. R. Lakshman Rao	BSc (Statistics)	T. R. Lakshman
44.	R. Akash	B.Sc (Mathematics)	R. Akash
45.	A. Siva Ranga Reddy	B.Sc Mathematics	A. Siva Ranga Reddy
46.	Ch. Yaswanth	BSC. (Statistics)	Ch. Yaswanth
47.	L. Vijay Bhaskar Reddy	B.Sc (Maths)	L. Vijay Bhaskar Reddy
218.	S. Simhadri	B.Sc (Statistics)	S. Simhadri
219.	k. Veerendra	B.Sc (Statistics)	k. Veerendra
220.	Sk. Sameer Omar	B.Sc (Statistics)	Sk. Sameer Omar
221.	K. Srinivas	BSc (Maths)	K. Srinivas
222.	P. Praveen Kumar	B.Sc (Maths)	P. Praveen Kumar
223.	P. Sashank	B.Sc (Maths)	P. Sashank
224.	G. Rajasabe	B.Sc (Maths)	G. Rajasabe
225.	Ch. Rujin	B.Sc (Stat)	Ch. Rujin
226.	Y. Sindurga Prasad	B.Sc (Stat)	Y. Sindurga Prasad
227.	B. Sravan	BSC (Stat)	B. Sravan
228.	M. Harish	BSc (Stat)	M. Harish
	V. Havi	BSc (Maths)	V. Havi
	B.M.D. Shahid	BSC (maths)	B.M.D. Shahid
	P. Amith Kumar	B.Sc (Maths)	P. Amith Kumar
	P. Lokesh	B.Sc (Maths)	P. Lokesh

L. Durgaji	Maths	L. Durgaji
M. Pawan Kumar	Maths	M. Pawan Kumar
Y. Vinayak	Maths	Y. Vinayak
Ch. John Prasad	Maths	Ch. John Prasad
K. Praveen	Maths	K. Praveen
A. Yerrapathudu	Maths	A. Yerrapathudu
V. Nani Babu	Maths	V. Nani Babu
N. Tirupathi	Maths	N. Tirupathi
G. Satish Kumar	B.S.C (Statistics)	G. Satish Kumar
G. Uday Sai Narayana	B.S.C (Statistics)	G. Uday Sai Narayana
T. Ajay	B.S.C (Statistics)	T. Ajay

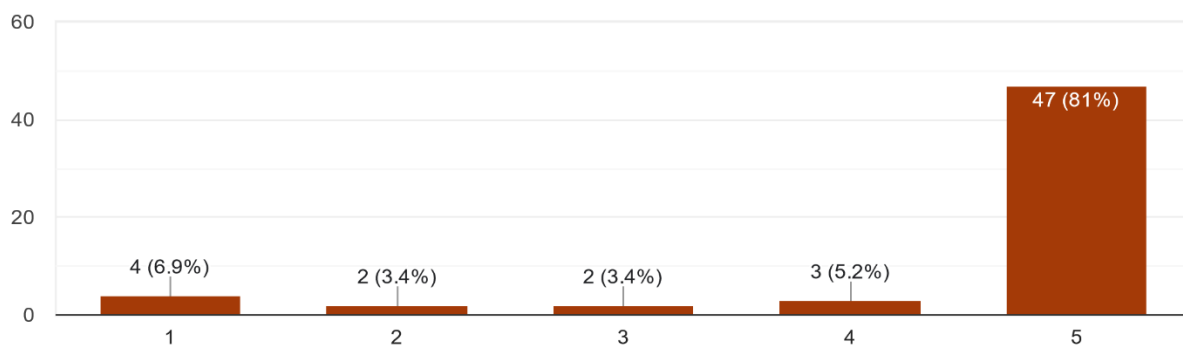
Student Feedback

Guest Lecture Feedback		
Topic: Differential Equations and It's Applications		
Delivered by : Smt.M.Madhavi		Date : 25-04-2024
Please rate the following on the scale of 1-5, with 5 being the highest & 1 being the lowest		
S.No		1 to 5
1	Topic of the Speaker was relevant to my area of interest	
2	Speaker was able to explain the topic clearly & used relevant examples.	
3	Speaker was able to make the lecture interactive & made me feel engaged.	
4	Speaker was able to positively influence my views towards applications of differential equations.	
5	In near future, I would like to attend more lectures from the same Speaker.	Yes /No
6	Kindly put forward suggestions/comments(if any)	

Report:

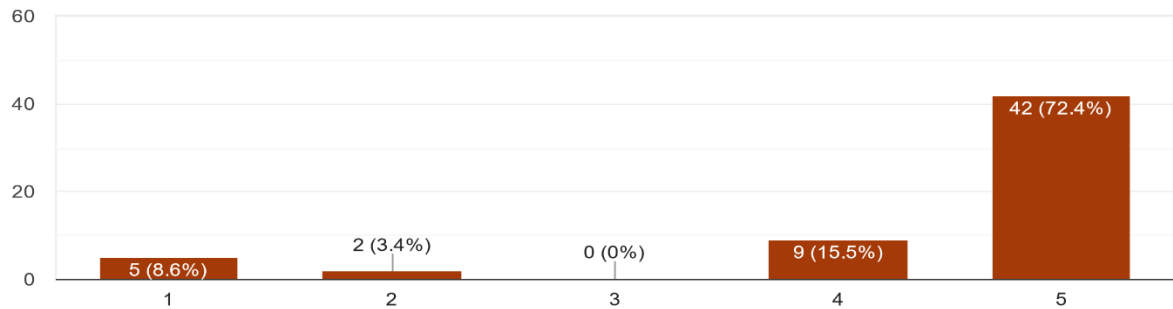
Topic of the Speaker was relevant to my area of interest (Please rate the following on the scale of 1-5, with 5 being the highest & 1 being the lowest)

58 responses



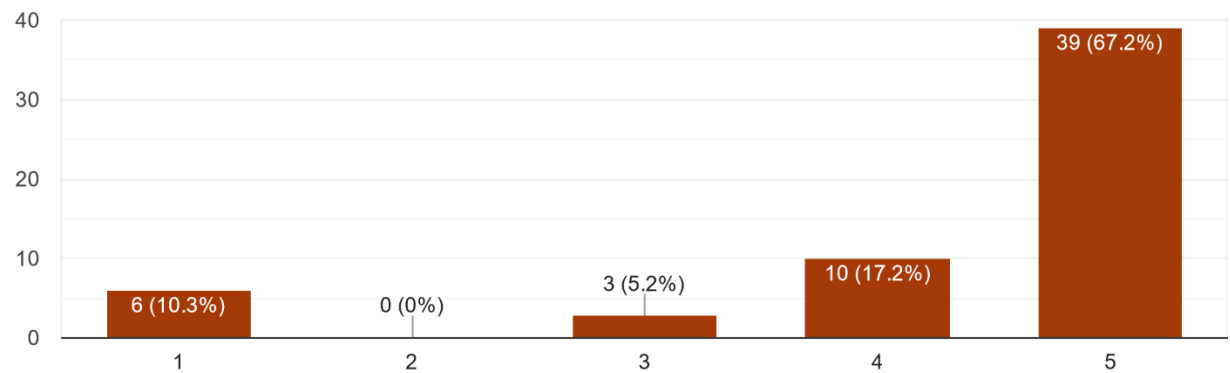
Speaker was able to explain the topic clearly & used relevant examples.(Please rate the following on the scale of 1-5, with 5 being the highest & 1 being the lowest)

58 responses



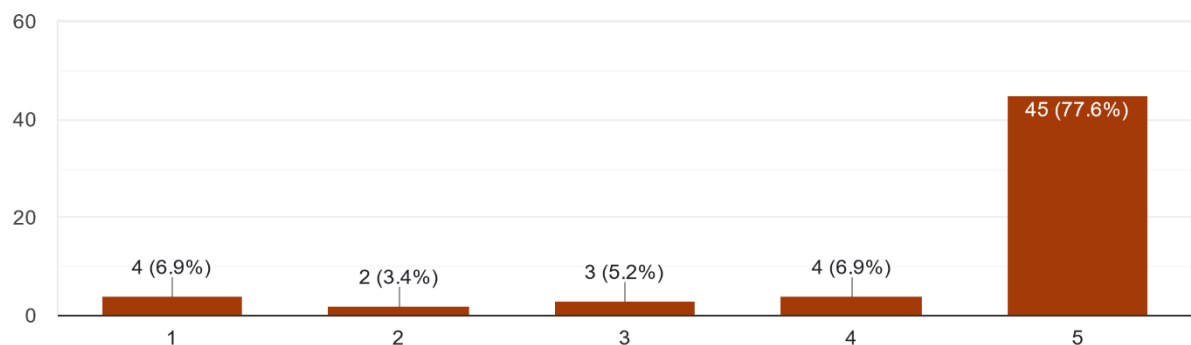
Speaker was able to make the lecture interactive & made me feel engaged.(Please rate the following on the scale of 1-5, with 5 being the highest & 1 being the lowest)

58 responses



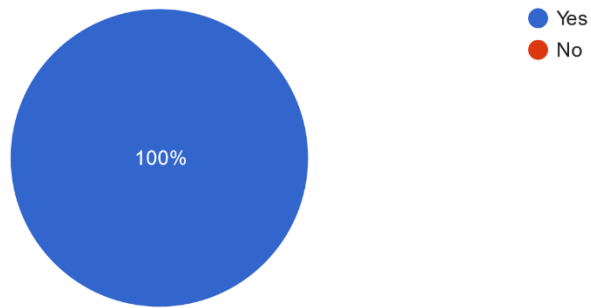
Speaker was able to positively influence my views towards applications of differential equations.(Please rate the following on the scale of 1-5, with 5 being the highest & 1 being the lowest)

58 responses



In near future, I would like to attend more lectures from the same Speaker.

58 responses



Kindly put forward suggestions/comments(if any)

- Good taught
- No comments I don't have learn this type of classes from my past .this is too refreshing for me.
- Good lecturer skills
- Nice lecture
- Thanking you for comming madam
- Very good lecturer
- Good
- Good lecturer & good teaching skills
- Very useful lecture for us
- Necessary
- This concept is very nice
- Good lecturer
- Good explanation
- Good teacher
- Speak slowly
- Good performance
- No Comments

Pics/ News Clips





Lecture Classes





Felicitation by Chief Guest



Conclusion:

The guest lecture by Smt.M.Madhavi on Differential Equations & It's Real life applications was an enlightening experience for the students of Pithapur Rajah's Government college(A), Kakinada. The event not only provided a comprehensive understanding of the Differential Equations but also inspired students to equip themselves with the necessary skills and knowledge. The Department of Mathematics extends its sincere appreciation to Dr.K.Jayadev, In charge of the department and all staff members for their collaborative efforts in organizing this enlightening session, which will undoubtedly empower and guide students towards success in their future endeavors.

A large, elegant, black cursive script that reads "Thank You". The letters are highly stylized with many loops and flourishes, particularly around the 'T', 'Y', and 'U'. The text is centered on the page.