- No one ever accepts criticism so cheerfully. Neither the man who utters it nor the man who invites it. - R.K. Narayan
- The profound study of nature is the most fertile source of mathematical discovery. - Joseph Fourier
- In the history of science, we often find that the study of some natural phenomenon has been the starting point in the development of a new branch of knowledge. - Sir C V Raman
- Chemistry can be a good and bad thing. Chemistry is good when you make love with it. Chemistry is bad when you make crack with it - Frederick Soddy
- We don't inherit the earth from our ancestors; we borrow it from our children - David Brower

The Elephant Rope

As a man was passing the elephants, he suddenly stopped, confused by the fact that these huge creatures were being held by only a small rope tied to their front leg. No chains, no cages. It was obvious that the elephants could, at anytime, break away from their bonds but for some reason, they did not. He saw a trainer nearby and asked why these animals just stood there and made no attempt to get away. "Well," trainer said, "when they are very young and much smaller we use the same size rope to tie them and, at that age, it's enough to hold them. As they grow up, they are conditioned to believe they cannot break away. They believe the rope can still hold them, so they never try to break free." The man was amazed. These animals could at any time break free from their bonds but because they believed they couldn't, they were stuck right where they were. Like the elephants, how many of us go through life hanging onto a belief that we cannot do something, simply because we failed at it once before?

Failure is part of learning; we should never give up the struggle in life.

What are numerical methods?

Numerical methods, is approximation fast solution for mathematical problems. Such problems can be in any field of engineering. So any result you get from it is approximated not exact, it gives you the solution faster than normal ones, also it's easy to be programmed.
Here are some issues that numerical analysis is used in

- Solving linear/non-linear equations and finding the real roots, many methods exist like Bisection, Newton-Raphson ... etc.
- Fit some points to curve, good approximation and simple solution.

- Interpolation, great to get any value in between a table of values. It can solve the equally spaced readings for unequally spaced methods, Newton general method is implied.
- Solve definite integration, simple methods are used to compute integration based on idea that the definite integration is the bounded area by the given curve, these methods approximate the area with great approximation. Many methods are there like Simpson's rule.
- Solving initial value 1st and 2nd order differential equations, good approximation and simpler than normal analysis.
- Solving partial differential equations like laplace equation for wave equation, very fast solution.

What are applications of numerical methods in engineering?

There are so many uses of numerical methods, it is impossible to list them all. But essentially, we can cover first the basic math problems those can be used for, which are often
- Computing integrals and derivatives
- Solving differential equations
- Building models based on data, be it through interpolation, Least Square, or other methods
- Root finding and numerical optimization
- Estimating the solution to a set of linear and nonlinear equations
- Computational geometry

There are other areas I haven't listed, some of the common fundamental uses. With respect to real world problems, here are some examples where numerical methods are used
- Development and computation of optimal control algorithms
- Development of high fidelity simulations to model viscous flow around a race car to see if the wing designs generate sufficient down force
- Machine learning algorithms like estimating optimal weights of parametric models using only subsets of the full dataset like stochastic gradient descent
- Photorealistic renderer
- Design optimization based on simulation and multi-objective optimization formulations
- Game Engines
- Filtering of noisy data based on an approximately expected model of the dynamics (Kalman Filter, Particle Filter, etc.)

There are many more uses of numerical methods which will hopefully show a range of areas to prove its uses are broad.

What are the uses of numerical methods in software engineering?

While Answering to this question, just look at your scientific calculator.

It can pretty much find complex roots, perform differentiation, integration etc.

How do you think it's programmed…?

Ans: numerical methods!

- We know how to perform differentiation, integration…but while coding it's done with the help of numerical methods..!
- To find complex roots there's Newton-raphson method.
- To find differentiation there's interpolation.
- To find integration there's Trapezoidal Rule, Simpson's Rule etc.
- All these methods make it easy to code because they use basic functions like addition, subtraction, multiplication, division.

These algorithms are very useful for programmers. Hence every engineering student even non CS student has a subject on numerical methods. Just to get acquainted to it..!

Mrs. D.N.Bhargavi and Mrs. K. Bhagya Lakshmi

DOPPLER EFFECT

The change in the frequency of a wave observed at a receiver whenever the wave's source, the receiver, or the carrying medium of the wave is in motion relative to the other. The Doppler effect was predicted in 1842 CE by Austrian physicist Christian Doppler, and first verified for sound waves by Dutch chemist and meteorologist C. H. D. Buys-Ballot in 1845 from experiments conducted on a moving train. The Doppler effect for sound waves is now a commonplace experience: If one is passed by a fast car or a plane, the pitch of its noise is considerably higher during the vehicle's approach than during the receding (Fig. 1). The same phenomenon is observed if the source is at rest and the receiver is passing it. An optical Doppler effect was first observed as a shift of spectral lines by German physicist Johannes Stark in 1905 in experiments involving high-velocity canal rays produced in a cathode-ray tube.

ACID RAIN

Acid Rain as the name suggests can be said to be the precipitation of acid in the form of rain in the simplest manner. When atmospheric pollutants like oxides of nitrogen and Sulphur react with rainwater and come down with the rain, then it results in Acid Rain.

Causes of Acid Rain

The causes of acid rain are Sulphur and Nitrogen particles which get mixed with the wet components of rain. Sulfur and Nitrogen particles which get mixed with water are found in two ways either man-made i.e. as the emissions are given out from industries or by natural causes like how a lightning strike in the atmosphere releases nitrogen ions and sulphur is released from volcanic eruptions.

The regular clean rain we experience, even though it is not clean i.e. water and carbon dioxide react together to form weak carbonic acid which essentially by itself is not extremely harmful. The reaction occurring is:

$$H_2O \ (l) + CO_2 \ (g) \rightleftharpoons H_2CO_3 \ (aq)$$
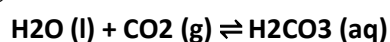
The pH value of regular rainwater is around 5.7, giving it an acidic nature. The oxides of nitrogen and sulphur are blown away by the wind along with the dust particles. They settle on the earth's surface after coming down in the form of precipitation. Acid rain is essentially a byproduct of human activities which emit oxides of nitrogen and sulphur in the atmosphere. Example – the burning of fossil fuels, unethical waste emission disposal techniques.

Formation of Acid Rain

Sulphur dioxide and nitrogen dioxide undergo oxidation and then they react with water resulting in the formation of sulphuric acid and nitric acid respectively. The following reaction will clarify the acid formation reaction:

$$2SO_2 (g) + O_2 (g) + 2H_2O (l) \rightarrow 2H_2SO_4 (aq)$$
$$4NO_2 (g) + O_2 (g) + 2H_2O (l) \rightarrow 4HNO_3 (aq)$$
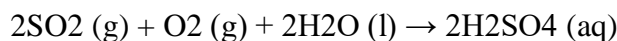
Effects of acid rain:

- Acid rain is very harmful to agriculture, plants, and animals. It washes away all nutrients which are required for the growth and survival of plants. Acid rain affects agriculture by the way how it alters the composition of the soil.

  ✓ Dr T.D. Vimala, a noted Psychologist gave a lecture on Mentoring and Counseling. She explained how every teacher could play the noble role as a good mentor and counselor to a student in shaping him up as a useful citizen.

Smt. Rajani, Justice, AP High Court gave a lecture on suicide tendencies among the youth and atrocities against the women. She told that alcohol could be the prime motive behind many evils in society. So the youngsters should never indulge in consumption for fancy and friends.

FACULTY PARTICIPATION

➢ Mr. Y. Ramu attended FDPs on "Soft Skills and Personality Development" held at JNTUA College of Engineering from 10th to 14th Dec., 2018 and on "Enhancing Soft Skills and Personality" held by NPTEL in association with AICTE in Feb., 2019.

➢ Mrs. D.N.Bhargavi attended FDP on "Mathematical Methods and its Applications" held by NPTEL in association with AICTE in Feb., 2019.

➢ Mr. Y. Ramu attended a National Workshop on "The Application of Technology for Teaching and Learning of English Language Skills" held at Vignan's University on 22nd and 23rd Dec., 2018.

➢ Mr. G. Prasanna Kumar, Dr. A. Raghavendra Rao and Y. Mohan Rao attended a national workshop on "Applications of Quantum Mechanics Optics" held at KBN College on 1st and 2nd Feb., 2019.

➢ Mr. Ch. Srinivasa Rao and Mr. G. Prasanna Kumar attended a national workshop on "Vedic Mathematics" held at JKC College on 20th Feb., 2019.

➢ Mr. M.V.Ramanjaneyulu presented a paper at an International Conference on "5G Communications, Applications and Technologies" held at Vignan's University on 5th and 6th Dec., 2018.

➢ Ms. G. Pavani presented a paper at a programme held at SV Vedic University in Feb., 2019.

- Mr. M.V.Ramanjaneyulu and Mrs. K. Bhagya Lakshmi presented papers at a conference on "Recent Trends in Mathematics and its Applications" held at GITAM University, on 21st and 22nd Dec., 2018.
- Mrs. K. Bhagya Lakshmi presented paper in "Recent Trends on Mathematical Sciences and its Applications" held at ANU on 24th and 25th Jan., 2019.
- Mr. M.V.Ramanjaneyulu published a paper in IJRTE, in Feb., 2019.

STUDENTS' PARTICIPATION

- Mr. Bhargav of EEE participated in Central D-Zone cricket tournament.
- Mr. Siva Teja of ECE participated in Kabaddi D-Zone held at KLU & Mittapalli Engg. College and got 3rd & 1st Places.
- The KHO-KHO team of 1st year girls stood as Winners of the events held at Mittapalli Engg. College, VVIT, KLU and St. Mary's

TOPPERS OF I SEM. FOR THE ACADEMIC YEAR 2018-19

1	18JR1A0163	NAGA SAI LOKESH KOPPALLI	9.38	
2	18JR1A0115	ANKALA ANIL SIVA KUMAR	9.13	
1	18JR1A0209	KATTA LAKSHMI PRIYANKA	9.25	
2	18JR1A0222	RAMINENI SRAVANI	9.13	
1	18JR1A0337	KANDEPU SAINADH	8.88	
2	18JR1A0336	KAMMA DHANUSH KUMAR	8.75	
1	18JR1A0477	MUKIRI SWARNA LATHA	9.12	
2	18JR1A0453	GORANTLA SRIKANTH	9.12	
1	18JR1A0519	EEMANI JAYA LAKSHMI	9.75	
2	18JR1A0583	PEDDI NAGA PRAVALLIKA	9.63	