Guest Lecturers:

Academic Year	Name and Designation	Topic	Date
2019-20	Dr. Jayashree, Associate Professor	Active learning methods	18th June 2019.
	Prof. V. V. Hara Gopal, Professor	Data Sciences- For a wonderful present anda brilliant future	29th June 2019
	Dr.Aparna Dode, Associate Professor	Introduction to MATLAB	12th July 2019.
	Dr.Aparna, Sr.Assistant professor	Vectors and its applications	10th December 2019
	Mr. Dasari Ravi Kumar, StatisticalSpecialist	Applications of statistics in variousdomains and Advanced Experimental Designs	11th January, 2020

2019-20

Guest Lecture on Active learning methods

A Guest Lecture by **Dr. Jayashree , Associate Professor in VNRVJIET** on Active learning methods was conducted by department of Mathematics and Statistics on 18thJune 2019.The speaker stressed on the present day education system which not only needs curriculum knowledge but also students must be acquainted with more online courses. In today's competitiveworld it is important for students not only have good basics in their subjects but also have some extra skill set. To have some extra knowledge one of the best is online courses because a certificate is also present for proof. Different means of improving skill set was discussed. The different online sites like moocs. Nptel, mhrd etc., were discussed.

The present industry related topics like data analysis and it's demand in the industry was discussed. Online courses help to get practical skills using the latest computer technology to enable them to solve real-world problems and prepare students for a career in a wide range of areas such as finance, investment, information technology, environmental management, health, marketing, logistics, defence, media, education and research.

Guest Lecture
On

Data Sciences- For a wonderful present and a brilliant future

The Department of Mathematics and Statistics has organized a guest lecture on 29th June 2019 on "Data Sciences- For a wonderful present and a brilliant future" by Prof. V. V. HaraGopal, department of mathematics, BITS Pilani, Hyderabad. Prof. V. V. HaraGopal briefed us about the importance of Data- Sciences, all the trends and applications of data sciences its uses to the world and the predictions we can make using it. Data Sciences is one of the most growing fields of today's generation, his speech about the same is really helpful for the students who aspire to build a career in this field. Also he helped us understand the benefits of entering this field and encouraged us to actually opt for it.

On the occasion of National Statistics day the department of Mathematics and Statistics conducted a statistical Quiz and 23 teams participated in this quiz. Baba and Pooja from B.Sc (MSCs-IIIA) stood Ist in the quiz and were awarded the certificates by the guest and Dr. K. Vasudeva Rao, Head Department of Mathematics and Statistics also appreciated the prize winners and participants.

Dr. K. Vasudeva Rao addressed the students about the importance of statistics and various trends of new software related to statistics. Finally we concluded the program by vote of thanks.

GUEST LECTURE IN MATHEMATICS On Introduction to MATLAB

A Guest Lecture on Introduction to MATLAB by Dr.Aparna Dode, Associate Professor in University college of Engineering on Introduction to MATLAB was conducted by department of Mathematics and Statistics on 12 July 2019. The speaker gave a lecture on MATLAB and its applications in the present field of Science and Technology . The lecture was organized only for the faculty of Physical Sciences.

MATLAB is a high-performance language for technical computing. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in familiar mathematical notation. Typical uses include:

- Math and computation
- Algorithm development
- Modeling, simulation, and prototyping
- Data analysis, exploration, and visualization
- Scientific and engineering graphics
- Application development, including Graphical User Interface building

MATLAB is an interactive system whose basic data element is an array that does not require dimensioning. This allows you to solve many technical computing problems, especially those with matrix and vector formulations, in a fraction of the time it would take to write a program in a scalar non interactive language such as C or Fortran.

The name MATLAB stands for matrix laboratory. MATLAB was originally written to provide easy access to matrix software developed by the LINPACK and EISPACK projects, which together represent the state-of-the-art in software for matrix computation.

MATLAB has evolved over a period of years with input from many users. In university environments, it is the standard instructional tool for introductory and advanced courses in mathematics, engineering, and science. In industry, MATLAB is the tool of choice for high-productivity research, development, and analysis.

MATLAB features a family of application-specific solutions called toolboxes. Very important to most users of MATLAB, toolboxes allow you to learn and apply specialized technology. Toolboxes are comprehensive collections of MATLAB functions (M-files) that extend the MATLAB environment to solve particular classes of problems. Areas in which toolboxes are available include signal processing, control systems, neural networks, fuzzy logic, wavelets, simulation, and many others.

The MATLAB System
The MATLAB system consists of five main parts:
The MATLAB language.

This is a high-level matrix/array language with control flow statements, functions, data structures, input/output, and object-oriented programming features. It allows both "programming in the small " to rapidly create quick and dirty throw-away programs, and "programming in the large " to create complete large and complex application programs.

The MATLAB working environment:

This is the set of tools and facilities that you work with as the MATLAB user or programmer. It includes facilities for managing the variables in your workspace and importing and exporting data. It also includes tools for developing, managing, debugging, and profiling M-files, MATLAB's applications.

Handle Graphics:

This is the MATLAB graphics system. It includes high-level commands for two-dimensional and three-dimensional data visualization, image processing, animation, and presentation graphics. It also includes low-level commands that allow you to fully customize the appearance of graphics as well as to build complete Graphical User Interfaces on your MATLAB applications.

The MATLAB mathematical function library:

This is a vast collection of computational algorithms ranging from elementary functions like sum, sine, cosine, and complex arithmetic, to more sophisticated functions like matrix inverse, matrix eigenvalues, Bessel functions, and fast Fourier transforms.

The MATLAB Application Program Interface (API).
This is a library that allows you to write C and Fortran programs that interact with MATLAB. It includes facilities for calling routines from MATLAB (dynamic linking), calling MATLAB as a computational engine, and for reading and writing MAT-files.

The session was very informative and faculty were very keen to learn new techniques.
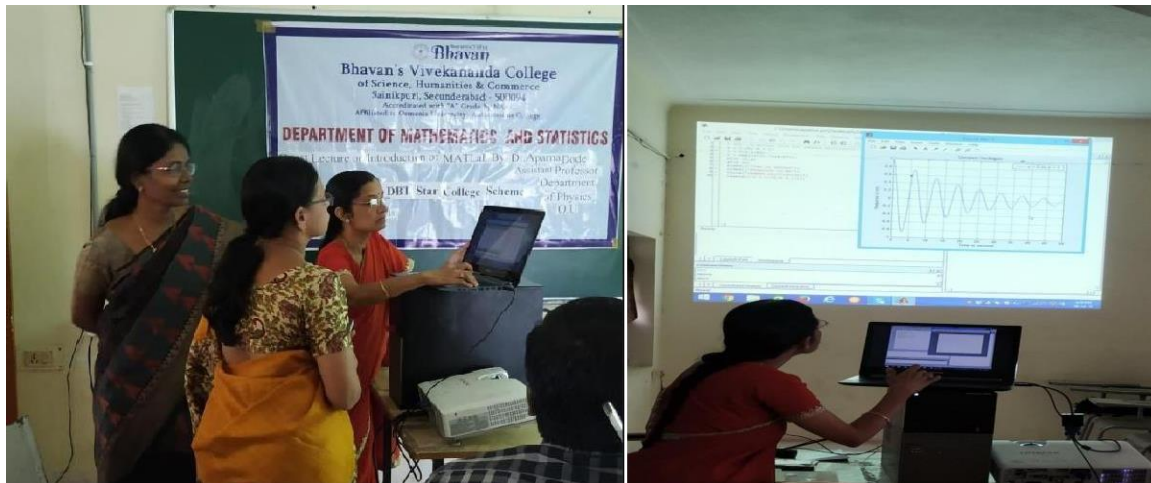
GUEST LECTURE On Vectors and its applications

Dr.Aparna , Sr.Assistant professor in VNRVJIET gave a talk on 'vectors and it's applications'.The talk was for students of B.Sc III year on December 10th 2019 in Room No. 71.The students had a paper on Vector Calculus in their sem 5.This talk was on the applications. The speaker gave an insight into the physical interpretations of different concepts of which the students learnt only the mathematical aspects.In the fifth semester students had various concepts like gradient divergence, curl,irrotational, solenoidal vector.

Divergence:
Consider water flowing through a large pipe. Now, it has smaller pipes joined to it. Hence, as the water flows, more water is added along the way by the smaller pipes. Hence, the mass flow rate increases as the water flows.
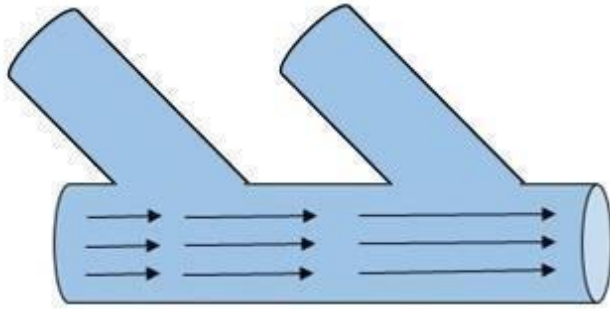
In another case, consider that there is a leakage in the pipe. Hence the mass flow rate decreases as it flows. **This change in the flow rate through the pipe, whether it increases or decreases, is called divergence.** Divergence denotes only the magnitude of change and so, it is a scalar quantity. It does not have a direction.

When the initial flow rate is less than the final flow rate, divergence is positive (divergence > 0). If the two quantities are the same, divergence is zero. If the initial flow rate is greater than the final flow rate divergence is negative (divergence <0).

Curl:
Imagine pouring water in a cup. The water won't just flow linearly but rather, as it reaches the end of the cup, it will flow in a rotational motion before settling in the cup. Or consider water draining down the sink, it will swirl in a rotational motion before going out. If we plot this rotational flow of water as vectors and measure it, it will denote the Curl.
Curl is a measure of how much a vector field circulates or rotates about a given point. When the flow is counter-clockwise, curl is considered to be positive and when it is clockwise, curl is negative. Sometimes, curl doesn't necessarily flow around a single time. It can also be any rotational or curled vector.

Learning about gradient, divergence and curl are important. They help us calculate the flow of liquids and correct the disadvantages. For example, curl can help us predict the voracity, which is one of the causes of increased drag. By using curl, we can calculate how intense it is and reduce it effectively. Calculating divergence helps us understand the flow rate and correct it to suit our needs.
In vector calculus a solenoidal vector field (also known as an incompressible vector field, a divergence-free vector field, or a transverse vector field) is a **vector field** v with divergence zero at all points in the field:

The speaker has given a clear picture of the physical interpretation in fluid dynamics.The concept of energy flow and heat transfer in a machine in a vehicle was explained clearly. The students were very happy with the content and relevance of the lecture.

Guest Lecture on Applications of statistics in various domains and Advanced Experimental Designs

Date of the event: **11/01/2020**

A wonderful seminar was given by Dr. Ravi Kumar Dasari,Statistical Specialist, Novartis, Hyderabad, on Data Science and Pharma Industry who works in Novartis Hyderabad. Sir has given a brief introduction about Statistics and application of statistics in various domains. He also explained about Advanced Experimental Designs. Students had a very interactive session with Ravi Kumar. He gave a clear lecture on Pharma Industry with a case study, which was very helpful for the students.