



G.T. Enterprises popularly known as GTE was established during early 1994. A humble beginning has been made by introducing Free and Open Source Software and Services (also known as FOSS) to the Indian market. Over the last two decades GTE has expanded its foray of Technology Services to cater many verticals in the industry. Since 2006 GTE realized the necessity for world class training and started training in various, latest and budding technologies, thus opening up opportunities to people in India to get trained in cutting edge technologies.

Faculty Enablement Program (FEP) is a unique program enriching the faculty members and students with the latest, cutting-edge and industry relevant technologies. This program will help faculty members to learn the technologies such as **High Performance Computing, CUDA, Parallel Programming using Mathematica Virtualization, Cloud Computing, Storage-DR, Big Data using MangoDB** making Students "Industry Relevant". This program benefits Institutions to groom the kind of skilled resources of today's need which will consequently benefits both Faculty as well students.

FEP Benefits :-

- ☞ Inculcate the needs of the latest and most happening technologies in the industry
- ☞ Understand and adopt the latest IT Trends
- ☞ Makes Faculty and Student skillful and industry relevant
- ☞ Increase the campus recruitment options
- ☞ Helps faculty members in research

Our FEP Offers are :-

- ☞ High Performance Computing(HPC), CUDA
Parallel Programming using Mathematica
- ☞ Virtualization
- ☞ Cloud Computing
- ☞ Storage - DR
- ☞ Big Data using MangoDB



*Taranath U.M, CEO,
Inaugurating FEP at
MSRIT, Bangalore*



*Taranath U.M, CEO, at
Browse Technical Symposium,
SIT, Tumkur*



*GTE Trainer Mr. Shankarnag
at FEP Inauguration Seminar,
SSIT, Tumkur*

HPC, CUDA and Parallel Programming using Mathematica

High Performance Computing(HPC) refers to any computational activity requiring more than a single computer to execute a task. Supercomputers and computer clusters are used to solve such advanced computation problems.

Mathematica is ultimate super tool for education and research with enormous breadth and depth of application areas and functionality, **Mathematica** is a technical computing environment that can be used at all levels, Across-campus and Across discipline—for teaching **Algebra**, learning about **Economics**, or collaborating on a large-scale research project in **Bioinformatics**.

Objectives :-

- ☞ What is HPC ☞ Why HPC is on the main stream ☞ Introduction to NVIDIA's CUDA and Tools available
- ☞ Enablement to get started with writing parallel codes on GPGPU ☞ Hands-on to parallel programming covering various languages and tools.
- ☞ What is Mathematica ☞ Advantages of Mathematica ☞ Inbuilt Application Packages ☞ How to use Mathematica.

Module 1

- ☞ What is High Performance Computing
- ☞ Introduction to Parallel Computing
- ☞ Why Parallel Computing
- ☞ Libraries and Directives of Parallel paradigms
- ☞ Types of Parallelism, Limits of Parallel Computing
- ☞ Shared Memory Vs Distributed Memory
- ☞ MPI Basics and Features of MPI.

Module 2

- ☞ Introduction to GPU Computing & its advantages
- ☞ Easy ways to parallelize the home-grown applications
- ☞ GPU Architecture and model
- ☞ CUDA Architecture
- ☞ Programming mode
- ☞ Heterogeneous Computing
- ☞ Managing devices CUDA Profiling and debugging tools

Module 3

Introduction :-

What is Mathematica, Getting Started, Basic Operations, Getting Information, Notebooks.

Programming :-

Assignments and Definitions, Procedural and Functional Programming, Comparing Programming Styles, Programming with rules.

Visualization :-

Function Visualization, Data Visualization, Graphics Options, Displaying Graphics, Dynamic & Interactive Graphics.

Computation :-

Solving Equations, Calculus, Numerical Computation, Symbolic Computation

Virtualization

Virtualize IT Infrastructure. Virtualization enables today's computers to run multiple operating systems and applications, making infrastructure simpler & more efficient. Applications get deployed faster, performance and availability increase and operations become automated, resulting in IT that's easier to implement and less costly to own and manage.

Objectives :-

- ☞ What is Virtualization
- ☞ Highly scalable and agile IT infrastructure
- ☞ Reduced management and resource costs
- ☞ Improved security and reduced downtime

Module 1

- ☞ Introduction to Virtualization
- ☞ Why Virtualization
- ☞ Benefits of Virtualization
- ☞ Virtual Machines
- ☞ Virtualization platform components
- ☞ Explain the concepts of server, network and storage virtualization
- ☞ Introduce virtual machines, virtual machine hardware and virtual machine files
- ☞ Deploy a single virtual machine

Module 2

- ☞ Introduction to the Centralized Management Server architecture
- ☞ Configuration and Management of Centralized Management Server
- ☞ Features of virtualization platform

Cloud Computing

The term Cloud Computing refers to a big area of Information Technology that involves: Hardware and Software infrastructures, Data Center Facilities, virtualization technologies and software engineering concepts. All these areas are connected to give a strong backbone to start learning how to use & work with Cloud Computing platforms.

Objectives :-

- ☞ What is cloud
- ☞ Learn how to use Cloud Services
- ☞ Cloud resource Management
- ☞ Security concerns in cloud infrastructure and secure the cloud environment

Module 1

- ☞ Overview of Computing Paradigm
- ☞ Recent trends in Computing
- ☞ Grid Computing, Cluster Computing Distributed Computing, Utility Computing, Cloud Computing
- ☞ Evolution of cloud computing
- ☞ Introduction to Cloud Computing, History of Cloud Computing, Cloud service providers

Module 2

- ☞ Cloud Computing Architecture
- ☞ Service Models (XaaS)
- ☞ Infrastructure as a Service (IaaS)
- ☞ Platform as a Service (PaaS)
- ☞ Software as a Service (SaaS)
- ☞ Public, Private, Hybrid and Community cloud
- ☞ Data storage in cloud computing

Storage

Storage systems are inevitable for modern day computing. All known computing platforms ranging from handheld devices to a large super computers use storage systems for storing data temporarily or permanently. Beginning from punch card which stores a few bytes of data, storage systems have reached to multi Terabytes of capacities in comparatively less space and power consumption. This course is intended to give an introduction to storage systems.

Objectives :-

☞ What is Storage ☞ Types of Storage ☞ Learn how to use Storage ☞ Storage Management ☞ Security concerns in Storage.

Module 1

Fundamentals of Primary Storage

- ☞ Storage components
- ☞ I/O interfaces
- ☞ Addressing
- ☞ RAID
- ☞ Storage Architecture

Storage Area Network

- ☞ FC components
- ☞ Basic elements of SAN

Module 2

- ☞ SAN topologies
- ☞ Fabric services & zoning
- ☞ Secondary storage

NAS

- ☞ Types of NAS
- ☞ Filesystems & I/O
- ☞ File sharing & protocols
- ☞ NAS Architecture
- ☞ Unified storage

Module3

Data Protection

- ☞ Layers of data protection
- ☞ Snapshots
- ☞ Secondary storage
- ☞ Backup components
- ☞ Disk/VTL/Dedupe
- ☞ Backup architectures
- ☞ Archival
- ☞ Replication

Big Data using MongoDB

MongoDB is a high-performance, open source, schema- free, document/object-oriented database optimized for web application environments, and is perhaps one of the most disruptive software technologies in years. MongoDB will fundamentally change the way participants think about data persistence. During this hands-on course participants will learn the fundamentals of MongoDB. The course will teach participants how to install, configure, administrate, and write applications with MongoDB, as well as cover the "big picture" and explain how MongoDB fit into the overall "NoSQL" landscape. By the end of this class participants will be proficient in MongoDB and be able to use it in next application with confidence.

Objectives :-

☞ Overview of "NoSQL" ☞ When and why should you use MongoDB ☞ How to install and configure MongoDB
☞ Basic administration ☞ How to build applications that use MongoDB

Course Outline :

- ☞ Overview ☞ Installation and Administration ☞ MongoDB Basics ☞ Clients and drivers ☞ Advanced querying
- ☞ Building applications with MongoDB ☞ Security and Authentication ☞ Performance and scaling ☞ GridFS

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