

**4/4 B.Tech. FIRST SEMESTER**

**IT7T2**

**PERFORMANCE ENGINEERING**

**Credits: 4**

**Lecture: 4 periods/week**

**Internal assessment: 30 marks**

**Tutorial: 1 period /week**

**Semester end examination: 70 marks**

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**Objectives:**

To explain and discuss

- Various types of Computer Architectures.
- Internal components of system and their performance.
- Application Programming Interfaces.
- Performance of software and testing.
- Software Development Processes.
- Various Scalability factors.

**Outcomes:**

Students will be able to:

- Know various computer architectures.
- Identify internal components and then perform calculations.
- Build Application Programming Interfaces.
- Know the life style of Software Development Process (SDP).

**Syllabus**

**UNIT I**

Turing Machine, Von Neumann Machine, Zuse Machine, Intel Machine, History of Intel's Chips, Hyper threading, Intel's Multicore Micro architecture, Challenges for system monitoring Tools.

**UNIT II**

**System under Test** :Processors, Motherboard, Chipset, Storage, RAID, Networking, Operating Systems.

**UNIT III**

**APIs** :Windows APIs,Java APIs, Google APIs .

**Categorizing Software:** Systems Software,Application Software, Middleware Software.

#### **UNIT IV**

**Enterprise Computing:**What is Enterprise Software?,Enterprise software Architecture,Monolithic Architecture, Client/Server Architecture, three-tier Architecture, N-Tier Architecture, Service oriented architecture.

#### **UNIT V**

**Scope of Software Performance and Scalability Testing :** Performance regression Testing,Performance Optimization and Tuning Testing, Performance Benchmarking Testing, Scalability Testing, QA Testing versus Performance Testing.

#### **UNIT VI**

**Software Development Process:** Agile Software Development, Extreme programming.

#### **UNIT VII**

**Defining Software Performance:** Performance Metrics for OLTP workloads, Performance Metrics for batch jobs.

#### **UNIT VIII**

**Software Performance and Scalability Factors:**Hardware, Operating System, Database Statistics, SQL Server Parameterization, Database dead locks.

#### **Text Book:**

Software Performance and Scalability A Quantitative Approach, HernyH.Liu, Wiley Publishers .