DTE Code : EN6315
MSBTE Code : 1739

HOLY-WOOD ACADEMY'S
SANJEEVAN
GROUP OF INSTITUTIONS, PANHALA
POLYTECHNIC
AICTE ID : 1-8019451
AISHE Code : C-11165
Sanjeevan Knowledge City, Somwar Peth-Injole, Panhala, Tal. Panhala, Dist. Kolhapur.
Pin- 416 201 (Maharashtra) Phone : 9146999500
❍ Approved By AICTE, New Delhi ❍ Recognized by Govt. of Maharashtra & DTE, Mumbai
❍ Affiliated to Maharashtra State Board of Technical Education (E), Mumbai

Date- 17/10/2024

Request Letter

To,
The Principal,
Sanjeevan Group of Institutions-Polytechnic,
Panhala-416201.

Subject: Request for Permission for Guest Lecture on Understanding Hardware: Building Blocks of Modern Computing

Respected Sir,

We would like to request your kind permission to organize a guest lecture on "Understanding Hardware: Building Blocks of Modern Computing" for our students on 22nd October 2024. Given the importance of hardware knowledge in today's technological landscape, we believe this lecture will be highly beneficial for their knowledge and understanding.

We have arranged for Mr. S. T. Bhosale, an expert in hardware systems, and Owner of Lakshya Computer Education, Kolhapur to conduct this session.

Thank you for your consideration.

Sincerely,

Guest Lecture Co-Ordinator **HOD**

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Date- 18/10/2024

NOTICE

Guest Lecture on " Understanding Hardware: Building Blocks of Modern Computing "

All students are hereby informed that a guest lecture on **"Hardware: Core Components of PC"** will be organized on **22nd October 2024**. This lecture will cover the essential hardware components that make up a personal computer.

The lecture will be delivered by **Mr. S. T. Bhosale**, Owner of Lakshya Computer Education, Kolhapur.

Date: 22nd October 2024

Time: 11:00 am

Venue: Classroom No. 109

All interested students are encouraged to attend this informative session.

Guest Lecture Co-Ordinator **HOD**

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Date- 01/10/2024

One-Page Report on Guest Lecture on " Understanding Hardware: Building Blocks of Modern Computing"

Date of Program: 22nd October 2024
Venue: Classroom No. 109
Resource Person: Mr. S. T. Bhosale

Overview:
A guest lecture was conducted for the Computer Science and Engineering Diploma students, focusing on the fundamental hardware components that underpin modern computing systems. The lecture provided a comprehensive overview of various hardware components, including but not limited to:

- CPU (Central Processing Unit)
- GPU (Graphics Processing Unit)
- TPU (Tensor Processing Unit)
- Motherboards
- RAM (Random Access Memory)
- Hard Disk Drives (HDD)
- Solid State Drives (SSD)
- Other essential hardware components

The lecture covered the functions, characteristics, and interdependencies of these components within a computer system.

Key Takeaways:
The lecture emphasized the importance of a strong foundation in hardware for computer science professionals.

- Students gained insights into the distinct roles and capabilities of CPUs, GPUs, and TPUs, highlighting their impact on different computing tasks.
- The lecture underscored the importance of the motherboard as the central hub connecting all hardware components.
- Students learned about the crucial role of RAM in system performance and the differences between HDDs and SSDs in terms of storage technology.

- The lecture provided a holistic understanding of how various hardware components work together to enable modern computing.

Gap Identification in Computer Science and Engineering Curriculum:

Based on the lecture, the following gaps were identified within the existing diploma curriculum:

- Lack of dedicated hardware modules: The curriculum may primarily focus on software and high-level concepts, with limited coverage of fundamental hardware components like CPUs, GPUs, TPUs, motherboards, and storage devices.
- Insufficient integration of hardware concepts into existing subjects: While subjects like "Computer Architecture" or "Operating Systems" might touch on some hardware aspects, a more comprehensive and practical approach is needed to cover the breadth of hardware knowledge presented in the lecture.
- Limited hands-on training on hardware components and interaction: Students need practical experience in understanding how hardware components function, how they are assembled, and how they interact with software. This includes practical exposure to components like CPUs, motherboards, RAM modules, and storage drives.

Specific Subject Gap Analysis:

Here's how hardware integration can enhance existing Computer Science and Engineering subjects:

- **Computer Architecture:**
  - Gap: Insufficient focus on the detailed architecture and functionality of modern CPUs, GPUs, and TPUs, including their internal components, instruction sets, and parallel processing capabilities. Limited coverage of motherboard design, chipset functionality, and bus systems.
  - Integration: Incorporate modules on advanced CPU architectures (e.g., pipelining, caching, multi-core processing), GPU architectures and programming, TPU design and applications, motherboard components and their functions, and high-speed interconnects.
- **Operating Systems:**
  - Gap: Limited coverage of how the OS interacts with and manages specific hardware components like memory (RAM), storage devices (HDDs and SSDs), and peripheral devices. Insufficient focus on device drivers and hardware interrupts.
  - Integration: Add sections on memory management techniques in detail (including virtual memory, paging, and caching), file system interaction with storage devices, device driver models, and interrupt handling mechanisms.

- **Data Communication and Networking:**
  - Gap: Limited coverage of network hardware components (e.g., network interface cards, routers, switches) and their role in data transmission.
  - Integration: Add sections on the architecture and functionality of network interface cards, the hardware components of routers and switches, and the physical layer technologies involved in data transmission.
- **Computer Organization:**
  - Gap: Lack of in-depth exploration of the internal organization of a computer system, including the interaction between different hardware components.
  - Integration: Focus on the systematic study of computer hardware elements, their interconnections, control mechanisms, and the flow of information within the system.

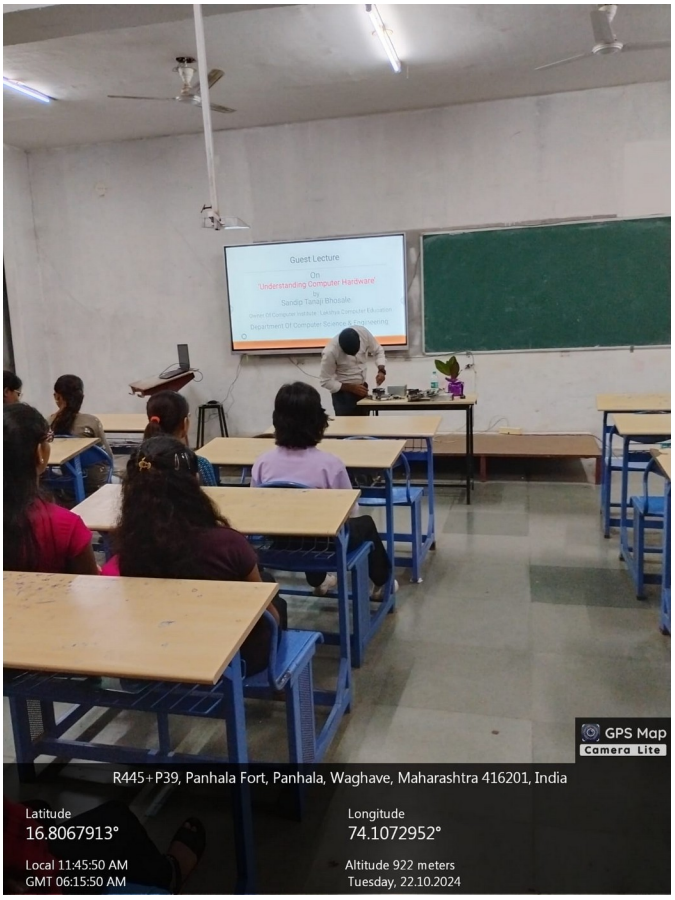
Recommendations:

- Integrate dedicated hardware modules into existing subjects, covering topics like CPU architecture, GPU computing, TPUs, motherboard design, memory systems, and storage technologies.
- Introduce a dedicated hardware-focused elective that provides in-depth knowledge and hands-on experience with various hardware components.
- Provide hands-on training on hardware components, including assembling a computer system, configuring hardware settings, and troubleshooting hardware issues. This could involve using simulators, working with actual hardware, and conducting laboratory experiments.
- Encourage collaboration with hardware experts and industry professionals to provide students with the latest knowledge and practical insights into hardware technologies.

Photos:

Sandip Sir Explaining Types of Hardware

Sandip Sir Displaying the Motherboard with its Components



Sandip Sir Showing connections of Hardware Components

Guest Lecture Co-Ordinator **HOD**