EMERGING TECHNOLOGIES AND AI IN IT SYSTEMS

Innovations reshaping the future of information technology

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Introduction to Emerging Technologies

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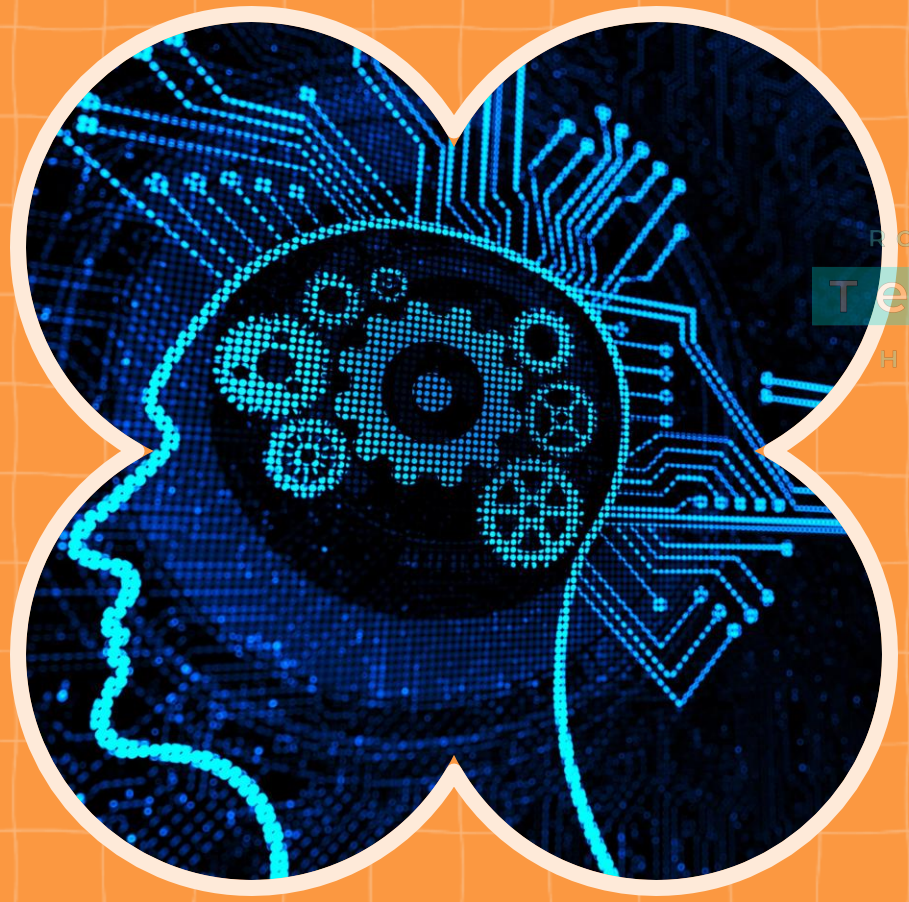
What is Unit 1 about?



Understanding IT Systems

Unit 1 introduces Information Technology Systems and their importance in organisations and everyday life.

Impact of Technology Choices

Technology decisions affect performance, productivity, and user experience in significant ways.

Focus on Emerging Technologies and AI

The unit explores emerging technologies and AI, highlighting their transformative effects on IT systems.

Preparing for Future Careers

Knowledge gained helps in making informed technology decisions and supports future tech-driven career readiness.

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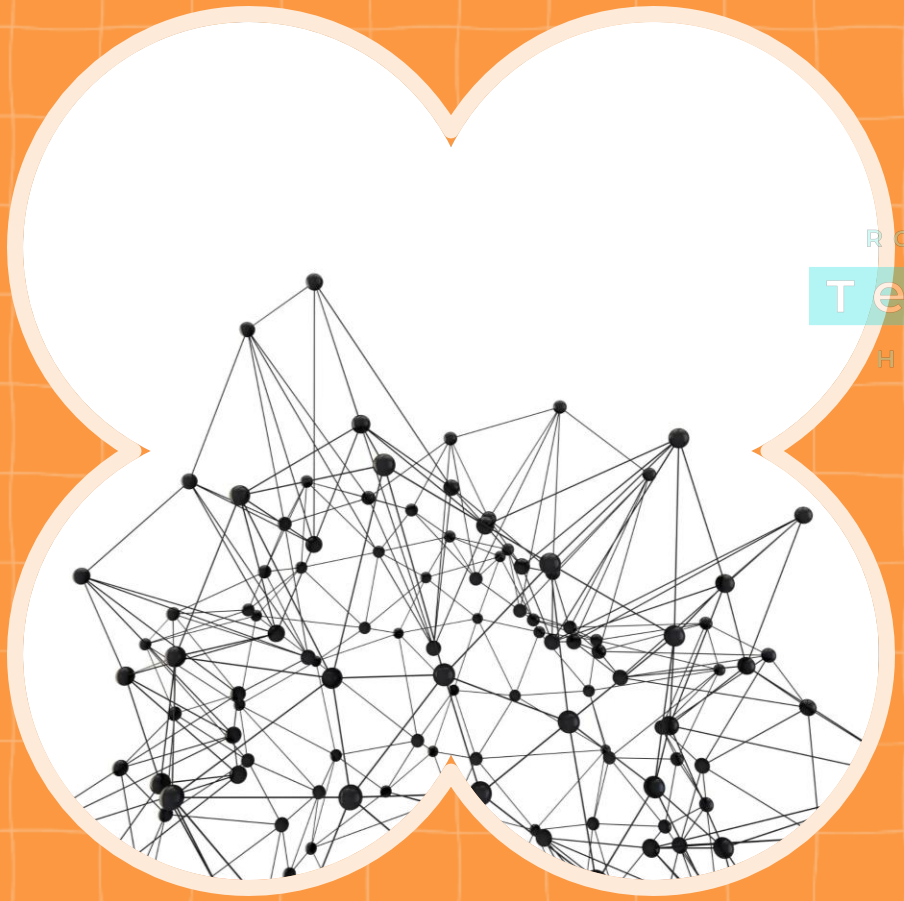
What does 'Emerging Technologies' mean?



Definition of Emerging Technologies

Emerging technologies are new innovative tools with significant potential to transform industries and daily life.

Examples of Key Technologies

Examples include AI, machine learning, cloud computing, IoT, and blockchain, driving rapid industry changes.

Impact on IT Systems

These technologies improve efficiency, connectivity, and automation, enabling smarter decisions and user experiences.

Adapting for Growth

Understanding emerging technologies helps organizations leverage growth opportunities and remain competitive.

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What is AI?

Definition of AI

AI enables machines to mimic human cognitive functions like learning and problem-solving effectively.

AI Applications

AI powers speech recognition, image processing, predictive analytics, and automation in various fields.

AI in IT Systems

AI improves IT performance by analyzing data, making decisions, and adapting to new situations.

AI Driving Innovation

AI is a cornerstone technology driving innovation in personal and organisational contexts.

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Impact on IT System Performance (A5.1)

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Faster and More Reliable Systems

AI-Driven Optimization

Artificial intelligence optimizes hardware performance for faster data processing and reduced downtime.

Predictive Maintenance

Machine learning predicts system failures early to ensure continuous and reliable operation.

Cloud Computing Scalability

Cloud services provide scalable resources that enable handling heavy workloads efficiently.

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AI-Driven Decision Making and Automation

Automation of Repetitive Tasks

AI automates repetitive IT tasks, reducing human error and increasing operational efficiency.

Data-Driven Decision Making

AI algorithms analyze large datasets to provide accurate insights for informed business decisions.

Adaptive Learning Systems

Adaptive AI systems learn and improve over time, customizing solutions to evolving business needs.

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Implications for Personal Use (A5.2)

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Smarter Devices and Daily Assistance

AI-Enabled Smart Features

Artificial intelligence powers voice recognition, personalized recommendations, and predictive assistance in smart devices.

Virtual Assistants Benefits

Virtual assistants help manage schedules, reminders, and control smart home devices with simple voice commands.

Cloud Storage Flexibility

Cloud storage allows users to access files anytime and anywhere, enhancing device convenience and productivity.

Privacy and Security Concerns

Increased smart device use raises privacy, data security risks, and concerns about overreliance on technology.

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Implications for Organisations (A5.3)

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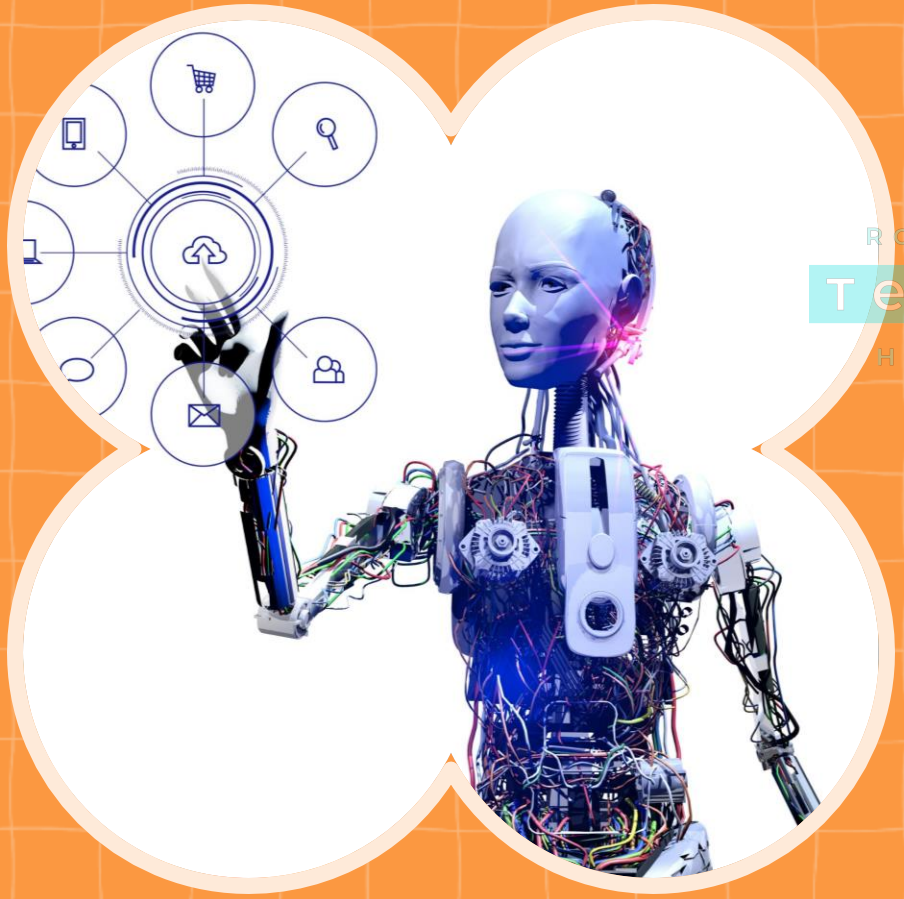
Business Operations and Innovation



Efficiency and Automation

AI automates routine tasks, reduces errors, and frees staff for complex work, improving operational efficiency.

Data-Driven Decision Making

Data analysis tools process large information volumes, enhancing strategic planning and informed decisions.

Cloud and IoT Technologies

Cloud computing offers scalable infrastructure and IoT improves supply chain monitoring and operational control.

Challenges and Risks

Businesses must address cybersecurity threats, ethical concerns, and ensure adequate staff training.

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Risks and Challenges

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Ethical, Security, and Workforce Issues

Job Displacement and Reskilling

Automation can cause job losses, necessitating workforce reskilling and adaptation to new roles and technologies.

Ethical AI Concerns

AI raises ethical issues such as data privacy, algorithmic bias, and the need for accountability in autonomous decisions.

Cybersecurity Vulnerabilities

Interconnected systems increase cyberattack risks, requiring strong security measures and regulatory compliance.

Balancing Innovation and Responsibility

Organizations must ensure sustainable technology use while maintaining stakeholder trust and ethical responsibility.

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Summary and Future Outlook

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Key Takeaways and Exam Tips

Impact of Emerging Technologies

Emerging technologies and AI improve IT system performance and enhance user experiences across industries.

Challenges and Risks

New technologies raise concerns around ethics, data security, and workforce adaptation.

Exam Preparation Focus

Students should focus on understanding opportunities, risks, and responsible innovation for exams and careers.

Continuous Learning Importance

Adapting to technological change requires ongoing learning, critical thinking, and responsible use of innovation.

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