

MG660 Management of New & Emerging Technologies

Wednesday ---- 8:20 PM - 10:35 PM ---- Room RH-602

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- 1/24 1/31 • 2/07 2/14 2/21 2/28 • 3/07 3/14 3/21 3/28 • 4/11 4/18 4/25 •
- * No Class 4/04 Spring Break !

<u>WEEK</u>	<u>TOPIC</u>
#1	Emerging Technology Issues
#2	Internet Architecture
#3	The Semantic Web
#4	Computing / Communications Platforms
#5	Operating Systems
#6	Web Services
#7	Security Issues
#8	Privacy / Legal Issues
#9	Service Oriented Architectures
#10	e-Process Engineering
#11	e-Business Strategy
#12	Internet Communities
#13	The <i>Next</i> Emerging Technologies

This course is a survey of the exciting new and emerging technologies that are becoming available to the new business world domain of the global information marketplace. Architectures and issues for implementation for these new media are presented. The "Information Highway" is presented, and its opportunities, applications and challenges are discussed. This course is for the manager who is interested in staying current with and learning about new technologies for use in business. No specific engineering background is required. A variety of reference texts, journals and websites will be used throughout the term.

A weekly paper, 2 – 3 pages in length, will be assigned; each will count for 5% of the final grade. The lowest weekly grade will be dropped . . . total 60% of the final grade. Class participation will count for 15% of the final grade based on depth & scope of discussion. The final research paper/presentation (20 pages/10 minutes) will serve to bring the technical and management issues discussed in alignment with the business strategy of an actual or hypothetical company. The depth, scope, and maturity of the analysis as well as the overall technical and management plan outlined will determine the grade which will count for 25% of the course grade.

MG660 CLASS NOTES

Emerging Technology Issues

[Link:](#) IT Management (Datamation)

[Link:](#) TechWeb

Computerworld

Information Week

Internet News

➤ The 'Manager of Emerging Technologies' (EMT)

Issues:

Rapid Change

Moore's Law / 'Internet Speed'

Many Technologies:

Internet / XML / Processor / Operating Systems

Programming Languages / Design Methodologies

Security & Privacy Issues / Management Techniques

Trade Organizations / Technical Standards / R & D

Financial Models / Legal Changes / Social Concerns

Economic Factors / Politics / International Affairs

Questions:

How to 'Keep up'? / How to Manage? / How to Plan? / How to Lead?

The Case for an Emerging Technologies Team:

Conversant in technical, business & industry issues and your business strategy

Expert in 'dynamically focusing it all' on your business situations (knowledge sculpting)

Using your business strategy to drive technology deployment in your organization

Homework: Research & discuss some emerging ebusiness technologies and the role of the Emerging Technologies Team in today's evolving IT infrastructure.

➤ References:

The IT Payoff, Sarv Devaraj & Rajiv Kohli, [Prentice Hall](#)

The Internet Bubble, Anthony B. Perkins & Michael C. Perkins, [Harper Collins](#)

[The e-Commerce Question & Answer Book](#), Anita Rosen, [AMACOM](#)

[e-Business 2.0: Roadmap for Success](#), Dr. Ravi Kalakota and Marcia Robinson,

with Foreword by Don Tapscott, Second Edition, 2001, [Addison Wesley](#) (Highly Recommended)

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Internet Architecture

[Link:](#) Internet Engineering Task Force

Internet Corporation for Assigned Names & Numbers

➤ It's The Synergy of IT

Networking Concepts

Client / Server

Local Area Network (LAN)

Wide Area Network (WAN)
Internetworking / Grid Computing

Networks

[SNA](#) / [Ethernet](#) / [Token Ring](#)
[X.25](#) / [Frame Relay](#) / [ATM](#)

Internetworking

IP Addressing (Class A / Class B / Class C)
Domain Name System (DNS)

The Internet's History

Internet Founding Fathers

[Jon Postel, IANA](#) / [Vint Cerf](#) (TCP/IP)

Internet Architecture

[The OSI Model](#)
[TCP/IP Architecture](#)

Internet Addressing

[Ipv4](#) (32 bit) / [Ipv6](#) (128 bit)

Internet Transmission

Packet switching / Hop-by-hop / [Root Servers](#)

World Wide Web (WWW)

[Internet 2](#) / [Grids](#) (next generation technology)

The Internet Industry

The Internet as 'Network of Networks'
and as 'Community of Communities'

ICANN & its affiliated organizations / ISPs

Your Internet Strategy

eCommerce (transactional) / eBusiness (new business platform)

Homework: Discuss some aspects of IPv4 and IPv6 Internet technologies & their business benefits.

➤ References:

IPSec, Naganand Doraswamy & Dan Harkins, [Prentice-Hall](#)

[Weaving the Web](#), [Tim Berners-Lee](#) with Mark Fischetti, [HarperCollins](#)

TCP/IP for Dummies, Candace Leiden & Marshall Wilensky, [Dummies](#)

The Psychology of the Internet, Patricia Wallace, [Cambridge University Press](#)

[Release 2.1: A Design for Living in the Digital Age](#), [Esther Dyson](#), [Broadway Books](#)

Teach Yourself Visually Networking, 2nd Edition, Paul Whitehead, [IDG Books](#)

[Business Data Communications](#), 6th Edition, David A Stamper & Thomas L Case, [Prentice-Hall](#)

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The Semantic Web

Link: [W3C \(XML\)](#) [OASIS](#) [XML.com](#) [XMetal](#) (software) [Ixiasoft](#) (native XML databases)

[ebXML](#) (industry consortium)

[Eclipse](#) (a new developer's industry association)

[UML.org](#)

➤ XML: Lingua Franca of eBusiness [Link](#) [XML Portal](#) (XML Family of Specifications)

EDI: Electronic Data Interchange
Evolution / Advantages / Shortcomings

The 'XML Software Family'
HTML / DHTML / XML / XHTML

Important XML Components
DTD / Schema / Namespace / XSLT / CSS

Enterprise Application Integration (EAI)
XML / UML / JAVA™
Forming an eBusiness Platform

Industry Organizations
W3C / OASIS / Eclipse

Managing the Use of XML
Technical Specifications
Operational Concerns
Strategic Considerations

Homework: Research & discuss the interoperability management issues associated with deploying the semantic technologies.

➤ References:

XML for the World Wide Web, Elizabeth Castro, [Peachpit Press](#)
[Modeling XML Applications with UML](#), David Carlson, [Addison Wesley](#)

XML: The Annotated Specification, Bob DuCharme, [Prentice Hall, Inc.](#)
EAI with XML and Java™, JP Morgenthal with Bill LaForge, [Prentice Hall, Inc.](#)

[XMLDevCon 2001 'Meet the Press' Panel Discussion](#) featuring the author & other industry analysts
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Computing / Communications Platforms

➤ The Equipment of eBusiness [Link](#) [Intel](#) [AMD](#) [Transmeta](#)

Early Processor Technology

Processor Chip Technology
Silicon Wafers / Circuit Etching

Chip Functionality:
Control Unit / Data Cache

Language Decoding
Arithmetic Logic Units
Speed & Architecture

Intel Pentium 4, AMD Athlon XP
Intel Itanium & Xeon, Multicore Processors

Moore's Law – Coming to an end?

The Variety of Hardware Platforms

- Desktop / server / mobile
- PDA / Cell phone – based
- Entertainment-based:
 - iPod & Podcasting

Chip Usage in Business / Data Types
[The Chip Industry & Manufacturers](#)
Management and Budgetary Issues

Homework: Discuss one or more mobile technologies and how they affect business operations.

➤ References:

[The Essential Guide to Computer Hardware](#), Jim Keogh, Prentice-Hall

[Computer & Web Resources for People with Disabilities](#), The Alliance for Technology Access
(With Foreword by Stephen Hawking, Physicist)

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Operating Systems

[Link:](#) [Linux.com](#) [Microsoft](#) (Win2000) [RedHat](#) (Linux) [IBM](#) [Novell](#)
[SCO](#) (UNIX) [SCO Letter to US Congress](#) [OSDL](#) (Open Source Development Labs)

➤ Making e-Business Equipment Intelligent

The History of Operating Systems
[Microsoft](#) / Unix / Linux / IBM
Desktop / Server / Network (Novell)
Proprietary / Open Source / [GNU Project](#)

Operating System Architecture
Shell / Kernel / 'The Multis'
Multi-tasking: multiple 'simultaneous' processes (via CPU time slices)
Multi-threading: multitasking within a single process
Multi-processing: 'true' multiple simultaneous processes
Multi-user: concurrent user access (via CPU time slices)

Microsoft Operating Systems:
MS DOS / Windows 3.x (early platforms)
Windows 95 / 98 / 98SE (Y2K OK) / Me (all involve some form of resource sharing)
Windows NT (various versions) / 2000 / XP / Vista – Microsoft's newest operating system

Microsoft Anti-Trust Trials:
US DOJ Vs Microsoft
European Union Vs Microsoft

The LINUX / UNIX War
SCO / IBM / Linus Torvalds
The 'Mydoom' Virus / DDoS Attacks
The SCO & MS 'War Chests' & 'Rewards'

Industry / Legal / International Issues

Management Issues in an Uncertain Environment
Mission Critical Operations ([Mission Critical Linux](#))

Homework: Compare/contrast the proprietary vs the open source software business models.

➤ References:

Windows 2000 and Mainframe Integration, William H. Zack, [Macmillan Publishing](#)

UNIX & Linux: Answers!, [Charlie Russel and Sharon Crawford](#), [Osborne](#)

[Pride Before the Fall](#), John Heilemann, [Harper Collins](#)

World War 3.0: Microsoft & Its Enemies, Ken Auletta, [Random House](#)

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Web Services

[Link](#) [WebServices](#) [WS / XML](#) [Web Services @ XML.com](#)

➤ Bringing the Internet to You

Need for Web Services (WS)

Concept of [Web Services](#)

[Service-Oriented Architecture](#) (SOA)

Web Services Protocols

[SOAP](#): Simple Object Access Protocol

[WSDL](#): Web Services Description Language

[UDDI](#): Universal Description, Discovery & Integration

Web Services Technologies

[Microsoft .Net](#) / [Sun Microsystems J2EE](#) (SunONE)

[IBM Websphere](#) / [BEA Weblogic](#) / [BPEL4WS](#) (Business Processes)

Industry Organizations

Web Services Interoperability Organization ([WS-I](#))

Organization for the Advancement of Structured Information Standards ([OASIS](#))

Example:

Homework: Discuss the functioning of the three major web service components – WSDL, UDDI, and SOAP – and some of the associated deployment and management issues in using web services.

➤ References:

Web Services in 24 Hours, [Stephen Potts](#) & [Mike Kopack](#), Sams Publishing

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Security Issues

[Link](#) [Computer Emergency Response Team](#) (CERT)

➤ Letting 'em In, Keeping 'em Out

Security Issues

Technical, Social, Management, Policy

Security Problems

Hackers, Software Vulnerabilities

Transactional, Infrastructure, Poor Practices

Security Solutions:

Firewalls, Encryption, [Honeypots](#)

Digital Signatures / Certificates

Public Key Infrastructure (PKI)

Extensive Security Index

Industry Concerns

Standards, Best Practices

Social Concerns

Private, Corporate

National, International

Criminal, Terrorism & CyberWarfare

Management Issues

How Secure is Secure? / Risk Management / ROI?

Homework: In a developing ebusiness, which security concerns would you address first; why?

➤ References:

VPNs: A Beginners Guide, John Mairs, [Osborne](#)

Firewalls, Matthew Strebe & Charles Perkins, Sybex

Cybershock, Winn Schwartau, Thunder's Mouth Press

Secrets & Lies (digital security), Bruce Schneier, Wiley

PKI, Tom Austin, Wiley

IPSec, Naganand Doraswamy & Dan Harkins, [Prentice-Hall](#)

Intranet Security, Linda McCarthy, [Prentice-Hall](#) (ISBN: 0-13-894759-7)

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