

# MG656 Adv. Mgt of Data & Communications Networks

Wednesday ---- 6:00 PM - 8:15 PM ---- Room RH-705

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\* No Class 4/04 Spring Break !

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**TEXT:** [The Essential Guide to Internet Business Technology](#), [Gail Honda & Kipp Martin](#), [Prentice Hall](#), 2002 (ISBN: 0-13-042820-5)

Explores advanced issues & trends in modern enterprise networking. Examines implications of such developments in the business environment and infrastructural needs of organizations & clusters of organizations. Reviews ramifications of the TCP/IP revolution leading to commercialization of the Internet/World Wide Web. Discusses the network infrastructure required to implement Intranets/Extranets, e-commerce and interorganizational business communication & collaboration. Evaluates emerging technologies such as electronic payment systems, corporate digital libraries, push technology, multicasting, firewalls & digital signatures. and the implications of internetworking such as digital cities, smart buildings, distance learning, telecommuting & teleconferencing.

A weekly paper, 2 – 3 pages in length, each counting for 5% of the final grade will be assigned. 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 / management plan outlined will determine the grade which will count for 25% of the total course grade.

# MG656 CLASS NOTES

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## The e-Business Environment (Chapter 1)

[Link](#) [TechWeb](#)      [Computerworld](#)      [Information Week](#)      [Internet News](#)

➤ Sculpting A New Platform for Business      [Link](#) [IT Management \(Datamation\)](#)

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)

eCommerce / eBusiness - the differences, similarities, and technologies

Using your business strategy to drive technology deployment in your organization

Case Study: Yummy Jams – a fictitious maker of jams and jellies.

Homework: Discuss how the internet-based IT technologies are changing the way business is conducted and managed both operationally & strategically.

➤ 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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## Computer Hardware (Chapter 2)

[Link](#) [Intel](#)      [AMD](#)      [Transmeta](#)

## ➤ The Equipment of eBusiness

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, Multicore Processors

Moore's Law – Coming to an end?  
- 64 bit processing  
- 128 bit processing

Chip Usage in Business / Data Types  
The Chip Industry & Manufacturers  
Management and Budgetary Issues

Homework: Discuss the hardware issues faced by Yummy Jams operationally and strategically..

## ➤ 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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## Computer Software (Chapter 3)

[Link](#) [Sun Microsystems](#) (Java) [Linux.com](#) [Microsoft](#) (Win2000)

[SCO](#) (UNIX) [OSDL](#) (Open Source Development Labs)

## ➤ Making e-Business Equipment Intelligent

The History of Operating Systems  
Microsoft / Unix / Linux / [IBM](#)  
Desktop / Server / Network ([Novell](#))

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 (each process given its own run environment)  
Windows Vista -- capabilities, business uses and risks, enterprise platform issues

## Microsoft Anti-Trust Trials:

US DOJ Vs Microsoft  
European Union Vs Microsoft (on-going)

## The LINUX / UNIX War

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

## Web Services

MS .Net Services  
Sun Microsystems J2EE

## Programming Languages

Procedural / Object-Oriented / 4GL  
Proprietary / Open Source / [GNU Project](#)  
Compile / Interpret / Runtime Environment

Cobol / Fortran (legacy code)  
Basic / Visual Basic (VB) / C / C++  
Java & JVM (java virtual machine) / C# & Windows

## Industry / Legal / International Issues

Management Issues in an Uncertain Environment

Homework: Discuss the software issues and conflicts faced by Yummy Jams today.

### ➤ References:

Windows XP: The Easy Way, [EZ Tech Guides](#), Vol. 2, Issue 2, 2004

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

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

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

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

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## Internet Technologies (Chapter 4)

[Link:](#) [Internet Engineering Task Force](#)    [Internet Corporation for Assigned Names & Numbers](#) (ICANN)

### ➤ It's The Synergy of IT

#### Networks

Client / Server ([IBM's SNA](#))

Local Area Network (LAN)  
[Ethernet](#) / [Token Ring](#)  
Wide Area Network (WAN)  
[X.25](#) / [Frame Relay](#) / [ATM](#)

Internetworking  
IP Addressing (Class A / Class B / Class C)  
The 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](#)

The World Wide Web (WWW) & [Tim Berners-Lee](#)  
[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 (Internet Service Provider)

Your Internet Strategy  
eCommerce (transactional) / eBusiness (new business platform)

Example: Yummy Jams ( a fictitious jams & jellies manufacturer )  
i) recognizes the Internet's potential to reach new customers  
ii) establishes a corporate Internet presence @ yummy-jams.com

Homework: Discuss how the Internet can affect business at Yummy Jams..

➤ **References:**

TCP/IP for Dummies, Candace Leiden & Marshall Wilensky, [Dummies](#)  
Teach Yourself Visually Networking, 2<sup>nd</sup> Edition, Paul Whitehead, [IDG Books](#)  
[Weaving the Web](#), Tim Berners-Lee with Mark Fischetti, [HarperCollins](#)  
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](#)

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## Internet Languages (Chapter 5)

**Link:** [W3C](#) (XML)    [OASIS](#) (B2B)    [XML.com](#)    [XMetal](#) (software)    [Ixiasoft](#) ( XML databases)  
[ebXML](#) (industry consortium)    [Eclipse](#) (a new developer's industry association)    [UML.org](#)

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

HTML: Hypertext Markup Language  
Formatting Tags / Display Only  
HTML Authoring & Editing Tools

XML: Extensible Markup Language  
User-definable Tags  
Data-centric Web Pages (see Figs. 5-5 & 5-6, Course Text)

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

The 'XML Software Family'  
SGML / HTML / DHTML / XML / [XHTML](#)

Enterprise Application Integration (EAI)  
UML / XML / JAVA™ / Legacy Systems

EDI: Electronic Data Interchange & XML  
Evolution / Advantages / Shortcomings

Forming a new Business Platform (eBusiness)

Industry Organizations:  
W3C / OASIS / Eclipse / OMG

Managing the Use of XML  
Technical Specifications  
Operational Concerns  
Strategic Considerations

Example: Yummy Jams ( a fictitious jams & jellies manufacturer )  
i) establishes a simple, hosted HTML corporate website @ [yummy-jams.com](#)  
ii) begins to investigate the XML family of technologies for e-commerce & e-business

Homework: Compare and contrast HTML and XML; discuss the best uses and associated management issues of both technologies by Yummy Jams.

➤ References:

XML for the World Wide Web, Elizabeth Castro, [Peachpit Press](#)  
[Weaving the Web](#), Tim Berners-Lee with Mark Fischetti, [HarperCollins](#)  
[Modeling XML Applications with UML](#), David Carlson, [Addison Wesley](#)  
XML: The Annotated Specification, Bob DuCharme, [Prentice Hall, Inc.](#)

[XML and JAVA™ from Scratch](#), Nicholas Chase, [Que](#)

EAI with XML and Java™, JP Morgenthal with Bill LaForge, [Prentice Hall, Inc.](#)

UML Distilled, Second Edition, [Martin Fowler](#) with Kendall Scott, [Addison Wesley](#)

Building A Strategic Extranet, Bryan Pfaffenberger, [IDG Books](#)

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

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## **Website Designs Issues** (Chapter 6)

### ➤ Drawing 'em In, Keeping 'em Coming Back (Online Communities)

Nature of The Web

Multi-dimensional, Multi-cultural

Multi-media, Dynamic, Interactive, Non-linear

Technological, Artistic, Community-Oriented

Purpose of the Website

Informational, Marketing, Sales

e-Commerce, e-Business, Educational

Know Your Audience

'Passersby', Aficionados, Experts

Kids, Adults, Business People

Decide on Content

Focused, General, Trans-cultural

Customized, Special, Everyday, Explicit

Market the Website

Advertising, Word-of-Mouth, Meta-tags

Web Services

Product-specific, Community-oriented

Industry-focused, Back-Office

The Online Community

Local, Regional, National, International

Industry-based, Trans-Industry, Special Interest Groups

Management Issues / Best Practices

Standard Procedures, New Business Models

Economic, Legal, Political, and Cultural Considerations

Example: Yummy Jams ( a fictitious jams & jellies manufacturer )

evolves to a multi-functional corporate e-commerce & e-business website  
then

migrates to a number of content-specific websites for better portal management -

Websites might include:

- yummy-jams.com, for corporate information; e-business portal
- yummy-jams.biz, for product sales (e-store)

- yummy-jams.info, for the Yummy Jams 'community'
- yjs.com, specifically for kids (with appropriate protections and legal compliances)
- yummy-jams.tv, for the Yummy Jams 'promo' and 'reality' videos

Homework: Discuss the design of one of Yummy Jams' websites and how it would help business.

➤ References:

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

[XML for the World Wide Web, Elizabeth Castro, Peachpit Press](#)

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

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## **The Online Business** (Chapter 7)

➤ Just Doing IT

The Enterprise Network  
LANs, WANs / Intranets, Extranets

The Hardware Decision  
PCs, Servers, Data Communications

The Hardware Technology Matrix  
Ownership / Leasing / Colocation

Internet Service Provider (ISP)  
Managed Service Provider (MSP)  
Application Service Provider (ASP)

Consultants & Consulting Services  
Planning, Deployment, Upgrades, Auditing

Internet Connectivity  
Technical & Management Issues  
Communications Speeds & Service Providers

Example: A consideration of Yummy Jams' different needs for its various websites – yummy-jams.com, yummy-jams.biz, and yummy-jams.info – based on content, use, and corporate policy.

Homework: Discuss Yummy Jams' options and suggest a course of action and its business ramifications.

➤ References:

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

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