



Indian Institute of Management Indore

EXECUTIVE POST GRADUATE PROGRAM IN E-GOVERNANCE

2013-14

Title of the Course: EMERGING TECHNOLOGIES

Credits: 2

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COURSE DESCRIPTION

The participants of the e-Governance program are expected to play important roles in channelizing and directing Government funds and efforts in improving the wellbeing of the society with applications of modern technologies. This course is aimed to bring them up current with modern technologies, their application and impact on human society, and the related role of Government.

COURSE OBJECTIVES

This course has following objectives:

- To familiarize participants with new IT hardware and operating systems.
- To learn applications of cloud computing, data warehousing, mining, business intelligence and artificial intelligence.
- To expose participants to modern developments, such as, machine learning and human ambient environments.

PEDAGOGY

Lectures, case discussions and presentations.

EVALUATION

Class preparation, presentation	:	20%
Group assignments	:	20%
Quizzes	:	20%
End-term	:	40%

[Use of ET for Roti, Kapada & Makaan]

SCHEDULE OF SESSIONS:

MODULE I: Hardware and Operating System Developments

Module Objective(s): To learn recent developments in hardware and operating systems

Sessions 1&2 Developments in Hardware Technologies

Objective: To familiarize the participants with developments in IT hardware technologies.

Readings: Kaneshige, Tom. (2008). Taking advantage of multicore PCs, *InfoWorld*, pp 1-4. White Paper downloaded from: <http://www.infoworld.com/print/37711>

2 copies **R2/5n 8** Shah, Agam. (2009). Multicore chips pose next big challenge for industry, *InfoWorld*, pp 1-3. White Paper downloaded from: <http://www.infoworld.com/print/68105>

R3/9n 10 Venezia, Paul. Modern multicore and the next generation of IT, *InfoWorld*, pp 1-2. White Paper downloaded from: <http://www.infoworld.com/print/116325>

2 copies **R4/11n 22** Patterson, David. (2010). The Trouble with Multicore. *IEEE Spectrum*. Downloaded from: <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5491011>

Session 3 Operating Systems.

Objective: Introduction to the open source operating systems developments (Linux, Android) for mobiles, tablets, notebooks, laptops, and servers.

R5/23n 26 **Readings:** McPherson, Amanda. (2009). Linux: The Operating System of the Cloud, *Linux Foundation*. Downloaded from:

<http://www.linuxfoundation.org/sites/main/files/publications/linuxincloud.html>

6/27n 58 **Case:** Apple Inc., 2008, Harvard Business Publishing Product no 708480. (Also, Ref case: "Google's Android..." in IT Networking course from Term I)

Module 2: Recent IT Developments affecting Organisations

Module Objective(s): To enable participants to understand developing computing technologies and their applications.

Session 4 Grid computing and Autonomic computing.

Objective: To understand the use of grid and autonomic computing technology.

R7/59n 80 **Readings:** Joseph, J., Ernest, M., & Fellenstein, C. (2004). Evolution of grid computing architecture and grid adoption models. *IBM Systems Journal*, 43(4), 624-645.

R8/81n 94 Parashar, M., & Hariri, S. (2005). Autonomic computing: An overview. In *Unconventional Programming Paradigms*, pp. 257-269. Springer Berlin Heidelberg.

R9/95n 102 Dobson, S., Sterritt, R., Nixon, P., & Hinchey, M. (2010). Fulfilling the vision of autonomic computing. *Computer*, 43(1), 35-41.

Session 5 Cloud computing

Objective: To understand cloud computing (SaaS, PaaS, IaaS) and its uses.

R10/103n 116 **Readings:** "An Overview of Cloud Computing", Report by *National Security Agency (NSA), USA*. Downloaded from:

http://www.nsa.gov/research/_files/publications/cloud_computing_overview.pdf

R11/117n 148 **Case:** CA Technologies: Bringing the Cloud to Earth, HBS 611047.

Session 6 Data Warehousing, Mining, and Business Intelligence.

Objective: To learn applications of data warehousing, mining, and business intelligence.

R12
149-182

Readings: ✓ Kimball, Ralph. (2011). The Evolving Role of the Enterprise Data Warehouse in the Era of Big Data Analytics. White paper, *Kimball Group*. Downloaded from: <http://www.informatica.com/>

C13
183-196

Case: # Towngas: Achieving Competitive Advantage through Customer Relationship Management, Asia Case Research Centre HKU295.

Session 7: Artificial Intelligence.

Objective: To understand artificial intelligence and its uses.

R14
197-202

Reading(s): ✓ Hopgood, A.A. (2003). Artificial intelligence: Hype or reality? *Computer* (IEEE Computer Society), 36(5), pp. 24-28.

C15
203-218

Case: Du Pont's Artificial Intelligence Implementation Strategy, HBS 189036.

Module 3: Future technologies

Module Objective(s): To learn upcoming developments in information technologies

Session 8 & 9: Machine Translation (and machine learning).

Objective: To expose participants to applications in machine learning.

R16
219-254

Reading(s): ✓ Goutte, Cyril, Cancedda, Nicola, & Dymetman, Marc. (2009). A Statistical Machine Translation Primer. Book Chapter in *Learning Machine Translation*, MIT Press.

R17
255-268

✓ "Machine Translation for Government Applications" By Jones, D., Wade Shen, and Herzog, M. Downloaded from http://www.ll.mit.edu/publications/journal/pdf/vol18_no1/18_1_2_Jones.pdf

Session 10: Ambient Intelligence

Objective: To learn the application of technology in human ambient environments

R18
269-306

Reading: ✓ Cook, D. J., Augusto, J. C., & Jakkula, V. R. (2009). Ambient intelligence: Technologies, applications, and opportunities. *Pervasive and Mobile Computing*, 5(4), 277-298.