SUBJECT DESCRIPTION FORM

Subject Title: Information Technology and Logistics

Subject Code: COMP5512

Credit Value: 3

Pre-requisite: (Subject title and code no, if any)

Fundamentals of E-commerce (COMP514) or E-commerce and Applications (COMP575) or E-Commerce Fundamentals and Development (COMP5122) or equivalent

Recommended background knowledge:

Knowledge of spreadsheet modelling, operational research, and statistics & probability would be an advantage

Mutual Exclusions: NIL

Learning Approach:

42 hours teaching including lecture, tutorial, lab, workshop seminar where applicable

Assessment:

Continuous assessment	70%
Test, and Examination	30%

Objectives:

A logistics system usually includes various processes that integrate multiple business partners such as manufacturers, distributors, retailers, and customers. In recent years, fundamental changes have been taken place in the business environment due to the service-oriented economy as well as emerging information technology (IT). For example, the adoption of the service-oriented architecture not only integrates disparate business functions but also provides adequate control over business interactions in supply chains. Such information and process integration facilitates management decision support of various parties in a quest for efficiency, cost reducing, and service quality.

This course illustrates how various contemporary information technologies can facilitate logistics and decision support in supply chain management.

Learning outcomes:

After completing this subject, students should be able to

- identify the IT technology in different operational stages in logistics
- understand the fundamental issues for information acquisition and processing in logistical management
- apply knowledge understanding and discovery for supply chain forecasting, transportation scheduling and cost prediction
- use IT technology and simulation models for inventory control and monitoring

The Department reserves the right to update the syllabus contents. Please note that the learning approach for the same subject could vary slightly due to different delivery modes.

Keyword syllabus:

- Overview of logistics & supply chain management
- Bullwhip effect in supply chains
- Minimum-cost flow problems in Transportation
- Data centre and logistics product support
- Transportation decisions and inventory management
- Forecasting and simulation models (e.g. using Excel Solver, Crystal Ball)
- IT applications and case analysis
- Other emerging IT for logistics

Indicative reading list and references:

Books

- Ballou, R.H., 2004, *Business Logistics/Supply Chain Management: Planning, Organizing, and Controlling the Supply Chain*, 5th Ed., Prentice Hall.
- Murphy, P.R. and Wood, Jr. D. F., 2008, *Contemporary Logistics*, 8th Ed., Pearson Prentice Hall.
- Hillier, F.S. and Hillier, M.S., 2008, *Introduction to Management Science: a modeling and case studies approach with spreadsheets*, 3rd Ed., McGraw-Hill/Irwin.

Articles

- Erickson, R.S, 1953, "The Logistics Computer", *Proceedings of the IRE*, 41(10), p.1325 – 1332.
- Hedberg, S.R., 2002 "DART: revolutionizing logistics planning", *IEEE Intelligent Systems*, 17(3), p.81 – 83.
- Gunasekaran, A., Ngai, E.W.T. and Cheng, T.C.E., 2007, "Developing an e-logistics system: a case study", *International Journal of Logistics Research and Applications*, 10(4), p.333 – 349.
- Leung, L.C., Cheung W. and Hui, Y.V., 2000"A framework for a logistics e-commerce community network: the Hong Kong air cargo industry", *IEEE Transactions on Systems, Man, and Cybernetics – Part A: Systems and Humans*, 30(4), 446 – 455.
- Auramo, J. and Ala-risku, T., 2005, "Challenges for going downstream", *International Journal of Logistics Research and Applications*, 8(4), p.333 – 345.
- Mason, R. and Lalwani, C., 2006, "Transport integration tools for supply chain management", *International Journal of Logistics Research and Applications*, 9(1), p.57 – 74.
- Li, Z. and Kumar, A., 2005, "Supply chain network scenario design and evaluation", *International Journal of Logistics Research and Applications*, 8:2, p.107 – 123.
- Tarantilis, C.D., Spinellis D. and Gendreau, M., Eds., 2005, Special issue on "Advanced Heuristics in Transportation and Logistics", *IEEE Intelligent Systems*, 20(4).