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Intelligent Maintenance Systems (IMS)

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The University
of Manchester



**Introduction of E-Manufacturing
and E-Maintenance Systems**

**Achieving six-sigma
manufacturing excellence through
innovative web-enabled
infotronics technologies**

Short Course 24-28 January 2005

**University of Manchester
United Kingdom**

COURSE CONTENTS

Day One

Business Transformation, New Business Model and Changing Needs in Production Innovation

Changing business model and needs
Needs in E-Manufacturing for E-Business Transformation
Role of E-Service/E-Maintenance/E-Manufacture in Business Productivity Improvement
E-Manufacturing (E-Operations) → E-Factory → E-Business

Introduction of Infotonics Technologies for Modern E-Maintenance/E-Manufacturing Systems

Infotonics technologies vs. information technologies
Information system vs. informing decision
Techniques in transforming data to information and knowledge
Managing data/information security
Data transformation → prediction → optimization → synchronization
Decision Analysis in Asset Management: getting the most out of a Computerized Maintenance Management System (CMMS).

Introduction of Web-enabled Monitoring Systems

Introduction of web-enabled vs. web-based systems
Using internet for remote monitoring and e-prognostics
Sending information vs. sending data through internet
Introduction of *Device-to-Business (D2B)* techniques
Implement web-enabled systems for productivity innovation

Day Two

Overview of Smart Prognostics and Predictive Maintenance Systems

Introduction of E-diagnostics and E-prognostics
Overview of various prognostics methods
Introduction of tools and methods for smart prognostics
Standards and Open Architecture for Smart Maintenance Systems
Intelligent Techniques (Fuzzy Logic and AHP) in Maintenance
Case examples

Day Three

Introduction of Tether-Free Monitoring and Automatic Systems

- Introduction of tether-free (e.g. wireless) technologies
- Understanding various tether-free systems (Bluetooth/802.11b/IEEE 1451 etc.)
- How to use wireless systems for predictive maintenance and remote monitoring
- Wireless and tether-free prognostics
- Peer-to-peer performance assessment method
- Innovative self-powered tether-free monitoring systems
- Case examples

Day Four

Integrated Supply-Chain and E-Manufacturing Practices

- Methodologies for optimization and E-logistics
- Synchronization with E-Business tools
- Transform E-Manufacturing practices to smart business performance
- Achieve six-sigma quality through E-Manufacturing methodologies
- Case studies for product mix manufacture and supply systems

Day Five

Case Studies and Best Practices On E-Manufacturing

- GE Medical tetherfree equipment testing monitoring
- Harley Davidson machine tool monitoring
- GM web-enabled monitoring and E-Manufacture testbed
- Rockwell (Meritor) Adaptive PM System

Revision

Quiz and Q & A Summary (Open Forum)

Feedback Session

SUITABLE FOR

Those requiring introduction to the subject area, those seeking an advanced understanding of E-Manufacturing and E-Maintenance Systems and those interested in applications of the fundamental ideas to practical areas.

Nature of Course

Part of a Masters Course in Advanced Manufacturing Technology and Systems Management (AMT&SM)

Lectures given by academics and involve case studies from industry

Continuing Professional Developments assignments may be submitted for assessment

Attended by full-time AMT&SM MSc students

Available for Master-level students in other cognate subjects (Maintenance, Asset Management, Manufacturing..etc)

Fees

*£400 for full course (5 days)
£100 per day for individual days*

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