Form 2B

City University of Hong Kong

Information on a Course
offered by Department of SEEM
with effect from Semester A in 2012/2013

Part I

Course Title: **Asset and Maintenance Management**

Course Code: **SEEM6014**

Course Duration: **One Semester**

No. of Credit Units: **3**

Level: **P6**

Medium of Instruction: **English**

Prerequisites: **Nil**

Precursors: **Students are expected to have either some working experience in management or taken management equivalent course(s)**

Equivalent Courses: MEEM6014

Exclusive Courses: Nil

Note: Students may repeat a course, or an equivalent course, to improve course grade only if the previous course grade obtained is C or below.

Part II

1. Course Aims:

The aim is to provide a managerial perspective to the maintenance and physical asset management, and introduce an effective strategy for routine asset and maintenance control so that the students are capable of selecting suitable asset and maintenance management systems for public utilities and industries. The content of this course is especially designed to partially comply with **the major elements** in the British Standards on Asset Management.

2. Course Intended Learning Outcomes (CILOs)

Upon successful completion of this course, students should be able to:

No.	CILOs	Weighting* (if applicable)
1.	Recognise the importance of maintenance and engineering asset management to manufacturing, public utilities, transportations and building services,	1
2.	Understand the philosophies and international compliance on maintenance and engineering asset management,	1
3.	Use of common condition monitoring, fault diagnosis, reliability, risk assessment in maintenance and engineering asset management, and	2
4.	Formulate reliable and cost-effective managerial strategy for selected equipment/process operating in a particular kind of public utility and industry.	2

***Weighting ranging from 1,2,3 to indicate the relative level of importance in an ascending level.**

3. Teaching and Learning Activities (TLAs)

(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)

Activity Type	Timetabled Activity (Average hours per week)
Lecture/Mixed Demonstration/Presentation (D/P)	Lecture (2 hrs) & Mixed D/P (1 hr)

CILO No.	Lectures (large class)	D/P Phase - 1 Demonstration & Mini-Presentations (small class)	D/P Phase - 2 Term Project Presentation (large class)	Total (hours)
CILO 1	4	2	0	6
CILO 2	4	2	0	6
CILO 3	9	3	1	13
CILO 4	9	3	2	14
Total	26	10	3	39

Maximum number of students in large class is 40.

Lectures have 26 hours. Demonstration/Presentation (D/P) has 13 hours distributed among a time span of 5 weeks. The content of lectures will roughly follow the topics covered in the Section of Keyword Syllabus with case studies for illustration purpose. D/P will be separated into two phases. The first phase is the demonstration and mini-presentation. The second phase is the term project presentation. In the first phase of tutorial/presentation, the students must attend 4 sessions with each session last for 2 hours. The second phase has three hours, especially scheduled for the term project presentation.

To work for the mini-presentation and term project, the students will form groups with a size of no more than 5 students per group. During each of the four sessions in the first phase of D/P, typical kind of system/package related to the four CILOs will be demonstrated to students in the concerned laboratory. Alternatively, guest speakers, who are prestigious in industry, will be invited to present special talks related to the course aim. After the demonstration/talk, questions and discussion items will be given to students. Each student must participate in discussions in his group and prepare a short summary. Each group must

present her summary in the format of mini-presentation. Comments will be received from the course examiner and colleagues. Marks will be given to each group based on her responses to comments, the content of the summary and the quality of the mini-presentation.

At the end of the lectures, a term project must be accomplished by each group. Each group is required to develop an effective strategy in maintenance and engineering asset management for a given type of equipment/process operating in a particular kind of public utility and industry. A group report to describe the structure and the expected achievements of the designed strategy must be submitted. A presentation will be held in the second phase of the D/P to report and demonstrate the achievements of the completed term project.

4. Assessment Tasks/Activities (ATs)

(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

CILO No	**Term Project and its Report**	**Mini-Presentations & in-class Discussion**	**Term Project Presentation**	**Total** (%)
CILO 1	10	5	2	17
CILO 2	10	5	2	17
CILO 3	15	10	6	31
CILO 4	15	10	10	35
Total (%):	50	30	20	100

5. Grading of Student Achievement:

The grading of achievements is on a 100% course work basis. The portion of assessment is divided as 30% for the mini-presentations, in-class discussion and summaries, 20% for the term project presentation, and 50% for the term project and its report.

The assessment of the term project will depend on the degree of understanding the problems, the appropriateness of suggested methods to the given problems, the suitability of the managerial strategy for the given types of equipment/process operating in a given kind of company. A report must be submitted to lay out the designed strategy for maintenance and engineering asset management, the gained benefits as well as the effectiveness in cost and resources provided by the strategy.

At the end of the D/P session, each group must give a presentation for her term project. All members of the group must responsible for the preparation of presentation. The attendance of the presentation is compulsory. The preparation, the style and the clarity of presentation as well as the response to the comments will contribute to the final assessment of presentation.

Each group must submit a report for her completed term project. To facilitate individual assessment, each student in a particular group must also submit his own detailed section of contribution (called ‘individual section’), which can be attached to the term project’s report. In the individual section, each student must define clearly his role, the amount of work done by him, and the portion of his own contribution (in percentage) in completing the term project. The student should also include his own discussion and conclusion in the report to verify his degree on understanding the term project. Hence, the final mark given to each

student may be varied due to his actual contribution and achieved efforts toward the term project.

Grade Table

Letter Grade	Grade Point	Grade Definitions
A+ A A-	4.3 4.0 3.7	Excellent
B+ B B-	3.3 3.0 2.7	Good
C+ C C-	2.3 2.0 1.7	Adequate
D	1.0	Marginal
F	0.0	Failure
P	-	Pass

Please refer to the SGS's website for details.

Part III

Keyword Syllabus:

- Overview of Engineering Asset and Maintenance Management
- Strategies and Schemes of Maintenance Practices
- Introduction to Condition Monitoring and Preventive Maintenance
- Basic Fault Diagnosis and Analysis
- Basic Reliability and Risk Management
- Reliability Cantered Maintenance
- Maintenance Remedy, Planning and Scheduling
- International Compliance on Engineering Asset Management
- Benchmarking Maintenance and Physical Asset Management
- Industrial Case Studies and Demonstrations

Recommended Reading:

1. The Institute of Asset Management, *PAS 55-1 and 55-2: Asset Management*, British Standards Institute, 2004, (ISBN 0-580-42765 X)
2. Jardine, A. and Tsang A., *Maintenance, Replacement, and Reliability – Theory and Applications*, Taylor & Francis, 2006 (ISBN 0-8493-3966-9)
3. Kelly A, *Maintenance Management Auditing: in search of Maintenance Management Excellence*, Industrials Press, New York, 2006 (TS192.K425 2006)
4. Mather D., *CMMS (Computerized Maintenance Management System): A Time Saving Implementation Process*, CRC Press, 2002.

5. Levitt J., *The Handbook of Maintenance Management*, Industrial Press, New York, 1997 (TS192.L48 1997).
6. Mobley, R., Higgins, L., and Wikoff, D., Maintenance Engineering Handbook, McGraw Hill, c2008, (TS192.M335 2008)
7. Levitt, J., Complete Guide to Preventive and Predictive Maintenance, Industrial Press, 2003 (TS192.L4667 2003)
8. Koller G., *Risk Assessment and Decision Making in Business and Industry* – a Practical Guide, CRC Press, 1999 (ISBN 0-8439-0268-4)
9. Pedersen, J.D., *Maintenance in Manufacturing Plant: Turnaround Planning and Monitoring*, International Fertiliser Society, 2000 (C0326047).

Online Resources:

a) International Journal of Strategic Engineering Asset Management, www.inderscience.com
b) Engineering Asset Management Review, www.springer.com/engineering
c) Journal of Quality in Maintenance Engineering (e-journal), ISSN 1355-2511, http://ejournals.ebsco.com/Journal2.asp?JournalID=101232
d) The Asset Journal, Asset Management Council, (e-journal), ISSN 1834-3864.
e) Maintenance Management (video recording, 9 records), TS192.M345/pt.1-9.