

City University of Hong Kong
Information on a Course
offered by **Department of Mechanical and Biomedical Engineering**
with effect from **Semester A in 2013/2014**

Part I

Course Title: Operations and Maintenance of Nuclear Power Plants

Course Code: MBE6103

Course Duration: One Semester

No. of Credit Units: 3

Level: P6

Medium of Instruction: English

Prerequisites: Nil

Precursors: Nil

Equivalent Courses: Nil

Exclusive Course: 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

This course aims to introduce the fundamentals of operation and maintenance of nuclear power plants. The course focuses on guidelines and principles for plant and corporate personnel in support of safe, efficient and reliable plant operation under normal conditions and reliability of plant equipment required to support emergency operations. The topics discussed in the courses are applicable to all nuclear power plants.

2. Course Intended Learning Outcomes (CILOs)

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

No.	CILOs	Weighting* (if applicable)
1.	Describe the basic principles of nuclear power plant operation and Maintenance	2
2.	Describe the key roles and responsibilities of the operation and maintenance personnel	2
3.	Describe the key elements of good operation and maintenance programs	1
4.	Describe the key issues and challenges of operation and maintenance	1
5.	Describe the roles and responsibilities of other organizations on operation and maintenance	1

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

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 (Hours per week)
Lecture/Tutorial/Laboratory Mix	Lecture (3) / Laboratory (1)

TLAs	Large Class Activities	Laboratory Activities	Mini-project	Total Hours
CILO 1	7	3	4	14
CILO 2	7	3	4	14
CILO 3	4	-	3	7
CILO 4	4	3	-	7
CILO 5	4	3	1	8
Total (hrs)	26	12	12	50

Large class activities: Delivery of the course will be achieved through a series of formal lectures supported by practical case studies.

Laboratory work will be mainly teaching the student various practical aspects related to operation and maintenance of nuclear power plants. Field trip/visit to nuclear plant training facility simulator (Taiwan or China) will be planned if feasible. Interviews with nuclear power plant directors of operation and maintenance (Taiwan or China) will also be considered.

Mini-project: A typical issue or challenge will be given to students to solve. The students are expected to work in teams to tackle the given problems. The learning activity will be mainly student-led but with some structural guidance from the instructor. At the end of learning activity, a presentation session will be organized for all students to present their solutions for the given problem.

4. Assessment Tasks/Activities

(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)

TLAs	Examination (2 hours)	Laboratory Reports	Mini-project	Total (%)
CILO 1	18	6	6	30
CILO 2	18	6	6	30
CILO 3	8	3	3	14
CILO 4	8	3	3	14
CILO 5	8	2	2	12
Total (%)	60	20	20	100

For a student to pass the course, at least 30% of the maximum mark for the examination should be obtained.

5. Grading of Student Achievement:

The grading is assigned based on student's performance in assessment tasks/activities. The 2-hour examination (60%), laboratory reports (20%) and mini-project (20%) will be marked numerically and final grades will be awarded accordingly.

Grade Table

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

Please refer the SGS's website:

<http://www.sgs.cityu.edu.hk/student/tpg/assessment/coursegrades#01> for more details.

Part III

Keyword Syllabus:

- Basic knowledge of key nuclear power plant systems, equipment's and components.
- Basic principles of nuclear power plant operation and maintenance
- Key roles and responsibilities of the operation and maintenance personnel
- Key elements of good operation and maintenance programs
- Key issues and challenges of operation and maintenance
- Roles and responsibilities of other organizations on operation and maintenance
- Communication and leadership
- Integrity
- Accountability

Recommended Reading:

Text(s)

1. Operational Limits and Conditions and Operating Procedures for Nuclear Power Plants, IAEA Report, No. NS-G-2.2
2. Guidelines for the Conduct of Operations at Nuclear Power Stations, INPO Report, 01-002

Online Resources

Various available websites will be recommended (Later)

www.nrc.gov