



TQF. 3

Bachelor's Degree

Master's Degree

Course Specification

Course Code: MIE3103

Course Title: Industrial Maintenance Management

Credits: 3(2-2-5)

Program: Bachelor of Science (Management Technology)

Semester: 2

Academic Year: 2023

Faculty of Industrial Technology
Suan Sunandha Rajabhat University

Section 1 - General Information

1. Course code and course title

Course code: MIE3103

Course title (English): Industrial Maintenance Management

ชื่อวิชา (ภาษาไทย): การจัดการการบำรุงรักษาทางอุตสาหกรรม

2. Credits

3(2-2-5)

3. Curriculum and course category

Curriculum: Bachelor of Science (Management Technology)

Course Category:

- | | | |
|---|---|--|
| <input type="checkbox"/> General Education | <input type="checkbox"/> Specialized Course | <input type="checkbox"/> Professional Foundation |
| <input checked="" type="checkbox"/> Required Course | <input type="checkbox"/> Elective Course | <input type="checkbox"/> Internship |

4. Teacher in charge and lecturer

Teacher in charge: Dr.Pongrapee Kaewsaiha

Lecturers: Dr.Pongrapee Kaewsaiha, Assoc.Prof.Benchalak Muangmeesri

5. Contact

Room Number: 47/4724A

Email: pongrapee.ka@ssru.ac.th

6. Semester/Academic year

Semester: 2 Academic Year: 2023

Number of enrolled students: **TBA**

7. Pre-requisite (if any)

None

8. Co-requisite (if any)

None

9. Venue

Faculty of Industrial Technology, 42/4255

10. Last date for preparing and revising this course

July 2022

Section 2 - Aims and Objectives

1. Course aims

This course emphasizes on students understanding the principles of maintenance. The main contents include material control, quality control, and human resource management related to maintenance work. This is to allow students to plan and create a maintenance schedule, as well as implement the plan for success and continuously monitor results.

2. Course objectives

By the end of this course, students will be able to:

- 1) Explain the principles of maintenance management systems in industrial plants.
- 2) Plan maintenance, organize maintenance work, and develop a continuous maintenance system.
- 3) Recognize the importance of maintenance and create habits for maintaining tools, machines, and buildings in industrial plants.

3. Purposes for developing and revising course

To strengthen professionalism in the industry

Section 3 - Characteristics and Operations

1. Course description

(English) Maintenance concepts in industries, organizing maintenance team, maintenance categories, total productive maintenance (TPM), failure statistics and causes analysis, maintenance planning, measuring machine effectiveness, reliability, maintenance control, work order system, and maintenance report and conducting assigned projects

(ไทย) แนวคิดการบำรุงรักษาในอุตสาหกรรม โครงสร้างองค์การการบำรุงรักษา ประเภทของการบำรุงรักษา การบำรุงรักษาที่ผลแบบทุกคนมีส่วนร่วม สถิติการชำรุดขัดข้องและการวิเคราะห์สาเหตุ การวางแผนการบำรุงรักษา การวัดประสิทธิผลของเครื่องจักร ความเชื่อมั่น การควบคุมการบำรุงรักษา ระบบใบงาน และรายงานการบำรุงรักษา และการจัดทำโครงการที่ได้รับมอบหมาย

2. Time length per semester (Lecture/Practice/Self-study hours)

Lecture	Practice	Self-Study	Remedial Class
2 hours/week	2 hours/week	5 hours/week	As needed

3. Individual consulting and guidance

Self-consulting at the lecturer's office:

Room Number 4724A, Faculty of Industrial Technology, SSRU

Mon., 13:00-15:00 or by appointment

Consulting via office telephone/mobile phone:

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Consulting via email:

pongrapee.ka@ssru.ac.th

Consulting via social media platform:

Line Group

Consulting via a web forum:

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Section 4 - Developing Students' Learning Outcomes

Expected students' learning outcomes are categorized into five domains, developed from curriculum specification (TQF2), as follows:

1. Morals and ethics

1.1 Learning outcomes to be developed

- 1) Have knowledge, understanding, and realizing value, morality, ethics, sacrifice, and honesty. Have academic and professional ethics.
- 2) Be disciplined, punctual, and responsible for oneself and society. Be able to comply with organizational and social regulations.
- 3) Be able to take leader and follower roles, work as a team, resolve conflicts and priorities.
- 4) Be open-minded and respect rights, value, and dignity of human beings.
- 5) Have a conscience that considers common interests rather than personal interests.

1.2 Teaching strategies

Establish an organizational culture to instill discipline in students. Emphasis on attending classes on time as well as dressing according to university regulations. Students responsible for group work must be trained to know the responsibilities of being a group leader and being a member of a group. Be honest by not committing fraud in exams or plagiarizing other people's homework. In addition, all instructors must include morality and ethics in teaching all subjects. Also, there are activities to promote morality and ethics, such as honoring students who have done well in benefit the public and sacrifice.

1.3 Assessment & evaluation strategies

- 1) Evaluate from attentiveness and diligence in participating in class activities.
- 2) Assess students' punctuality in class, submission of work, and participation in activities.
- 3) Evaluate the responsibilities of assigned duties.

2. Knowledge

2.1 Learning outcomes to be developed

- 1) Have knowledge and understanding of important principles and theories in the course.
- 2) Have knowledge and understanding of other areas related to the course which can be integrated and applied appropriately.
- 3) Have knowledge of operational techniques using experiential learning methods.
- 4) Be able to continuously monitor academic and professional changes both in theory and in practice.

2.2 Teaching strategies

Use a variety of teaching methods emphasizing theoretical principles and practical application in real-world environments to keep pace with technological changes. This shall be in accordance with the nature of the course as well as the content of that course.

2.3 Assessment & evaluation strategies

- 1) Quiz
- 2) Mid-term and final exams
- 3) Report
- 4) Presentation

3. Cognitive skills

3.1 Learning outcomes to be developed

- 1) Be able to think critically and systematically.
- 2) Be able to search, interpret, process, and evaluate data to identify, analyze, and solve problems creatively.
- 3) Be able to follow up, evaluate, and report results accurately and completely.

3.2 Teaching strategies

- 1) Teachers always teach and show rational thinking as an example.
- 2) Presentations and group discussions.
- 3) Provide students the opportunity to practice.

3.3 Assessment & evaluation strategies

Assess according to the real situation from the work and practice of students, such as assessing from class presentations, testing using quiz, interviews, etc.

4. Interpersonal skills and responsibilities

4.1 Learning outcomes to be developed

- 1) Be able to help and facilitate in solving problems in various situations in the group, either as a leader or a team member.
- 2) Have good human relations. Be able to work well with others and adapt well to situations and corporate culture.
- 3) Have responsibility for their own actions and for group work and learning development, both personally and professionally.
- 4) Be able to work and take responsibility for assigned tasks efficiently.

4.2 Teaching strategies

Use instructions with activities that involve group work, work that requires coordination with others, across curriculum, across faculties, external parties, external agencies, or work that students need to research information from interviewing other people or experts.

4.3 Assessment & evaluation strategies

Assess student behavior and expression in presenting group reports in class and observe the behavior shown in participating in various activities and the completeness and clarity of the information.

5. Numerical analysis, communication, and information technology skills

5.1 Learning outcomes to be developed

- 1) Be able to use quantitative analysis to make creative decisions in interpretation and suggest ways to solve problems or disputes.
- 2) Be able to communicate effectively both verbally and in writing. Know how to choose a presentation style that is suitable for different problems and audience groups.
- 3) Be able to choose appropriate information technology and communication techniques to collect data, interpretation, and information communication.

5.2 Teaching strategies

Organize learning activities in various subjects for students to analyze simulated situations, numerical analysis skills, virtual situations, and propose appropriate solutions. Learn techniques for applying technology in a variety of situations.

5.3 Assessment & evaluation strategies

Assess presentation techniques based on theory, selection of technological tools or related mathematics and statistics. Assess the ability to explain the limitations, reasons for choosing different tools, discussions, and case studies that are presented to the class.

Remark: The symbol ● means “major responsibility.”

The symbol ○ means “minor responsibility.”

No symbol means “no responsibility.”

Section 5 - Lesson Plan and Assessment

1. Lesson plan

Week	Content	Teaching Management	Program/Teaching Strategies	Material/Media	Assessment
1	Course introduction Chapter 1: Concepts of maintenance in industries	On-site, Online	<ul style="list-style-type: none"> - Introduce course outlines. - Introduce the course LMS (Moodle) and provide technical assistance as needed. - Explain aims and importance of maintenance. - Clarify types of maintenance. - Display overall maintenance process. - Students attempt a quiz. - Discuss expected outcome and grading criteria. 	<ul style="list-style-type: none"> - Presentation - Online quiz 	<ul style="list-style-type: none"> - Participation record - Quiz result
2	Chapter 2: Maintenance strategy	On-site, Online	<ul style="list-style-type: none"> - Show how to organize maintenance. - Introduce maintenance strategies. - Students attempt a quiz. 	<ul style="list-style-type: none"> - Presentation - Online quiz 	<ul style="list-style-type: none"> - Participation record - Quiz result
3	Chapter 3: Maintenance plan	On-site, Online	<ul style="list-style-type: none"> - Introduce data collection and planning for maintenance. - Students attempt a quiz. 	<ul style="list-style-type: none"> - Presentation - Online quiz 	<ul style="list-style-type: none"> - Participation record - Quiz result
4	Chapter 4: Maintenance implementation	On-site, Online	<ul style="list-style-type: none"> - Describe the implementation of maintenance plans. - Introduce total productive maintenance (TPM) - Students attempt a quiz. 	<ul style="list-style-type: none"> - Presentation - Online quiz 	<ul style="list-style-type: none"> - Participation record - Quiz result
5	Chapter 5: Maintenance control	On-site, Online	<ul style="list-style-type: none"> - Introduce work order system. 	<ul style="list-style-type: none"> - Presentation - Online quiz 	<ul style="list-style-type: none"> - Participation record - Quiz result

Week	Content	Teaching Management	Program/Teaching Strategies	Material/Media	Assessment
			<ul style="list-style-type: none"> - Recommend feedback collection and process revision. - Students attempt a quiz. 		
6-7	Review & Project		<ul style="list-style-type: none"> - Review previous lessons. - Discuss group projects. 	- Presentation	- Participation record
8	Mid-term examination		-	-	-
9	Chapter 6: Material management	On-site, Online	<ul style="list-style-type: none"> - Explain types of material. - Introduce inventory management. - Students attempt a quiz. 	<ul style="list-style-type: none"> - Presentation - Online quiz 	<ul style="list-style-type: none"> - Participation record - Quiz result
10	Chapter 7: Quality control in maintenance	On-site, Online	<ul style="list-style-type: none"> - Explain validation and verification process. - Summarize quality control in maintenance. - Students attempt a quiz. 	<ul style="list-style-type: none"> - Presentation - Online quiz 	<ul style="list-style-type: none"> - Participation record - Quiz result
11	Chapter 8: Human resource management in maintenance	On-site, Online	<ul style="list-style-type: none"> - Introduce roles, positions, and structure of human resource management in maintenance. - Describe activities related to human resource management in maintenance work. - Students attempt a quiz. 	<ul style="list-style-type: none"> - Presentation - Online quiz 	<ul style="list-style-type: none"> - Presentation - Online quiz
12	Chapter 9: Continuous maintenance system development	On-site, Online	<ul style="list-style-type: none"> - Introduce monitoring of maintenance work. - Analysis of the roots of the problem and solutions 	<ul style="list-style-type: none"> - Presentation - Online quiz 	<ul style="list-style-type: none"> - Presentation - Online quiz
13-15	Review & Project		<ul style="list-style-type: none"> - Review previous lessons. - Students present their projects. 	- Presentation	<ul style="list-style-type: none"> - Participation record - Rubrics for projects
16	Final examination		-	-	-

2. Learning assessment plan

Learning Outcomes	Assessment Activities	Schedule (Week)	Proportion for Assessment (%)
1	Participation record	1-15	10
2, 3	Activity	1-15	40
	Examinations	8, 16	20, 30

Section 6 - Learning and Teaching Resources

1. Required textbooks and materials

อนุศักดิ์ ฉิ่งไพศาล. (2556). การบริหารงานบำรุงรักษา. ซีเอ็ดยุคเข็้น, บมจ.

2. Documents and important information

Documents suggested by the lecturer

3. Recommended resources for extra study

Information retrieved from search engines

Section 7 - Course Evaluation and Revising

1. Strategies for evaluation of course effectiveness by students

Students will complete the evaluation form after the end of the course.

2. Strategies for course evaluation by the lecturer

The lecturer observes the class and collects feedback from students.

3. Teaching revision

The lecturer revises the teaching and learning process based on the evaluation results.

4. Feedback for achievement standards

The administration committees collect data and analyze students' academic performance each semester.

5. Methodology and planning for course review and improvement

Revise the curriculum, teaching methods, and learning methods by referring to the evaluation results from those involved. Meetings will be held to review the course's effectiveness and improve the curriculum.