



A) COURSE

| Course Id: | Course |
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| 5525 | INDUSTRIAL MAINTENANCE |

| Class Hours per Week | Lab hours per week | Complementary practices | Credits | Total hour course |
|----------------------|--------------------|-------------------------|---------|-------------------|
| 3 | 0 | 3 | 6 | 48 hours total |

B) GENERAL COURSE INFORMATION:

| | EE (IEA) | ME (IM) | MME (IMA) | EME (IME) | MTE (IMT) |
|--|-------------|--|--------------|--------------|--------------|
| Level: | | IX | X | | |
| Course Type (Required/Elective) | | Required | Elective | | |
| Prerequisite Course: | | It requires that have approved 315 credits | 5683 | | |
| CACEI Classification: | | AE | AE | | |

C) COURSE OBJECTIVE

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| <p>At the end of the course, the student will be capable of:</p> <p>To provide the basic knowledge to organize the maintenance department and set industry maintenance in a realistic mode suitable to the various problems that arise in industry.</p> |
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D) TOPICS (CONTENTS AND METHODOLOGY)

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| 1. INTRODUCTION. | | 2 Hours |
| Specific Objective: | To introduce students to the field of maintenance, introducing and explaining the purpose of the course and its agenda, and the policies and methods. | |
| 1.1. Policies and methods. 1.2. Maintenance concepts. | | |
| Readings and other resources | Books, articles, extra references, Internet. | |
| Teaching Methodologies | Class exposition, exposed concepts analysis, solving exercises, collaborative work, problem based Knowledge, project based Knowledge, brainstorming, forums, round table debates. | |



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| Learning Activities | Team work dynamics, homework assignment and their discussion, problem solving, debates, posters, conceptual maps, investigation, summaries, infographics, synoptic squaring. |
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| 2. Maintenance Concepts. | | 15 Hours |
| Specific Objective: | To learn the basic maintenance under the service quality approaches. | |
| | 2.1. General. 2.2. Power failures. 2.3. Maintenance division. 2.4. Quality of service. 2.5. Definition of corrective maintenance. 2.6. Definition of preventive maintenance. 2.7. Work orders. 2.8. Work fronts. | |
| Readings and other resources | Books, articles, extra references, Internet. | |
| Teaching Methodologies | Class exposition, exposed concepts analysis, solving exercises, collaborative work, problem based Knowledge, project based Knowledge, brainstorming, forums, round table debates. | |
| Learning Activities | Team work dynamics, homework assignment and their discussion, problem solving, debates, posters, conceptual maps, investigation, summaries, infographics, synoptic squaring. | |

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| 3. Staff in industry. | | 13 Hours |
| Specific Objective: | Define the types of staff in the administration of a company. | |
| | 3.1. Production staff. 3.2. Maintenance personnel 3.3. Management staff. 3.4. Management modes. | |
| Readings and other resources | Books, articles, extra references, Internet. | |
| Teaching Methodologies | Class exposition, exposed concepts analysis, solving exercises, collaborative work, problem based Knowledge, project based Knowledge, brainstorming, forums, round table debates. | |
| Learning Activities | Team work dynamics, homework assignment and their discussion, problem solving, debates, posters, conceptual maps, investigation, summaries, infographics, synoptic squaring. | |

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| 4. Administration maintenance machinery. | | 13 Hours |
| Specific Objective: | To determine the administrative activities that take place within the machinery maintenance. | |
| | 4.1. Planning. 4.2. Organization 4.3. Execution. 4.4. Control. | |



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| Readings and other resources | Books, articles, extra references, Internet. |
| Teaching Methodologies | Class exposition, exposed concepts analysis, solving exercises, collaborative work, problem based Knowledge, project based Knowledge, brainstorming, forums, round table debates. |
| Learning Activities | Team work dynamics, homework assignment and their discussion, problem solving, debates, posters, conceptual maps, investigation, summaries, infographics, synoptic squaring. |

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| 5. Methods for assessing the role maintenance. | | 5 Hours |
| Specific Objective: | To know various indices that determines the efficiency of a maintenance department. | |
| | 5.1. Productivity. 5.2. Costs. 5.3. Availability and use. 5.4. Planning. 5.5. Workload. 5.6. Utilization and labor. | |
| Readings and other resources | Books, articles, extra references, Internet. | |
| Teaching Methodologies | Class exposition, exposed concepts analysis, solving exercises, collaborative work, problem based Knowledge, project based Knowledge, brainstorming, forums, round table debates. | |
| Learning Activities | Team work dynamics, homework assignment and their discussion, problem solving, debates, posters, conceptual maps, investigation, summaries, info graphics, synoptic squaring. | |

E) TEACHING AND LEARNING METHODOLOGIES

- a) Lecture strategy proposing specific problems for group analysis and solution.
- b) Evaluation exams are applied for initial statistical analysis (without knowledge) and final (with knowledge).
- c) After completing this course provides an analysis of real examples of maintenance departments in the industry.
- d) A visit is scheduled for student to a company.



F) EVALUATION CRITERIA:

| Evaluation: | Schedule | Suggested Form of Evaluation and weighing | Topics |
|----------------------------|---------------------------------------|---|-------------|
| 1er. Evaluación Parcial | Session 16 | 33 % Total Evaluation Partial evaluation: Exam 90% , Assignments 10% | 1 y 2 |
| 2º Evaluación Parcial | Session 32 | 33 % Total Evaluation Partial evaluation: Exam 90% , Assignments 10% | 3 y 4 |
| 3er. Evaluación Parcial | Session 48 | 33 % Total Evaluation Partial evaluation: Exam 90% , Assignments 10% | 5 |
| Evaluación Final Ordinario | | 100% (Average value of the partial evaluations) | |
| Examen Extraordinario | Week 17 of the semester in progress | 100% Exam | 100% topics |
| Examen a título | According to Secretary school setting | 100% Exam | 100% topics |
| Examen de regularización | According to Secretary school setting | 100% Exam | 100% topics |

G) BIBLIOGRAPHY AND ELECTRONIC RESOURCES

Main Books

- a) Dounce villarreal Enrique, administration in maintaining, C.E.C.S.A.
- b) Morrow, I.C., industrial maintenance manual, C.E.C.S.A.

Complementary Books

- a) MANTENIMIENTO: PLANEACION EJECUCION Y CONTROL
Autor: Mora Gutiérrez Alberto
Editorial: ALFAOMEGA GRUPO EDITOR, 2009
- b) Teoría y Práctica del Mantenimiento Industrial Avanzado
4ª Ed. 2012 Francisco Javier González Fernández, Editorial: FUND. CONFEMETAL, 2011

Internet Links

<http://www.ingenieriaindustrialonline.com/herramientas-para-el-ingeniero-industrial/mantenimiento/>