

# PREVENTIVE MAINTENANCE AND TROUBLESHOOTING

|      |                                                              |                                                                                          |                                                                      |
|------|--------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| 1    | Course Title:                                                | PREVENTIVE MAINTENANCE AND TROUBLESHOOTING                                               |                                                                      |
| 2    | Course Code:                                                 | İSOZ202                                                                                  |                                                                      |
| 3    | Type of Course:                                              | Compulsory                                                                               |                                                                      |
| 4    | Level of Course:                                             | Short Cycle                                                                              |                                                                      |
| 5    | Year of Study:                                               | 2                                                                                        |                                                                      |
| 6    | Semester:                                                    | 4                                                                                        |                                                                      |
| 7    | ECTS Credits Allocated:                                      | 4.00                                                                                     |                                                                      |
| 8    | Theoretical (hour/week):                                     | 2.00                                                                                     |                                                                      |
| 9    | Practice (hour/week):                                        | 2.00                                                                                     |                                                                      |
| 10   | Laboratory (hour/week):                                      | 0                                                                                        |                                                                      |
| 11   | Prerequisites:                                               | None                                                                                     |                                                                      |
| 12   | Language:                                                    | Turkish                                                                                  |                                                                      |
| 13   | Mode of Delivery:                                            | Face to face                                                                             |                                                                      |
| 14   | Course Coordinator:                                          | Prof. Dr. SALİH COŞKUN                                                                   |                                                                      |
| 15   | Course Lecturers:                                            | Meslek Yüksekokulları Yönetim Kurullarının görevlendirdiği öğretim elemanları.           |                                                                      |
| 16   | Contact information of the Course Coordinator:               | coskuns@uludag.edu.tr                                                                    |                                                                      |
| 17   | Website:                                                     |                                                                                          |                                                                      |
| 18   | Objective of the Course:                                     | The students, aimed to gain maintenance and troubleshooting procedures in refrigeration. |                                                                      |
| 19   | Contribution of the Course to Professional Development:      | raising qualified personnel to be employed in the cooling sector                         |                                                                      |
| 20   | Learning Outcomes:                                           |                                                                                          |                                                                      |
|      |                                                              | 1                                                                                        | Troubleshooting of refrigeration components                          |
|      |                                                              | 2                                                                                        | Troubleshooting of electrical faults of related systems              |
|      |                                                              | 3                                                                                        | Troubleshooting of split and packaged type of air conditioners       |
|      |                                                              | 4                                                                                        | Troubleshooting of central air conditioning systems                  |
|      |                                                              | 5                                                                                        | Troubleshooting of mobile air conditioners and refrigeration systems |
|      |                                                              | 6                                                                                        |                                                                      |
|      |                                                              | 7                                                                                        |                                                                      |
|      |                                                              | 8                                                                                        |                                                                      |
|      |                                                              | 9                                                                                        |                                                                      |
|      |                                                              | 10                                                                                       |                                                                      |
| 21   | Course Content:                                              |                                                                                          |                                                                      |
|      |                                                              | <b>Course Content:</b>                                                                   |                                                                      |
| Week | Theoretical                                                  | Practice                                                                                 |                                                                      |
| 1    | The procedures of preventive maintenance and troubleshooting | Applications with students on related topic in lab.                                      |                                                                      |
| 2    | Troubleshooting of compressors                               | Applications with students on related topic in lab.                                      |                                                                      |
| 3    | Troubleshooting of evaporators and condensers                | Applications with students on related topic in lab.                                      |                                                                      |

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| 4  | Troubleshooting of expansion valve and capillary tube.               | Applications with students on related topic in lab. |
| 5  | Troubleshooting of refrigeration control circuits                    | Applications with students on related topic in lab. |
| 6  | Troubleshooting of residential and commercial refrigeration systems  | Applications with students on related topic in lab. |
| 7  | Troubleshooting of individual air conditioning devices.              | Applications with students on related topic in lab. |
| 8  | Troubleshooting of individual air conditioning devices.              | Applications with students on related topic in lab. |
| 9  | Troubleshooting of variable refrigerant volume (VRV) systems         | Applications with students on related topic in lab. |
| 10 | Troubleshooting of central air conditioning systems.                 | Applications with students on related topic in lab. |
| 11 | Troubleshooting of control circuits used in air conditioning systems | Applications with students on related topic in lab. |
| 12 | Troubleshooting of mobile air conditioning and refrigeration systems | Applications with students on related topic in lab. |
| 13 | Refrigeration servicing procedures.                                  | Applications with students on related topic in lab. |
| 14 | Refrigeration servicing procedures.                                  | Applications with students on related topic in lab. |

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| 22 | Textbooks, References and/or Other Materials: | 1.SOĞUTMA TEKNİĞİ VE ISI POMPASI UYGULAMALARI, Recep Yamankaradeniz, İlhami Horuz, Ömer Kaynaklı, Salih Coşkun, Nurettin Yamankaradeniz, Dora Yayıncılık<br>2. BAKIM ARIZA BULMA VE SERVİS İŞLEMLERİ, |
|----|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Activities                                         |   | Number                                                 | Duration (hour) | Total Work Load (hour) |
|----------------------------------------------------|---|--------------------------------------------------------|-----------------|------------------------|
| <b>TERM LEARNING ACTIVITIES</b>                    |   | <b>NUMBER</b>                                          | <b>WEIGHT</b>   |                        |
| Theoretical                                        |   | 14                                                     | 2.00            | 28.00                  |
| Practicals/Labs                                    |   | 14                                                     | 2.00            | 28.00                  |
| Self study and preparation                         | 0 | 0                                                      | 2.00            | 28.00                  |
| Homeworks                                          |   | 1                                                      | 28.00           | 28.00                  |
| Projects                                           |   |                                                        |                 |                        |
| Final Exam                                         | 1 | 60                                                     | 0.00            | 0.00                   |
| Field Studies                                      |   | 0                                                      | 0.00            | 0.00                   |
| Midterm exams                                      |   |                                                        |                 |                        |
| Contribution of Term (Year) Learning Activities to |   | 40                                                     | 1.00            | 1.00                   |
| Others                                             |   | 3                                                      | 2.00            | 6.00                   |
| Contribution of Final Exam to Success Grade        |   | 60                                                     | 1.00            | 1.00                   |
| Total Work Load                                    |   |                                                        |                 | 120.00                 |
| Total work load/ 30 hr                             |   |                                                        |                 | 4.00                   |
| Measurement and Evaluation Techniques Used in the  |   | Measurement and evaluation is carried out according to |                 |                        |
| ECTS Credit of the Course                          |   |                                                        |                 | 4.00                   |

|                               |                                     |
|-------------------------------|-------------------------------------|
| 24                            | Undergraduate Education Regulation. |
| <b>ECTS / WORK LOAD TABLE</b> |                                     |

| 25  | CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |
|-----|---------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|
|     | PQ1                                                           | PQ2 | PQ3 | PQ4 | PQ5 | PQ6 | PQ7 | PQ8 | PQ9 | PQ10 | PQ11 | PQ12 | PQ13 | PQ14 | PQ15 | PQ16 |
| ÖK1 | 2                                                             | 4   | 1   | 3   | 1   | 2   | 5   | 0   | 3   | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| ÖK2 | 2                                                             | 4   | 0   | 4   | 1   | 0   | 5   | 0   | 3   | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| ÖK3 | 2                                                             | 4   | 0   | 3   | 1   | 0   | 5   | 0   | 3   | 0    | 0    | 2    | 0    | 0    | 0    | 0    |
| ÖK4 | 2                                                             | 4   | 0   | 3   | 1   | 3   | 5   | 0   | 3   | 0    | 0    | 2    | 0    | 0    | 0    | 0    |

|                                                      |            |   |   |       |   |   |          |   |   |        |   |   |             |   |   |   |
|------------------------------------------------------|------------|---|---|-------|---|---|----------|---|---|--------|---|---|-------------|---|---|---|
| ÖK5                                                  | 2          | 4 | 0 | 3     | 1 | 0 | 5        | 0 | 3 | 0      | 0 | 2 | 0           | 0 | 0 | 0 |
| LO: Learning Objectives   PQ: Program Qualifications |            |   |   |       |   |   |          |   |   |        |   |   |             |   |   |   |
| Contrib<br>ution<br>Level:                           | 1 very low |   |   | 2 low |   |   | 3 Medium |   |   | 4 High |   |   | 5 Very High |   |   |   |