

## 1. Course Description

| COURSE DESCRIPTION FORM                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Course Code and Title                                                            | KM385 Laboratory Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Course Semester                                                                  | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Catalog Description (Content) of the Course                                      | Laboratory safety. the laboratory operating principles. chemical waste collection, storage and disposal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Main Textbook                                                                    | Richarson J., Risk Analysis and Safety Monitoring,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Supporting Textbooks                                                             | <ol style="list-style-type: none"> <li>1. Richarson J., Risk Analysis and Safety Monitoring,</li> <li>2. Tolley' health and Safety Work Handbook, 1998.</li> <li>3. Environmental Protection Agency( EPA),</li> <li>4. US Regulation 40 CFR part 68 "Proposed Rule, Risk Management Programs for Chemical Accidental Release Prevention", EPA, Washington DC.,1983.</li> <li>5. TSEN ISO 17025, 2010 MSDS Forms.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Course Credit (ECTS)                                                             | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Prerequisites of the Course<br>(Compulsory attendance should be indicated here.) | There is no prerequisite or co-requisite for this course.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Type of the Course                                                               | Elective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Instruction Language of the Course                                               | Turkish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Object and Target of the Course                                                  | <p>To introduce the laboratory management systems and to gain the ability to serve as Laboratory Responsible.</p> <p>To give information about the laboratory operating principles, Material Safety Data Sheet (MSDS), chemical waste collection, storage and disposal, first aid, laboratory accreditation (TS EN ISO 17025).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Learning Outcomes of the Course                                                  | <ol style="list-style-type: none"> <li>1. Importance of chemical engineering in laboratory management</li> <li>2. To provide an approach to fire engineering</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Mode of Delivery                                                                 | The mode of delivery of this course is face to face                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Weekly Schedule of the Course                                                    | <ol style="list-style-type: none"> <li>1. Week Laboratory safety, calibration of equipment, environmental conditions, working conditions</li> <li>2. Week Laboratory safety, calibration of equipment, environmental conditions, working conditions</li> <li>3. Week Laboratory safety, calibration of equipment, environmental conditions, working conditions</li> <li>4. Week Laboratory safety, calibration of equipment, environmental conditions, working conditions</li> <li>5. Week Measurement uncertainty calculations, validation, the laboratory operating principles, Material Safety Data Sheet(MSDS ),</li> <li>6. Week Measurement uncertainty calculations, validation, the laboratory operating principles, Material Safety Data Sheet(MSDS ),</li> <li>7. Week Measurement uncertainty calculations, validation, the laboratory operating principles, Material Safety Data Sheet(MSDS ),</li> <li>8. Week Measurement uncertainty calculations, validation, the laboratory operating principles, Material Safety Data Sheet(MSDS )</li> <li>9. Week Measurement uncertainty calculations, validation, the laboratory operating principles, Material Safety Data</li> </ol> |

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|                                                                                                                                             | Sheet(MSDS ),<br>10. Week chemical waste collection, storage and disposal, First Aid, Laboratory Accreditation (TS EN ISO 17025),<br>11. Week chemical waste collection, storage and disposal, First Aid, Laboratory Accreditation (TS EN ISO 17025),<br>12. Week chemical waste collection, storage and disposal, First Aid, Laboratory Accreditation (TS EN ISO 17025),<br>13. Week chemical waste collection, storage and disposal, First Aid, Laboratory Accreditation (TS EN ISO 17025),<br>14. Week Presentations |                         |                                  |                                   |
| <b>Educative Activities</b><br><i>(Credit will be determined based on the time given for these activities. Should be filled carefully.)</i> | Theoretical Study Hours of Course Per Week<br>Searching in Internet and Library<br>Preparing Reports<br>Preparing Presentation<br>Presentation<br>Mid-Term and Studying for Mid-Term<br>Final and Studying for Final                                                                                                                                                                                                                                                                                                    |                         |                                  |                                   |
| <b>Assessment Criteria</b>                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Quantity</b>         | <b>Total Contribution (%)</b>    |                                   |
|                                                                                                                                             | Midterm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2                       | 40                               |                                   |
|                                                                                                                                             | Homework                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |                                  |                                   |
|                                                                                                                                             | Assignment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                         |                                  |                                   |
|                                                                                                                                             | Projects                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                       | 20                               |                                   |
|                                                                                                                                             | Practice                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |                                  |                                   |
|                                                                                                                                             | Quiz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |                                  |                                   |
|                                                                                                                                             | Contribution of In-term Studies to Overall Grade                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         | 60                               |                                   |
|                                                                                                                                             | Contribution of Final Examination to Overall Grade                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         | 40                               |                                   |
|                                                                                                                                             | Attendance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                         |                                  |                                   |
| <b>Workload of the Course</b>                                                                                                               | <b>Activity</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Total Week Count</b> | <b>Weekly Duration (in hour)</b> | <b>Total Workload in Semester</b> |
|                                                                                                                                             | Theoretical Study Hours of Course Per Week                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 14                      | 3                                | 42                                |
|                                                                                                                                             | Practicing Hours of Course Per Week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |                                  |                                   |
|                                                                                                                                             | Reading                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                         |                                  |                                   |
|                                                                                                                                             | Searching in Internet and Library                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2                       | 4                                | 8                                 |
|                                                                                                                                             | Designing and Applying Materials                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                         |                                  |                                   |
|                                                                                                                                             | Preparing Reports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2                       | 4                                | 8                                 |
|                                                                                                                                             | Preparing Presentation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2                       | 4                                | 8                                 |
|                                                                                                                                             | Presentation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1                       | 2                                | 2                                 |
|                                                                                                                                             | Mid-Term and Studying for Mid-Term                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2                       | 5                                | 10                                |
|                                                                                                                                             | Final and Studying for Final                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1                       | 5                                | 5                                 |
|                                                                                                                                             | Other                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1                       | 1                                | 1                                 |
|                                                                                                                                             | Total work load                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                                  | 84                                |
|                                                                                                                                             | Total work load/25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |                                  | 3,36                              |
|                                                                                                                                             | ECTS of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                         |                                  | 3                                 |

| Course's Contribution To Program | Number | Program Outcomes                                                                                                                                                                                                      | 1 | 2 | 3 | 4 | 5 |
|----------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
|                                  | 1      | Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems. | X |   |   |   |   |
|                                  | 2      | Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.                                                            | X |   |   |   |   |
|                                  | 3      | Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.      | X |   |   |   |   |
|                                  | 4      | Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively.                                                               | X |   |   |   |   |
|                                  | 5      | Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems.                                                                                         | X |   |   |   |   |
|                                  | 6      | Ability to work efficiently in intra-disciplinary teams.                                                                                                                                                              |   |   |   | X |   |
|                                  | 7      | Ability to work efficiently in multi-disciplinary teams;                                                                                                                                                              |   |   |   |   |   |
|                                  | 8      | Ability to work individually.                                                                                                                                                                                         |   |   |   |   | X |
|                                  | 9      | Ability to communicate effectively in Turkish/English, both or ally and in writing; Ability to write effective reports and comprehend written reports, make effective presentations,                                  |   |   |   | X |   |
|                                  | 10     | Prepare design and production reports, give and receive clear and intelligible instructions.                                                                                                                          | X |   |   |   |   |
|                                  | 11     | Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.                                               |   |   |   | X |   |
|                                  | 12     | Awareness of professional and ethical responsibility.                                                                                                                                                                 | X |   |   |   |   |
|                                  | 13     | Information about business life practices such as project management, risk management, and change management.                                                                                                         | X |   |   |   |   |
|                                  | 14     | Information about awareness of entrepreneurship, innovation, and sustainable development.                                                                                                                             | X |   |   |   |   |
|                                  | 15     | Knowledge about contemporary issues and the global and societal effects of engineering practices on health, environment, and safety.                                                                                  |   |   |   | X |   |
|                                  | 16     | Knowledge about awareness of the legal consequences of engineering solutions.                                                                                                                                         | X |   |   |   |   |
|                                  | 17     | Knowledge on standards used in                                                                                                                                                                                        | X |   |   |   |   |

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|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------|--|--|--|--|--|-----------------------|--|--|--|--|
|                                                     | <table><tr><td></td><td>engineering practice.</td><td></td><td></td><td></td><td></td></tr></table>                        |                       |  |  |  |  |  | engineering practice. |  |  |  |  |
|                                                     |                                                                                                                            | engineering practice. |  |  |  |  |  |                       |  |  |  |  |
|                                                     |                                                                                                                            |                       |  |  |  |  |  |                       |  |  |  |  |
| <b>Name of Lecturer(s) and Contact Isnformation</b> | <div>1. Prof. Dr. Atilla MURATHAN, murathan@gazi.edu.tr</div> <div>2. Prof. Dr. Ayşe MURATHAN, amurathan@gazi.edu.tr</div> |                       |  |  |  |  |  |                       |  |  |  |  |