

## 1. Course Description

| COURSE DESCRIPTION FORM                                                       |                                                                                                                      |
|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Course Code and Title                                                         | KM348 Plastic Materials                                                                                              |
| Course Semester                                                               | 6                                                                                                                    |
| Catalog Description (Content) of the Course                                   | Plastic materials and additives. Usage of the plastics. Environmental effects of plastics. Plastic wastes recycling. |
| Main Textbook                                                                 | Savaşçı O.T., Uyanık N., Akovalı G.; Plastikler ve Plastik Teknolojisi, Çantay Kitabevi, İstanbul, 1998              |
| Supporting Textbooks                                                          | Brent Strong, Plastics: Materials and Processing 2nd Edition, 2000 Prentice Hall.                                    |
| Course Credit (ECTS)                                                          | 3                                                                                                                    |
| Prerequisites of the Course (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                                               | The course is taught to get students acquainted with basic concepts in plastic materials.                            |
| Learning Outcomes of the Course                                               | Teaching of technological development of advances in the fields of plastic materials and manufacturing               |
| Mode of Delivery                                                              | The mode of delivery of this course is Face to face                                                                  |
| Weekly Schedule of the Course                                                 | 1. Week Introduction to plastics                                                                                     |
|                                                                               | 2. Week The application of plastics                                                                                  |
|                                                                               | 3. Week The mechanical and thermal properties of polymers                                                            |
|                                                                               | 4. Week The mechanical and thermal properties of polymers                                                            |
|                                                                               | 5. Week Fillers in plastic materials                                                                                 |
|                                                                               | 6. Week Filler effects on Flame retardancy and impact strength of plastics                                           |
|                                                                               | 7. Week Preparation of plastic mixtures                                                                              |
|                                                                               | 8. Week Preparation of plastic mixtures                                                                              |
|                                                                               | 9. Week Plastic processing                                                                                           |
|                                                                               | 10. Week Physical and mechanical standart test systems                                                               |
|                                                                               | 11. Week Physical and mechanical standart test systems                                                               |
|                                                                               | 12. Week Environmental Aspects of Plastics                                                                           |
|                                                                               | 13. Week Environmental Aspects of Plastics                                                                           |
|                                                                               | 14. Week Recycling of plastics                                                                                       |

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|                                                                                                                                      | Week                                                                                                                                                                                                                            |                                                                                                                                                                                                                       |                        |                           |                            |   |   |   |   |
| <b>Educative Activities</b><br>(Credit will be determined based on the time given for these activities. Should be filled carefully.) | Theoretical Study Hours of Course Per Week<br>Reading<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>                                                                                                           |                                                                                                                                                                                                                                 | Quantity                                                                                                                                                                                                              | Total Contribution (%) |                           |                            |   |   |   |   |
|                                                                                                                                      | Midterm                                                                                                                                                                                                                         | 50                                                                                                                                                                                                                    | 2                      |                           |                            |   |   |   |   |
|                                                                                                                                      | Homework                                                                                                                                                                                                                        | 10                                                                                                                                                                                                                    | 5                      |                           |                            |   |   |   |   |
|                                                                                                                                      | Assignment                                                                                                                                                                                                                      | 0                                                                                                                                                                                                                     | 0                      |                           |                            |   |   |   |   |
|                                                                                                                                      | Projects                                                                                                                                                                                                                        | 0                                                                                                                                                                                                                     | 0                      |                           |                            |   |   |   |   |
|                                                                                                                                      | Practice                                                                                                                                                                                                                        | 0                                                                                                                                                                                                                     | 0                      |                           |                            |   |   |   |   |
|                                                                                                                                      | Quiz                                                                                                                                                                                                                            | 0                                                                                                                                                                                                                     | 0                      |                           |                            |   |   |   |   |
|                                                                                                                                      | Contribution of In-term Studies to Overall Grade                                                                                                                                                                                | 60                                                                                                                                                                                                                    |                        |                           |                            |   |   |   |   |
|                                                                                                                                      | Contribution of Final Examination to Overall Grade                                                                                                                                                                              | 40                                                                                                                                                                                                                    |                        |                           |                            |   |   |   |   |
|                                                                                                                                      | Attendance                                                                                                                                                                                                                      | 0                                                                                                                                                                                                                     | 0                      |                           |                            |   |   |   |   |
| <b>Workload of the Course</b>                                                                                                        | Activity                                                                                                                                                                                                                        |                                                                                                                                                                                                                       | Total Week Count       | Weekly Duration (in hour) | Total Workload in Semester |   |   |   |   |
|                                                                                                                                      | Theoretical Study Hours of Course Per Week                                                                                                                                                                                      |                                                                                                                                                                                                                       | 14                     | 3                         | 42                         |   |   |   |   |
|                                                                                                                                      | Practicing Hours of Course Per Week                                                                                                                                                                                             |                                                                                                                                                                                                                       |                        |                           |                            |   |   |   |   |
|                                                                                                                                      | Reading                                                                                                                                                                                                                         |                                                                                                                                                                                                                       | 10                     | 1                         | 10                         |   |   |   |   |
|                                                                                                                                      | Searching in Internet and Library                                                                                                                                                                                               |                                                                                                                                                                                                                       | 10                     | 1                         | 10                         |   |   |   |   |
|                                                                                                                                      | Designing and Applying Materials                                                                                                                                                                                                |                                                                                                                                                                                                                       |                        |                           |                            |   |   |   |   |
|                                                                                                                                      | Preparing Reports                                                                                                                                                                                                               |                                                                                                                                                                                                                       | 1                      | 3                         | 3                          |   |   |   |   |
|                                                                                                                                      | Preparing Presentation                                                                                                                                                                                                          |                                                                                                                                                                                                                       | 1                      | 5                         | 5                          |   |   |   |   |
|                                                                                                                                      | Presentation                                                                                                                                                                                                                    |                                                                                                                                                                                                                       | 1                      | 5                         | 5                          |   |   |   |   |
|                                                                                                                                      | Mid-Term and Studying for Mid-Term                                                                                                                                                                                              |                                                                                                                                                                                                                       | 2                      | 5                         | 10                         |   |   |   |   |
|                                                                                                                                      | Final and Studying for Final                                                                                                                                                                                                    |                                                                                                                                                                                                                       | 1                      | 2                         | 2                          |   |   |   |   |
|                                                                                                                                      | Other                                                                                                                                                                                                                           |                                                                                                                                                                                                                       | 15                     | 0                         | 0                          |   |   |   |   |
|                                                                                                                                      | Total work load                                                                                                                                                                                                                 |                                                                                                                                                                                                                       |                        |                           | 87                         |   |   |   |   |
|                                                                                                                                      | Total work load/25                                                                                                                                                                                                              |                                                                                                                                                                                                                       |                        |                           | 3,48                       |   |   |   |   |
|                                                                                                                                      | ECTS of the course                                                                                                                                                                                                              |                                                                                                                                                                                                                       |                        |                           | 3                          |   |   |   |   |
| <b>Course's Contribution To Program</b>                                                                                              | 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                                                                                                                                                                |                        |                           | X                          |   |   |   |   |

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|                                                    |    | 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.                           |   |   |   |   |  |
|                                                    | 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;                                                                                                                            | X |   |   |   |  |
|                                                    | 8  | Ability to work individually.                                                                                                                                                       |   |   |   | X |  |
|                                                    | 9  | Ability to communicate effectively in Turkish/English, both orally 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 engineering practice.                                                                                                                                |   |   | X |   |  |
| <b>Name of Lecturer(s) and Contact Information</b> |    | 1. Prof. Dr. Nursel Dilsiz<br>ndilsiz@gazi.edu.tr                                                                                                                                   |   |   |   |   |  |