

| İLT 511 ADVANCED MATERIALS<br>PREPARATION TECHNIQUES |  |        |      | ADVANCED TECHNOLOGIES DEPARTMENT |         |       |       |                         |                  |
|--|--|--------|------|----------------------------------|---------|-------|-------|-------------------------|------------------|
| SEMESTER   | Teaching and Learning Methods (Hours Per Semester)   |        |      |                                  |         |       |       | Krediler                |                  |
|  | lecture  | Recite | Lab. | Homework                         | Project | Other | Total | Basic Credit            | ECTS Credit      |
| 1-2  | 42   | -      | -    | 27                               | 35      | 84    | 188   | 3                       | 7.5              |
| <b>Language</b>                                      | Turkish  |        |      |                                  |         |       |       |                         |                  |
| <b>Compulsory/<br/>Elective</b>                      | Optional   |        |      |                                  |         |       |       |                         |                  |
| <b>Prerequisites</b>                                 | -  |        |      |                                  |         |       |       |                         |                  |
| <b>Course Contents</b>                               | Composie materials, metal matrix composite, plastic matrix composite and preparation methods. Catalysts and catalyst preparation methods. Membranes and membrane preparation methods. Nanomaterials, smart materials and preparation methods. Advanced materials characterization techniques.  |        |      |                                  |         |       |       |                         |                  |
| <b>Course Objectives</b>                             | Giving information about the preparation methods of the advanced technologies, nanomaterials and smart materials   |        |      |                                  |         |       |       |                         |                  |
| <b>Learning Outcomes and Competences</b>             | <ul style="list-style-type: none"> <li>• Learning the advanced meterials preparation methods.</li> <li>• Obtain information about the nanomaterials and smart materials.</li> </ul>  |        |      |                                  |         |       |       |                         |                  |
| <b>Textbooks and /or References</b>                  | <ul style="list-style-type: none"> <li>• Wessel, J. K. and Wessel, J. K., Handbook of Advanced Materials, Wiley, John&amp;Sons, 2004.</li> <li>• Pilato, L. A. and Michno, M. J., Advanced Composite Materials, Cambridge University Press, 1994.</li> <li>• Segal, D. L., Chemical Synthesis of Advanced Ceramic Materials, Cambridge University Press, 1992.</li> <li>• Klabunde, K.J., Nanoscale Materials in Chemistry, Wiley, 2001.</li> <li>• Swanson, S.R., Introduction to Design and Analysis With, Advanced Composite Materials, Prentice Hall, 1997.</li> <li>• Şahin, Y., Kompozit Malzemelere Giris, Seçkin Kitapevi, Ankara, 2006</li> </ul> |        |      |                                  |         |       |       |                         |                  |
| <b>Assessment Criteria</b>                           |  |        |      |                                  |         |       |       | <i>If and, mark (X)</i> | <b>Percent %</b> |
|  | <b>Midterm Exams</b>   |        |      |                                  |         |       |       | X                       | 40               |
|  | <b>Quizzes</b>   |        |      |                                  |         |       |       | -                       | -                |
|  | <b>Homeworks</b>   |        |      |                                  |         |       |       | -                       | -                |
|  | <b>Project</b>   |        |      |                                  |         |       |       | -                       | -                |
|  | <b>Term Paper</b>  |        |      |                                  |         |       |       | X                       | 20               |
|  | <b>Laboratory Work</b>   |        |      |                                  |         |       |       | -                       | -                |
|  | <b>Other</b>   |        |      |                                  |         |       |       | -                       | -                |
|  | <b>Final exam</b>  |        |      |                                  |         |       |       | X                       | 40               |
| <b>Instructor</b>                                    | Assistant Prof. Dr. Filiz DEREKAYA   |        |      |                                  |         |       |       |                         |                  |

| <b>Week</b>  | <b>Subjects</b>                         |
|--------------|---|
| <b>1-2</b>   | Composite Materials                     |
| <b>2-4</b>   | Composite Materials Preparation Methods |
| <b>4-5</b>   | Catalysts                               |
| <b>5-7</b>   | Catalyst Preparation Methods            |
| <b>7-8</b>   | Membranes                               |
| <b>8-10</b>  | Membrane Preparation Methods            |
| <b>10-12</b> | Nanomaterials and Smart Materials       |
| <b>12-14</b> | Characterization Techniques             |