

**CURRICULUM**

| Year     | 1           |                                            |           |          |           |
|----------|-------------|--------------------------------------------|-----------|----------|-----------|
| Semester | Fall        |                                            |           |          |           |
| #        | Course Code | Course Title                               | T         | L/A      | ECTS      |
| 1        | MATH 101    | Calculus-I                                 | 4         | 0        | 6         |
| 2        | PHYS 101    | Physics-I                                  | 3         | 0        | 4         |
| 3        | CHEM 101    | General Chemistry                          | 3         | 0        | 5         |
| 4        | ESE 101     | Introduction to Energy Systems Engineering | 2         | 0        | 2         |
| 5        | ESE 103     | Computer Aided Technical Drawing           | 2         | 2        | 5         |
| 6        | ENG 101     | Academic English-I                         | 3         | 0        | 4         |
| 7        | TDL 101     | Turkish language-I                         | 2         | 0        | 1         |
| 8        | TIT 101     | History of the Turkish Revolution-I        | 2         | 0        | 1         |
| 9        | PHYS 103    | Physics Laboratory I                       | 0         | 2        | 2         |
|          |             | <b>Total</b>                               | <b>21</b> | <b>4</b> | <b>30</b> |
|          |             | <b>Year Total</b>                          |           |          |           |
|          |             | <b>Cumulative Total</b>                    | <b>21</b> | <b>4</b> | <b>30</b> |

| Year     | 2           |                                                     |           |          |           |
|----------|-------------|-----------------------------------------------------|-----------|----------|-----------|
| Semester | Fall        |                                                     |           |          |           |
| #        | Course Code | Course Title                                        | T         | L/A      | ECTS      |
| 1        | ENGR 201    | Engineering Mathematics-I                           | 4         | 0        | 6         |
| 2        |             | University Elective (UE)                            | 2         | 0        | 3         |
| 3        | ESE 201     | Materials Science                                   | 2         | 1        | 4         |
| 4        | ESE 203     | Thermodynamics-I                                    | 3         | 0        | 5         |
| 5        | ESE 205     | Principle of Electrical and Electronics Engineering | 2         | 0        | 2         |
| 6        | ESE 207     | Manufacturing Technologies                          | 2         | 0        | 3         |
| 7        | ENG 201     | Technical English                                   | 3         | 0        | 4         |
| 8        | ENGR 260    | Principles of Occupational Health & Safety          | 2         | 0        | 3         |
|          |             | <b>Total</b>                                        | <b>20</b> | <b>1</b> | <b>30</b> |
|          |             | <b>Year Total</b>                                   |           |          |           |
|          |             | <b>Cumulative Total</b>                             | <b>64</b> | <b>9</b> | <b>90</b> |

| Year     | 3           |                         |            |           |            |
|----------|-------------|-------------------------|------------|-----------|------------|
| Semester | Fall        |                         |            |           |            |
| #        | Course Code | Course Title            | T          | L/A       | ECTS       |
| 1        | ESE 301     | Fluid Mechanics         | 3          | 0         | 5          |
| 2        | ESE 303     | Energy Systems-I        | 3          | 0         | 5          |
| 3        | ESE 305     | Heat Transfer           | 4          | 0         | 5          |
| 4        | ESE 307     | Control Systems         | 3          | 0         | 5          |
| 5        | ESE 309     | Energy Economy          | 2          | 0         | 3          |
| 6        |             | Faculty Elective (FE)   | 2          | 0         | 3          |
| 7        | ESE 300     | Industrial Practice-I   | 0          | 2         | 4          |
|          |             | <b>Total</b>            | <b>17</b>  | <b>2</b>  | <b>30</b>  |
|          |             | <b>Year Total</b>       |            |           |            |
|          |             | <b>Cumulative Total</b> | <b>101</b> | <b>12</b> | <b>150</b> |

| Year     | 4           |                             |            |           |            |
|----------|-------------|-----------------------------|------------|-----------|------------|
| Semester | Fall        |                             |            |           |            |
| #        | Course Code | Course Title                | T          | L/A       | ECTS       |
| 1        | ESE 401     | Graduation Project-I        | 3          | 3         | 6          |
| 2        | ESE 403     | Energy Systems Laboratory-I | 1          | 2         | 5          |
| 3        |             | Department Elective (DE4)   | 3          | 0         | 5          |
| 4        |             | Department Elective (DE4)   | 3          | 0         | 5          |
| 5        |             | Department Elective (DE4)   | 3          | 0         | 5          |
| 6        | ESE 400     | Industrial Practice-II      | 0          | 2         | 4          |
| 7        |             |                             |            |           |            |
| 9        |             |                             |            |           |            |
|          |             | <b>Total</b>                | <b>13</b>  | <b>7</b>  | <b>30</b>  |
|          |             | <b>Year Total</b>           |            |           |            |
|          |             | <b>Cumulative Total</b>     | <b>132</b> | <b>19</b> | <b>210</b> |

| Year     | 1           |                                      |           |          |           |
|----------|-------------|--------------------------------------|-----------|----------|-----------|
| Semester | Spring      |                                      |           |          |           |
| #        | Course Code | Course Title                         | T         | L/A      | ECTS      |
| 1        | MATH 102    | Calculus-II                          | 4         | 0        | 6         |
| 2        | PHYS 102    | Physics-II                           | 3         | 0        | 4         |
| 3        | ESE 102     | Statics                              | 4         | 0        | 5         |
| 4        | MATH 106    | Probability and Statistics           | 3         | 0        | 3         |
| 5        | ESE 106     | Computer Programming                 | 2         | 2        | 4         |
| 6        | ENG 102     | Academic English II                  | 3         | 0        | 4         |
| 7        | TDL 102     | Turkish language II                  | 2         | 0        | 1         |
| 8        | PHYS 104    | Physics Laboratory 2                 | 0         | 2        | 2         |
| 9        | TIT 102     | History of the Turkish Revolution-II | 2         | 0        | 1         |
|          |             | <b>Total</b>                         | <b>23</b> | <b>4</b> | <b>30</b> |
|          |             | <b>Year Total</b>                    | <b>44</b> | <b>8</b> | <b>60</b> |
|          |             | <b>Cumulative Total</b>              | <b>44</b> | <b>8</b> | <b>60</b> |

| Year     | 2           |                                        |           |           |            |
|----------|-------------|----------------------------------------|-----------|-----------|------------|
| Semester | Spring      |                                        |           |           |            |
| #        | Course Code | Course Title                           | T         | L/A       | ECTS       |
| 1        | ENGR 202    | Engineering Mathematics-II             | 4         | 0         | 6          |
| 2        |             | Faculty Elective                       | 2         | 0         | 3          |
| 3        | ESE 204     | Thermodynamics-II                      | 3         | 0         | 5          |
| 4        | ESE 206     | Basics of Renewable Energy             | 2         | 1         | 4          |
| 5        | ESE 208     | Electronic                             | 3         | 0         | 4          |
| 6        | ESE 210     | Electromechanical Energy Transformtion | 3         | 0         | 4          |
| 7        | ESE 212     | Energy and Environment                 | 3         | 0         | 4          |
|          |             | <b>Total</b>                           | <b>20</b> | <b>1</b>  | <b>30</b>  |
|          |             | <b>Year Total</b>                      | <b>40</b> | <b>2</b>  | <b>60</b>  |
|          |             | <b>Cumulative Total</b>                | <b>84</b> | <b>10</b> | <b>120</b> |

| Year     | 3           |                                 |            |           |            |
|----------|-------------|---------------------------------|------------|-----------|------------|
| Semester | Spring      |                                 |            |           |            |
| #        | Course Code | Course Title                    | T          | L/A       | ECTS       |
| 1        | ESE 302     | Measurement and Data Evaluation | 3          | 0         | 5          |
| 2        | ESE 304     | Energy Systems-II               | 3          | 0         | 5          |
| 3        | ESE 306     | Numerical Methods for Engineers | 3          | 0         | 5          |
| 4        |             | Department Elective (DE3)       | 3          | 0         | 5          |
| 5        |             | Department Elective (DE3)       | 3          | 0         | 5          |
| 6        |             | Department Elective (DE3)       | 3          | 0         | 5          |
| 9        |             |                                 |            |           |            |
|          |             | <b>Total</b>                    | <b>18</b>  | <b>0</b>  | <b>30</b>  |
|          |             | <b>Year Total</b>               | <b>35</b>  | <b>2</b>  | <b>60</b>  |
|          |             | <b>Cumulative Total</b>         | <b>119</b> | <b>12</b> | <b>180</b> |

| Year     | 4           |                              |            |           |            |
|----------|-------------|------------------------------|------------|-----------|------------|
| Semester | Spring      |                              |            |           |            |
| #        | Course Code | Course Title                 | T          | L/A       | ECTS       |
| 1        | ESE 402     | Graduation Project-II        | 3          | 3         | 6          |
| 2        | ESE 406     | Energy Managment             | 3          | 0         | 4          |
| 3        | ESE 404     | Energy Systems Laboratory-II | 1          | 2         | 5          |
| 4        |             | Department Elective (DE4)    | 3          | 0         | 5          |
| 5        |             | Department Elective (DE4)    | 3          | 0         | 5          |
| 6        |             | Department Elective (DE4)    | 3          | 0         | 5          |
| 9        |             |                              |            |           |            |
|          |             | <b>Total</b>                 | <b>16</b>  | <b>5</b>  | <b>30</b>  |
|          |             | <b>Year Total</b>            | <b>29</b>  | <b>12</b> | <b>60</b>  |
|          |             | <b>Cumulative Total</b>      | <b>148</b> | <b>24</b> | <b>240</b> |

**ELECTIVE COURSES**

| 3rd Year<br>Elective Courses |             | 3                               |   |     |      |
|------------------------------|-------------|---------------------------------|---|-----|------|
| Semester                     | Spring      |                                 |   |     |      |
| #                            | Course Code | Course Title                    | T | L/A | ECTS |
| 1                            | ESE 310     | Solar Energy Systems and Design | 3 | 0   | 5    |
| 2                            | ESE 312     | Design of Power Plants          | 3 | 0   | 5    |
| 3                            | ESE 316     | Fuels and Combustion            | 3 | 0   | 5    |
| 4                            | ESE 318     | Mass Transferr                  | 3 | 0   | 5    |
| 4                            | ESE 320     | Energy Storage Systems          | 3 | 0   | 5    |
| 6                            | ESE 322     | Electromagnetic Theory          | 3 | 0   | 5    |
| 7                            |             |                                 |   |     |      |
| Total                        |             |                                 |   |     | 30   |
| Year Total                   |             |                                 |   |     |      |
| Cumulative Total             |             |                                 |   |     |      |

| 4th Year<br>Elective Courses |             | 4                                |   |     |      |
|------------------------------|-------------|----------------------------------|---|-----|------|
| Semester                     | Fall        |                                  |   |     |      |
| #                            | Course Code | Course Title                     | T | L/A | ECTS |
| 1                            | ESE 411     | Biomass                          | 3 | 0   | 5    |
| 2                            | ESE 413     | Energy Efficiency                | 3 | 0   | 5    |
| 3                            | ESE 417     | Geothermal Energy                | 3 | 0   | 5    |
| 4                            | ESE 419     | Fossil Energy Resources          | 3 | 0   | 5    |
| 5                            | ESE 421     | Semiconductor Physics            | 3 | 0   | 5    |
| 6                            | ESE 423     | Power Systems                    | 3 | 0   | 5    |
| 8                            | ESE425      | Principles of Project Management | 3 | 0   | 5    |
|                              |             | Total                            |   |     | 35   |
|                              |             | Year Total                       |   |     |      |
|                              |             | Cumulative Total                 |   |     |      |

| 4th Year<br>Elective Courses |             | 4                                 |   |     |      |
|------------------------------|-------------|-----------------------------------|---|-----|------|
| Semester                     | Spring      |                                   |   |     |      |
| #                            | Course Code | Course Title                      | T | L/A | ECTS |
| 1                            | ESE 410     | Energy Law/Politics               | 3 | 0   | 5    |
| 2                            | ESE 412     | Hydrogen Energy Systems           | 3 | 0   | 5    |
| 3                            | ESE 414     | Design of Nuclear Reactors        | 3 | 0   | 5    |
| 4                            | ESE 416     | Modelling and Simulation          | 3 | 0   | 5    |
| 5                            | ESE 418     | Modern Physics                    | 3 | 0   | 5    |
| 6                            | ESE 420     | Fuel Cells                        | 3 | 0   | 5    |
| 9                            | ESE 422     | Principles of Wind Energy Systems | 3 | 0   | 5    |
|                              |             | Total                             |   |     | 35   |
|                              |             | Year Total                        |   |     |      |
|                              |             | Cumulative Total                  |   |     |      |

UE: University Elective (Any course with minimum 3 ECTS, given by the University)

FE: Faculty Elective (Any course with minimum 3 ECTS, given by the Faculty)