**Abdullah Gul University**

**Industrial Engineering Program**

(*For students who start their undergraduate program in* ***Fall 2016 and later***).

**FIRST YEAR/FIRST SEMESTER (FRESHMAN YEAR)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Course** | **PreReq** | **T** | **P** | **Credits** | **ECTS** |
| MATH 151 | Calculus I  | - | 5 | 0 | 5 | 6 |
| PHYS 101 | Physics I  | - | 3 | 2 | 4 | 5 |
| COMP 101 | Art of Computing | - | 3 | 2 | 4 | 6 |
| ENG 101 | English I | - | 4 | 0 | 4 | 4 |
| GLB 101 | AGU Ways | - | 3 | 0 | 3 | 4 |
| CHEM 101 | Chemistry for Engineers | - | 3 | 2 | 4 | 5 |
| **Total** | 21 | 6 | 24 | 30 |

**FIRST YEAR/SECOND SEMESTER (FRESHMAN YEAR)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Course** | **PreReq** | **T** | **P** | **Credits** | **ECTS** |
| MATH152 | Calculus II | MATH151 | 5 | 0 | 5 | 6 |
| BIO101\*  | Biology for Engineers I  | - | 3 | 2 | 4 | 5 |
| COMP 112 | Object Oriented Programming | COMP101 | 3 | 2 | 4 | 6 |
| ENG 102 | English II | ENG101 | 4 | 0 | 4 | 4 |
| GLB XXX | Global Issues Elective I  | - | 3 | 0 | 3 | 4 |
| IE102 | Exploring Profession | - | 3 | 2 | 4 | 5 |
|  | **Total** |  | 21 | 6 | 24 | 30 |

*\*BIO102 can be selected if BIO101 is not offered in that semester.*

**SECOND YEAR/THIRD SEMESTER (SOPHOMORE YEAR)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Course** | **PreReq** | **T** | **P** | **Credits** | **ECTS** |
| MATH 203 | Linear Algebra  |  |  3 |  0 |  3 |  5 |
| IE 221 | Probability |  | 3 | 0 | 3 | 6 |
| IE 213 | Mathematical Modeling | MATH152 | 3 | 2 | 4 | 7 |
| ECON 222 | Economics for Engineers |  | 3 | 0 | 3 | 4 |
| TURK 101 | Turkish I |  | 2 | 0 | 2 | 2 |
| GLB XXX | Global Issues Elective II |  | 3 | 0 | 3 | 4 |
|  | Elective (Non-technical) |  |  |  |  | 1 |
| **Total** |  |  |  | 29 |

**SECOND YEAR/FOURTH SEMESTER (SOPHOMORE YEAR)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Course** | **PreReq** | **T** | **P** | **Credits** | **ECTS** |
| IE 222 | Statistics | IE221 | 4 | 0 | 4 | 7 |
| IE 212 | Deterministic Optimization | MATH203 IE213 | 4 | 0 | 4 | 7 |
| IE 242 | Business Process Analysis and Design |  | 3 | 0 | 3 | 5 |
| COMP 204 | Database Management Systems |  | 3 | 0 | 3 | 6 |
| TURK 102 | Turkish II |  | 2 | 0 | 2 | 2 |
| GLB XXX | Global Issues Elective III |  | 3 | 0 | 3 | 4 |
| **Total** | 19 | 0 | 19 | 31 |

**THIRD YEAR/FIFTH SEMESTER (JUNIOR YEAR)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Course** | **PreReq** | **T** | **P** | **Credits** | **ECTS** |
| IE 375 | Production and Service Systems Management I | IE222IE212 | 4 | 0 | 4 | 6 |
| IE 325 | System Simulation | IE222 | 3 | 2 | 4 | 7 |
| IE 335 | Stochastic Models | IE221 | 3 | 0 | 3 | 5 |
| IE 345 | Financial and Managerial Accounting |  | 3 | 0 | 3 | 4 |
| HIST 201 | History of Modern Turkey I |  | 2 | 0 | 2 | 2 |
| GLB XXX | Global Issues Elective IV |  | 3 | 0 | 3 | 4  |
| **Total** | 18 | 2 | 19 | 28 |

**THIRD YEAR/SIXTH SEMESTER (JUNIOR YEAR)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Course** | **PreReq** | **T** | **P** | **Credits** | **ECTS** |
| IE 376 | Production and Service Systems Management II | IE375 | 4 | 0 | 4 | 6 |
| IE 346 | Engineering Economics and Cost Analysis |  | 3 | 0 | 3 | 5 |
| IE 380 | Quality Control and Assurance  | IE222 | 3 | 0 | 3 | 4 |
| IE 326 | Business Analytics | IE212 IE222 | 3 | 0 | 3 | 5 |
| IE 395 | Decision and Risk Analysis | IE221IE212 | 3 | 0 | 3 | 5 |
| HIST 202 | History of Modern Turkey II |  | 2 | 0 | 2 | 2 |
|  | Elective (Non-technical) |  |  |  |  | 5 |
| **Total** |  |  |  | 32 |

**FOURTH YEAR/SEVENTH SEMESTER (SENIOR YEAR)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Course** | **PreReq** | **T** | **P** | **Credits** | **ECTS** |
| IE 497 | Systems Analysis and Design Project I | IE212 IE222 IE376 | 4 | 0 | 4 | 10 |
| OHS 401 | Occupational Health and Safety I |  | 2 | 0 | 2 | 1 |
| IE 197 | Summer Training I |  | - | - | - | 4 |
|  | Elective  |  |  |  |  | 5 |
|  | Elective |  |  |  |  | 5 |
|  | Elective (Non-technical) |  |  |  |  | 5 |
| **Total** |  |  |  | 30 |

**FOURTH YEAR/EIGTH SEMESTER (SENIOR YEAR)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Course** | **PreReq** | **T** | **P** | **Credits** | **ECTS** |
| IE 498 | Systems Analysis and Design Project II | IE497 | 4 | 0 | 4 | 10 |
| OHS 402 | Occupational Health and Safety II |  | 1 | 0 | 1 | 1 |
| IE 297 | Summer Training II |  | - | - | - | 5 |
| IE 397 | Summer Training III |  | - | - | - | 6 |
|  | Elective  |  |  |  |  | 4 |
|  | Elective (Non-technical)  |  |  |  |  | 4 |
| **Total** |  |  |  | 30 |

**Concentration Area Electives**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Code** | **Course** | **T** | **P** | **Credits** | **ECTS** |
| IE 348 | Marketing Engineering | 3 | 0 | 3 | 5 |
| IE 374 | Supply Chain Management | 3 | 0 | 3 | 5 |
| IE 391 | Industry Applications I | 3 | 0 | 3 | 5 |
| IE 392 | Industry Applications II | 3 | 0 | 3 | 5 |
| IE 393 | Industry Applications III | 3 | 0 | 3 | 5 |
| IE 394 | Industry Applications IV | 3 | 0 | 3 | 5 |
| IE 396 | High-Tech Product Development I | 3 | 0 | 3 | 5 |
| IE 398 | High-Tech Product Development II | 3 | 0 | 3 | 5 |
| IE 495 | High-Tech Product Development III | 3 | 0 | 3 | 5 |
| IE 496 | High-Tech Product Development IV | 3 | 0 | 3 | 5 |
| IE 412 | Network Optimization | 3 | 0 | 3 | 5 |
| IE 414 | Advanced Linear Programming | 3 | 0 | 3 | 5 |
| IE 415 | Discrete Math | 3 | 0 | 3 | 5 |
| IE 416 | Nonlinear Programming | 3 | 0 | 3 | 5 |
| IE 417 | Heuristic Methods in Optimization  | 3 | 0 | 3 | 5 |
| IE 418 | Discrete Optimization | 3 | 0 | 3 | 5 |
| IE 422 | Advanced Simulation | 3 | 0 | 3 | 5 |
| IE 425 | System Dynamics | 3 | 0 | 3 | 5 |
| IE 426  | Data Mining | 3 | 0 | 3 | 5 |
| IE 442 | Operations Analysis and Design | 3 | 0 | 3 | 5 |
| IE 446 | Supply Chain Economics | 3 | 0 | 3 | 5 |
| IE 448 | International Marketing Tool:Turquality | 3 | 0 | 3 | 5 |
| IE 449 | Financial Engineering | 3 | 0 | 3 | 5 |
| IE 454 | Sustainable Energy Systems | 3 | 0 | 3 | 5 |
| IE 455 | Green Buildings | 3 | 0 | 3 | 5 |
| IE 456 | Operations Research in Sustainability | 3 | 0 | 3 | 5 |
| IE 457 | Operations Research Applications in Energy Systems | 3 | 0 | 3 | 5 |
| IE 458  | Smart Transportation Systems | 3 | 0 | 3 | 5 |
| IE 459 | Smart Cities  | 3 | 0 | 3 | 5 |
| IE 461  | Manufacturing Processes | 3 | 0 | 3 | 5 |
| IE 462 | Lean Manufacturing | 3 | 0 | 3 | 5 |
| IE 463 | Disaster and Emergency Management  | 3 | 0 | 3 | 5 |
| IE 464 | Operations Research Models in Disaster Management | 3 | 0 | 3 | 5 |
| IE 465 | Operations Research and Homeland Security  | 3 | 0 | 3 | 5 |
| IE 466 | Vulnerability and Resilience | 3 | 0 | 3 | 5 |
| IE 467 | Critical Infrastructure Planning | 3 | 0 | 3 | 5 |
| IE 472 | Production Planing and Scheduling | 3 | 0 | 3 | 5 |
| IE 474 | Humanitarian Logistics | 3 | 0 | 3 | 5 |
| IE 475 | Facility Layout and Location | 3 | 0 | 3 | 5 |
| IE 476 | Logistics Engineering | 3 | 0 | 3 | 5 |
| IE 477 | Inventory Models | 3 | 0 | 3 | 5 |
| IE 478 | Scheduling | 3 | 0 | 3 | 5 |
| IE 482 | Economics of Healthcare | 3 | 0 | 3 | 5 |
| IE 484  | Optimization Models in Health Care | 3 | 0 | 3 | 5 |
| IE 486 | Healthcare Operations Management | 3 | 0 | 3 | 5 |
| IE 488 | Healthcare Policy Analysis | 3 | 0 | 3 | 5 |
| IE 489 | Optimization in Medicine and Biology | 3 | 0 | 3 | 5 |
| IE499 | Industry 4.0 | 3 | 0 | 3 | 5 |

**GLB Electives**

(4 GLB courses must be taken)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Code** | **Course Name** | **T** | **P** | **Credits** | **ECTS** |
| GLB 102 | Innovation and Entrepreneurship | 3 | 0 | 3 | 4 |
| GLB 201 | Food and Health | 3 | 0 | 3 | 4 |
| GLB 202 | Immigration and Population | 3 | 0 | 3 | 4 |
| GLB 301 | Sustainability | 3 | 0 | 3 | 4 |